AUTOMATIC LUBRICATION EQUIPMENT

Buyer's Guide

PROVEN QUALITY. LEADING TECHNOLOGY.

CONSTRUCTION | FLEETS AND TRANSPORTATION | INDUSTRIAL | MINING | ENERGY | AGRICULTURE

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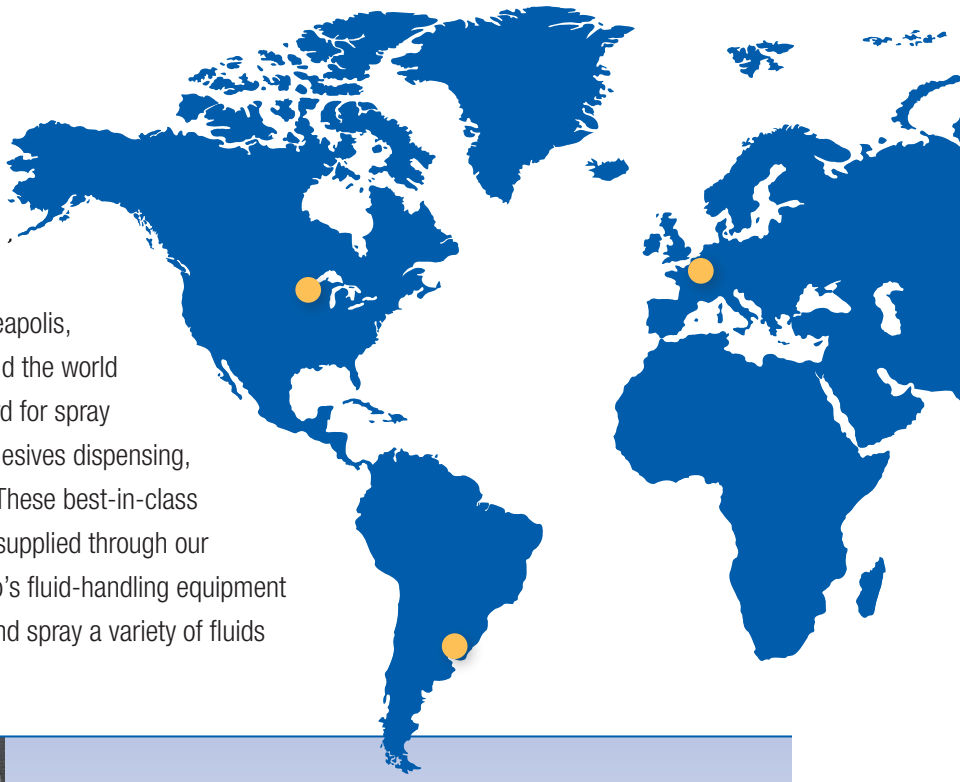
About Graco



Established in 1926, Graco has built a worldwide reputation for high quality, reliable and technically advanced products, world-class manufacturing and outstanding customer service. Headquartered in Minneapolis, Minnesota, Graco works closely with distributors around the world to offer innovative products that set the quality standard for spray finishing, paint circulation, lubrication, sealant and adhesives dispensing, process application and contractor power equipment. These best-in-class products are manufactured in the U.S. and China and supplied through our distribution centers around the world. Every day, Graco's fluid-handling equipment and systems move, measure, mix, control, dispense and spray a variety of fluids and materials.

Lubrication Equipment Division

From the first air-powered grease gun to our industry-leading Fire-Ball pump, Graco's Lubrication Equipment Division is what started it all. We manufacture equipment to monitor, control, manage and dispense fluids. Offering innovative equipment for all your vehicle services, industrial and automatic lubrication needs.

Keep your equipment running at peak performance. Graco automatic lubrication solutions give you the ultimate machine performance by lubricating key wear points – the right amount of lubricant, at the right time, in the right location. Graco has automatic lubrication solutions for the industrial, on-road mobile, off-road mobile, energy industries and more. From light-duty applications to high-performance concepts designed for heavy-duty jobs, our equipment is known for its rugged, durable and long-life design.

More than **3,300** distribution partners offer local service and support in more than **100** countries all over the world

Machining is a core competency of Graco – it enables complete control of the component parts needed to ensure precise metering, reliable dispensing and fluid movement.

When it comes to **research and development**, Graco is one step ahead, ensuring we offer the best possible solutions. To guarantee superior quality and to meet the changing requirements of your markets, we prioritize investing resources in research and development. Innovative technologies and extensive field testing are a natural part of our process to develop new products. Also, every aspect of our production is subject to constant testing and evaluation. It's the foundation to deliver products with long service life and low cost of ownership. The insurance to help you grow your business.

We understand our customers. We build a partnership, working and striving towards new solutions, together. We are at the service of our distribution partners, supporting you along the way. Look at Graco not just as a manufacturer or supplier but as an extension of your business. Our dedicated and experienced teams offer unique capabilities to help you meet your specific goals and challenges.

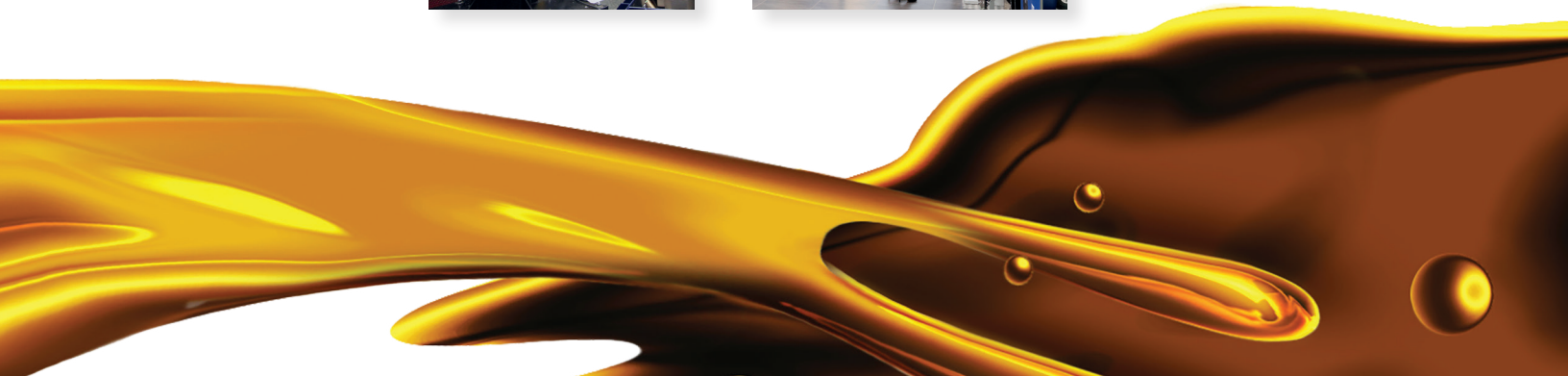
- Innovative, high-quality products with unique features
- A professional warranty and high service rate
- Purchasing conditions aimed at profitable growth
- A committed sales and marketing team for tailor-made support of expanding sales opportunities
- Continuous technical, commercial and hands-on training

Our world-class distribution centers and unrivaled global distributor network give Graco a unique industry advantage that allows us to rapidly deliver our products to end users worldwide.

Exceeding customer expectations is our priority. Our multilingual team of customer service specialists and technical engineers are available to you. Graco offers instructor-lead training sessions in the United States, EMEA and Asia Pacific. These courses teach theory and hands-on practical applications, covering basic operational to advanced technical knowledge. Each training session can be adapted to your specific needs.

Offering more than just products, we are focused on building relationships, identifying and developing business opportunities with you. Our sales team is available to collaborate, define strategies to assist in navigating through our product offering and provide advice on promotional activities.

Graco's marketing specialists investigate ways to expand the market and develop the right technologies for any application, in close cooperation with distributors and field users. We offer tailor-made promotional and communication support, from defining strategic requirements to developing marketing campaigns, organizing events and creating digital or printed material.



Did You Know?

Graco also manufactures and sells a complete line of high-quality pumps, meters, valves and hose reels!

Graco offers a full line of quality equipment to meet the varying needs of vehicle maintenance and repair. Streamline your workflow and move more lubricants through your shop. We offer reliable, high-quality equipment you can depend on for fuel, diesel, antifreeze, oil and grease. Our versatile fluid inventory control and management systems are designed to accurately track the use of oil, grease and other automotive fluids at vehicle maintenance facilities, and our lubrication equipment ensures you deliver fluids to the right spot in your shop.

Visit www.graco.com/vehicle-service

Graco Resources

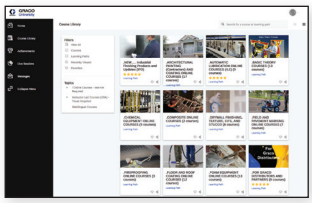
Graco has developed tools and resources to help educate and better serve our distribution channel. Check them out today:

Graco Sales Book

Stay up-to-date with the newest information from Graco by downloading the Graco Sales Book App.

Graco Sales Book is an innovative mobile application, designed to give Distributors access to Graco product information, including brochures, manuals, videos, and training documents – all on your mobile device.

Download today by visiting
salesbook.graco.com

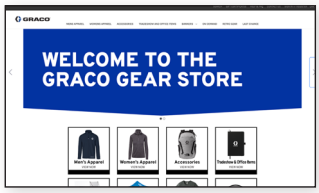


Graco University

Graco University is an e-learning module that can be accessed online, anytime, and contains assets that help educate you on Graco products.

This innovative online learning program gives the tools to stay on the leading edge with a variety of resources such as virtual and instructor led courses, online books, live and on-demand video presentations, and much more.

Learn more today at
training.graco.com



Graco Gear

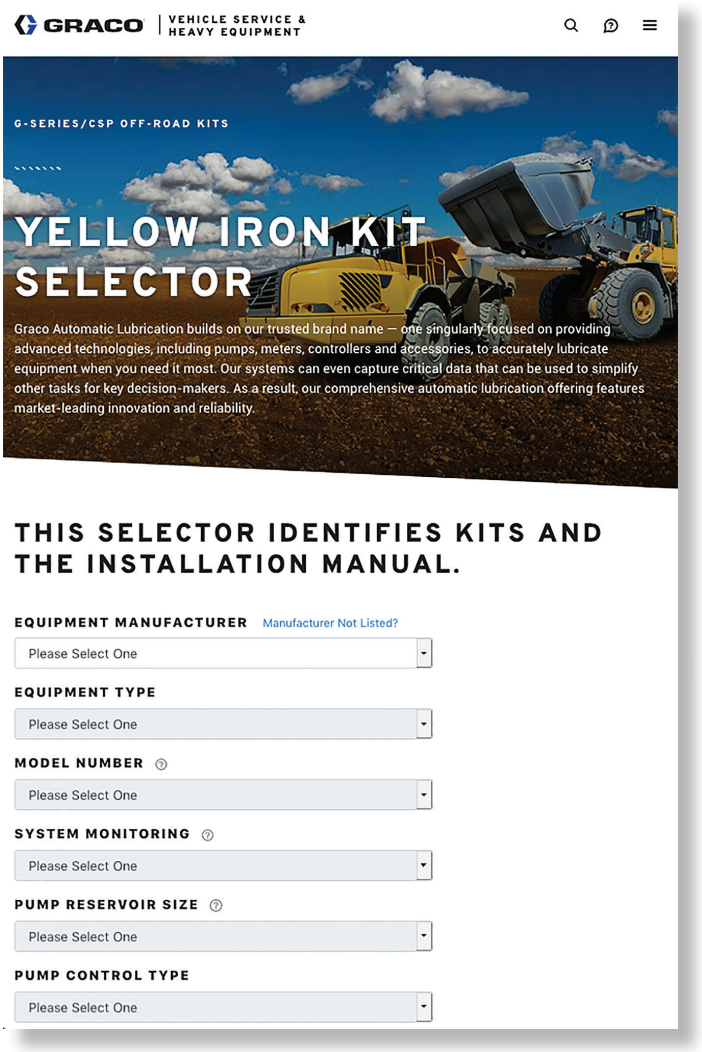
Graco Gear is your one-stop shop for branded merchandise and other tools that will help you build customer relationships.

Order shirts, hats, banners, and more whenever you need! You can even add your logo for a small fee. Most orders ship next day.

Start shopping today at
graco.mybigcommerce.om

Graco mobile equipment kits provide the latest technology from Graco, including the G-Series pumps, solid-state proximity switches, CSP divider valves, and hoses and fittings. Each kit will include all of the components necessary for model-specific customizations.

In order to eliminate system design and streamline the sales process, we have created a quick-to-spec, quick-to-quote and quick-to-sell solution. Scan the QR code below or visit **www.graco.com/offroadselector** to find an automatic lubrication kit for your piece of heavy equipment.



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GRACO

When determining the right Graco pump for your application, please consider the following factors:

1. What POWER is available?

Graco has pump options for:

- Electric
- Pneumatic
- Hydraulic
- Mechanical
- Manually operated

If the customer has multiple power options available, which one would they prefer to use?

2. What FLUID is being used as the lubricant?

Is this an oil system or a grease system?

- Several pumps work with both oil and grease, but many are for one or the other.
- **Important:** Graco automatic lubrication equipment is designed for use with oils and greases that are based on mineral oil or synthetic lubricant. If you are working with a different material, please contact the correct Graco division.

3. Which type of METERING DEVICE is being used?

Single Line Parallel (SLP) systems require a vent valve to function.

- Injectors and piston distributors (Injecto-Flo) are SLP systems.
- Not all pumps are offered with vent valves.
- Some vent valves are sold separately.
- Some do not offer a vent valve option.

Series Progressive Divider Valve (SPDV) and Single Line Resistive (SLR) systems require a relief valve, but not a vent valve.

= Single Line Parallel (Injectors)

= Series Progressive Divider Valve

= Single Line Resistive

= Pump to Point

4. What FLUID PRESSURE and FLOW RATE are needed to operate the metering system?

Pressure at the pump outlet is affected by the type and size of the metering system, as well as the viscosity and temperature of the lubricant.

- With SPDV and SLR, total flow is simply the sum of all the lube points' flow requirements.
- For Injectors and other SLP systems, extra volume is required because some of it is vented back to the reservoir between lubrication cycles.

For more information on lubricant metering options, see the Metering Devices section later in this Buyer's Guide.

Graco Buyer's Guidance: Pump Selection

5. What SIZE OF RESERVOIR is required?

System design "best practice" is to deplete the reservoir once a month, if possible.

- This keeps the customer from forgetting that it needs to be refilled regularly.
- Regular reservoir depletion also helps to prevent grease separation.

6. Does the customer prefer to have a CONTROLLER INTEGRATED into the pump body?

Integrated controllers are only offered on G-Series pumps:

- G3 SP, Pro and Max
- G5 Pro
- G-Mini Controller
- Electric Grease Jockey (EGJ)

Most G-Series pumps also offer a controller-less version for use with external controllers or a customer's PLC.

- G3 Standard
- G-Mini No Controller

Some pumps are designed to run constantly, without a controller. All other pumps require an external controller, which can be:

- a Graco controller
- a different brand
- a PLC
- or anything that can control the pump's connection to its power source.

For more information on controller options, see the Controllers section later in this Buyer's Guide.

7. Other factors to consider:

- Does the pump need to send some form of signal output (i.e. alarm, low level, etc.)?
- Does the pump need to log performance data (i.e. DMS or Auto Lube app)?
- Is the pump mounted in a location that would benefit from Auto-Fill Shut Off (AFSO)?
- What are the operating conditions of the application (i.e. weather, heat, vibration, contamination, etc.)?

Important: Always keep in mind that there could be <u>more</u> than one correct answer.

- Don't be surprised if you have more than one good option.
- Ultimately the choice may come down to preference; either yours or your customer's.

Consult with your local Graco Lubrication Account Manager for help finding the best solution.

Electric Pump Selection Guide

Pump Family	Typical Applications	Voltage	Fluid Type	Maximum Output Pressure psi (bar)	Maximum Output Volume per Minute in^3 (cm^3)	Reservoir Capacity Options		Metering	Reference Page
						US	Metric – Liters		
G-Mini® 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing • Vehicle Service	12 or 24 VDC	Grease up to NLGI #2	4,061 (280)	0.18 (3)	1 or 2 lb	0.5, 1 or 2	SPDV	13-15
G3® 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing • Vehicle Service	12 or 24 VDC, 90-240 VAC, 50/60 Hz	Oil – 40 cSt minimum Grease – up to NLGI #2	5,100 (352)	0.25 (4) per element. Up to 3 pump elements.	4, 8, 16, 24 or 32 pint/lb	2, 4, 8, 12 or 16	SPDV or SLP	16-29
G3® Hammer Pumps 	• Hydraulic breakers/ hammers	18-30 VDC; 2.5A current, 60W, inrush/locked rotor 6A	Chisel paste, NLGI #000 to #2 greases	5,100 (352)	0.25 (4) per element	8 or 16 lb	4 or 8	SPDV or SLP	30-31
G3® Dual-Line 	• Construction equipment • Mining equipment • Agricultural equipment	18-30 VDC	NLGI #000 to #2 greases	3,500 (241)	0.25 (4) per element. Up to 3 pump elements.	8 or 16 lb	4 or 8	SPDV or SLP	32-33
G5™ 	• Quintuplex frac pumps • Pumpjacks • Other pump-to-point applications	24 VDC	Packing lube	4,250 psi (293)	0.155 (2.54) per element	8 or 16 lb	4 or 8	PtP	34-38
Lube Master® 	• In-Plant Manufacturing	115/230 VAC, 1 phase or 230/460 VAC, 3 phase 60 Hz	Oil/grease up to NLGI #2	5,000 (345)	8.6 (143)	Oil – 12 or 20 pint Grease** – 6 or 12 lb	Oil – 5.5 or 9 Grease – 3 or 6	SPDV	39-42

**See page 69 for note on legacy Trabon grease reservoir volumes and metric conversions.

SLP = Single Line Parallel (Injectors) SPDV = Series Progressive Divider Valve SLR = Single Line Resistive PtP = Pump to Point

Electric Pump Selection Guide

Pump Family	Typical Applications	Voltage	Fluid Type	Maximum Output Pressure psi (bar)	Maximum Output Volume per Minute in^3 (cm^3)	Reservoir Capacity Options		Metering	Reference Page
						US	Metric - Liters		
Miniature Meter-Flo® 	• In-Plant Manufacturing	115 VAC, 60 Hz, 1 phase or 230 VAC, 50/60 Hz, 3 phase	Oil – 160 to 15,000 SUS	2,000 (138)	14 (229)	1.5, 3 or 5 gallon (12, 24 or 40 pint)	5.7, 11 or 19	SPDV or SLR	43-44
Meter-Flo® 	• In-Plant Manufacturing	Motor sold separately	Oil – 300 to 3,000 SUS	1,500 (103)	245 (4,015)	N/A	N/A	SPDV	45-46
Electric Grease Jockey® 	• Vehicle Service	12 or 24 VDC	Grease up to NLGI #2	2,000 (352)	0.5 (8) per element. Up to 3 pump elements.	4 lb	2	SLP	195-197
Compact Dyna-Star® 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing • Vehicle Service	24 VDC 90-240 VAC, 1 phase, 50/60 Hz*	Oil/grease up to NLGI #2	3,500 (241)	4.5 (74)	24, 48 or 60 lb reservoir or 35 lb pail option	12, 20 or 30 L reservoir or 20 L pail option	SPDV or SLP	47-48
Electric Dyna-Star® 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing	24 VDC 90-240 VAC, 1 phase, 50/60 Hz*	Oil/grease up to NLGI #2	5,000 (344)	35 (574) adjustable	60 or 90 lb reservoir	30 or 45 L reservoir	SPDV or SLP	49-52
						or standard barrel length options			
Manzel® MBL 	• In-Plant Manufacturing	115/230 VAC, 1 phase or 230/460 VAC, 3 phase, 60 Hz	Oil – 80 to 5,000 SUS	7,500 (517)	2.7 (44) per element, adjustable. Up to 24 pump elements.	4, 6 ,8, 12, 16, 24, 32 or 40 pint	1.9, 2.8, 3.8, 5.7, 7.6, 11, 15 or 19	SPDV or PtP	53-57

*CDS and EDS pumps require converter box 77X524 for AC applications.

SLP = Single Line Parallel (Injectors) SPDV = Series Progressive Divider Valve SLR = Single Line Resistive PtP = Pump to Point

Small size. Big value. Huge impact.

Make the most of your space, budget and machines. The new full-featured G-Mini offers reliable lubrication in a small footprint to fit more types of machines. Use it to simplify everyday maintenance, extend life cycles and optimize uptime. It's rugged and tough, perfect for handling the 24/7 rigors of any job, big or small. Best of all, it comes with a modest price tag – boosting your productivity and profitability.

Follower Plate and Stir Paddle

Available in 0.5 liter and 1 liter reservoirs.

Patent-Pending Heater Option

Built-in heater option automatically turns on at 23ºF (-5ºC), allowing NLGI #2 grease to pump down to -40ºF (-40ºC).

M12 Input

M12 cycle or proximity switch input standard on all pumps with a controller.

Power and Low Level Options

CPC or DIN-style connectors make for easy, no hassle installations.

Multiple Reservoir Options

0.5 liter, 1 liter and 2 liter grease capacity.

Up to Two Pump Elements

0.18 in^3/min (3 cm^3/min)
4,061 psi (280 bar)

Optional Controller

No Controller: Pair with either an external controller or a PLC.

Controller: Easy-to-program controller can be utilized for both time-based and cycle-based systems and provides low-level alert and alarm.

Rugged Construction

Designed to withstand the harshest of environments; IP69K rated.

Typical Applications

- Wind energy
- Industrial
- Off-road mobile equipment
- On-road mobile equipment

Technical Specifications

Maximum working pressure	4,061 psi (280 bar)
Fluids handled	Grease NLGI #000 to #2, Oils 40 cSt and up
System	Pump to point or series progressive
Power	12 VDC, 24 VDC or 100-240 VAC
Operating temperature	-40°F to 158°F (-40°C to 70°C)
Reservoir size	0.5, 1 or 2 liter
Pump element output	0.18 in^3 (3 cm) per minute
Pump elements	Up to 2
Pump outlet thread	1/4-18 NPSF female, mates with 1/4-18 NPT male fittings
Certifications/Ratings	CE, ETL*, IP69K *Conforms to UL 73, certified to CSA 22.2 No. 68-09
Instruction manual	3A6714

G-Mini® Compact Pumps

Ordering Information

G-Mini Grease Pumps

Controller Option	Voltage	With Follower Plate		With Follower Plate and Heater	Without Follower Plate	
		0.5 L	1 L	1 L	1 L	2 L
No Controller	12V CPC	–	25R802	–	25R812	25R832
	24V CPC	25R807	25R800	–	25R811	25R831
	24V DIN	–	25R820	–	25R815	25R835
	AC DIN	2000643	2000645	–	2000648	2000650
Controller	12V CPC	25R810	25R803	25R806	25R814	25R834
	24V CPC	25R808	25R801	25R804	25R813	25R833
	24V DIN	–	25R821	25R824	25R817	25R837
	AC DIN	2000644	2000646	2000647	2000649	2000651

G-Mini Oil Pumps

Controller Option	Voltage	1 L	2 L
No Controller	24V DIN	2000634	2000638
	AC DIN	2000635	2000639
Controller	24V DIN	2000636	2000640
	AC DIN	2000637	2000641

25R802

25R803

Accessories

Part Number	Description
127783*	2-wire CPC power cable, 15 ft (4.6 m)
127780*	5-wire CPC power cable, 15 ft (4.6 m)
16U790*	DIN connector power or low level cable
25C981	12V manual run button (5-wire CPC power cable required)
25C982	24V manual run button (5-wire CPC power cable required)
26C825	Direct mount CSP bracket (allows for drop-in replacement of competition)
26C826	Universal mounting bracket (allows for drop-in replacement of competition)
17L879	Graco CSP solid state proximity switch (DC PNP)
17R703	1 ft proximity switch cable, M12 female straight to M12 male straight cable
124333	16.5 ft proximity switch cable, M12 female straight to M12 male straight
26A910	4,000 PSI pressure relief kit (1/4 NPT to 1/8 NPT reducer bushing, 1/8 NPT tee-fitting, 4,000 PSI pressure relief valve)
26C947	Pump element kit (add a second pump element or replace existing)
24M644	High capacity fill stud with dust cover
121474	Mating coupler for 24M644 fill stud
26C947	Manual fill pump – fits 5 gallon or 35 lb pail, includes 121474 (requires 24M644)

*G-Mini pumps do not come with power cables. Power cables needed for installation.

See the G-Series Pump Accessories section (pages 22-29) for additional G-Mini accessories.

G-Mini/CSP Valve Kits

Each kit includes a pump assembly with mounting bracket, pressure relief valve and outlet hose all pre-assembled to the pump. These kits allow users to quickly build a simple automatic grease system for many small applications. All kits utilize DIN connections for their power cables.

Also included:

- G-Mini power cord
- CSP valve
- CSP outlet fittings for 6 mm OD tubing
- 6 mm x 1/8 in NPT end point fittings
- Elbow fitting for the CSP inlet
- 6, 8 and 10 outlet kits include 82 ft (25 m) of 6 mm OD tubing
- 12, 14 and 16 outlet kits include 164 ft (50 m) of 6 mm OD tubing

Image Coming Soon

Ordering Information

24 VDC Packages

Kit Part Number	Number of Outlets	24VDC Pump Kit Part Number	CSP Valve Part Number	Outlet Fitting Quantity
2000534	6	2000047	24Z486	6
2000535	8		24Z487	8
2000536	10		24Z488	10
2000537	12		24Z489	12
2000538	14		24Z490	14
2000539	16		24Z491	16

115/230 VAC Packages

Kit Part Number	Number of Outlets	AC Pump Kit Part Number	CSP Valve Part Number	Outlet Fitting Quantity
2004439	6	2004436	24Z486	6
2004441	8		24Z487	8
2004443	10		24Z488	10
2004445	12		24Z489	12
2004446	14		24Z490	14
2004447	16		24Z491	16

Versatile Design Helps Solve Today's Lubrication Challenges

Temperature changes, changing grease types and challenging installation requirements are no problem for the G3 electric lubrication pump. With its flexible design, including five reservoir sizes, three controller options, three power types and an adjustable pump element, the G3 is a rugged, cost-effective pump designed to serve multiple markets and applications.

Two Reservoir Types

Stirring paddle with wiper arm to keep material from separating. Follower plate available for extreme angle installations.

Power Choices

Connect to DC (12 or 24V) and AC (90-240V) power sources with CPC or DIN-style connectors for easy, no hassle installations.

Vent Valve Output

Combine Max controller with a vent valve for injector-based systems.

Four Controller Options

Choose from Standard, Pro, SP and Max controller options – buy only what you need for your application.

Multiple Reservoir Sizes

Choice of 2, 4, 8, 12 or 16 liter U.V. resistant, high-impact reservoirs for oil and grease to meet the needs of your equipment.

Three Pump Elements

G3 comes standard with one adjustable pump element installed – add up to two more for higher output on large projects.

Multiple Cycle and Pressure Inputs

Mix and match up to three cycle and pressure switches for custom installations and feedback.

Machine Count Input

Machine count input to manage equipment with unpredictable lubrication requirements.

Typical Applications

- Off-road mobile equipment
- On-road mobile equipment
- In-plant machine and conveyor lubrication
- Wind energy

Typical Fluids

- Oil
- Grease up to NLGI #2

Technical Specifications

Maximum working pressure	5,100 psi (352 bar)
Fluids handled	Grease NLGI #000 to #2, Oils 40 cSt and up
Power	12 VDC, 24 VDC or 100-240 VAC
Operating temperature	-40 to 158º F (-40 to 70º C) depending on lubricant used
Reservoir size	2, 4, 8, 12 or 16 liter
Pump element output	0.12 in^3, 0.18 in^3 or 0.25 in^3 (2 cm^3, 3 cm^3 or 4 cm^3) per minute
Pump elements	Up to 3
Pump outlet thread	1/4-18 NPSF female, mates with 1/4-18 NPT male fittings
Certifications/Ratings	CE, ETL*, IP69K *Conforms to UL 73, certified to CSA 22.2 No. 68-09
Instruction manuals	Standard – 332291 / Pro – 332298 / SP – 3A4676 / Max – 332305

G3 Standard, Pro, SP and Max

Choose the level of control you need for your series progressive or injector based applications.

G3 Standard

- No internal controller – use with separate or existing machine control for a low cost solution
- Capable of sending a low level signal to your external controller or PLC

G3 Pro

- Built-in controller with selectable pump on/pump off timer
- Low level indicator provides low warning and shut-down alarm
- Manual run initiates lube cycle on-demand (remote option also available)
- Password protection safeguards settings
- Pre-lube function can initiate lube cycle on start-up

G3 SP

- Simple programming and valuable system feedback
- Low level indicator provides low warning and shut-down alarm
- Only programming requirements are number of cycles and off time between lube events
- Manual run initiates lube cycle on-demand (remote option also available)
- Password protection safeguards settings
- Pre-lube function can initiate lube cycle on start-up

G3 Max

- Built-in controller with selectable pump on/pump off timer
- Low level indicator provides low warning and shut-down alarm
- Manual run initiates lube cycle on-demand (remote option also available)
- Password protection safeguards
- Pre-lube function can initiate lube cycle on start-up
- Up to three pressure or cycle switch inputs to ensure proper lubrication cycles
- Mix/match cycle and pressure switches for custom installations and feedback
- Machine count input – ideally suited for inconsistently used equipment
- Fault indication to external alarms
- Optional Data Management System™ (DMS)

Data Management System (DMS)

- Simple data transfer to your PC via USB flash drive for further analysis using Excel® or Notepad®
- Provides performance history for lube system events, such as cycle detection, error logs and allows a quick check of lubrication performance
- Preferred lube cycle program can be stored and transferred to other G3 pumps in your fleet for quick and accurate repeatability

Auto-Fill Shut Off (AFSO)

- Available on G3 Standard, Pro and Max
- Eliminates over- or under-filling
- Completely fill the reservoir while avoiding costly spills
- Does not require power to operate

Check Out the Full-featured G3 Max

1. Easy-to-read LED display
2. Clearly identified pump on/off indication
3. Monitoring of up to three independent zones
4. Programmable machine count feature
5. Alarm signal of lube system shutdown
6. Warning signal prior to lube system shutdown
7. Low level indication
8. Password protected access to control
9. Pre-lube capability
10. Easy-to-use navigation keys

Ordering Information

G3 Standard

Comes standard with no controller for use with separate or existing machine control for a low cost solution.
Some models capable of sending a low level signal to your external controller or PLC.

Application		Voltage	Reservoir Size 2 liter	4 liter	8 liter	12 liter	16 liter	Wiper Arm	Follower Plate	Low Level Switch Connection	Auto-Fill Shut Off	Power Connection
	Grease	12 VDC	96G000	96G038	–	–	–	•		–		CPC
			96G003	96G044	96G045	–	–	•		M12 female		CPC
		24 VDC	96G001	96G040	96G041	96G171	96G172	•		–		CPC
			96G005	96G048	96G049	96G199	96G220	•		M12 female		CPC
			96G239	96G238	96G198	–	–	•		5-wire CPC		5-wire CPC
			–	–	96G217	–	–		•	5-wire CPC	•	5-wire CPC
			96G006	96G053	96G192	–	–		•	M12 female		CPC
			96G182	96G184	96G189	96G240	96G241	•		DIN		DIN
			96G243	96G204	96G205	–	–		•	DIN		DIN
			–	96G210	96G213	–	–		•	DIN	•	DIN
		100-240 VAC	96G002	96G042	96G043	–	–	•		–		DIN
			96G007	96G055	96G056	96G057	96G058	•		M12 female		DIN
			–	–	–	–	96G237	•		M12 female	•	DIN
			96G008	96G062	–	–	–		•	M12 female		DIN
			–	–	96G207	–	–		•	M12 female	•	DIN
			–	96G202	–	–	–	•		DIN		DIN
			96G320	96G321	96G322	–	–		•	DIN		DIN
	Oil	24 VDC	96G050	96G051	96G052	–	96G258			M12 female		CPC
		100-240 VAC	96G059	96G060	96G061	–	96G291			M12 female		DIN

G3 Pro

Built-in controller with selectable pump on/pump off timer comes with local manual run and password protection with pre-lube function to initiate lube cycle on start-up. Optional low level sensing available as well as remote manual run.

Application		Voltage	Reservoir Size 2 liter	4 liter	8 liter	12 liter	16 liter	M12 Connection for Remote*	Wiper Arm	Follower Plate	Low Level	Power Connection
	Grease	12 VDC	96G027	96G135	96G136	–	–		•			CPC
			96G033	96G147	96G148	–	–		•		•	5 Wire CPC**
		24 VDC	96G028	96G137	96G138	–	–		•			CPC
			96G011	96G068	96G069	–	–	•	•		•	CPC
			96G012	96G073	–	–	–	•		•	•	CPC
			96G034	96G149	96G150	96G163	96G167		•		•	5 Wire CPC**
			–	96G196	–	–	–		•			DIN
			–	–	96G194	–	–			•	•	5 Wire CPC**
		90-240 VAC	96G029	96G139	96G140	–	–		•			DIN
			96G013	96G075	96G076	96G077	96G078		•		•	DIN
			96G014	96G082	–	–	–			•	•	DIN
	Oil	24 VDC	96G070	96G071	96G072	–	–	•			•	CPC
		90-240 VAC	96G079	96G080	96G081	–	–				•	DIN

*G3 Pro pumps with the M12 connection for Remote Manual Run/Monitoring Light use the kit with the connecting cable to provide external low level indication. Choose part number 571032 for 12 VDC pumps or 571033 for 24 VDC and AC pumps.

**G3 Pro pumps with the 5 Wire CPC power connection are compatible with a Remote Manual Run/Monitoring Light Device to provide external low level indication. Choose part number 571030 for 12 VDC pumps or 571031 for 24 VDC pumps.

Ordering Information

G3 SP (Series Progressive)

The G3 SP (Series Progressive) combines the robust, proven design of our G-Series pumps with simple programming and valuable system feedback. The only programming requirements are number of cycles and off time between lube events.

Application		Voltage	Reservoir Size				Wiper Arm	Low Level	Power Connection
			2 liter	4 liter	8 liter	12 liter			
Application	Grease	12 VDC	96G221	96G222	–	–	•	•	5-wire CPC†
		24 VDC	96G223	96G224	96G225	96G226	•	•	5-wire CPC†
		90-240 VAC	96G227	96G228	–	–	•		DIN

Note: G3 SP pumps for use in series progressive systems only and require proximity switch with M12 connection.

G3 Max

Built-in controller with selectable pump on/pump off timer has low level warning and shut-down alarm or set up faults to an external alarm. Comes with manual run and password protection with pre-lube function to initiate lube cycle on start-up. Mix and match up to three cycle and pressure switches for custom installations and feedback. Machine count input is ideally suited for inconsistently used equipment. Optional Data Management System™ (DMS) uses a common USB port to quickly configure, store and transfer error log history to Excel® or Notepad® for longer equipment life and performance.

Application		Voltage	Reservoir Size					Number of Cycle/ Pressure Input	Machine Count	Vent Valve Output*	DIN Alarm Output**	M12 Connection for Remote***	Wiper Arm	Follower Plate	Power Connection
			2 liter	4 liter	8 liter	12 liter	16 liter								
Application	Grease	12 VDC	96G030	96G141	96G142	–	–	1					•		CPC
			96G021	96G096	96G097	–	–	1-3	•	•	•	•	•		DIN
			96G035	96G151	96G152	–	–	1		•			•		5-wire CPC†
		24 VDC	96G031	96G143	96G144	–	–	1					•		CPC
			96G017	96G088	96G089	–	–	1		•		•	•		CPC
			96G018	96G090	–	–	–	1		•		•		•	CPC
			96G036	96G155	96G156	96G164	96G168	1		•			•		5-wire CPC†
			96G023	96G103	96G104	96G105	96G106	1-3	•	•	•	•	•		DIN
			96G024	96G113	96G292	–	–	1-3	•	•	•	•		•	DIN
			96G178	–	–	–	–	1			•		•		DIN
			–	96G160	96G177	–	–	1	•				•		5-wire CPC†
		90-240 VAC	96G032	96G145	96G146	–	–	1					•		DIN
			96G019	96G092	96G093	–	96G166	1		•			•		DIN
			96G020	96G094	–	–	–	1		•				•	DIN
			96G025	96G118	96G119	96G120	96G121	1-3	•	•	•	•	•		DIN
			96G026	96G128	96G197	–	–	1-3	•	•	•	•		•	DIN
			96G037	96G183	–	–	–	1			•		•		DIN
	Oil	24 VDC	96G107	96G108	96G109	–	–	1-3	•	•	•	•			DIN
		90-240 VAC	96G122	96G123	96G124	–	–	1-3	•	•	•	•			DIN

*If not connected, use part number 16T854 to cover the Vent Valve Output and maintain IP69K rating.

**The DIN Alarm Output is a dry contact relay which opens or closes when a fault is detected. This relay acts as a switch but supplies no power. It requires external power to energize the circuit when closed. If not connected, use part number 24P731 to cover the DIN connector and maintain IP69K rating.

***G3 Max pumps with the M12 connection for Remote Manual Run/Monitoring Light use the kit with the connecting cable to provide external fault indication. Choose part number 571032 for 12 VDC pumps or 571033 for 24 VDC and AC pumps.

†G3 Max and SP pumps with the 5 Wire CPC power connection are compatible with a Remote Manual Run/Monitoring Light Device to provide external fault indication. Choose part number 571030 for 12 VDC pumps or 571031 for 24 VDC pumps.

Ordering Information

G3 Max with Data Management System (DMS)

Application		Voltage	Reservoir Size				Number of Cycle/ Pressure Input	Machine Count	Vent Valve Output*	DIN Alarm Output**	M12 Connection for Remote***	Wiper Arm	Follower Plate	Power Connection
			2 liter	4 liter	8 liter	16 liter								
Application	Grease	12 VDC	96G329	96G161	–	–	1	•				•		5-wire CPC†
			96G098	96G099	96G100	96G252	1-2	•	•	•	•	•		DIN
		24 VDC	96G110	96G111	96G112	–	1-2	•	•	•	•	•		DIN
			96G115	96G116	–	–	1-2	•	•	•	•		•	DIN
			96G330	96G162	–	96G185	1	•				•		5-wire CPC†
			–	96G157	96G158	96G169	1		•			•		5-wire CPC†
		90-240 VAC	96G125	96G126	96G127	96G235	1-2	•	•	•	•	•		DIN
			96G132	96G133	–	–	1-2	•	•	•	•		•	DIN
	Oil	24 VDC	–	96G188	–	–	1	•				•		5-wire CPC†
			96G190	–	–	–	1-2	•	•	•	•	•		DIN
		90-240 VAC	96G174	96G175	96G176	96G201	1-2	•	•	•	•	•		DIN

*If not connected, use part number 16T854 to cover the Vent Valve Output and maintain IP69K rating.

**The DIN Alarm Output is a dry contact relay which opens or closes when a fault is detected. This relay acts as a switch but supplies no power. It requires external power to energize the circuit when closed. If not connected, use part number 24P731 to cover the DIN connector and maintain IP69K rating.

***G3 Max pumps with the M12 connection for Remote Manual Run/Monitoring Light use the kit with the connecting cable to provide external fault indication. Choose part number 571032 for 12 VDC pumps or 571033 for 24 VDC and AC pumps.

†G3 Max and SP pumps with the 5 Wire CPC power connection are compatible with a Remote Manual Run/Monitoring Light Device to provide external fault indication. Choose part number 571030 for 12 VDC pumps or 571031 for 24 VDC pumps.

Ordering Information

G3 Pumps with Auto-Fill Shut Off

Versatile line of G3 Pumps (Standard, Pro, and Max) offered with a factory installed Auto-Fill Shut Off (AFSO). The AFSO feature automatically shuts off lubricant flow from a fill pump to the G3 reservoir once the G3 reservoir is full. The G3 AFSO is based on the same design concept as the Auto-Fill Shut Off offered in conjunction with the robust Electric Dyna-Star product line. Eliminate the need to climb up on equipment to refill an empty reservoir by adding Remote Fill Manifold 77X542 to your system at ground level.

Application	Grease	Voltage	G3 Model	Reservoir Size		Number of Cycle/ Pressure Input	Vent Valve Output*	Wiper Arm	Low Level	Power Connection
				4 liter	8 liter					
Application	Grease	24 VDC	Standard	96G210	96G213			•	• DIN	DIN
				–	96G217			•	•	5-wire CPC**
			Pro	–	96G214			•	•	5-wire CPC**
			Max	96G212	96G215	1	•	•	•	5-wire CPC**
		90-240 VAC	Standard	–	96G207			•	•	DIN
			Pro	–	96G208			•	•	DIN
			Max	–	96G209	1	•	•	•	DIN

*If not connected, use part number 16T854 to cover the Vent Valve Output and maintain IP69K rating.

**Low level in CPC.

†G3 Pro and Max pumps with the 5 Wire CPC power connection are compatible with a Remote Manual Run/Monitoring Light Device to provide external fault indication. Choose part number 571030 for 12 VDC pumps or 571031 for 24 VDC pumps.

G3 Auto-Fill Shut Off Field Conversion Kits

Part Number	Description
571286	G3 AFSO 4L field conversion kit
571287	G3 AFSO 8L field conversion kit
571288	G3 AFSO 12L field conversion kit
571289	G3 AFSO 16L field conversion kit

G3® Pump Packages and Accessories

Ordering Information

G-Series Reservoir Upsize and Conversion Options

G3 and Electric Grease Jockey pumps all consist of a base and a reservoir. The bases are all designed for 2 L reservoirs, so to convert to a larger a reservoir, a 2 L to 4 L adaptor is required.

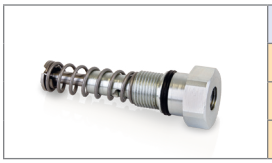
Size	Oil Reservoirs 8 L and larger oil reservoirs simply require one 4 L oil reservoir plus expansion rings (qty.)	Grease Reservoirs	
		Upsize (with Wiper Arm)	Auto-Fill Shut Off*
4 liter	571182	571155	571286
8 liter	571182 (1) + 25C764 (1)	571156	571287
12 liter	571182 (1) + 25C764 (2)	571157	571288
16 liter	571182 (1) + 25C764 (3)	571158	571289

*AFSO reservoir kits do not include adaptor ring. Order p/n 574002 separately when converting from a 2 L reservoir to an AFSO reservoir.

G3 Injector Pump Pre-assembled Modules

Part Number		Description
8 liter	16 liter	
17J999	17N926	G3 Injector Pump Pre-assembled Module: 24V, Max, 5 Pin CPC (alarm, manual run, low level in the CPC), 2 pump elements, union kit, vent valve, pressure switch, pressure gauge.

G3 Pump Elements



Part Number	Description
571041	Pump element – same adjustability as the pump included with G3 pumps.
571041PK	100-pack of replacement pump elements
24V837	Food and Beverage Upgrade Kit – contains pump element, stainless zerk fitting, and stainless reservoir plugs.

G3 Pump Output Union Kits

Pump element(s) sold separately.

Part Number		Description
Three (3) Pumps	Two (2) Pumps – Left and Right	
571026	571063	For systems without a direct-mount vent valve installed on the first pump outlet.
24P295	24P296	For systems with a direct-mount vent valve installed on the first pump outlet.

Each G3 includes one pump element when it ships. Add one or two more (p/n 571041) and the appropriate union kit if needed for your application.

Ordering Information

G-Series Pressure Relief Valve (PRV) Options

	Part Number		Description
	Outlet Thread		
	NPT	BSPP	
	571028	571071	Adjustable return-to-reservoir pressure relief kit – 500 to 3,500 psi (35 to 241 bar).
	556420*	–	Male run tee – 1/4 NPT, use with 571028 kit to increase pressure limit to 5,000 psi.*
	26C030*	26C176*	Pressure relief to atmosphere kit – 5,000 psi (345 bar).*
	26A910	–	Pressure relief to atmosphere kit – 4,000 psi (276 bar).
	16V999	–	Pressure relief to atmosphere valve – 1/8 in NPT male, 5,000 psi (345 bar).*
	115122	–	Pressure relief to atmosphere valve – 1/8 in NPT male, 4,000 psi (276 bar).
	571058	571070	Pressure relief-to-atmosphere kit – requires one of the following six pressure relief valves:
	563156		Pressure relief valve – 750 psi (52 bar)
	563157		Pressure relief valve – 1,000 psi (69 bar)
	563158		Pressure relief valve – 1,500 psi (103 bar)
	563159		Pressure relief valve – 2,000 psi (138 bar)
	563160		Pressure relief valve – 2,500 psi (172 bar)
	563161		Pressure relief valve – 3,000 psi (207 bar)
	25U706		**G-Series Gauge And Relief Valve Adapter Kit** – includes 5,000 psi/350 bar gauge (102814), street cross fitting (133645) and 1/4 NPT x NPSM swivel fitting (156823). Allows connection of gauge, relief valve and outlet fitting to pump outlet. NPSM swivel fitting installs in the G-Series pump outlet for easy clocking of the complete assembly. Relief valve sold separately – choose from one of the options above.

*Not for use with G-Mini pumps.

G3® Pump Accessories

Ordering Information

G-Series Remote Manual Run/Monitoring Lights

	Part Number		M12 Cable Included?
	12 VDC	24 VDC*	
	571030	571031	No. Use with CPC-5 power cables.
	571032	571033	Yes. 16.5 ft (5 m). Use with pumps that have M12 input for manual run.

*24 VDC is also used with AC powered G-Series pumps.

G3 Mounting Bracket Options

	Part Number	Description
	125910	G3 pump mounting L-bracket
	571159	G3 reservoir support bracket for mobile installations – secures 12 and 16 liter reservoirs.
	132187	G-Series isolation kit (vibration damper)

G3 Protective Front Cover Kits

	Part Number	Description
	571036	Black
	571255	Clear
	24Z962	Clear with cutouts for Reset and Manual Run buttons

Grease Pressure Gauges

Stainless steel case, liquid filled (glycerin), 0-5,000 PSI (0-350 bar).

	Part Number	Thread	Mount	Suggested Use
	115523	1/4 NPT brass	Back	Vent valve gauge port
	102814		Bottom	Tee into pump outlet with p/n 556420

Ordering Information

G-Series Reservoir Filling Accessories

	Part Number	Description
	24M644	High capacity fill coupler with quick disconnect and dust cover
	77X542	Remote-fill port manifold with vent – for use with reservoirs that have AFSO.
	121474	Female coupler – mates to 24M644 fill stud and 77X542 remote fill manifold.
	571162	Manual hand pump – use with grease cartridges. Installs into alternate pump element port. (G3 only. Not recommended for pumps with follower plates or three-pump union kits.)
	571167	Manual hand pump adaptor – for use with 571162 fill pump to protect threads in pump base.
	571064	Cold temperature fill relief kit – prevents over-pressurizing when filling in cold temperatures.

Refill Pump Kits

Each kit includes 121474 coupler.

	Part Number	Description
	247886	Manual hand pump for 35 lb pail
	2002295	LD Series 35 lb fill pump kit
	2002296	LD Series 120 lb fill pump kit
	26A320	Mini Fire-Ball 400 lb fill pump kit

G3® Pump Accessories

Ordering Information

Solar Power Accessories

For use with 12 VDC pumps.

Part Number	Description
26C432	Solar battery box with terminal strip
26C433	Solar Panel Kit. Includes battery box with terminal strip (26C432), solar panel and mounting hardware.
B32073	Solar panel base anchor kit
B32790	Solar panel stand kit – 3 ft (0.9 m) for 50-180W panels
B32793	Solar panel stand kit – 6 ft (1.8 m) for 50-180W panels
B32739	Solar panel A-frame stand kit

G3 Pump Enclosure Kits

Ideal for fracturing equipment lubrication, these kits contain a G3 pump, valve assemblies, durable enclosure and mounting assemblies.

	Part Number	Description
	132090	Triplex, 12V, G3 Pro
	132091	Triplex, 24V, G3 Pro
	132154	Triplex, 24V, G3 Standard
	132092	Quintuplex, 12V, G3 Pro
	132093	Quintuplex, 24V, G3 Pro
	132155	Quintuplex, 24V, G3 Standard
	132089	Standalone enclosure with G3/MSP mounting panel
	132188	G3/MSP mounting panel
	132163	Isolator kit

Ordering Information

Machine Count Sensors

	Part Number	Description
	17J939	G3 machine count inductive sensor – 12-24 VDC. NPN normally open, M12 male, 5 mm sensing distance.
	557781	"Microswitch" dry contact limit switch – AC/DC. Can be wired N.O. or N.C. Use with cable 124300 and cord grip 260067.

Pressure Switches

Use to read pressure in an injector-based system. After injectors dispense, controller or G3 Max will trigger pump shut down and vent.

	Part Number	Voltage and Switch Type	Pressure Setting Range	Porting	Electrical Connector	Notes
	24N181	AC/DC, Dry Contact	580 to 5,800 psi (40 to 400 bar)	1/4 NPT female	DIN connector (included)	Designed specifically for grease. Includes DIN connector – just add 124300 to connect to G3 Max.
	24K414	10-32 VDC, PNP	Set: 290 to 5,800 PSI (20 to 400 bar) Reset: 175 to 5,685 PSI (12 to 392 bar)	1/4 NPT male	M12 male	Dual pressure setting adjustments. M12 connection makes it easy to wire to a G3 Max.

For more pressure switch options and more details, see page 170.

Solid State Proximity Switches

Use with Series Progressive Divider Valves to count cycles.

	Part Number	Voltage and Switch Type	Divider Valve	Thread	Electrical Connector
	17L983	10-36 VDC, PNP	MSP and MHH	7/16-20	M12 male
	17L879		CSP	M11	

Cables for Solid State Proximity Switches

Use with a G3 Max or G3 SP when connecting directly to the pump, when LED cycle indication is required.

Part Number	Proximity Switch Connection	2nd Connection	Length	Notes
25M602	M12 female, straight	Flying leads	16.5 ft (5 m)	PNP switch with NPN LED – requires 124594
25M603		M12 male, straight		PNP switch with NPN LED

For more proximity switch and cable options, and more details, see Proximity Switches section on pages 159-160.

Ordering Information

Other Wiring Accessories for G-Series Pumps

Use with a G3 Max, G3 SP or G-Mini when connecting directly to the pump, when LED cycle indication is not required.

	Part Number	1st Connection	2nd Connection	Length	Notes
	126331	M12 female, straight	Flying leads	16.5 ft (5 m)	Requires 124594 when used with G3 Max/SP or G-Mini
	124300	M12 male, straight	Flying leads	16.5 ft (5 m)	Accessory cable – add 124301 when connecting to an M12 sensor.
	124333	M12 female, straight	M12 male, straight	16.5 ft (5 m)	Accessory cable
	124301	M12 female, straight	–	–	Connector for 6-8 mm cable
	124594	M12 male, straight	–	–	Connector for 6-8 mm cable
	124595	M12 male, straight	–	–	Connector for 8-11 mm cable
	124640	DIN female	Flying leads	6.6 ft (2 m)	Output cable for DIN alarm relay (G3 Max)
	127123	DIN female	–	–	Field wireable DIN connector
Image Coming Soon	24P731	DIN power/ alarm cover	–	–	With gasket and screw, IP69K rated
	16T854	Vent valve output cover	–	–	With O-ring, IP69K rated – use with G3 Max pumps that have the VV connector but no VV cable installed

Ordering Information

Direct-Mount Vent Valves for G3 Pumps

G3 pump vent valve kits include adjustable pressure relief, 500-3,500 psi (35-241 bar), and mount directly to a G3 pump.

Normally-Closed Vent Valves for Use with G3 Max Pumps

Voltage	Part Number		Power Cable
	NPT	BSPP	
12 VDC	571169	571171	Included
24 VDC	571170	571172	Included
AC pumps	571170	571172	Included

G3 Max AC pumps are 24 VDC internally, so they use 24 VDC accessories, including the vent valve and pressure sensors.

Normally-Open Vent Valves for Use with G3 Standard Pumps

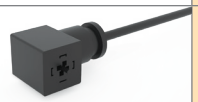
Voltage	Part Number		Power Cable
	NPT	BSPP	
12 VDC	24M478	24M481	24N402
24 VDC	24M479	24M482	24N402
115 VAC	24M480	24M483	16U790*
230 VAC	24N182	24M484	16U790*

*24N351 is alternative patch cable which connects directly to DIN power connection.

Low Pressure Vent Valve for Use with G3 Pumps

Part Number	Description
2001401	Similar to 24M483 (above) but with a lower adjustment range, this vent valve is intended for use with piston distributors such as Injecto-Flo. Includes adjustable pressure relief, 200-750 psi (14-52 bar), factory set to 200 psi (14 bar). BSPP outlet thread. Normally Open solenoid, for use with G3 Standard pumps. 115 VAC with DIN connector, requires power cable 16U790 or 24N351.

Vent Valves Accessories for G3 Standard Systems

	Part Number	Description
	24N402	Vent valve power cable – normally open, 12 or 24 VDC valve, Deutsch connector, 6 feet
	16U790	Vent valve power cable – normally open, 115 or 230 VAC valve, DIN connector, 15 feet
	24N351	Save installation time and money without the need for additional cabling. Patch cable connects vent valves with DIN connection directly to the DIN Pump Power connector.

G3® Hammer Pump

Ideal for Hydraulic Breaker/Hammer Lubrication

Extend the life of your hydraulic hammer/breaker tools and provide a breakthrough for your budget. The new G3 Hammer Pump offers convenient top fill access, enabling chisel paste to be quickly added to the reservoir to avoid halting operations. Designed for harsh, high vibration environments, the G3 Hammer Pump ideally handles high shock hammer/breaker applications with ease.

Spin-Off Reservoir Cover

Quickly fill hard to pump grease from the top of the reservoir.

Multiple Reservoir Options

Available in both 4 and 8 liter capacities.

Power and Low Level Options

CPC or DIN-style connectors make for easy, no hassle installations.

Robust Cover Design

Reinforced ribs to withstand high vibration and shock applications.

Up to Three Pump Elements

0.25 in3/min (4 cm3/min) per element. 5,100 psi (351.6 bar).

Versatile Pump Elements

Built to withstand the harshest of greases, such as chisel paste and other greases containing additives.

Typical Applications

- Hydraulic breakers/hammers
- Carrier or pedestal mounted

Technical Specifications

	96G278	133789	96G279	133791
Power source	18-30 VDC; 2.5A current, 60W, inrush/locked rotor 6A			
Fluids handled	Chisel Paste, NLGI #000 to #2 Greases			
Operating temperature	-40°F to 158°F (-40°C to 70°C)			
Reservoir size	4 Liter		8 Liter	
Control option	Control pump via external control method			
Pump elements	Ships with one pump element, add up to two additional pump elements			
Output pressure	5,100 psi (35.1 MPa, 351.6 bar)			
Pump output	0.25 in^3/min (4 cm^3/min) per pump element			
Pump outlet	1/4-18 NPSF, mates with 1/4-18 NPT male fittings			
Protection grade	IP69K			
Instruction Manual	332291			

Ordering Information

G3 24 VDC Hydraulic Breaker/Hammer Chisel Paste Lubrication Pumps

	Part Number	Description
	96G278	4 Liter, 5-Wire CPC Cable
	96G279	8 Liter, 5-Wire CPC Cable
	133789	4 Liter, External Low Level, 2 DIN Cables
	133791	8 Liter, External Low Level, 2 DIN Cables

G3® Dual-Line Pump

Reliable Drop-In Dual-Line or Twin Pump Upgrade

Designed for a seamless pump upgrade or replacement in existing dual-line lubrication systems for yellow iron equipment. Effortlessly upgrade your dual-line or twin pump system while ensuring compatibility with the machine's existing dual-line metering devices.

Versatile Reservoir Options

Choose from durable 4- or 8-liter U.V. resistant, high-impact reservoirs.

Easily Accessible Components

Streamline maintenance and troubleshooting.

Universal Mounting Bracket

Easily install into existing dual-line systems.

Proven Components

Field-proven pump elements and motors engineered to excel in the toughest applications.

User-Friendly Pump Management

Effortlessly adjust pump parameters using the built-in controller (G3 Max models) or included GLC X® controller (G3 Standard models).

Fail-Safe Reversing Valve

Minimize failures with a mechanically controlled reversing valve.

Typical Applications

- Construction equipment
- Mining equipment
- Agricultural equipment

Technical Specifications

Power source	18-30 VDC
Fluids handled	NLGI #000 to #2 greases
Operating temperature	14°F to 122°F (-10°C to 50°C)
Reservoir size	4 or 8 liters
Control option	Built-in (G3 Max models), GLC X (G3 Standard models)
Pump elements	Ships with three pump elements if not specified in description
Output pressure	3,500 psi (24.1 MPa, 241 bar)
Pump output	0.25 cu in/min (4 cc/min) per pump element
Valve outlet	(2) ¼ in NPT female
Protection grade	IP69K
Instruction manual	3A7830

Ordering Information

G3 Dual-Line Pumps

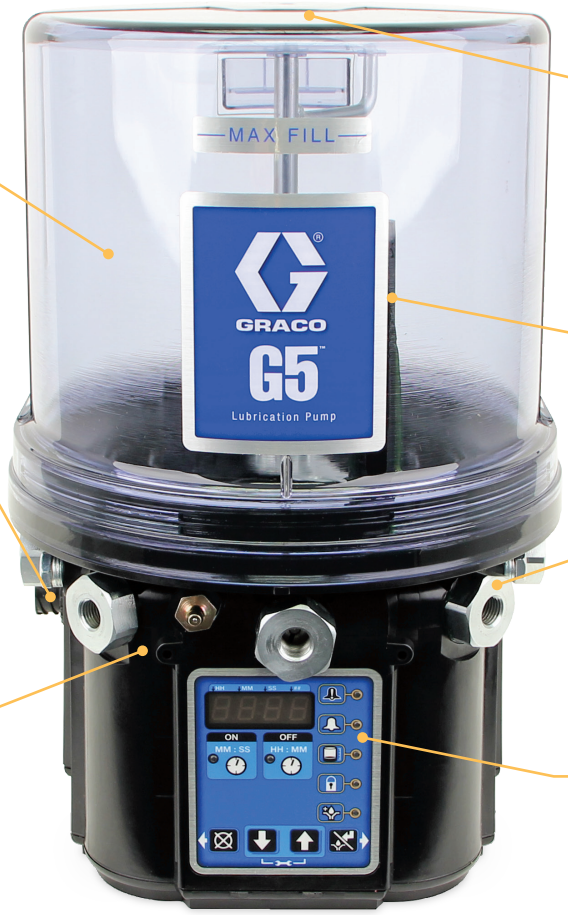
	Part Number	Description
	2002240	G3 Max, 24 VDC, 4 liter with Internal Controller
	2002241	G3 Max, 24 VDC, 8 liter with Internal Controller
	2002243	G3 Standard, 24 VDC, 4 liter with GLC X Controller
	2002244	G3 Standard, 24 VDC, 8 liter with GLC X Controller
	2006886	G3 Max, 24 VDC, 4 liter with Internal Controller, 2 Pump Elements
	2006887	G3 Max, 24 VDC, 8 liter with Internal Controller, 2 Pump Elements
	2002247	G3 Standard, 24 VDC, 4 liter with GLC X Controller, 2 Pump Elements
	2002248	G3 Standard, 24 VDC, 8 liter with GLC X Controller, 2 Pump Elements

Accessories

Part Number	Description
2002702	3 Pump Element Union Kit with Pressure Relief Valve
2006225	G3 to Dual-Line Conversion Kit – Reversing Valve, Union Kit, Mounting Bracket
2004626	NPT to M10 Fitting
2002258	Reversing Valve Assembly
2004545	Reversing Valve Remote Mounting Kit
2004968	Reversing Valve Rebuild Kit

Designed for Quintuplex Packing Lube

Greater profit is within reach with Graco G5 pumps. Equipped with five pump elements for more versatile and simpler grease operations, the G5 has been designed specifically for the harsh demands of fracking operations.



Robust Reservoir

U.V. resistant, high-impact reservoirs to meet the needs of your equipment.

Flexible Power Options

Two CPC-style connectors with low level output options make for easy, hassle-free installations.

Optional Pressure Relief Valves

Install up to five pressure relief valves with the option to vent back into the reservoir.

Auto-Fill Shutoff Option

Completely fill the reservoir while avoiding costly spills with an optional AFSO.

Reservoir Wiper Arm

Stirring paddle with wiper arm to keep material from separating.

Five Pump Elements

G5 comes standard with five adjustable pump elements installed.

Two Controller Options

Use your existing machine's controller or choose the G5 Pro's built-in controller.

Typical Applications

- Quintuplex frac pumps
- Pumpjacks
- Other pump-to-point applications

Typical Fluids

- Packing lube

Technical Specifications

Maximum working pressure	4,250 psi (293 bar)
Power	24 VDC
Operating temperature	-40°F to 158°F (-40°C to 70°C), depending on lubricant used
Reservoir size	4 and 8 liter (Enclosures fit 4 liter only)
Maximum run time	30 minutes
Control options	Standard (no controller) or Pro (timer)
Adjustable pump output per element per minute*	0.155 in^3 (2.54 cm^3) [no shim] 0.104 in^3 (1.70 cm^3) [1 shim] 0.055 in^3 (0.90 cm^3) [2 shims]
Enclosure dimensions (L x W x H)	Small – 17.75 in x 14.94 in x 13.00 in (45 cm x 38 cm x 33 cm) Large – 22 in x 17 in x 18 in (56 cm x 44 cm x 46 cm)
Certifications/ratings	CE, UKCA
Instruction manual	Standard – 3A8847 / Pro – 3A8848 / Pro with Enclosure – 3A9275

*Shims not included with pump element. Please see shim kit under Accessories section.

Ordering Information

G5 24 VDC Standard Grease Pumps

	Part Number	Description
	95G102	4 liter, 5-pin CPC
	95G103	4 liter, external low level, 5-pin CPC
	95G109	4 liter, external low level, side vent, no power cord, 5-pin CPC
	95G112	8 liter, 5-pin CPC
	134178	Assembly, 4 liter, external low level, side vent, no power cord, 5-pin CPC, pressure relief valves

Ordering Information

G5 24 VDC Pro Grease Pumps

	Part Number	Description
	95G104	4 liter, low level with controller, 5-pin CPC
	95G106	4 liter, remote manual run, 5-pin CPC
Image Coming Soon	95G108	4 liter, auto-fill shutoff, 5-pin CPC
Image Coming Soon	95G110	4 liter, auto-fill shutoff, DIN power, DIN alarm
Image Coming Soon	95G111	8 liter, auto-fill shutoff, DIN power, DIN alarm
	134179	Assembly, 4 liter, auto-fill shutoff, DIN power, DIN alarm, pressure relief valves, return to reservoir, controller cover
	134180	Assembly, 8 liter, auto-fill shutoff, DIN power, DIN alarm, pressure relief valves, return to reservoir, controller cover

Ordering Information

G5 24 VDC Grease Pumps with Enclosure

Part Number	Description
134410	Assembly – small enclosure, G5 Standard pump, 4 liter, pressure relief valves
134411	Assembly – small enclosure, G5 Standard pump, 4 liter, pressure relief valves, return to reservoir
134010	Assembly – small enclosure, G5 Pro pump, 4 liter, pressure relief valves, run lights
134011	Assembly – large enclosure, G5 Pro pump, 4 liter, auto-fill shutoff, pressure relief valves, run lights

G5 Pump Enclosure Accessories

Part Number	Description
132095	Enclosure rubber grommet for power or AFSO
133919	Flying lead AMP connector
133994	Run light kit – green
133995	Run light kit – red
134142	Fluid manifold assembly – small enclosure
134167	Fluid manifold assembly – large enclosure
134169	Small bare enclosure
134170	Large bare enclosure
132163	Enclosure isolator kit

G5™ Pump Accessories

Ordering Information

G5 Pump Accessories

	Part Number	Description
	571041	Pump element
	571041PK	100-pack of replacement pump elements
Image Coming Soon	133960	Return to reservoir kit – includes no pressure relief valves
Image Coming Soon	133958	Return to reservoir kit – includes five pressure relief valves
	133910	Pressure relief valve, 4,250 psi (293 bar)
	133991	Pressure relief valve kit, 4,250 psi (293 bar) – includes five pressure relief valves
Image Coming Soon	571286	Auto-fill shutoff reservoir kit
Image Coming Soon	133457	Pump shim kit – includes five shims
	132187	G5 isolator kit
	127780	G5 pump power cord
	121474	Female coupler for reservoir fill port
	126005	Back mounted 1/4 in NPT pressure gauge, 0-5,000 PSI (0-350 bar)
	102814	Bottom mounted 1/4 in NPT pressure gauge, 0-5,000 PSI (0-350 bar)
	125910	G5 pump mounting L-bracket
	571159	G5 reservoir support bracket for mobile installations – secures 12 and 16 liter reservoirs.
	571036	Black
	571255	Clear
	24Z962	Clear with cutouts for Reset and Manual Run buttons

Built for Severe-Duty Environments

The Lube Master is a rugged pump package designed for demanding applications. The adjustable output and anti-friction drive bearings make it both reliable and efficient. Rugged cast aluminum main body and heavy-duty internal components deliver consistent performance in harsh applications. With several reservoir choices and accessories to choose from, the Lube Master pump can be easily customized to meet virtually all application needs.

Reservoir Options

For oil or grease, 12 or 20 pint/pound, plastic or metal.

Low Level Switch Options

Available for both oil and grease reservoirs.

Continuous Duty

1/2 hp motors in 1 phase or 3 phase, choose from two different RPMs for each.

Drive and Mounting Base

Choose from two gearbox ratios to configure your flowrate range. Choose floor mount or wall mount.

Adjustable Pump Displacement

Set the pump output with the turn of a wrench.

Typical Applications

- Cement plants
- Paper processing
- Steel mills
- Other harsh environments

Typical Fluids

- Oil
- Grease up to NLGI #2

Technical Specifications

Cycle Rate	1-175 strokes per minute
Output Volume per minute	See chart below
Max Output Pressure	5,000 psi (340 bar)
Material	Plastic or metal, cylindrical
Reservoir Size	Oil – 12 pint, 20 pint / Grease – 12 lb, 20 lb
Motor	115/230 VAC, 230/460 VAC, 60 Hz
Instruction Manual	3A2781

Theoretical Calculated Discharges of Lube Master

	60:1 Gear Ratio		10:1 Gear Ratio	
	Discharge Output in^3 (cm^3)			
Motor Speed (RPM)	Minimum	Maximum	Minimum	Maximum
1,140	0.19 (3.11)	0.95 (15.57)	1.14 (18.69)	5.7 (93.42)
1,725	0.28 (4.59)	1.48 (23.44)	1.72 (28.19)	8.62 (141.28)

Ordering Information

Popular Lube Master Assembly Models

Pressure Gauge 557713 is included with every LMxxxx assembly.

Grease Packages

Part Number	Reservoir		Base Mounting Configuration	Drive Ratio	Motor – *All motors are 1/2 hp, 60 Hz*		Low Level Switch
	Material	Capacity			RPM	Voltage	
LM6334	Plastic	20 pound	Floor	10:1	1,725	230/460 VAC, 3-phase	SPDT, 15 amp
LM6544				60:1	1,140	115/230 VAC, 1-phase	SPDT, 15 amp
LM6611			Wall		None		None
LM7311	Metal	12 pound	Floor	10:1	None		None
LM7354					1,140	230/460 VAC, 3-phase	SPDT, 15 amp
LM7534				60:1	1,725	230/460 VAC, 3-phase	SPDT, 15 amp
LM8534		20 pound	Floor	60:1	1,725	230/460 VAC, 3-phase	SPDT, 15 amp
LM8544					1,140	115/230 VAC, 1-phase	SPDT, 15 amp

Oil Packages

Part Number	Reservoir		Base Mounting Configuration	Drive Ratio	Motor – *All motors are 1/2 hp, 60 Hz*		Low Level Switch
	Material	Capacity			RPM	Voltage	
LM2536	Plastic	20 pint	Floor	60:1	1,725	230/460 VAC, 3-phase	SPST, 10 watt
LM4333	Metal			10:1	1,725	230/460 VAC, 3-phase	SPDT, 15 amp
LM9511		Overhead Supply		60:1	None		None
LM9521					1,725	115/230 VAC, 1-phase	None

Accessories

Pressure Indicators

	Grease – Aluminum-colored disc, 2,350 PSI (162 bar)	Oil – Yellow-colored disc, 1,450 PSI (100 bar)	Description
	563184	563179	Standard blowout fitting
	563385	563384	High-pressure blowout switch kit*
	563965	563962	Package of 6 blowout discs

*Each kit requires approximately 3 ft of 1/4 in OD copper tubing, not included.

Low Level Switches – Grease

	Part Number	Description
	563322	Standard SPDT, 15 amp switch kit, mounts to top of all grease reservoirs
	564318	High/low level switch kit, for metal grease reservoirs only
	564377	Explosion-proof LL switch for grease reservoirs. (Class I, Group C and D; Class II, Group E, F and G)

Ordering Information

Low Level Switches – Oil

	12 Pint	20 Pint	Description
	563015	563016	SPST, 10 watt, most popular option
	563316	563317	SPDT, 15 amp, for use with heavy or stringy oils

Pump Repair Kits

At the heart of all current Lube Master pump packages is pump part number 563380. There are three repair kits for the pump and some of the parts overlap because each kit includes some of the same seals. To completely rebuild the pump, all three kits are required and some extra parts will remain because of this overlap.

	Part Number	Description
	563915	Driveshaft Kit. Includes the driveshaft, cam, bearings and related seals and hardware.
	563921	Seal Kit. Includes seals and small hardware.
	563916	Standard Output Manifold Kit. Includes pump piston and cylinder, output manifold block and related seals and hardware.

Reservoir Repair Kits

	Part Number	Description
	562902	Polycarbonate tube with u-cup seal for part numbers 562892 (12 pt) and 562896 (12 lb).
	562903	Polycarbonate tube with u-cup seal for part numbers 562893 (20 pt) and 562897 (20 lb).

Replacement Gear Reducers

Floor Mount and Wall Mount drives use the same gear reducers.

	Part Number	Description
	557160	10:1 Gear Reducer
	557161	60:1 Gear Reducer

Ordering Information

Lube Master Ordering Menu Code

Use the Smart Numbering System to order a complete assembly! The six-digit Smart Numbering System can help you order quickly and accurately. Simply follow the diagram for the configuration you want and build your order. Alternatively, use the part numbers at right to order individual components and assemble them in the field.

				Reservoir	Drive	Motor	Low Level
Code	**Former Code**	**Description**	**Part Number**	**LM**	**X**	**X**	**X**	**X**
Product Identifier							
LM	LUB	LM = Lube Master	563380				
Note: When ordering Lube Master bare pump 563380 for use with a grease reservoir, a fill stud is required (part number 557374). Fill stud 557374 is compatible with mating coupler 558906. Order separately.							
Reservoir Options							
1	OPA	12 pt plastic oil reservoir	562892				
2	OPB	20 pt plastic oil reservoir	562893				
3	OMA	12 pt metal oil reservoir	562894				
4	OMB	20 pt metal oil reservoir	562895				
5	GPA	12 lb plastic grease reservoir	562896				
6	GPB	20 lb plastic grease reservoir	562897				
7	GMA	12 lb metal grease reservoir	562898				
8	GMB	20 lb metal grease reservoir	562899				
9	OHS	Power Prime/Overhead Supply	562908				
Drive Options							
1	DOO	No drive	N/A				
2	DOA	Clutch drive with ratchet arm	563383				
3	DOB	10:1 reduction, floor-mounting base	563388				
4	DOC	10:1 reduction, wall-mounting base	563386				
5	DOD	60:1 reduction, floor-mounting base	563389				
6	DOE	60:1 reduction, wall-mounting base	563387				
Note: Drive Options 3, 4, 5, and 6 each contain all required mounting hardware (mounting plate, coupler, coupler guard, nuts, bolts, and washers).							
Motor Options							
1	MOO	No motor	N/A				
2	MOA	1/2 HP, 115/230 VAC, single phase, 60 Hz, 1,725 rpm	557271				
3	MOB	1/2 HP, 230/460 VAC, 3-phase, 60 Hz, 1,725 rpm	557270				
4	MOC	1/2 HP, 115/230 VAC, single phase, 60 Hz, 1,140 rpm	557272				
5	MOD	1/2 HP, 230/460 VAC, 3-phase, 60 Hz, 1,140 rpm	557273				
Low Level Options							
1	LOO	No level switch	N/A				
2	LOA	12 pt oil, SPDT, 15 amps	563316				
3	LOB	20 pt oil, SPDT, 15 amps	563317				
4	LOC	12 and 20 lb grease, SPDT	563322				
5	LOE	12 pt oil, SPST, 10 watts	563015				
6	LOF	20 pt oil, SPST, 10 watts	563016				
N/A*	N/A	High/low level switch kit (for METAL grease reservoirs only)	564318				
N/A*	LOH	Explosion-proof LL switch for grease reservoirs. (Class I, Group C and D; Class II, Group E, F, and G)	564377				

*564318 and 564377 are sold separately and field-installed. Choose option "1" and then order either part separately.

Pressure Gauge (included)			
N/A	G1	No gauge	N/A
N/A	G3	Liquid-filled 0-3000 psi gauge	557713

Note: 557713 is included with every LMxxxx assembly, but not with the bare pump.

Pressure Indicators (sold separately, but required for safety)			
N/A	POA	Standard Blowout, 1,450 psi (100 bar), Oil	563179
N/A	POB	Standard Blowout, 2,350 psi (162 bar) Grease	563184
N/A	POC	High-Pressure Blowout Switch, 1,450 psi (100 bar), Oil	563384
N/A	POD	High-Pressure Blowout Switch, 2,350 psi (162 bar), Grease	563385

Note: Options POC and POD require approximately 3 feet of 1/4 in OD copper tubing, which must be obtained from a 3rd party source.

Versatile, All-In-One Pump Package

Designed for use with virtually any type of Series Progressive or Single Line Resistive oil lubrication system. The Miniature Meter-Flo's rugged steel reservoir and motor assembly withstands the toughest applications. Capable of high volumetric output operating continuously at pressures up to 2,000 psi (138 bar).

Continuous Duty Motor

Ideal for circulating oil systems.

Built-in Pressure Relief

Returns excess oil to the reservoir with no mess.

Sensor Options

Factory-installed low level. Pressure switch sold separately.

Oil Level Sight Glass

Provides visual indication of oil level.

Steel Oil Tank

Rugged construction offered in three sizes.

Typical Applications

- Ideal for smaller series progressive systems requiring continuous lubrication
- Adjustable, built-in pressure relief valve makes MMF packages compatible with resistive orifice systems.

Typical Fluids

- Oil – 160 to 15,000 SUS

Technical Specifications

Output Volume per minute	1, 5, 8, 14 in^3 (16, 82, 131, 229 cm^3)
Output Pressure	300-2,000 psi (20.7-138 bar)
Material	Metal, Rectangular
Reservoir Size	1.5, 3 or 5 gal (5.7, 11.4 or 18.9 L)
Motor	115 VAC, 60 Hz, 1ph or 230 VAC, 50/60 Hz, 3 ph
Instruction Manual	L12600

Miniature Meter-Flo® Pump

Ordering Information

Miniature Meter-Flo (MMF) Models

Part Number	Reservoir Capacity gallons (liters)	Flow Rate in^3/min (cm^3/min)	Maximum PSI (Bar)
Miniature Meter-Flo (MMF) 115 VAC Pumps with Reservoirs			
MM1112	1.5 (5.7)	1 (16.4)	1,500 (103)
MM1113*		1 (16.4)	1,500 (103)
MM1212		5 (82)	2,000 (138)
MM1412		14 (229)	1,500 (103)
MM2112	3 (11.4)	1 (16.4)	1,500 (103)
MM2212		5 (82)	2,000 (138)
MM2412		14 (229)	1,500 (103)
MM3212	5 (18.9)	5 (82)	2,000 (138)
MM3412		14 (229)	1,500 (103)
Miniature Meter-Flo (MMF) 230 VAC (3 phase) Pump with Reservoir			
26A414	1.5 (5.7)	5 (82)	2,000 (138)

*Part Number MM1113 includes dual level switch (high/low) part number 26C344.

MMF Pump and Motor Assemblies, Without Reservoirs

Part Number	Description
564412	1 in^3/min flow rate
564413	5 in^3/min flow rate
564414	8 in^3/min flow rate
564415	14 in^3/min flow rate

Additional MMF Spare Parts

557286	Motor, 115 VAC
557293	Gear box, 1 in^3/min (12.5:1)
557822	Gear pump only, 1 to 8 in^3/min
557821	Gear pump only, 14 in^3/min
557810	Suction strainer
563558	Pressure relief valve
557825	Low level switch
26C344	High/low level switch

Continuous Duty Durability

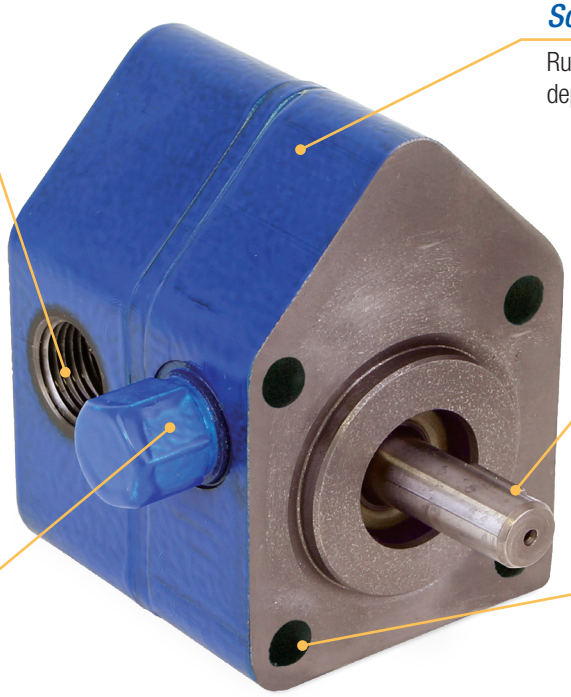
With its solid pump housing, these rugged gear pumps are designed for dependable operation in high demand applications. The gear pump is available with a direct-coupled 1/2 horsepower motor capable of 1,725 rpms with output volumes of 245 cubic inches per minute. Eleven different pump models to choose from.

NPT or SAE Porting

Options for 1/2 in NPT or 7/8 in SAE O-Ring Boss.

Solid Pump Housing

Rugged and durable for dependable operation.



Drive Shaft with Woodruff Key

1/2 in (12.7 mm) drive shaft mates to standard couplings.

Adjustable Pressure Relief Valve

Protects pump against overload conditions.

Standard SAE 4-bolt Mounting

Simplifies installation.

Typical Applications

- Ideal for applications requiring continuous oil delivery up to 1,000 lubrication points

Typical Fluids

- Oil – 300 to 3,000 SUS

Technical Specifications

Output Volume Per Minute	14 to 245 in^3 (230 to 4,015 cm^3)
Maximum Output Pressure	300 to 1,500 psi (20.7 to 103.5 bar)
Operating Temperature	50ºF to 150ºF (10ºC to 65.5ºC)
Instruction Manual	L12611

Ordering Information

Meter-Flo Pumps

Part Number		Rotation	Displacement	
Port Thread			in^3 (cm^3)/minute	
1/2 in NPT	7/8 in SAE		1,140 RPM	1,725 RPM
557813	–	CCW	18 (295)	30 (492)
557814	558953	CCW	9 (147)	14 (229)
557815	–	CCW	56 (918)	84 (1,377)
558949	–	CW	56 (918)	84 (1,377)
557816	–	CCW	76 (1,245)	117 (1,917)
558950	–	CW	76 (1,245)	117 (1,917)
557817	–	CCW	111 (1,819)	168 (2,753)
558951	–	CW	111 (1,819)	168 (2,753)
557818	558954	CCW	26 (426)	40 (655)
557819	–	CW	9 (147)	14 (229)
557820	–	CCW	161 (2,638)	245 (4,015)
558955	–	CW	161 (2,638)	245 (4,015)

Above displacements are nominal outputs at 600 psi (41 bar) using 350 SUS oil at 70ºF (76 cSt @ 21ºC).
CW = Clockwise rotation / CCW = Counter-clockwise rotation when facing pump shaft

Meter-Flo® Pump

Ordering Information

Repair Kits

	Part Number	Description
	557997	Meter-Flo seal kit
	557998	Meter-Flo relief valve repair kit

Meter-Flo Paddle Base and Pump Packages

Include motor mounting base, pump, L-bracket, coupler, coupler guard, and other small hardware needed to mount a 56F motor. Simply add any 56F motor (or 56C with feet) to complete the pump package.

Part Number	Description
563557	Paddle base with pump 557814
564411	Paddle base with pump 557813
24N405	Paddle base with pump 557815
24N406	Paddle base with pump 557816
24N407	Paddle base with pump 557817
24N408	Paddle base with pump 557818
24N409	Paddle base with pump 557820

Additional Mounting Options for Meter-Flo Pumps – pumps not included.

	Part Number	Description
	558956	Bell housing bracket and coupler kit – requires NEMA 56C motor with feet.
	561067	L-bracket – bare part for mounting Meter-Flo pump in a custom application

Motor Option

	Part Number	Description
	558895	1/2 HP, 115/230 VAC, 1,725 rpm, single phase, 56C with feet

Right-Sized Solution

The Graco Compact Dyna-Star (CDS) automatic lubrication system delivers high-capacity flow, robust durability and innovative control in a smaller footprint to extend uptime for today's toughest earth-moving machines and users in the harshest environments.

Rugged Durability

Metal construction ensures trustworthy operation in the most extreme environments.

Integrated Auto-Fill Shut-Off

This option enables single-person, powered-down, ground-level refills, without the need to climb or worry about spills.

Smart Power Train

24 VDC, brushless motor and zero-maintenance gear drive deliver lubricants on time, even at -40º F (-40º C).

Intelligent Monitoring

Optional pressure and lubricant level sensors provide useful system information in real time.

Compact Power

Fits easily in space-limited applications; powerful enough to keep up with aggressive lubrication interval.

Typical Applications

- Aggregates
- Mining
- Construction
- Hydraulic Fracturing Units

Typical Fluids

- Oil and grease up to NLGI #2

Technical Specifications

Maximum Working Pressure	3,500 psi (241 bar)
Operating Temperature	-40º F to 149º F (-40º C to 65º C)
Reservoir Size	12 L, 20 L, or 60 lb (30 L) reservoir or 35 lb (20 L) pail option
Maximum Flow Output Rate	4.5 in^3/min (74 cm^3/min)
Certifications/Ratings	IP69K
Instruction Manual	3A6941

Compact Dyna-Star®, GLC™ X Controller and Auto Lube™ App

Ordering Information

CD – X – X – X – X

Pump Description

Code	Description
1	12 L / 35 lb bucket length, 24 VDC
2	20 L reservoir length, 24 VDC
3	3 60 lb (30 L) reservoir length, 24 VDC

Metering System Feedback

Code	Description
0	Series progressive, no vent-valve, no pressure feedback (plugged outlet)
1	Vent-valve, no pressure feedback (plugged outlet)
2	Vent-valve, pressure switch
3	Vent-valve, pressure-reporting transducer

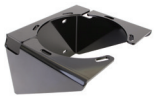
Reservoir

Code	Description
0	No reservoir, bare pump
1	12 L steel reservoir, follower plate
2	20 L steel reservoir, follower plate
3	35 lb plastic bucket kit – cover, follower plate (bucket not included)
4	12 L steel reservoir, no follower plate
5	20 L steel reservoir, no follower plate
6	60 lb (30 L) steel reservoir, follower plate
7	60 lb (30 L) steel reservoir, no follower plate

Reservoir Accessories

Code	Description
0	Bare pump or bucket kit (no reservoir)
1	Low-level switch
2	Level-reporting transducer
3	Auto-fill shut-off and low-level switch
4	Auto-fill shut-off and level-reporting transducer

Compact Dyna-Star Accessories

	Part Number	Description
	26A883	GLC X to CDS 3 ft (1 m) cable
	26A884	CDS extension cable, 12-wire, 20 ft (6 m) with flying leads
	26A889	12-pin DT female CDS mating connector kit
	25R001	12 liter reservoir wall mount bracket
	25R318	Mounting bracket for GLC X, Red Alert filter, 3- and 5-section MSP assemblies or 3- and 5-bank GL-1 series injectors

Pair with the GLC® X Controller and Auto Lube™ App

The all-new Bluetooth®-enabled GLC X controller and Auto Lube app will offer easy programming and real-time data for a wide range of auto-lube systems, even competitors' pumps.

Easy-to-Read Screen

High-contrast screen features text codes, faults and other data clearly in any ambient light.

Real-Time System Reporting

Program and display a wide range of customizable functions.

Smart Device and Mobile App

With the Auto Lube app, monitor lubrication levels, configure settings, track history and share important diagnostics.

Part Number	Description
26A855	GLC X controller with 20 ft (6 m) cable
26A814	GLC X controller
26A882	GLC X wiring harness, 12-wire, 20 ft (6 m) with flying leads

Accessories

	Part Number	Description
	26A853	GLC X pump and sensor simulator
	26A882	GLC X 20 ft (6 m) cable
	26A883	GLC X to Compact Dyna-Star® 3 ft (1 m) cable
	26A888	14-pin mating connector kit

The Rugged Workhorse

The Graco Electric Dyna-Star (EDS) pumps are built on a heavy steel reservoir with common bolt pattern to easily replace older designs. The time-proven Graco Advantage Drive is combined with existing Graco barrel pump lowers to provide performance you can depend on.

Safely Move Pump

Built-in lift ring is rated to 500 lbs (226 kg).

Graco Advantage Drive™

Hardened steel gears are lubricated for life and sealed to keep contaminants out for longer-lasting performance.

Direct-Mount Electric Vent Valve

Compact design means fewer parts to break or wear out.

Low-Level Sensor

Alerts low grease status and self-clears without a follower plate.

Tube-in-Tube

Provides simple and direct venting and filling to the foot of the pump.

M23 Connector

Saves installation time.

Adjustable Motor and Amp Control

Make adjustments with the turn of a dial. LED status lights.

Mechanical Auto-Fill Shut Off

Shuts off the fill pump for clean, trouble-free refilling without electronics.

Strong 12-Gauge Steel Reservoir

Available in 60 lb (27 kg) or 90 lb (41 kg) reservoirs. Matches common bolt pattern.

Remote Fill Manifold

Enables clean and efficient ground-level filling up to 5,000 psi (344 bar).

Typical Applications

- Mining Operations
- Milling and Crushing
- Heavy-duty Construction
- Well Services
- Industrial
  (see p/n 77X524 for AC to DC Converter)

Typical Fluids

- Oil and grease up to NLGI #2

Electric Dyna-Star® HP and Dyna-Star HF

Technical Specifications

	HF Models	HP Models
Max Output Volume Per Minute	1.5 to 35 in3/min (24.6 to 574 cm3/min)	1.5 to 18 in^3/min (24.6 to 295 cm^3/min)
Maximum Outlet Pressure	3,500 PSI (241 bar)	5,000 PSI (344 bar)
Certifications/Ratings	IP69K	
Inlet/Outlet Sizes		
Tank/Reservoir Fill Port	1/2 in NPT	
Overflow Port	1/2 in NPT	
Fluid Outlet Size	3/8 in NPT	
Operating Temperature	14°F to 149°F (-10°C to 65°C)	-40°F to 149°F (-40°C to 65°C)
Power	24 VDC	
Instruction Manual	332514	

Ordering Information

Stand Alone Pumps

Part Number	Description
77X000	24 VDC HP stand-alone pump for 35 or 60 pound reservoir
77X001	24 VDC HP stand-alone pump with tube-in-tube for 35 or 60 pound reservoir
77X002	24 VDC HP stand-alone pump with tube-in-tube for 90 or 120 pound reservoir
77X003	24 VDC HP stand-alone pump with tube-in-tube for 400 pound reservoir
77X014	24 VDC HF stand-alone pump for 35 or 60 pound reservoir
77X015	24 VDC HF stand-alone pump for 120 pound reservoir
77X016	24 VDC HF stand-alone pump for 400 pound reservoir

HP Pump Modules

Reservoir Size		Vent Valve	Dip Stick	Low Level 77X522 (DIN)	Follower Plate	Low Level 17L372 (M12)	Auto-Fill Shut Off
60 lb (27 kg)	90 lb (41 kg)						
77X100	77X101	•	•				
77X102	77X103	•					•
77X104	77X105	•		•	•		
77X202	77X203	•				•	•
77X204	77X205	•				•	
77X300	77X301		•				
77X304	77X305			•	•		
77X402	77X403					•	•

Complete System Installation Kits

Part Number	Description
77X960	24 VDC HP pump with auto-fill shut off and low-level monitor, GLC 2200 controller, wiring harness, low-level sensor cable, power cable, pressure switch, and remote fill manifold for 60 pound reservoir.
77X990	24 VDC HP pump with auto-fill shut off and low-level monitor, GLC 2200 controller, wiring harness, low-level sensor cable, power cable, pressure switch, and remote fill manifold for 90 pound reservoir.

Ordering Information

Custom Tank Injector Kits

Part Number	Description
77X011	24 VDC HP pump and vent valve with tube-in-tube for 35 or 60 pound reservoir
77X012	24 VDC HP pump and vent valve with tube-in-tube for 90 or 120 pound reservoir
77X013	24 VDC HP pump and vent valve with tube-in-tube for 400 pound reservoir

Standard Drum Injector Kits

Part Number	Description
77X111	24 VDC HP pump, vent valve, and cover with tube-in-tube for 120 pound reservoir
77X112	24 VDC HP pump, vent valve, and cover with tube-in-tube for 400 pound reservoir

Standard Drum Kits

Part Number	Description
77X121	24 VDC HF pump and cover for 120 pound reservoir
77X122	24 VDC HF pump and cover for 400 pound reservoir

Follower Plates and Covers

	Container Size				Description
	35 Pound Bucket	60/90 Pound Graco Reservoir	120 Pound Refinery Drum	400 Pound Refinery Drum	
	77X510	77X500	77X511	77X512	Follower plate for pumps with tube-in-tube
		247700	247701	247702	Follower plate for pumps without tube-in-tube
	77X513	–	77X514	77X515	Drum cover

Accessories

	Part Number	Description
	77X521	Auto-fill Shut Off (AFSO) – diaphragm, plate, valve, coupler and pipes. Can be used to add AFSO to an EDS module that shipped without it, or as replacement part(s) for existing AFSO modules.
	77X522	Low level kit sight glass, electric low level switch and cable (requires follower plate 77X500)
	77X523	400 micron inline filter, maximum 5,000 psi (344 bar) inlet pressure (replacement filter 77X541)

Electric Dyna-Star® HP and Dyna-Star HF Accessories

Ordering Information

Accessories

	Part Number	Description
	17L366	Red alert filter with 380µm, 36 in^2 steel mesh filter (replacement filter 129031)
	24R952	Red alert filter with reservoir mounting kit (includes 17L366)
	16V678	Red alert filter mounting bracket
	77X524	110-230 VAC to 24 VDC converter box
Image Coming Soon	77X540	24 VDC electric vent valve with pressure relief
	77X542	Remote-fill port manifold with vent
Image Coming Soon	77X543	HF output manifold with 4,000 psi pressure relief
	77X544	HP output manifold with 5,000 psi pressure relief
Image Coming Soon	77X545	Power cable for series progressive systems (pumps *without* a Vent Valve), M23 connector, 15 ft (4.6 m)
Image Coming Soon	77X546	Power cable for injector systems (pumps *with* a Vent Valve), M23 connector, 15 ft (4.6 m)
	115124	Pressure switch – pressure adjustment visible in window
	24N181	Pressure switch, 1/4 in NPT(F) inlet, DIN 43650 connector (1 NO/1 NC), 7,250 psi (500 bar)

Force Feed Box Lubricators

The Manzel® Modular Box Lubricator (MBL) provides true modularity that permits customizing a pump-to-point lubrication system from off-shelf components. MBL pumping packages can also be used with MHH divider valves in a series progressive system. Each moving part is lubricated at all times by the fluid in the reservoir. This and the wide range of options, high discharge pressure and rugged construction make the MBL ideally suited for a wide variety of industries and applications.

GBL 7500 Pumps

Modern design that has become the industry standard. See page 54 for pump part numbers.

Suction Pumps Installed

Use ordering menu on page 55 to specify pumps to be installed. Gravity and Pressure Feed pumps are sold separately for field installation.

Modular Drive

External drive assemblies available as replacement parts.

Heater Port

Integrated 1 in NPT port makes optional electric heater installation simple.

Heavy Steel Reservoirs and Mounting Bases

Eight reservoir capacities are available to hold up to 40 pints and 24 pumps.

Technical Specifications

Maximum Pressure	7,500 psi (517 bar)
Power	115/230 VAC, 230/460 VAC, 60 Hz
Operating Temperature	-20°F to 140°F (-29°C to 60°C)
Reservoir Size	See the following pages
Maximum Run Time	Continuous
Output per Element/Min	0.7, 1.2, or 2.7 in^3 (11.45, 19.65, or 44.25 cm^3)
Certifications/Standards	ATEX (depends on configuration)
Instruction Manual	3A2100

Typical Fluids

- Mineral oil or synthetic based lubricants
- 80 to 5,000 SUS

Typical Applications

- Compressors – petrochemical, refineries, gas transmission and more
- Edgers, planers and band saws
- Rubber mixers
- Cannery lid presses

Manzel® MBL Pump/Reservoir Combinations with Motor Mounting Bases

NOTE: All part numbers on the chart below use "OA" (Zero-A) to indicate assemblies with NO pumps. Refer to Smart Code ordering details.

End Rotary Drives

Add GBL 7500 pumps and a NEMA 56F motor, or 56C with feet, to complete the assembly – see motor options on page 56.

	Reservoir Size				
Drive Ratio	4 pint (1.9 L)/ 2 Feed	6 pint (2.8 L)/ 3 Feed	8 pint (3.8 L)/ 5 Feed	12 pint (5.7 L)/ 8 Feed	16 pint (7.6 L)/ 12 Feed
50:1	MBJ0AK	MBK0AK	MBL0AK	MBM0AK	MBN0AK
100:1	MBJ0AL	MBK0AL	MBL0AL	MBM0AL	MBN0AL
200:1	MBJ0AM	MBK0AM	MBL0AM	MBM0AM	MBN0AM
400:1	MBJ0AN	MBK0AN	MBL0AN	MBM0AN	MBN0AN
Replacement Camshaft	564166	564167	564170	560381	564179

Heavy Duty Gearbox Drives

Add GBL 7500 pumps and a NEMA 56C motor to complete the assembly – see motor options on page 56.

	Reservoir Size		
Drive Ratio	24 pint (11 L)/ 16 Feed	32 pint (15 L)/ 20 Feed	40 pint (19 L)/ 24 Feed
400:1	MBP0AY	MBR0AY	MBS0AY
Replacement Camshaft	564166	564167	564170

MBL Replacement Parts

25T989	Cam replacement kit – includes cam, key, and set screw for one pump station. For replacement cam shafts, see tables above.

Replacement Gearboxes

Drive Letter from Ordering Menu	Drive Ratio	Spare Part Number	Compatible with Reservoir/Base J – N?
J	25:1	564055	No*
K	50:1	564054	Yes
L	100:1	563121	Yes
M	200:1	563122	Yes
N	400:1	563120	Yes

*25:1 ratio is too low for use with 1,725 rpm motor.

Drive Letter from Ordering Menu	Drive Ratio	Spare Part Number
Y	400:1	557162

Ordering Information

MBL Smart Code Ordering Menu

MB – X – X – X – X

Reservoir (Smart Code Option A)

Code	Former Code(s)	Description	Code	Former Code(s)	Description
A	T1	4 pt (1.9 L), 2 pump stations max	J	T1 and P1	4 pt, 2 pump stations max, motor mount base
B	T2	6 pt (2.8 L), 3 pump stations max	K	T2 and P2	6 pt, 3 pump stations max, motor mount base
C	T3	8 pt (3.8 L), 5 pump stations max	L	T3 and P3	8 pt, 5 pump stations max, motor mount base
D	T4	12 pt (5.7 L), 8 pump stations max	M	T4 and P4	12 pt, 8 pump stations max, motor mount base
E	T5	16 pt (7.6 L), 12 pump stations max	N	T5 and P5	16 pt, 12 pump stations max, motor mount base
F	T6	24 pt (11.4 L), 16 pump stations max	P	T6 and P6	24 pt, 16 pump stations max, motor mount base*
G	T7	32 pt (15.1 L), 20 pump stations max	R	T7 and P7	32 pt, 20 pump stations max, motor mount base*
H	T8	40 pt (18.9 L), 24 pump stations max	S	T8 and P8	40 pt, 24 pump stations max, motor mount base*

*Cannot use double reduction or right angle drives.

Pump Size – GBL 7500 Suction Pumps (Smart Code Option B)

Code	Former Code(s)	Description
0	00	No pumps
1	76/88B	3/16 in Suction Pump 24J391
2	76/88C	1/4 in Suction Pump 24J392
3	76/88E	3/8 in Suction Pump 24J393
4	76/88B and F3	3/16 in Suction Pump plus RENS Level Controller
5	76/88C and F3	1/4 in Suction Pump plus RENS Level Controller
6	76/88E and F3	3/8 in Suction Pump plus RENS Level Controller
7	76/88B and F4	3/16 in Suction Pump plus GARZO Level Controller
8	76/88C and F4	1/4 in Suction Pump plus GARZO Level Controller
9	76/88E and F4	3/8 in Suction Pump plus GARZO Level Controller

NOTES:

1. When pump quantity is less than maximum pump stations of specified reservoir, a blank cover assembly is installed at Graco.
2. When low level is specified, deduct one pump for each option.
3. When ordering a ratchet drive, the maximum number of pumps allowable is 20.

Pump Quantity (Smart Code Option C)

Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty
A	0	E	4	J	8	N	12	T	16	X	20
B	1	F	5	K	9	P	13	U	17	Y	21
C	2	G	6	L	10	R	14	V	18	Z	22
D	3	H	7	M	11	S	15	W	19		

Drive Options (Smart Code Option D)

Code	Former Code	Description	Code	Former Code	Description	Code	Former Code	Description
A	G01R	Direct End Rotary (50 rpm max)	J	G05R	Double Reduction End Rotary 25:1	T	G13R	RT Angle Rotary 375:1
B	G02R	End Ratchet (without drive arm 563005)	K	G06R	Double Reduction End Rotary 50:1	U	G14R	100:1 Ratio Gear Reducer**
C	G03R	End Rotary Ratchet 37-1/2:1 – max input of 800 RPM	L	G07R	Double Reduction End Rotary 100:1	V	G15R	150:1 Ratio Gear Reducer**
D	G04R	End Rotary Ratchet 75:1 – max input of 800 RPM	M	G08R	Double Reduction End Rotary 200:1	W	G16R	200:1 Ratio Gear Reducer**
E	G01L	Direct End Rotary	N	G09R	Double Reduction End Rotary 400:1	X	G17R	300:1 Ratio Gear Reducer**
F	G02L	End Ratchet (without drive arm 563005)	P	G10R	RT Angle Rotary 25:1	Y	G18R	400:1 Ratio Gear Reducer**
G	G03L	End Rotary Ratchet 37-1/2:1 – max input of 800 RPM	R	G11R	RT Angle Rotary 50:1	Z	G12L	Left Angle Rotary 188:1
H	G04L	End Rotary Ratchet 75:1 – max input of 800 RPM	S	G12R	RT Angle Rotary 188:1			

**U (G14) through Y (G18) require motor mounting base; can only be used with reservoir options P, R, and S.

Ordering Information

MBL Box Lubricator Motors

	Part Number	Description
	558289	M2 – 1/4 hp, 1,725 rpm, 115/230V, 1 ph., TENV, Foot-Mounted (56F)
Image Coming Soon	558293	M3 – 1/4 hp, 1,725 rpm, 115/230V, 1 ph., Hazardous Area, Class 1, Group D, Foot-Mounted (56F)
	558290	M5 – 1/4 hp, 1,725 rpm, 230/460V, 3 ph., TENV, Foot-Mounted (56F)
Image Coming Soon	558292	M6 – 1/4 hp, 1,725 rpm, 230/460V, 3 ph., Hazardous Area, Class 1, Group D, Foot-Mounted (56F)
	558294	M7 – 1/2 hp, 1,725 rpm, 115/230V, 1 ph., Hazardous Area, Class 1, Group C, Severe Duty, Tropical Insulation, Face-Mounted or Foot-mounted (56C with feet)
Image Coming Soon	558295	M8 – 1/2 hp, 1,725 rpm, 230/460V, 3 ph., Hazardous Area, Class 1, Group C, Severe Duty, Tropical Insulation, Face-Mounted or Foot-mounted (56C with feet)
Image Coming Soon	558291	M10 – 1/2 hp, 1,725 rpm, 230/460V, 3 ph., 60Hz, Class 1, Group D, Face-Mounted (56C)
	557271	M11 – 1/2 hp, 1,725 rpm, 115/230V, 1 ph., 60Hz, TEFC, Face-Mounted (56C)
	557270	M12 – 1/2 hp, 1,725 rpm, 230/460V, 3 ph., 60Hz, TEFC, Face-Mounted (56C)

NOTE: Heavy Duty drives (G14 - G18) require 56C, face-mount. Normally a 1/2 hp motor would be used because more pumps are being operated by the HD drives.

Ordering Information

Auto Fill Options

	Part Number	Description
	559037	F1 Gravity Supply

NOTE: F2 – obsolete, use F1 instead. F3 – ordered with pumps (see page 55). F4 – ordered with pumps (see page 55).

Low Level Switches

	Part Number	Description
	563013	L1 – Low Level Switch Hazardous Area. Class 1, Group C and D; Class 2 Group, E, F and G.
	564015	L2 – Low Level, 10 Watts at 120 VAC, SPST Reed Switch, NC

Shaft Rotation Alarm

	Part Number	Description
	24K466	GBL 7500 Shaft Rotation Alarm Pump

Heater Options

	Part Number	Description
Image Coming Soon	557207	120 VAC Electric Heater, Hazardous Area, Class 1, Group B, one-prong heater. Can be installed in 1 in NPT port on MBL reservoirs.

NOTE: Former codes H3, H4 and H6 use 557207. For H1, H2 and H5, contact factory for details about part number 564058 (two prong heater) Class 1, Group D

Day Tank Options

Modu-Flo oil tanks include 1/2 in NPSF female thread at the bottom of the tank to receive a 1/2 in NPT male fitting.

	Part Number	Description
	563319	12 pt Tank
	563320	24 pt Tank
	563321	40 pt Tank

Pneumatic Pump Selection Guide

Pump Family	Typical Applications	Fluid Type	Maximum Output Pressure psi (bar)	Maximum Output Volume in^3 (cm^3)	Reservoir Capacity Options		Metering	Reference Page
					US	Metric - Liters		
LubePro™ 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing	40 cSt oil minimum / grease up to NLGI #2	3,500 to 4,000 (241 to 276)	Single Stroke Pumps – 0.56 to 3.0 (9.2 to 49.2) per stroke Reciprocating Pumps – 50 (819) per minute	Oil – 1.3, 4.2, 5 or 12 pints Grease – 1, 4, 6 or 12 lbs	Oil – 0.6, 2.0, 2.4 or 5.5 Grease – 0.5, 2, 3 or 6	SLP	59-63
LubriSystem 	• In-Plant Manufacturing	Oil/grease up to NLGI #1	1,350 (93)	1.5 (25) per stroke	Oil – 6, 12 or 20 pints Grease* – 3, 6 or 12 lbs	Oil – 2.8, 5.5 or 9 Grease – 1.5, 3, or 6	SLP	64-65
Modu-Flo® 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing	Oil/grease up to NLGI #2	3,000 (207)	0.030, 0.120 or 0.240 (0.5, 2.0 or 3.9) per stroke	Oil – 5, 6, 12, 20, 24 or 40 pints Grease* – 3, 6, or 12 lbs	Oil – 2.4, 2.8, 5.5, 9, 11 or 19 Grease – 1.5, 3, or 6	SPDV	66-70
E-Series 	• In-Plant Manufacturing • Vehicle service	Oil up to 30,000 SUS / grease up to NLGI #2	2,000 (138)	0.030 (0.5) per stroke	Oil – 4 pints Grease* – 3 or 6 lbs	Oil – 1.9 Grease – 1.5 or 3	SPDV	71-72
MSA-10 and MSA-100 	• In-Plant Manufacturing	Oil/grease up to NLGI #2	3,000 (207)	0.120 or 0.800 (2 or 13) per stroke	N/A	N/A	SPDV	73-74
Pneumatic Dyna-Star® Fire-Ball® 300 50:1 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing	Oil/grease up to NLGI #2	3,500 (241)	54 (85) per minute	60 or 90 lb	30 or 45	SPDV or SLP	75-76

*See page 69 for note on legacy Trabon grease reservoir volumes and metric conversions.

SLP = Single Line Parallel (Injectors) SPDV = Series Progressive Divider Valve

For Simple, Injector-based Automatic Lubrication Systems

As a hard-working professional focused on ensuring your production lines keep moving and your operating costs are reduced, automatic lubrication should be an essential part of your machine maintenance. Without proper lubrication your equipment can suffer from downtime and reduced life, which impacts your company's bottom line. Avoid the hassle. Meet your LubePro.™

Typical Applications

- Packaging
- Food and Beverage Processing and Packaging
- Glass Manufacturing
- Tire Production
- Thermoforming
- Injection Molding
- Paper Production
- Labelers
- Automation Machinery
- Presses
- Steel Forging and Finishing
- Bearing Manufacturing

Typical Fluids

- 40 cSt oil minimum
- NLGI #000 to NLGI #2 grease

A4000 Reciprocating Pump

Two Models Available
Oil or grease: 4,000 psi (276 bar).

Low Level Detection
Available as a factory-installed option. Easy to connect, comes with field-wireable DIN connector; NO or NC.

Simple Controlling
PLC or lube controller actuates a 3-way air valve to drive pump and vent valve to relieve pressure in the system once lube cycle is complete.

Pneumatic Power
Easily installed into existing air line.

17P751

Multiple Reservoir Types
Oil without follower plate – 5.5 liter.
Grease with follower plate – 7.5 lbs / 13 lbs.

Easy to Install
Utilize existing mounting holes for easy replacement and installation.

Fast Cycle Rate and Flow
Output of up to 50 in^3/min (819 cc/min).

Vent Valve
Integrated pneumatic or electric vent valve.

Technical Specifications

Fluid Handling Capabilities	40 cSt oil - #2 grease
Maximum Working Pressure	4,000 psi (276 bar)
Pressure Ratio	40:1
Pump Output Per Minute	50 in^3 (819 cm^3)
Maximum Air Inlet Pressure	100 psi (6.89 bar)
Air Inlet Size	1/4 in NPT
Fluid Outlet Size	1/4 in NPT
Operating Temperature	14ºF to 149ºF (-10ºC to 65ºC)
Instruction Manual	3A5266

Ordering Information

Fluid	Pressure Ratio	Reservoir Size	Low Level Detection	Pneumatic Vent Valve	Electric Vent Valve	Series Progressive
Oil	40:1	12 pints (5.5 L)	–	17P752	17T195	17T178
			Yes	17P753	17T196	17T179
Grease		6 lbs (3 L)	–	17P750	17T193	17T176
			Yes	17P751	17T194	17T177
		12 lbs (6 L)	Yes	17U217	–	–

A2800 and A2900 Vertical Pumps

Fast Cycle Rate and Flow

Cycles and vents lubricant injectors in as little as 10 seconds. 0.56 in^3 of oil per stroke and 0.58 in^3 of grease per stroke.

High-Strength, Shatter-Resistant Reservoir

Utilizes a high-quality, polycarbonate reservoir.

Multiple Reservoir Types

Oil without follower plate – 0.6 and 2 liter.
Grease with follower plate – 1 and 4 lb.

Self-Venting Pump

Integrated vent automatically relieves pressure on return stroke, no pressure switch or wiring required.

24Z053

Easy to Install

Utilize existing mounting holes for easy replacement and installation.

Simple Controlling

PLC or Lube controller actuates a 3-way air valve to drive pump, and vent on the return stroke.

Low Level Detection

Reliable, Graco factory-installed low level indicator that is easy to connect using a simple DIN connection.

Pneumatic Power

Easily installed into existing air line.

Technical Specifications

	A2800	A2900
Fluid Handling Capabilities	40 cSt oil minimum	Up to #2 grease
Maximum Working Pressure	3,500 psi (241 bar)	3,500 psi (241 bar)
Pressure Ratio	28:1	29:1
Pump Output Per Stroke	0.56 in^3 (9.18 cm^3)	0.58 in^3 (9.5 cm^3)
Maximum Air Inlet Pressure	175 psi (12.1 bar)	175 psi (12.1 bar)
Air Inlet Size	1/4 in NPT	
Fluid Outlet Size	1/4 in NPT	
Operating Temperature	14ºF to 149ºF (-10ºC to 65ºC)	
Instruction Manual	3A4033	3A4096

Ordering Information

Pump Model	Fluid	Pressure Ratio	Reservoir Size	NPT		BSPP	
				Pump Without Low Level	Pump With Low Level	Pump Without Low Level	Pump With Low Level
A2800	Oil	28:1	0.6 liters	24Z020	24Z021 (NO)	24Z023	24Z024 (NO)
					24Z022 (NC)		24Z025 (NC)
			2 liters	24Z026	24Z027 (NO)	24Z029	24Z030 (NO)
					24Z028 (NC)		24Z050 (NC)
A2900	Grease	29:1	1 lb	24Z051	24Z052 (NO)	24Z054	24Z055 (NO)
					24Z053 (NC)		24Z056 (NC)
			4 lb	24Z057	24Z058 (NO)	24Z060	24Z061 (NO)
					24Z059 (NC)		24Z062 (NC)

24Z028

H1900, A1900 and A2600 Horizontal Pumps

Two Reservoir Types

2 liter reservoir available in grease or oil. Select from the 19:1 oil pump or the 26:1 grease pump.

High-Strength, Shatter-Resistant Reservoir

Utilizes a high-quality, polycarbonate reservoir that is securely mounted to the pump with rigid tie rods for optimal sealing.

Easy to Install

Utilize existing mounting holes for easy replacement and installation.

Fire-Ball Pump Casting

Leverages the proven quality and long life of Graco's Fire-Ball pump. Eliminates tie rods and end cap.

17C750

Low Level Detection Option

Reliable, Graco factory-installed low level indicator that is easy to connect using a simple DIN connection.

Fast Cycle Rate and Flow

Cycles and vents lubricant injectors in as little as 10 seconds. 2.2 in^3 of grease per stroke and 3.0 in^3 of oil per stroke.

Self-Venting Pump

Integrated vent automatically and reliably relieves pressure on return stroke, no pressure switch or wiring required.

No Priming Required

No need to bleed the valve to prime the pump, no priming is required.

Pneumatic Power

Easily installed into existing air line.

Technical Specifications

	H1900	A1900	A2600
Fluid Handling Capabilities	40 cSt oil minimum	40 cSt oil minimum	Up to #2 grease
Maximum Working Pressure	3,500 psi (241 bar)	3,500 psi (241 bar)	3,500 psi (241 bar)
Pressure Ratio	19:1	19:1	26:1
Pump Output Per Stroke	3.0 in^3 (49.16 cm^3)	3.0 in^3 (49.16 cm^3)	2.2 in^3 (36.05 cm^3)
Maximum Air Inlet Pressure	185 psi (12.8 bar)	185 psi (12.8 bar)	135 psi (9.3 bar)
Air Inlet Size	1/4 in NPT		
Fluid Outlet Size	3/4 in NPT		
Operating Temperature	14ºF to 149ºF (-10ºC to 65ºC)		

24Y499

Ordering Information

				NPT		BSPP	
Pump Model	Fluid	Pressure Ratio	Reservoir Size	Pump Without Low Level	Pump With Low Level	Pump Without Low Level	Pump With Low Level
H1900	Oil	19:1	–	24Y498	24Y499	25Y498	25Y499
A1900	Oil	19:1	2 liters	17C753	17C752	18C753	18C752
A2600	Grease	26:1	4 lb	17C750	17C751	18C750	18C751

17C753

Ordering Information

LubePro Accessories

	Part Number	Description	Maximum Working Pressure	Pump Compatibility					
				A1900	H1900	A2600	A2800	A2900	A4000
	105474	3-way air valve, 150 psi (10 bar), 1/2 NPSM(F) conduit ports for wiring, 1/4 NPT(F) air ports. 24 VDC/120 VAC	150 psi (10.3 bar)				•	•	•
	128305	4-way air valve, 12 VDC		•	•	•			
	128254	4-way air valve, 24 VDC		•	•	•			
	128255	4-way air valve, 120 VAC		•	•	•			
	128257	4-way air valve, 240 VAC		•	•	•			
	560734	Air valve reservoir mounting bracket		•		•			
Image Coming Soon	24Y079	4-way air valve installation kit – 12 VDC air valve, bracket, air lines, fittings		•		•			
	24Y080	4-way air valve installation kit – 24 VDC air valve, bracket, air lines, fittings		•		•			
	24Y081	4-way air valve installation kit – 120 VAC air valve, bracket, air lines, fittings		•		•			
	24Y082	4-way air valve installation kit – 240 VAC air valve, bracket, air lines, fittings		•		•			
	121474	Female coupler. Quick-disconnect. 1/4 in NPT. Mates with fill stud on LubePro grease pumps.	3,700 psi (255 bar)	•	•	•	•	•	•

Air Operated Pump for Single Line Parallel Systems

Easy to design, modify and adjust for oil or grease applications. Combine with LubriSystem/Grease Jockey injectors or Injecto-Flo piston distributors for easy, low cost system design solutions. Efficient design promotes increased productivity and less downtime. Offers several reservoir choices for both oil and grease applications

Options For Oil And Grease

Grease reservoirs include follower plate and spring for up to NLGI #1 grease. Oil reservoirs are also available in 6, 12, and 20 pint.

Standard Low Level Switch Options

Uses the same switch kits as many other Trabon® pumps, with options for oil and grease.

Self-Venting Pump

Integrated vent automatically relieves pressure on return stroke, no pressure switch or wiring required.

Rugged Polycarbonate Reservoir

The “plastic” reservoir options utilize a polycarbonate tube or convert to a steel reservoir for an even tougher material.

9:1 Pump Ratio

Same reliable design as the classic Grease Jockey and A900 pumps, but with more reservoir options for added flexibility.

Trabon® Fill Stud

Uses mating coupler that is common to other Trabon pump packages.

Technical Specifications

Output per Stroke	1.5 in^3 (24.6 cm^3)
Maximum Output Pressure	360 to 1,350 psi (25 to 93 bar)
Air Inlet Pressure	40 to 150 psi (3 to 10 bar)
Ratio	9:1
Reservoir Material	Plastic (polycarbonate)
Instruction Manual	L12100

Typical Fluids

- Oil and grease up to NLGI #1

Typical Applications

- In-plant equipment and machinery

Ordering Information

LubriSystem Pump Packages

Low Level Option		Reservoir Size	Replacement Reservoir	Low Level Switch
Included	Not Included			
Grease Packages				
563572	563571	6 lb	562907	563322
563573	–	12 lb	562896	
Oil Packages				
563577	563574	6 pt	-	563014
563578	563575	12 pt	562892	563015
–	563576	20 pt	562893	563016

For a metal reservoir, refer to Lube Master section and select from those four options, then combine with bare pump 563579.

Bare Pump

Part Number	Repair Kit	Description
563579	563762	Pump includes Trabon fill stud and hardware to receive reservoir.

Air Solenoid Valves

150 psi maximum pressure, 1/4 in NPT female inlet.

Voltage		Air Outlet	Valve Ways	Air Motor Action
24 VDC	120 VAC			
563332	563315	1/4 in NPSF male banjo	3-way	Single

True Modularity

Wide choice of standard modular components helps you meet application requirements more exactly without the added cost of a custom system. A complete Modu-Flo modular pumping package (MPP) includes a pump, a baseplate manifold, a reservoir, and a variety of optional accessories. For more details search for brochure L12000 on Graco.com.

Fill Cap and Strainer

Included with every oil reservoir.

Low Level Switch

Options available for both oil and grease reservoirs.

High-Pressure Blowout Switch

Options for most oil and grease reservoirs; sold as a kit.

Polycarbonate (Plastic) and Metal Reservoir Options

For oil or for grease, a total of 16 options are available (see page 69).

Baseplate Manifold Kit

All plumbing connects to the manifold.

Option for use with NPT or BSP fittings.

Flapper valve inside works with modular pump design to allow removal and replacement of pump without draining lubricant from the reservoir.

Modular Pump Design

With options for pneumatic or hydraulic (page 78), a total of six models are available.

Pneumatic pumps may have single or double action on their air motors, depending on which air solenoid is used to actuate the air motor.

Pneumatic Pump Technical Specifications

Output per Stroke	0.010 to 0.240 in^3 (0.164 to 3.933 cm^3)
Air Motor Action	Single or Double
Lube Piston Action	Single
Pump Ratio	30:1
Instruction Manual	332042

Typical Fluids

- Oil and grease up to NLGI #2

Typical Applications

- In-plant
- Presses
- Mixers

Steps to Build Your Modu-Flo System:

A Pick Your Pump

B Select a Baseplate Manifold Kit

C Select a Reservoir

Choose from Optional Accessories

D Low Level Switch Assemblies

E Air Solenoid Valves

F Modu-Flo Pressure Switch Assemblies

Image Coming Soon

Ordering Information

Modu-Flo Pneumatic Pumps

Pump Part Number	Model	Pump Output Range per Stroke in³ (cm³)	Air Motor Action	Maximum Cycles per Minute		Input Air Pressure Range PSI (bar)		Maximum Fluid Outlet Pressure PSI (bar)	Repair Kit Part Number
				Oil	Grease	Minimum	Maximum		
563304	AL-5M	0.010 to 0.030 (0.164 to 0.492)	Single	30	10	40 (2.76)	150 (10.3)	3,000 (207)	563902
			Double*	60					
563306	AL-25M	0.030 to 0.120 (0.492 to 1.966)	Single	30					563903
			Double*	60					
563308	AL-50M	0.060 to 0.240 (0.983 to 3.933)	Single	30					563904
			Double*	60					

*Double acting air motors require a 4-way air solenoid to create the "double action." Single acting use a 3-way air solenoid and rely on spring return.

Complete your Modu-Flo pump package with a Baseplate Manifold, Reservoir and Accessories from the next page or refer to bulletin L12000. When replacing an older pump such as ALS-3A, ALJ-25C, etc., refer to the "Remote" Pump Manifold options to allow wall-mounting of the new pump instead of mounting directly to bottom of a reservoir.

A Ordering Information

Pick Your Modu-Flo Pump

 **Pneumatic** See page 67	 **Hydraulic** See page 78

B Ordering Information

Baseplate Manifold Kits

Note: 563324 and 563331 are the most popular kits.

	Part Number	Thread	Mount	Outlet Check Valve	System Fill Check Valve	1,450 psi Blowout Assembly	0-3,000 psi Gauge
	563329	NPSF (NPT)	Reservoir	No	No	None	None
	563324	NPSF (NPT)	Reservoir	Yes	Yes	Standard	Dry
	563331	NPSF (NPT)	Reservoir	Yes	Yes	Tubed**	Dry
	563333	NPSF (NPT)	Reservoir	Yes	Yes	Tubed**	Liquid-filled
	563336	NPSF (NPT)	Reservoir	Yes	Yes	Tubed**	None
	563323	NPSF (NPT)	Wall/Remote*	Yes	Yes	Standard	None
	563330	NPSF (NPT)	Wall/Remote*	Yes	Yes	Tubed**	None

*Manifolds are intended for gravity feed (oil) or spring loaded follower feed (grease) only; not for use with header systems. **Includes 1/8 in NPT female spud.

C Ordering Information

Select a Reservoir

Modu-Flo reservoirs include a built-in mounting bracket, and also a Pump Mounting Pad at the bottom of the reservoir. The pump mounting pad receives the "Reservoir" mount manifolds above (as well as several other pumps). The pad also includes a port with 1/2 in NPSF female thread to receive either an NPT or NPTF male fitting and then can then be used to gravity-feed a remote pump.

Part Number	Material	Capacity*	Tube and Gasket Replacement Kit
Cylindrical Grease Reservoirs			
562911	Plastic (Poly-carbonate)	3 pound	-
562888		5 pound	562901
562905		6 pound	562909
562884		12 pound	562902
562885		20 pound	562903
564264	Metal	5 pound	564269
562906		6 pound	–
562886		12 pound	564270
562887		20 pound	564271
Cylindrical Oil Reservoirs			
562891	Plastic (Poly-carbonate)	5 pint (2.4 L)	562901
562904		6 pint (2.8 L)	562909
562889		12 pint (5.7 L)	562902
562890		20 pint (9.5 L)	562903
Rectangular Oil Tanks			
563319	Metal	12 pint (5.7 L)	563934 oil level sight glass kit
563320		24 pint (11.4 L)	
563321		40 pint (18.9 L)	

*Nominal grease reservoir size is based on a direct conversion of oil reservoir capacity and does not reflect volume loss due to the follower and spring. Actual volumes contained are:

Nominal Size	Actual Volume
3 lb	3 lb (1.5 L)
5 lb	
6 lb	
12 lb	6 lb (3 L)
20 lb	12 lb (6 L)

D Ordering Information

Low Level Switch Assemblies

For Grease Reservoirs

3 lb	5, 6, 12 and 20 lb	Replacement Switch	Description
563272	563322	557781	SPDT switch and bracket kit installs to existing components included with grease reservoirs

For Oil Reservoirs

Cylindrical			Rectangular Metal Tanks	Replacement Switch	Description
5 and 12 Pint	20 Pint	6 Pint			
563015	563016	563014	563014	557825	"Low Watt" SPST switch assembly, used for most oils
563316	563317	563318	563318	557551	SPDT switch, older style preferred for heavy, stringy oils
–	–	–	564322	557825	Dual SPST, Low Watt Switches (One Low Level, One Shutdown)

E Ordering Information

Air Solenoid Valves

150 PSI maximum pressure, 1/4 in NPT female inlet.

Voltage				Air Outlet	Valve Ways	Air Motor Action	Valve Mounting
12 VDC	24 VDC	120 VAC	240 VAC				
–	563332	563315	–	1/4 in NPSF male banjo	3-way	Single	Baseplate Manifold
128305	128254	128255	128257	1/4 in NPT female	4-way	Double	Wall

F Ordering Information

Modu-Flo Pressure Switch Assemblies

For Cylindrical Reservoirs		For Rectangular Metal Tanks	Replacement Switch	Description
5 Pint/Pound	6, 12 and 20 Pint/Pound			
563325*	563326*	563327	557781	High Pressure Blowout Switch Kit, requires approximately 3 ft of 1/4 in OD copper tubing, not included
563328*			557829	Kit includes Tee fitting for mounting to outlet port.

*Kits include yellow disks for use in oil systems. For grease systems replace the yellow disk with a red or an orange disk, depending on pressure rating of your mainline grease hose/tubing.

Spare or Replacement Blowout Discs

For pressure relief.

psi (bar)	Color Code	Part Number	
5 Pint/Pound	6, 12 and 20 Pint/Pound	Single	6-Pack
900 (62.0)	Black	557431	–
1,175 (81.0)	Green	557432	–
1,450 (99.9)	Yellow	557433	563962
1,750 (120.7)	Red	557434	563963
2,050 (141.4)	Orange	557435	563964
2,350 (162.0)	Aluminum	557436	563965
2,650 (182.6)	Pink	557437	–
2,950 (203.0)	Blue	557438	563966
3,250 (220.1)	Purple	557439	–

*Discs up to 2,350 psi have a tolerance of ± 500 psi. Discs greater than 2,350 psi have a tolerance of ± 20%.

More Spare Parts for Modu-Flo Packages

563337	Pump mounting kit, includes four mounting screws, one large O-ring and three small O-rings to connect any Modu-Flo pump to bottom of baseplate manifold. Kit is included with new pumps, sold here as a spare part.

NPT Part Number	SAE-ORB Part Number	Description
563207	563053	Outlet Check Valve
563211	563056	System Fill Check Valve
563179	563180	Standard Blowout Assembly (1,450 psi / 100 bar)
563186	n/a	Tubed Blowout Assembly (1,450 psi / 100 bar)
557864	n/a	Standard (Dry) Pressure Gauge, 0-3,000 psi/0-210 bar dual scale, center back mount.
557866	557280	Liquid-Filled Pressure Gauge, 0-3,000 psi/0-210 bar dual scale, center back mount (557280 is PSI scale only).

Designed for Reliability

The E-Series pump is a minimum cost, entry level alternative to standard pneumatic pump products. This all-in-one pump package comes complete with no assembly required and is easy to install. All pump packages include high-pressure rupture disc assembly and lube outlet check valve. The E-Series offers many reservoir options for either grease or oil. Great for any application where price is a concern and installation time is at a premium.

Standard Low Level Switch Options

Uses the same switch kits as many other Trabon® pumps.

Modu-Flo Reservoirs

Provides easy interchangeability plus compatibility to most Modu-Flo accessories.

Drain Valve

Included petcock acts as a grease drain before removing a pump, and an air bleed during initial filling.

Two Pump Options

Choose from the original fixed output pump or the adjustable output version.

Technical Specifications

Output per Stroke	0.010 to 0.030 in^3 (0.164 to 0.492 cm^3)
Max Output Pressure	2,000 psi (138 bar)
Ratio	20:1
Reservoir Material	Plastic, cylindrical or rectangular
Air Pressure	40 to 150 psi (2.8 to 10.3 bar)
Cycle Rate	10 CPM grease, 30 CPM oil
Instruction Manual	L13126

Typical Fluids

- Oil up to 30,000 SUS
- Grease up to NLGI #2

Typical Applications

- Presses and other in-plant machines

Ordering Information

E-Series Pump Packages

Low Level Option		Reservoir Size	Pump Output	Relief Valve psi (bar)	Low Level Switch
Included	Not Included				
Grease Packages					
–	563365	3 lb	Fixed	2,000 (138)	563272
563360	–	5 lb	Fixed	1,750 (121)	563322
563364	563363	6 lb	Fixed	2,350 (162)	
–	563370	6 lb	Adjustable	2,000 (138)	
–	24N776	12 lb	Fixed	2,350 (162)	
EZ Greaser / Grease Jockey Trailer Pump Packages For fluid grease only (NLGI #0-000)					
–	563368	4 lb	Adjustable	Not Included	–
-	563372	10 lb	Adjustable	Not Included	–

E-Series Bare Pumps

Part Number	Pump Output	Pump Output Range per Stroke in^3 (cm^3)	Relief Valve psi (bar)	Repair Kit
563358	Fixed	0.030 (0.492)	1,750 (121)	563909
563367	Adjustable	0.010 to 0.030 (0.164 to 0.492)	Not Included	563945

Air Solenoid Valves

150 psi maximum pressure, 1/4 in NPT female inlet

Voltage		Air Outlet	Valve Ways	Air Motor Action
24 VDC	120 VAC			
563332	563315	1/4 in NPSF male banjo	3-way	Single

To create your own custom pump package, combine either of the pump options above with any Modu-Flo reservoir listed on page 69.

Durable In-Line Pumps

MSA Series pumps are used together with main lubrication supply lines where the pump is fed directly from a bulk header system. MSA pumps can also be piped to Modu-Flo reservoirs. Use the MSA-10 for standard applications and the MSA-100 when larger outputs are required.

MSA-10

Solid steel pump body. Match honed piston fit.

Adjustable Output

Permits a broad range of applications.

Single- Or Double-Acting Air Cylinder

Provides wide choice of controls.

High-Pressure Relief Protection

Reduces chance of damage to the lube system in case of blockage. Included Yellow (1,450 psi) disk can be replaced with higher pressure disk for use in grease applications.

MSA-100

Cast aluminum body provides a rugged design without extra weight. Match honed piston fit.

Technical Specifications

	MSA-10	MSA-100
Material	Steel	Aluminum
Output per Stroke	0.04 to .120 in^3 (0.66 to 1.97 cm^3)	0.4 to 0.8 in^3 (6.57 to 13.11 cm^3)
Maximum Pump Strokes per Minute	Single-Acting – 15 Double-Acting – 60	Single-Acting – 15 Double-Acting – 30
Maximum Output Pressure	3,000 psi (207 bar)	
Air Pressure	40 to 150 psi (2.8 to 10.3 bar)	60 to 140 psi (4.1 to 9.7 bar)
Maximum Lube Inlet Pressure	500 psi (34 bar)	
Pump Ratio	25:1	
Instruction Manual	L12850	L12851

Typical Fluids

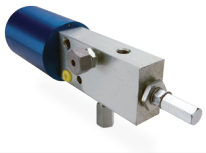
- Oil and grease up to NLGI #2

Typical Applications

- Presses and other in-plant machines and processing equipment

Ordering Information

MSA Pumps

	Part Number	Description
	562854	MSA-10 Air Operated Pump
	562855	MSA-100 Air Operated Pump

MSA Kits

	Part Number	Description
	563912	MSA-10 Repair Parts Kit
	563913	MSA-100 Repair Parts Kit

Restrictor Valve

	Part Number	Description
	563072	Slows the power stroke of the pump while allowing full speed on the return stroke.

Relief Assembly Replacement Parts

Part Number	Description
557402	Blowout disk retaining nut with 1/4 in orifice
560701	Relief adapter body for MSA-10 pump
15R130	Relief adapter body for MSA-100 pump
557433	Yellow blowout disk, 1,450 psi (100 bar)
563962	Yellow blowout disk, 6 pack

See page 70 for full list of blowout disk options.

Simply Legendary

Dyna-Star pump modules offer positive displacement lubrication for multiple lubrication points. At the heart of this system is the Graco Fireball pump, the most durable pump in the industry. The entire system consists of a pump module, injectors and system controls. The pump module provides the system inherent pressurization and venting cycles to actuate and reset the injectors.

Reciprocating Air Motor

Continuously pumps grease as long as air is supplied to it, until it stalls against system pressure.

Strong 12-Gauge Steel Reservoir

Available in 60 lb (27 kg) or 90 lb (41 kg) reservoirs. Matches common bolt pattern.

Fire-Ball 300 50:1 Grease Pump

Provides the lubricant pressure needed to activate the automatic lubrication system.

Vent Valve

Opens a return path to the reservoir between lubrication cycles, allowing the injectors to reset. Includes 4,000 psi (276 bar) relief valve.

Technical Specifications

Maximum Output Flow Rate	54 in^3/min (885 cm^3) at 60 PSI (4.1 bar) air
Maximum Recommended Pump Speed	76 cycles/min at 0.22 gpm (0.82 liter/min)
Ratio	60:1 theoretical, 50:1 common
Air pressure Operating Range	50 to 60 PSI (3.4 to 4.1 bar)
Air Inlet	3/8 in NPT on pump, 1/4 in NPT on module
Maximum Fluid Output Pressure	8,400 psi (580 bar) bare pump, 3,500 psi (241 bar) with vent valve
Fluid Output Thread	1/4 in NPT on pump, 1/2 in NPSM female on module
Instruction Manual	308955 / 308883

Typical Fluids

- Oil and grease up to NLGI #2

Typical Applications

- Energy, Infrastructure and Heavy Equipment
- In-Plant Manufacturing

Pneumatic Dyna-Star® Fire-Ball® 300 50:1

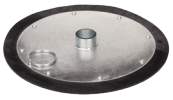
Ordering Information

Pneumatic Dyna-Star Injector System Modules

Modules ship fully assembled, complete with vent valve and hydraulic fluid controls.
See below for follower plate options (AFSO is not compatible with follower plate).

Part Number	Reservoir Size	Replacement Reservoir	Replacement Pump	Pump Repair Kits	
				Air Motor	Pump Lower
25D096	60 lb (27 kg)	247575	239877	206728	241623
241573	90 lb (41 kg)	241486	239887		

Module Accessories

	Part Number	Description
	215407	Air Solenoid – 150 PSI (10 bar) max, 24 VDC or 120 VAC , 1/4 in NPT with 3/8 in NPT adaptors.
Image Coming Soon	114488	Air Solenoid – 150 PSI (10 bar) max, 24 VDC only, 3/8 in NPT ports.
	109075	3/8 in NPT air regulator with gauge
	110150	FRL combo kit – includes air filter, regulator, pressure gauge, lubricator and connection fittings
	241485	Follower plate
	77X522	Low level switch kit – requires follower plate
	241572	Vent Valve Kit – included with packages 25D096 and 241573
	115122	Replacement Relief Valve – 4,000 psi (276 bar) relief pressure
	115124	Pressure switch – pressure adjustment visible in window
	24N181	Pressure switch – 1/4 in NPT(F) inlet, DIN connector (1 NO/1 NC), 7,250 psi (500 bar)

Pump Family	Typical Applications	Fluid Type	Maximum Output Pressure psi (bar)	Maximum Output Volume in^3 (cm^3)	Reservoir Capacity Options		Metering	Reference Page
					US	Metric – Liters		
Modu-Flo® 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing	Oil/grease up to NLGI #2	3,000 (207)	0.12 (1.97) per stroke	Oil – 5, 6, 12, 20, 24 or 40 pints Grease* – 3, 6 or 12 lbs	Oil – 2.4, 2.8, 5.5, 9, 11 or 19 Grease – 1.5, 3 or 6	SLP	78
Hydraulic Dyna-Star® 10:1 and 5:1 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing	Oil/grease up to NLGI #2	7,500 (517)	36 (590) per minute	60 or 90 lb reservoir	30 or 45 L reservoir	SPDV or SLP	79-82
					or standard barrel length options			

*See page 69 for note on legacy Trabon grease reservoir volumes and metric conversions.

SLP = Single Line Parallel (Injectors)

SPDV = Series Progressive Divider Valve

True Modularity

Wide choice of standard modular components helps you meet application requirements more exactly without the added cost of a custom system. A complete Modu-Flo modular pumping package (MPP) includes a pump, a baseplate manifold, a reservoir and a variety of optional accessories. For more details, refer to brochure L12000 on Graco.com.

Polycarbonate (Plastic) And Metal Reservoir Options (not shown)

For oil or for grease, a total of 16 options are available. (See page 67).

Baseplate Manifold Kit (not shown)

- All plumbing connects to the manifold.
- Options for use with NPT or BSP fittings. (See page 175).
- Flapper valve inside works with modular pump design to allow removal and replacement of pump without draining lubricant from the reservoir.

563305

Modular Pump Design

With options for pneumatic (page 67) or hydraulic power (page 75), a total of six models are available. Hydraulic pumps all utilize double-acting hydraulic motors (not reciprocating).

Adjustable Output

Permits a broad range of applications.

Technical Specifications	
Output per Stroke	0.010 in^3 to 0.120 in^3 (0.164 cm^3 to 1.966 cm^3)
Hydraulic Motor Action	Double
Lube Piston Action	Single
Instruction Manual	332042

Typical Fluids

- Oil and grease up to NLGI #2

Typical Applications

- In-plant
- Presses
- Mixers

Ordering Information

Modu-Flo Pumps

Pump Part Number	Model	Pump Ratio	Pump Output Range per Stroke in^3 (cm^3)	Maximum Cycles per Minute		Input Hydraulic Pressure Range PSI (bar)		Maximum Fluid Outlet Pressure PSI (bar)	Repair Kit Part Number
				Oil	Grease	Minimum	Maximum		
563305	HLJ-5M	5.5:1	0.010 to 0.030 (0.164 to 0.492)	60	10	200 (13.8)	2,000 (138)	3,000 (207)	563905
563307	HLJ-25M		0.030 to 0.120 (0.492 to 1.966)	50					563906
563345	HLJ-5X	2.2:1	0.030 to 0.092 (0.492 to 1.508)	50			3,000 (207)		563925

Complete your Modu-Flo pump package with a Baseplate Manifold, Reservoir, and Accessories from the Pneumatic Modu-Flo Pump Section on page 67, or refer to bulletin L12000. When replacing an older pump such as HLJ-5A, HLJ-25A, etc., refer to the "Remote" Pump Manifold options to allow wall-mounting of the new pump, instead of mounting directly to bottom of a reservoir.

Field Proven, Energy Efficient

Hydraulic Dyna-Star pumps provide reliable, quiet, ice-free performance at maximum pressure and low flow rates and are up to three times more energy efficient than comparable compressed-air systems.

High-Efficiency Motor Design

Uses less hydraulic oil.

10:1 Ratio For Lower Hydraulic Pressure

Full pressure performance by safely tapping low pressure hydraulics.

Quiet Hydraulic Motor

No need for add-on mufflers.

Self-Lubricating Vertical Design

For long life and reliable operation in high vibration environments.

Multiple Pump And Accessory Options

For use with refinery drum and custom tank installations.

Technical Specifications

Maximum Hydraulic Fluid Input Volume	3 gpm (11 lpm)
Maximum Output Flow Rate	36 in^3 (0.59 l)/min
Maximum Cycles per Minute	60
Hydraulic Supply Inlet	3/4 in -16 JIC-8 (37° flare) male
Hydraulic Return Outlet	3/4 in NPT
Incoming Hydraulic Fluid Maximum Temperature	200ºF (93ºC)
Maximum Fluid Output Pressure	7,500 psi (517 bar)*
Maximum Hydraulic Input Pressure	600 psi (41 bar)
Fluid Outlet Thread	1/2 in NPT female
Instruction Manual	312350

*When used in an injector system, the vent valve limits maximum to 3,500 psi (241 bar).

Typical Fluids

- Oil and grease up to NLGI #2

Typical Applications

- Energy, Infrastructure and Heavy Equipment
- In-Plant Manufacturing

Ordering Information

Hydraulic Dyna-Star Pumps

Part Number	Description	Container Size	Overall Pump Length	Pump Lower Length
247540	Dyna-Star 10:1, 60 lb (27 kg) pump*	60 lb (27 kg)*	33.9 in (861 mm)	19.15 in (501 mm)
247443	Dyna-Star 10:1, 90/120 lb (41/55 kg) pump*	90/120 lb (41/55 kg)*	41.5 in (1,054 mm)	26.75 in (679 mm)
247450	Dyna-Star 10:1, 400 lb (180 kg) pump	400 lb (180 kg)	48.5 in (1,232 mm)	33.75 in (857 mm)

*Used in Graco 60 or 90 lb (27 or 41 kg) reservoirs.

Hydraulic Pump Injector System Modules

Modules ship fully assembled, complete with vent valve and hydraulic fluid controls. See below for follower plate options (AFSO is not compatible with follower plate).

Part Number		Pump Ratio	Low Level 17L372 (M12)	Auto-Fill Shut Off (AFSO)	Instruction Manual
Reservoir Size					
60 lb (27 kg)	90 lb (41 kg)				
–	243159*	5:1*			309098
247574	247444	10:1			312349
24Y408	24Y407			•	3A3429
25C948	25C949		•	•	

*5:1 pump is normally used to replace existing pumps with the same or similar ratio. For new applications use 10:1 pumps.

Hydraulic Pump Packages

Packages are kits with popular components included in one part number. Some assembly required.

	Series Progressive System or Bulk Fluid Dispensing		Injector Pump Kits, without Reservoir – Mount to existing reservoir or refinery drum				
Module Part Number	247706	247707	26C537	26C538	26C539	26C144	26A325
Container Size	60 lb (27 kg)	90 lb (41 kg)	60 lb (27 kg)	90/120 lb (41/55 kg)	400 lb (180 kg)	120 lb (55 kg)	400 lb (180 kg)
Pump Ratio	10:1		10:1			10:1	
Bare Pump Part Number	247540	247443	247540	247443	247450	247443	247450
Reservoir Assembly	247575	241486	–			–	
Hydraulic Control Assembly	247538	247538	247538	247538	247538	247538	247538
Follower Plate	–		–			247701	247702
Drum Cover	–		–			247703	247704
Low Level Switch Kit	–		–				77X522
Manual Pressure Relief Kit	247902	247902	–			–	
Pump Mounting Gasket	–		15M442	15M442	15M442	15M442	15M442
Vent Valve Kit	–		243170	243170	243170	243170	243170
Manual	312349		–			–	

Ordering Information

Reservoir Assemblies

Part Number		
Container Size		
60 lb (27 kg)	90 lb (41 kg)	Description
247575	241486	Standard Dyna-Star Reservoir complete with cover
25C950	25C951	Bare Dyna-Star Reservoir with side port for Low Level Switch, no cover. Use to add LL sensor to an existing module. Sensor 17L372 sold separately.

Follower Plates and Drum Covers for 10:1 Pumps

Part Number			
Container Size			
60/90 lb* Graco reservoir	120 lb refinery drum	400 lb refinery drum	Description
247700	247701	247702	Follower Plate
–	247703	247704	Drum Cover

*Follower plate can not be used with AFSO option.

Accessories and Replacement Parts

	Part Number	Description
	15M442	Pump mounting gasket
Image Coming Soon	243170	Vent valve kit
	247538	Hydraulic control module
	243191	Follower plate for 60 or 90 lb reservoir with 5:1 pump
	244023	Level indicator for 60 lb and 90 lb modules, cover-mount, with flying leads*
	77X522	Level indicator for 60 lb and 90 lb modules, cover-mount, with DIN connector*
Image Coming Soon	17L372	Low level switch for AFSO modules that include side port for switch
	115124	Pressure switch – pressure adjustment visible in window
	24N181	Pressure switch, 1/4 in NPT(F) inlet, DIN connector (1 NO/1 NC), 7,250 psi (500 bar)
	247902	Manual pressure relief (dump valve) kit for 247706 and 247707

*Cover-mount low level switches require follower plate (sold separately). Not Compatible with AFSO option.

High-Pressure 10:1 Hydraulic Dyna-Star®

10,000 psi (689 bar) Hydraulic Lubrication Pump for 120 lb (55 kg) Kegs

High Pressure Pump and Reciprocator used for dispensing grease in wireline applications for oil well services.

Dyna-Star® Hydraulic Reciprocator

Time proven, Graco quality.

Self-Lubricating Vertical Design

For long life and reliable operation in high-vibration environments.

Outlet Port

13/16-16 UNC thread in pump body, ships with 1/2 NPT adapter included.

Pump Shovel

Helps feed grease into the pump.

Pump Lower

Specially designed for the high pressure required for wireline lubrication.

Technical Specifications

Maximum Hydraulic Fluid Input Volume	3 gpm (11 lpm)
Maximum Output Flow Rate	1.1 lb/min (0.5 kg/min)
Maximum Cycles per Minute	60
Hydraulic Supply Inlet	3/4 in -16 JIC-8 (37° flare) male
Hydraulic Return Outlet	3/4 in NPT
Incoming Hydraulic Fluid Maximum Temperature	200ºF (93ºC)
Container Size	120 lb (55 kg)
Overall Pump Length	41.5 in (1054 mm)
Pump Lower Length	26.75 in (679 mm)
Maximum Fluid Output Pressure	10,000 PSI (689 Bar)
Maximum Hydraulic Input Pressure	900 PSI (62 Bar)
Fluid Outlet Thread	13/16 in -16 UNC female
Instruction Manual	3A3005

Typical Fluids

- Oil and grease up to NLGI #2

Typical Applications

- Wireline lubrication
- Wellhead gate valve and plug valve greasing

Ordering Information

High-Pressure Hydraulic Dyna-Star® Pump

Part Number	Description
25A189	Dyna-Star 10:1, 120 lb (55 kg) pump

Mechanical Pump Selection Guide

Pump Family	Typical Applications	Fluid Type	Maximum Output Pressure psi (bar)	Maximum Output Volume per Stroke in^3 (cm^3)	Reservoir Capacity Options		Metering	Reference Page
					US	Metric - Liters		
Lube Master® 	• In-Plant Manufacturing	Oil/grease up to NLGI #2	5,000 (345)	Direct Drive – 8.6 (143) Clutch Drive – 1.25 (20) per minute	Oil – 12 or 20 pint Grease* – 6 or 12 lb	Oil – 5.5 or 9 Grease – 3 or 6	SPDV	39-42
Manzel® MBL® 	• Energy, Infrastructure and Heavy Equipment	Oil – 80 to 5,000 SUS	7,500 (517)	2.7 (44) per element, per minute, adjustable Up to 24 pump elements	4, 6 ,8, 12, 16, 24, 32 or 40 pint	1.9, 2.8, 3.8, 5.7, 7.6, 11, 15 or 19	SPDV or PtP	87-90

*See page 79 for note on grease reservoir volumes and the metric weight conversions.

SPDV = Series Progressive Divider Valve

PtP = Pump to Point

Lube Master® Ratchet Drive Pump

Rugged and Reliable

Lubricates only while the machine is running! The Lube Master Clutch Drive is a rugged, reliable pump powered mechanically by the machine using the lubrication. This pump is ideal for applications where lubrication cycles vary and are unpredictable.

Low Level Switch Options

Available for both oil and grease reservoirs.

Reservoir Options

For oil or grease, 12 or 20 pint/pound, plastic or metal.

Adjustable Pump Displacement

Set the pump output with the turn of a wrench.

Direct or Clutch Drive

Direct Drive provides shaft to receive a pulley or sprocket;
Clutch Drive functions like a ratchet arm to be driven linearly.

Technical Specifications

Output Per Pump Stroke	0.010 to 0.050 in^3 (0.164 to 0.819 cm^3)
Maximum Output Pressure	5,000 psi (340 bar)
Maximum Torque at Rated Maximum Pressure	27 ft lbs (36.6 N-m)
Reservoir Size	Oil – 12 pint or 20 pint / Grease – 12 lb or 20 lb
Reservoir Material	Plastic (polycarbonate) or metal, cylindrical
Instruction Manual	3A2781

Typical Fluids

- Oil and Grease up to NLGI #2

Typical Applications

- In-plant – presses, Banbury mixers, rubber mills, upsetters, heading machines, crane trolleys, chains, conveyors

Direct Drive

Pump Output Ranges	RPM at Drive shaft	Pump Strokes per Minute	Output per Minute in^3 (cm^3)	
			Minimum	Maximum
Minimum	1	1	0.01 (1.64)	0.05 (8.20)
Maximum	175	175	1.75 (28.7)	8.75 (143.3)

Clutch Drive

Pump Output Ranges	Degree of Throw	Impulses per Minute	Pump Strokes per Hour	Output per Hour in^3 (cm^3)	
				Minimum	Maximum
Minimum	12	5	10	0.1 (1.64)	0.5 (8.19)
Maximum	60	150	1,500	15 (246)	75 (1,229)

Ordering Information

Popular Lube Master Assembly Models

Pressure Gauge 557713 is included with every LMxxxx assembly.

With Low Level Switch	Without Low Level Switch	Reservoir		Drive Type
		Material	Capacity	
Grease Packages				
LM5114	LM5111	Plastic	12 pound	Direct drive, shaft only
LM5214	LM5211			Clutch drive with ratchet arm
LM6214	LM6211		20 pound	
LM7214	LM7211	Metal	12 pound	
LM8114	LM8111		20 pound	Direct drive, shaft only
LM8214	LM8211			Clutch drive with ratchet arm
Oil Packages				
LM1115	LM1111	Plastic	12 pint	Direct drive, shaft only
LM1215	LM1211			Clutch drive with ratchet arm
LM4215	LM4211	Metal	20 pint	

See page 40-42 for a complete Lube Master ordering menu.

Accessories

Pressure Indicators

	Grease – Aluminum-colored disc, 2,350 PSI (162 bar)	Oil – Yellow-colored disc, 1,450 PSI (100 bar)	Description
	563184	563179	Standard blowout fitting
	563385	563384	High-pressure blowout switch kit*
	563965	563962	Package of 6 blowout discs

*Each kit requires approximately 3 ft of 1/4 in OD copper tubing, not included.

Low Level Switches – Grease

	Part Number	Description
	563322	Standard SPDT, 15 amp switch kit, mounts to top of all grease reservoirs
	564318	High/low level switch kit, for metal grease reservoirs only
	564377	Explosion-proof low-level switch for grease reservoirs. (Class I, Group C and D; Class II, Group E, F and G)

Lube Master® Ratchet Drive Pump

Ordering Information

Low Level Switches – Oil

	12 Pint	20 Pint	Description
	563015	563016	SPST, 10 watt, most popular option
	563316	563317	SPDT, 15 amp, for use with heavy or stringy oils

Spare Parts

	Part Number	Description
	563383	Replacement clutch drive with ratchet arm

See pages 39-42 for accessories, repair kits and other spare parts.

Force Feed Box Lubricators

The Manzel® Modular Box Lubricator (MBL) provides true modularity that permits customizing a pump-to-point lubrication systems from off-shelf components. MBL pumping packages can also be used with MHH divider valves in a series progressive system. Each moving part is lubricated at all times by the fluid in the reservoir. This and the wide range of options, high discharge pressure and rugged construction make the MBL ideally suited for a wide variety of industries and applications.

GBL 7500 Pumps

Modern design that has become the industry standard. See page 55 for pump part numbers.

Suction Pumps Installed

Use ordering menu on page 55 to specify pumps to be installed. Gravity and pressure feed pumps are sold separately for field installation.

Modular Drive

External drive assemblies available as replacement parts.

Heater Port

Integrated 1 in NPT port makes optional electric heater installation simple.

Heavy Steel Reservoirs

Eight reservoir capacities are available to hold up to 40 pints and 24 pumps.

Technical Specifications

Maximum Pressure	7,500 psi (517 bar)
Operating Temperature	-20ºF to 140ºF (-29ºC to 60ºC)
Reservoir Size	See the following pages
Maximum Run Time	Continuous
Output per Element/Min	0.7, 1.2 or 2.7 in^3 (11.45, 19.65 or 44.25 cm^3)
Certifications/Standards	ATEX (depending on configuration)
Instruction Manual	3A2100

Typical Fluids

- Mineral oil base or synthetics
- 80 to 5,000 SUS

Typical Applications

- Compressors – petrochemical, refineries, gas transmission and more
- Edgers, planers and band saws
- Rubber mixers
- Cannery lid presses

Manzel® MBL Pump/Reservoir Combinations Without Pumps

Ordering Information

Direct Drives

1:1 ratio means the camshaft turns at the same speed as the drive shaft. Maximum input speed 50 RPM.

	Reservoir Size							
	4 pint (1.9 L), 2 feed	6 pint (2.8 L), 3 feed	8 pint (3.8 L), 5 feed	12 pint (5.7 L), 8 feed	16 pint (7.6 L), 12 feed	24 pint (11 L), 16 feed	32 pint (15 L), 20 feed	40 pint (19 L), 24 feed
Right Hand End	MBA0AA	MBB0AA	MBC0AA	MBD0AA	MBE0AA	MBF0AA	MBG0AA	MBH0AA
Left Hand End	MBA0AE	MBB0AE	MBC0AE	MBD0AE	MBE0AE	MBF0AE	MBG0AE	MBH0AE
Replacement Camshaft	564173	564174	564178	564182	560387	560388	560389	560390

MBL Direct Drive With Thru Shaft

Cam shaft protrudes from both right and left hand end of reservoir. Each end includes a #5 woodruff keyway on 5/8 in (15.9 mm) diameter shaft. Typically used when a pump-to-point system requires multiple oils/lubricants. As with other MBL assemblies, each pump station includes a single lobe cam.

	Reservoir Size			
	12 pint (5.7 L), 8 feed	16 pint (7.6 L), 12 feed	24 pint (11 L), 16 feed	32 pint (15 L), 20 feed
Reservoir and Shaft Combo	26A159	564290	25N624	26A172
Replacement Camshaft	561371	561370	560392	17M153

Ratchet Arm Drives

Driven by mechanical power via the ratchet arm*.

	Reservoir Size							
	4 pint (1.9 L), 2 feed	6 pint (2.8 L), 3 feed	8 pint (3.8 L), 5 feed	12 pint (5.7 L), 8 feed	16 pint (7.6 L), 12 feed	24 pint (11 L), 16 feed	32 pint (15 L), 20 feed	40 pint (19 L), 24 feed
Right Hand End	MBA0AB	MBB0AB	MBC0AB	MBD0AB	MBE0AB	MBF0AB	MBG0AB	MBH0AB
Left Hand End	MBA0AF	MBB0AF	MBC0AF	MBD0AF	MBE0AF	MBF0AF	MBG0AF	MBH0AF
Replacement Camshaft	564166	564167	564170	560381	564179	560384	564186	564196

*Ratchet arm 563005 sold separately.

Rotary Ratchet Drives

Maximum input speed 800 RPM.

		Reservoir Size		
	Drive Ratio	4 pint (1.9 L), 2 feed	6 pint (2.8 L), 3 feed	8 pint (3.8 L), 5 feed
Right Hand End	37.5:1	MBA0AC	MBB0AC	MBC0AC
Left Hand End		MBA0AG	MBB0AG	MBC0AG
Right Hand End	75:1	MBA0AD	MBB0AD	MBC0AD
Left Hand End		MBA0AH	MBB0AH	MBC0AH
Replacement Camshaft		564168	564171	564172

Ordering Information

End Rotary Drives

Offered for Right Hand End only.

	Reservoir Size				
Drive Ratio	4 pint (1.9 L), 2 feed	6 pint (2.8 L), 3 feed	8 pint (3.8 L), 5 feed	12 pint (5.7 L), 8 feed	16 pint (7.6 L), 12 feed
25:1	MBA0AJ	MBB0AJ	MBC0AJ	MBD0AJ	MBE0AJ
50:1	MBA0AK	MBB0AK	MBC0AK	MBD0AK	MBE0AK
100:1	MBA0AL	MBB0AL	MBC0AL	MBD0AL	MBE0AL
200:1	MBA0AM	MBB0AM	MBC0AM	MBD0AM	MBE0AM
400:1	MBA0AN	MBB0AN	MBC0AN	MBD0AN	MBE0AN
Replacement Camshaft	564166	564167	564170	560381	564179

90 Degree Drives

Right Hand End unless noted. Orientation can be rotated in the field to top, bottom, front or back.

	Reservoir Size				
Drive Ratio	4 pint (1.9 L), 2 feed	6 pint (2.8 L), 3 feed	8 pint (3.8 L), 5 feed	12 pint (5.7 L), 8 feed	16 pint (7.6 L), 12 feed
25:1	MBA0AP	MBB0AP	MBC0AP	MBD0AP	MBE0AP
50:1	MBA0AR	MBB0AR	MBC0AR	MBD0AR	MBE0AR
188:1	MBA0AS	MBB0AS	MBC0AS	–	–
375:1	MBA0AT	MBB0AT	MBC0AT	–	–
188:1 LHE*	MBA0AZ	MBB0AZ	MBC0AZ	–	–
Replacement Camshaft for drives P and R	564169	564175	564176	564183	564184
Replacement Camshaft for drives S, T and Z	564168	564171	564172	–	–

*Drive "Z" is mounted on the Left Hand End of the reservoir.

Accessories

Part Number	Description
563005	Ratchet arm required for drives "B" and "F"
559037	Gravity Supply Auto-Fill Valve, for use with overhead day tank (refer to Modu-Flo oil tanks for options)
564015	Basic Low Level Switch – Single-pole, single-throw. 10 watts @ 120 VAC.
563013	Explosion Proof Low Level Switch – Single-pole, double-throw. Class 1 Group C and D requirements. Class 2 Group E, F and G requirements.
25T989	Cam replacement kit – includes cam, key, and set screw for one pump station. *For replacement cam shafts, see tables above.*

See page 183 for a complete MBL ordering menu and more accessories.

Manzel® MB Specialty Box Lubricators

Long Life and Durability

Leak-proof welded steel reservoir and solid steel, hardened cams. Double-supported cam shafts and gear drives to eliminate cantilevered assemblies and high load capacity needle bearings and ball bearings.

MB118 Box Lubricators

- "Model 55" 118:1 reduction drive
- 4 or 6 pump stations max, use with any GBL 7500 pumps
- Maximum input speed 1,800 rpm
- Manual number 3A3006

MB60 Box Lubricators

- Rear 60:1 reduction drive
- Perfect for bolt-on gas compressor box lubrication solutions
- 2 or 4 pump stations max, use with gravity-fed or pressure-fed GBL 7500 pumps
- Maximum input speed 1,800 rpm
- Manual number 3A2953, 334210

24W636

24V068

Ordering Information

MB118 Box Lubricators

4 Pint (1.9 L), 4 Pump Capacity

For triplex mud pumps

Drive End		GBL 7500 Pumps*		Maximum Output Pressure
Left Hand	Right Hand	Quantity	Size	
25R513	24W633	0	N/A	N/A
25R557	24W636	3	1/4 in	6,000 psi (414 bar)

6 Pint (2.8 L), 6 Pump Capacity

For quintuplex mud pumps

Right Hand Drive End	GBL 7500 Pumps*		Maximum Output Pressure
	Quantity	Size	
24W634	0	N/A	N/A
24W635	5	1/4 in	6,000 psi (414 bar)

MB60 Box Lubricators

2 Pint (0.95 L), 2 Pump Capacity

Left Rear Drive

Mount Orientation		GBL 7500 Pumps*	
Floor	Wall	Quantity	Size
24V068	25A071	0	N/A

6 Pint (2.8 L), 4 Pump Capacity

Center Rear Drive

Drive Shaft		GBL 7500 Pumps*	
Keyway	Tang	Quantity	Size
24U750	24N724	0	N/A

*See page 186 for GBL 7500 part numbers and more tech specs, including metric conversions.

Pump Family	Typical Applications	Fluid Type	Maximum Output Pressure psi (bar)	Maximum Output Volume per Stroke in^3 (cm^3)	Reservoir Capacity Options		Metering	Reference Page
					US	Metric - Liters		
PH Pump 	• In-Plant Manufacturing	Oil/grease up to NLGI #2	3,000 (207)	0.15 (2.5)	Oil – 5, 6, 12, 20, 24 or 40 pint Grease* – 3, 6, or 12 lbs	Oil – 2.4, 2.8, 5.5, 9, 11 or 19 Grease – 1.5, 3 or 6	SPDV	92-93
LubriSystem 	• In-Plant Manufacturing	Oil/grease up to NLGI #1	3,000 (207)	0.125 (2)	Oil – 5, 6, 12, 20, 24 or 40 pint Grease* – 3, 6, or 12 lbs	Oil – 2.4, 2.8, 5.5, 9, 11 or 19 Grease – 1.5, 3 or 6	SLP	94

*See page 69 for note on legacy Trabon grease reservoir volumes and metric conversions.

SLP = Single Line Parallel (Injectors)

SPDV = Series Progressive Divider Valve

PH Pump

Versatile and Tough

Built with aluminum and steel components to meet the high standards of performance and quality you expect from Graco products. Available with a choice of standard clear plastic or metal Modu-Flo reservoirs for either oil or grease. Modular pump/reservoir design plus built-in features enable the PH Manual Pump to be customized for a wide range of applications.

Pump 563393 shown with 5 lb grease reservoir 562888.

Single-Acting Positive Displacement Pump Design

Minimizes the number of moving and wearing parts for extended pump life and reduced maintenance.

Built-In Outlet Check Valve

Prevents back pressure from damaging pump and minimizes chance for contaminants to get into the pump or the lube supply.

Pressure Relief Valve

Protects system components from over-pressure.

Built-In Volume Indicator

Provides easy verification that lubricant is being delivered to the system and that divider valves are completing lube cycles.

Technical Specifications

Pump Output	0.15 in^3 (2.46 cm^3) per full stroke
Maximum Operating Pressure	3,000 psi (207 bar)
High Pressure Protection Relief Valve	Set @ 2,500 psi (172 bar)
Force to Operate Handle	29 lb (13.14 kg) per 1,000 psi (69 bar) @ rated pressure
Instruction Manual	L12415

Typical Fluids

- Oil and Grease up to NLGI #2

Typical Applications

- In-plant
- Mobile Equipment with an installed EZ-Greaser centralized lubrication system.

Ordering Information

PH Pump

	Part Number	Description
	563393	PH Pump (without reservoir). Pressure gauge 557864 included.

Replacement Parts

	Part Number	Description
	557864	3,000 PSI / 210 bar dual scale pressure gauge
	563160	Pressure relief valve, 2,500 psi (172 bar)
	558906	Mating coupler for grease fill stud
	563924	PH Pump Repair Kit

Reservoir Options

To create your own custom pump package, combine pump 563393 with any of the Modu-Flo reservoirs on page 69.

Rugged Versatility

The LubriSystem hand pump package offers versatility for use in any application, large or small. Great for operation with Injectors or Piston Distributors, with oil or grease. Sturdy construction of aluminum and steel to provide years of service. Compact design can be used in areas where space is limited. Rugged bracket allows the pump package to be mounted in place in any application.

Pump 563580 shown with 12 lb grease reservoir 562884 and pressure gauge 557864

Modular Design

Combine the bare pump with any Modu-Flo reservoir from page 69 to build a custom package.

Polycarbonate Reservoir

High-strength, shatter-resistant material.

Built-in Vent Valve

Pull handle from half-stroke to full-stroke repeatedly to build pressure, then return the handle to vertical position to vent the pressure.

Pressure Gauge

Provides visual assurance to the operator that pressure is building to “fire” the injectors.

Technical Specifications

Pump Output	0.125 in^3 (2 cm^3) per full stroke
Output Pressure	3,000 psi (207 bar)
Force to Operate Handle	20 lb (9 kg) per 1,000 psi (69 bar)
Instruction Manual	L12100

Typical Fluids

- Oil and Grease up to NLGI #1

Typical Applications

- General machinery lubrication where power is limited or not available

Ordering Information

LubriSystem Pump

Part Number	Description
563580	Pump (without reservoir)

Accessories

Part Number	Description
557864	3,000 PSI / 210 bar dual scale pressure gauge

Reservoir Options

To create your own custom pump package, combine pump 563580 with any of the Modu-Flo reservoirs on page 69.

CONTROLLERS

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GRACO

Controller Selection Guide

Controller	Markets	Power Type	Inputs/Outputs	Modes	Reference Page
GLC X™ Controller and Auto Lube™ App 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing • Vehicle Service	9–30 VDC	4/2	Pressure / Cycle / Timer	98-99
GLC™ 4400 Series Controller 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing • Vehicle Service	9–30 VDC or 100–240 VAC	4/4	Pressure / Cycle / Timer	100
GLC™ 2200 Series Controller 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing • Vehicle Service	9–30 VDC	2/2	Pressure / Cycle / Timer	101-102
Grease Jockey® Timer 	• Energy, Infrastructure and Heavy Equipment • Vehicle Service	9–30 VDC	0/1	Timer	103-104
Solid State Timer 	• Energy, Infrastructure and Heavy Equipment • In-Plant Manufacturing	115/230 VAC	0/1	Timer	105

Feature	Standalone Controllers						Integrated Controllers			
	GLC-X	GLC 4400 AC (24B596)	GLC 4400 DC (24B591)	GLC 2200 (24N468)	Grease Jockey Timer (24W482)	Solid State Timer (562872)	G3 Max	G3 SP	G3 Pro	G-Mini Controller
Voltage	9-30 VDC	100-240 VAC	9-30 VDC	9-30 VDC	9-30 VDC	115/230 VAC	AC: 88-264 VAC 24V: 18-32 VDC 12V: 9-16 VDC			24V: 18-32 VDC 12V: 9-16 VDC
AC Frequency	–	50/60 Hz	–	–		50/60 Hz	AC: 47-63 (50/60) Hz – DC: N/A			–
Max amps (pump output)	10 A	10 A	5 A	7 A		3 A	Internal connection only			
Min On Time	10 secs	1 sec		1 sec		~ 12 secs	1 sec*	4 mins/cyc	1 sec*	1 min
Max On Time	100 hrs (99:59:59) (Timeout) Must be < Interval	100 hrs (99:59:59)		60 mins (59:59)		13 mins	30 mins	4 mins/cyc	30 mins	30 mins
Minimum Cycle Count	1	1 (optional)		1 (optional)	–	–	1 (optional)	1	–	1
Maximum Cycle Count	100	9,999		99	–	–	9,999	99	–	99
Pressure Switch Function	Configurable for both injectors and divider valves	Configurable for both injectors and divider valves		For injectors only	–	–	For injectors only	–	–	–
Min Off Time	1 min (Interval) Must be > Timeout	1 sec		1 min		30 secs	1 min	15 mins	1 min	15 min
Max Off Time	100 hrs (99:59) (Interval)	9,999 hrs		100 hrs (99:59)		32 hrs	9,999 hrs	9,999 hrs	9,999 hrs	99 hrs
Stroke/ Machine Count	Yes	Yes		–	–	–	Yes	–	–	–
Minimum Stroke/ Machine Count	1	1 (optional)		–	–	–	1 (optional)	–	–	–
Maximum Stroke/ Machine Count	10,000	9,999		–	–	–	9,999	–	–	–
Pulse mode for pump	Auto Lube App**	Yes		Yes	–	–	–	–	–	–
PreLube	Yes	Yes		–	–	–	Yes	–	Yes	Yes
PreLube Delay	Yes	Yes		–	–	–	Yes	–	Yes	Yes
Low Level Input	Yes	Yes		Yes	–	–	Internal connection only			
Low Level Output	Auto Lube App**	Yes		Yes	–	–	Yes	Yes	Yes	Yes
Alarm Output	Auto Lube App**	Yes		Yes	–	–	Yes	Yes	LL only	Yes
OK Signal	Auto Lube App**	Yes		–	–	–	–	–	–	–
Manual Run (onboard)	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Remote Manual Run	Auto Lube App**	Yes		–	–	–	Yes	Yes	Yes	Yes
Enclosure Rating (None are explosion proof)	IP69K	IP69K		IP54	IP54	N/A	IP69K	IP69K	IP69K	IP69K
Page Number	98	100		101-102	103-104	105	17	17	17	13-14

*Note: The 22 rpm motor needs 3 seconds to stroke the G3 or EGJ piston pump once. **These features are available via a Bluetooth connection to the Graco Auto Lube app on your smartphone or tablet.

GLC™ X Controller

Drive More Productivity

The powerful, easy-to-use Graco GLC X automatic lubrication controller captures more information so operators, technicians and managers can make faster, smarter decisions. Paired with the intuitive Auto Lube app, users can monitor system performance and make adjustments with incredible speed, precision and freedom from their personal mobile device.

Indoor/Outdoor Mountable (IP69K)

Designed to withstand all the elements, including high-pressure washes and inclement weather encountered at the harshest and dirtiest sites.

Easy-to-Read Screen

High-contrast screen features text codes, faults and other data clearly in any ambient light without distracting operators.

Real-Time System Reporting

Program and display a wide range of customizable functions – including lubrication intervals, pressure limits, lubricant levels and more.

Smart Device and Mobile App

With the Auto Lube™ app, monitor lubrication levels, configure settings, track history and share impo diagnostics.

Universal Compatibility

One controller for all your lubrication systems simplifies training and inventory.

Quick Technical Information Access

Easily scan this QR code for access to manuals, guides, video tutorials and more.

Scan Me!

Active Current Protection

9-30 VDC, 10 amp continuous power supply protects grease pumps from overcurrent and entire system from misfires, electrical shorts and surges.

Typical Applications

- Heavy construction
- Mining
- Other off-road mobile equipment

Technical Specifications

Inputs/Outputs	4/2
Power Source	9-30 VDC
Modes	Pressure / Cycle / Timer
Dimensions	3.62 in (92 mm) wide x 6.66 in (169 mm) high x 1.98 in (50 mm) deep
Operating Temperature Range	-22°F to 158°F (-30°C to 70°C)
Protection Grade	IP69K
Manual	3A7031

Ordering Information

Controllers

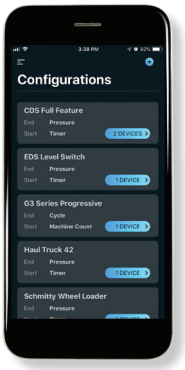
Part Number	Description
26A855	GLC X controller with 20 ft (6 m) cable
26A814	GLC X controller

Accessories

	Part Number	Description
	26A853	GLC X pump and sensor simulator
	26A882	GLC X wiring harness, 20 ft (6 m) with flying leads
	26A883	GLC X to Compact Dyna-Star®, 3 ft (1 m) cable
	26A888	14-pin mating connector kit
	17G007	Yellow iron mounting bracket with slide adjustment

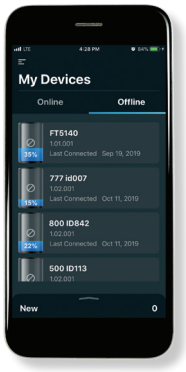
Productivity Leads to Profitability

Help your crews work faster and minimize downtime by simplifying their everyday lubrication tasks. Designed for today's modern personal mobile device user, the **Graco Auto Lube App** is intuitive and easy to learn for users in the field. They can view historical performance charts, access support and share information with a tap or swipe.



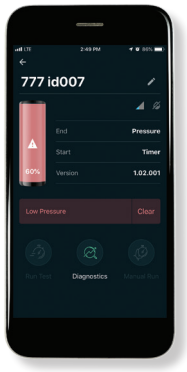
Control Lubrication Profile Configurations

- Customize profiles for equipment and end users
- Quickly and easily assign a Lube Profile Configuration with a GLCX Controller



Manage Devices

- Connect via Bluetooth to get instant status
- Review last-known state on any historical device



Communicate in Real Time

- See, control, check and clear alarms
- Complete a manual run
- Review and share system history

Workers simply need to be within Bluetooth range to perform maintenance tasks faster and easier – directly from their mobile devices.

Download the **Graco Auto Lube** app from Google Play or the App Store (iOS) and perform all controller functions from the convenience of a smartphone or tablet.

GLC™ 4400 Controller

Easily Manage Your Auto Lube System

Loaded with features and simple to operate. A must-have controller for ensuring critical machine lubrication.

Lubrication Indicator

Confirms lubrication cycle status

Pressure/Cycle Input

Indicates input from system sensors

System Power LED

On/off status at a glance

Alarm

System fault alerts

Multi-functional Buttons

For easy programming and system operation

Backlit and Heated LCD Display

Adjustable brightness and contrast for sunny or dark conditions, plus the heated display allows for use in cold weather

Simple Navigation

Arrow buttons for easy navigation of intuitive menus

Typical Applications

- Heavy construction
- Mining
- Off-road mobile
- In-plant machinery
- Food and beverage equipment
- Wind energy

Technical Specifications

Dimensions	4.7 in H x 4.8 in W x 3.6 in D (120 mm H x 122 mm W x 91 mm D)
Protection Grade	IP69K
Operating Temperature Range	-40°F to 145°F (-40°C to 63°C)
Net Weight	2 lbs (0.9 kg)
Standards	CE Marked
Instruction Manual	313855

Ordering Information

Controllers

Part Number	Description
24B591	GLC 4400 controller – 9-30 VDC
24B596	GLC 4400 controller – 100-240 VAC

Accessories

	Part Number	Description
	17J939	Machine/stroke count inductive sensor – 12-24 VDC. NPN normally open, M12 male, 5 mm sensing distance.
	557781	Machine/stroke count SPTD dry contact limit switch – AC/DC. Can be wired N.O. or N.C. Use with cable 124300 and cord grip 260067.

Remember to Order!

Proximity Switches

See page 168-169

Pressure Switches

See page 170

Compact and Versatile for Demanding On-Vehicle Auto Lube

You spend a lot on your equipment. The GLC 2200 controller helps protect components by alerting you to lube events, lube failures and low lubrication levels. You have peace of mind knowing your investment is being protected.

External Mounting Tabs

Easy to mount without having to open up the control box.

LED Indicators

LED lights let you know what your system is doing at a glance.

Digital Readout

Easy-to-read digital display makes it simple to program and monitor your equipment.

Visual and Audible Alarms

In-cab visual and audible alarms let the operator know your equipment needs attention. Or set up a remote alarm to alert service or maintenance staff.

Intuitive, Protected Control

Simple icon-based push buttons make programming easy. PIN code lockout protects settings.

Plug and Play

Color-coded wiring harness with flying leads and easy-to-follow wiring diagrams makes installations efficient.

Typical Applications

- Heavy construction
- Mining
- On-road mobile
- Off-road mobile

Technical Specifications

Dimensions	5.53 in H x 2.75 in W x 1.38 in D (140 mm H x 70 mm W x 35 mm D)
Protection Grade	IP54
Operating Temperature Range	-40°F to 176°F (-40°C to 80°C)
Standards	CE Marked
Power Source DC	9 to 30 VDC
Instruction Manual	3A2960

GLC™ 2200 Controller

Ordering Information

Controller

Part Number	Description
24N468	GLC 2200 controller

Accessories

	Part Number	Description
	24P314	GLC 2200 wiring harness – 5 feet (1.5 m) with flying leads
	24W981	GLC 2200 wiring harness – 10 feet (3 m) with flying leads
	24P686	10-pin mating connector kit
	24P687	10-pin mating connector kit – 5 pack
	16T671	Crimper for 10-pin connector kits
Image Coming Soon	24X606	Mounting bracket kit
	17G007	Yellow iron mounting bracket with slide adjustment

Remember to Order!

Proximity Switches
See page 168-169

Pressure Switches
See page 170

Drive More Productivity

Graco's Grease Jockey® Timer is a compact and digital solution for on-road mobile lubrication with simple programming and easy connections. Mount in the cab to complete your pneumatic Grease Jockey auto lube system.

External Mounting Tabs

Easy to mount without having to open up the control box.

LED Indicators

LED lights let you know what your system is doing at a glance.

Digital Readout

Easy-to-read digital display makes it simple to program and monitor your equipment.

Visual and Audible Alarms

In-cab visual and audible alarms let the operator know your equipment needs attention. Or set up a remote alarm to alert service or maintenance staff.

Intuitive, Protected Control

Simple icon-based push buttons make programming easy. PIN code lockout protects settings.

Plug and Play

Color-coded wiring harness with flying leads and easy-to-follow wiring diagrams makes installations efficient.

Typical Applications

- On-road mobile equipment

Technical Specifications

Power Source	9-30 VDC
Dimensions	5.53 in H x 2.75 in W x 1.38 in D (140 mm H x 70 mm W x 35 mm D)
Operating Temperature Range	-40°F to 176°F (-40°C to 80°C)
Protection Grade	IP54
Manual	334662

Grease Jockey® Timer

Ordering Information

Grease Jockey Timers

Part Number	Description
25A118	Grease Jockey Timer with 10 ft (3 m) cable
24W482	Grease Jockey Timer

Accessories

	Part Number	Description
	25C771	Grease Jockey Timer wiring harness – 10 ft (3 m) with flying leads
	24P686	10-pin mating connector kit
	24P687	10-pin mating connector kit – 5 pack
	16T671	Crimper for 10-pin connector kits
Image Coming Soon	24X606	Mounting bracket kit

Flexible and Dependable

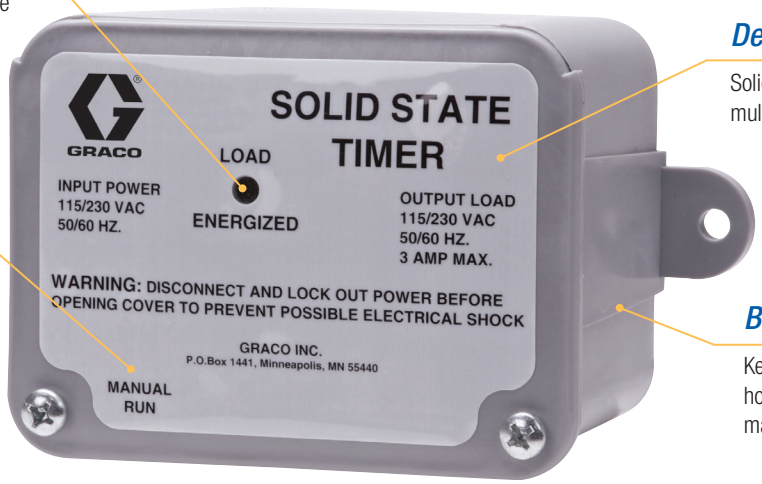
The Solid-State Timer from Graco is a compact on/off timer solution for AC power with easy to adjust dials. Features an internal terminal strip for simple wiring.

System Power LED

On/off status at a glance

Manual Run Button

Use to check system integrity as well as to simplify system filling and air purging



Dependable Performance

Solid-state technology combined with multiple-level protection

Built-In Memory

Keeps the timer “alive” for 1-1/2 hours during power failures and machine shutdown

Typical Applications

- In-plant machinery

Technical Specifications

Electrical	115/230 VAC; 50/60 hz; 3 ampere (max.)
Operating Temperature Range	0º to 131ºF (-18ºC to 55ºC)
Storage Temperature Range	-67º to 185ºF (-55ºC to 85ºC)
Enclosure	High-impact plastic
Component Technology	CE Marked
Cycle (Off Time) Range	
Range 1	0.5 to 30 minutes
Range 2	0.5 to 32 hours
On Time Range	0.2 to 13 minutes
Vibration	5g’s 50 Hz
Instruction Manual	312055

Ordering Information

Part Number	Description
562872	Solid State Timer
558031	Replacement timer board, without enclosure

Controller Accessories

Ordering Information

DT Connector Kits

	Part Number	Description
	26A889	12-pin DT female connector kit
	132571	12-pin DT male connector kit – with boot
	132572	2-pin DT male and female kit
	26A884	20 ft (6 m) cable, 12-pin DT male x flying leads, 2 x 16 AWG, 10 x 18 AWG. Use with connector kits 26A889 and 132571.

In-Line Fuse Kits

For up to 32 VDC

	Part Number	Description
Image Coming Soon	571039	Splash-proof holder with 4 amp blade fuse (557377 plus 124342)
Image Coming Soon	571040	Splash-proof holder with 7.5 amp blade fuse (557377 plus 124343)
Image Coming Soon	25C986	Weatherproof holder with 7.5 amp blade fuse (17P339 plus 124343)
Image Coming Soon	25C985	Weatherproof holder with 10 amp blade fuse (17P339 plus 131206)

Fuse Holders

For up to 32 VDC

	Part Number	Description
Image Coming Soon	131944	Add-a-circuit tap/holder, 32 VDC max, for ATM blade fuses up to 10 amps, 18 AWG wire lead.
Image Coming Soon	17D688	Add-a-circuit tap/holder, 32 VDC max, for ATO blade fuses up to 10 amps, 18 AWG wire lead.
Image Coming Soon	17P339	In-line holder with weatherproof cover, 32 VDC max, for ATO blade fuses up to 30 amps, 12 AWG wire leads.
Image Coming Soon	557377	In-line holder with splash-proof cover, 32 VDC max, for ATO blade fuses up to 20 amps, 16 AWG wire leads.

Ordering Information

Blade Fuses

For up to 32 VDC

	Part Number	Size	Amp Rating
Image Coming Soon	124342	ATO	4
	557264		5
	124343		7.5
	131206		10
	17P340		30
	131945	ATM	5

Nylon Cable Ties

Part Number	Description
17K063	Single-loop, 14.75 in (375 mm), 100 count package
563770	Single-loop, 11.5 in (292 mm), 100 count package
26C980	Double-loop (Figure-8), 15 in (381 mm), 10 count package

P-Clamps

Part Number	Clamp diameter	Mounting hole diameter
557943	5/16 in (7.9 mm)	9/32 in (7 mm)
557946	3/8 in (9.5 mm)	
557944	7/16 in (11.1 mm)	
557947	1/2 in (12.7 mm)	
557945	5/8 in (15.9 mm)	
128051	1 in (25.4 mm)	13/32 in (10 mm)

Ring Terminals

	Part Number	Crimp Connector Insulation (Nylon)	Compatible Wire Gauge (AWG)	Compatible Screw/ Stud Size
Image Coming Soon	104911	Yellow	10-12	#10
	102258	Blue	14-16	3/8 in
	106595	Red	16-22	3/8 in
	109025	Not insulated	18-22	#10
	131230		18	1/4 in
	131229		10	3/8 in

Notes

METERING

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GRACO

How to Design a Metering Device System

At the heart of every automatic lubrication system is a **Metering Device.**

People often ask why they can't just put a tee in the line to serve two points. The fluid in such a system would take the path of least resistance, leading it to only one of the points. Metering devices are used to prevent fluid from taking the path of least resistance.

As the "heart" of automatic lubrication, the system design process starts with metering. Once the metering system is designed, then an appropriate pump, and usually a controller can be selected to meet the needs of the system that has been designed. Many accessories are also specific to a certain metering device, so accessory selection also depends on the metering device(s) selected for the system.

Ultimately, the choice of which metering device to use for each application is often based on customer preference, but there are differences in functionality and sensor feedback which can influence the decision.

To learn more about system design, including calculating bearing requirements, determining lubrication ratios and component selection, contact your local Account Manager for Graco Lubrication Equipment.

If you are a Graco distributor, you can also ask about upcoming training classes. Attending one of our free classes in person also gives you the opportunity to tour our impressive factory in Anoka, Minnesota!

METERING

1

Select the Metering Device

Determined by your fluid type and usage requirements.

Metering Device Types

- ☐ **SLR – Single Line Resistive Orifice** – Not a true "metering" device; uses a helical path to create resistance on the oil flow.
- ☐ **SLP – Single Line Parallel** – Requires a pump with a Vent Valve to allow reset between cycles
- ☐ **SPDV – Series Progressive Divider Valve** – "Trabon" system that uses shifting pistons to measure and route the lubricant pumped through it. Offers the most monitoring options of any metering system.

PUMP

2

Select the Pump

Determined by your metering choice, fluid type and power source.

Pump Power Types

- ☐ AC
- ☐ DC
- ☐ Pneumatic
- ☐ Hydraulic
- ☐ Manual
- ☐ Mechanical

CONTROLLER

3

Select the Controller (if needed)

Determined by your usage needs and whether your selected pump offers an integrated controller.

ACCESSORIES

4

Add Accessories

Complete your metering system with high-quality Graco accessories including proximity and pressure switches, hoses, valves and fittings.

Name	Type	Typical Applications	Fluid Type	Maximum Pressure psi (bar)	Max. Temperature degrees F (C)	Reference Page
Thrif-T Luber	SLR	Ideal for small to medium-sized lathes or grinders	Oil – 100 SUS to 10,000 SUS	150 (10)	180 (82)	112
Injecto-Flo II	SLP	Medium-sized cutting machine tools	Oil – 32 to 2,000 cSt	650 (45)	140 (60)	113
GL-32		In-plant machinery, mobile equipment and anywhere adjustable lubrication output is desired	Grease up to NLGI #2	3,500 (241)	350 (176)	114
GL-43			Oil –10 weight minimum	1,000 (69)		114
GL-33			Grease up to NLGI #2	3,500 (241)		115
GL-42			Oil –10 weight minimum	1,000 (69)		115
GL-1			Grease up to NLGI #2	3,500 (241)		117-119
GL-1 Oil			Oil –10 weight minimum			117-119
GL-1 SST			Grease up to NLGI #2			117-119
GL-1 X			Grease up to NLGI #2	6,000 (414)		117-119
GL-1 XL			Grease up to NLGI #2			117-119
GL-11			Grease up to NLGI #2	3,500 (241)		120
CSP	SPDV	Industrial or mobile applications where space is at a premium	Oil and grease up to NLGI #2	5,076 (350)	212 (100)	121-122
MD			Oil and grease up to NLGI #2	3,000 (207)	212 (100)	123
MJ		Industrial applications where space is at a premium, and diverse output ratios are needed	Oil and grease up to NLGI #1	2,000 (138)	200 (93)	124-127
MSP		Mobile, industrial, food and beverage, wind and many more	Oil and grease up to NLGI #2	3,500 (241)	350 (176)	128-134
MSP SST		Food and beverage, off-shore rigs, marine lift cranes, locks and dams, pulp and paper production, chemical processing, oil and gas applications, and other harsh environments such as salty air or areas needing repetitive cleaning	Oil and grease up to NLGI #2	3,500 (241)	140 (60)	135-140
MHH		Compressors, industrial equipment, and where high-pressure lubrication is required	Synthetic or Mineral Oil	7,500 (517)	350 (176)	141-145
MX		Pulp and paper, steel mills, heavy- and high-volume industrial applications	Oil and grease up to NLGI #2	3,000 (207)	200 (93)	146-149
MXP			Oil and grease up to NLGI #2	3,000 (207)	350 (176)	150-154
MGO			Oil and grease up to NLGI #2	6,000 (414)	350 (176)	155-158
Air/Oil Manifold	SPDV	Steel mills, pulp and paper processing, high temperature and dirty environments		250 (17)	200 (93)	161

Metering Types Explained

SLR	Single Line Resistive Orifice – Not a true "metering" device; uses a helical path to create resistance on the oil flow.
SLP	Single Line Parallel – Requires a pump with a Vent Valve to allow reset between cycles
SPDV	Series Progressive Divider Valve – "Trabon" system that uses shifting pistons to measure and route the lubricant pumped through it. Offers the most monitoring options of any metering system.

Simple Solutions for Tight Spaces and Budgets

Thrif-T Luber orifice systems offer an efficient method of applying lubricant, resulting in less machine downtime, increased productivity and a safer work environment. Available in three types and ten flow ranges to meet lube requirements.

Compression Nut With Captured Ferrule Included

For fast, easy connection to 5/32 in (4 mm) OD tubing.

Quality Sintered Bronze Filters

Won't shred or clog like felt.

Typical Applications

- Simple time and flow metering system; ideal for small to medium-sized lathes or grinders

Typical Fluids

- Oil – 100 SUS to 10,000 SUS

Technical Specifications

Cracking Pressure	2 psi (0.1 bar)
Maximum Pressure	150 psi (10 bar)
Filter Rating	40 micron
Orifice Type A	Direct to bearing
Orifice Type B	Manifold
Orifice Type A	Direct to bearing or tee

Ordering Information

1/8 in NPT Male Bearing Fitting

Compression fitting for 5/32 in (4 mm) OD tubing. All three parts are required to make one complete fitting. May also be used inline to mate with standard 1/8 in NPT "female" fittings such as anchor blocks, tees, etc.

Image Coming Soon	558220	TLBF-00	Fitting Body with 1/8 in NPT male thread
	558189	TLCN-00	Compression Nut
	558188	TLCF-00	Compression Ferrule

Tube Clips

Zinc plated carbon steel clips for 5/32 in (4 mm) OD tubing.

Image Coming Soon	558156	TLTC-01	1-Tube
	558159	TLTC-04	4-Tubes

Other Accessories

Image Coming Soon	558190	TLIF-00	5/16 in-24 Inverted Compression Nut, used to attach tubing to manifold. Also requires ferrule 558188

Thrif-T Luber Resistive Orifices

	Part Number	Reference/Description
	Type A	Direct Bearing Mount
	564019	TLOA-0
	564020	TLOA-1
	564021	TLOA-2
	564022	TLOA-3
	564024	TLOA-5
	564025	TLOA-2/0
Image Coming Soon	Type B	Manifold Mount
	564044	TLOB-2/0
	564045	TLOB-3/0
	Type C	1/8 in NPTF mbe
	564034	TLOC-5

Compact Metering System with a Wide Range of Outputs

Ideal for medium-sized cutting machine tools.

Piston Distributor Style Single Line Meters

Known worldwide for fast, simple installation.

Metering Nipples

Can be changed to fine-tune your dispense volumes.

Typical Applications

- Compact metering system with a wide range of outputs; ideal for medium-sized cutting machine tools

Typical Fluids

- Oil – 32 to 2,000 cSt

Technical Specifications

	3400 Series	3500 Series	3900 Series
Oil/Fluid Grease	Oil	Oil	Oil
Reset Pressure	150 psi (10 bar)	150 psi (10 bar)	150 psi (10 bar)
Max. Operating Pressure	650 psi (45 bar)	650 psi (45 bar)	650 psi (45 bar)
Output Range	0.0006 to 0.009 in^3 (0.01 to 0.16 cm^3)	0.006 to 0.036 in^3 (0.1 to 0.6 cm^3)	0.012 to 0.09 in^3 (0.2 to 1.5 cm^3)
Metering Nipple Options	5	4	5
Cast Manifold Outlets	2, 3 or 5	2, 3 or 5	2 or 3

Ordering Information

3400 Series Single Point Piston Distributors – Oil

558306	0.01 cm^3 output, M8 x 1
558307	0.03 cm^3 output, M8 x 1
558308	0.06 cm^3 output, M8 x 1
558309	0.10 cm^3 output, M8 x 1
558310	0.16 cm^3 output, M8 x 1

3500 Series Single Point Piston Distributors – Oil

121658	0.10 cm^3 output, M10 x 1
121659	0.20 cm^3 output, M10 x 1
121660	0.40 cm^3 output, M10 x 1
121661	0.60 cm^3 output, M10 x 1

3900 Series Single Point Piston Distributors – Oil

121665	0.20 cm^3 output, M14 x 1.5
121668	1.00 cm^3 output, M14 x 1.5

3400 Cast Manifolds

122841	2 outlets, oil PD, complete with red plastic cover
122861	3 outlets, oil PD, complete with red plastic cover
122862	5 outlets, oil PD, complete with red plastic cover

3400 Metering Nipples

558311	0.03 cm^3 (#2)
558312	0.06 cm^3 (#3)
558313	0.10 cm^3 (#4)
558314	0.16 cm^3 (#5)

3500 Cast Manifolds

122866	2 outlets, oil PD, complete with red plastic cover
122868	3 outlets, oil PD, complete with red plastic cover
122869	5 outlets, oil PD, complete with red plastic cover

3500 Metering Nipples

558315	0.10 cm^3 (#4)
558316	0.20 cm^3 (#5)
558317	0.40 cm^3 (#6)
558318	0.60 cm^3 (#7)

3900 Cast Manifolds

122888	2 outlets, oil PD, complete with red plastic cover
122889	3 outlets, oil PD, complete with red plastic cover

3900 Metering Nipples

558319	0.20 cm^3 (#5)
558320	0.40 cm^3 (#6)
558321	0.60 cm^3 (#7)
558322	1.00 cm^3 (#8)
558323	1.50 cm^3 (#9)

GL-32™ and GL-43™ Injectors

Accurate, Reliable Lubrication for Every Lube Point on Your Machine

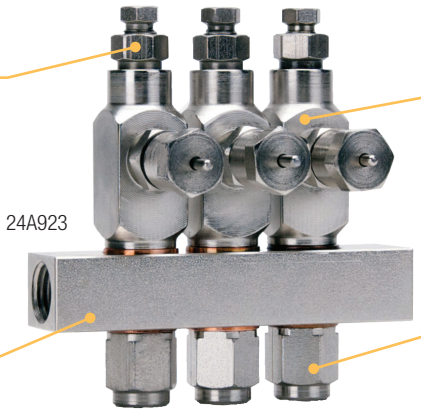
With its one piece design, Graco's GL grease injector systems are easy to design, fast to set up and allow you to add or subtract lube points without having to redesign your lubrication system. Easily handles up to NLGI #2 grease.

Adjustable Lubrication For Each Lube Point

Systems are easy to design, fast to set up and allow you to add or subtract lube points without having to redesign your lubrication system.

Large Selection of Outlet Types and Manifold Quantities

Convenient options for any application.



24A923

Versatile High Performance

Versions for oil or grease grades to NLGI #2.

High Temperature Applications – Up To 350ºF (176ºC)

All injectors come standard with fluoroelastomer seals.

Single Line Parallel

Typical Applications

- In-plant machinery, mobile equipment and anywhere adjustable lubrication output is desired

Typical Fluids

- Oil (10 weight minimum) and grease up to NLGI #2

Technical Specifications

	GL-32 Grease Injectors	GL-43 Oil Injectors
Maximum Operating Pressure	3,500 psi (241 bar)	1,000 psi (69 bar)
Minimum Operating Pressure	1,200 psi (83 bar)	750 psi (52 bar)
Typical Operating Pressure	1,500 psi (103 bar)	850 psi (59 bar)
Reset Pressure	200 psi (13.7 bar)	150 psi (10 bar)
Output Volume Per Cycle (adjustable)	0.001 to 0.008 in^3 (0.02 to 0.13 cm^3)	
Maximum Temperature Rating	350ºF (176ºC)	
Cycle Indication	Visual pin	
Instruction Manual	313798	

Ordering Information

Number of Injectors	Inlet Thread	Outlet Fitting	GL-32 Grease		GL-43 Oil
			Carbon Steel	304 Stainless	Carbon Steel
Stand-Alone	1/4 in NPT male	1/8 in OD tube compression	24A919*	24E389*	24E240*
1	1/4 in NPT female		24A921	24E391	24E241
2			24A922	24E392	24E242
3			24A923	24E393	24E243
4			24A924	24E394	24E244
6			25T775	–	–
Replacement	N/A		24A920*	24E390*	24E245*
Stand-Alone	1/4 in NPT male	6 mm OD tube compression	24F507	–	24F542
1	1/8 in BSPP female		24F509	24F551	24F544
2			24F510	24F552	24F545
3			24F511	24F553	24F546
4			24F512	24F554	24F548
Replacement	N/A		24F508*	24F550*	24F543*
Repair/Overhaul Kit	N/A	N/A	24B360	24F944	24F201

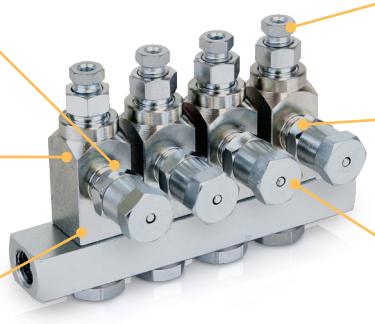
*Must be ordered in quantities of five.

See page XX for alternate and replacement outlet fittings, and more accessories.

Life-Long Seals
Graco-quality manifold and indicator seals deliver increased productivity.

Wide Range of Manifold Options
Manifolds designed to hold up to 15 injectors decreases installation time.

One-Piece Machined Body
Provides durability not seen in other brands.



Seven Output Fitting Sizes
Use your preferred size of tubing or hose.

Adjustable Injector Output
Adjust output volume on each injector for a custom fit in any application.

Visual Indicator Pin
Convenient front-mounted cycle pin indicator confirms that the injector is functioning properly.

Typical Applications
- In-plant machinery, mobile equipment and anywhere adjustable lubrication output is desired

Typical Fluids
- Oil (10 weight minimum) and grease up to NLGI #2

Technical Specifications

	GL-33 Grease Injectors	GL-42 Oil Injectors
Maximum Operating Pressure	3,500 psi (241 bar)	1,000 psi (69 bar)
Minimum Operating Pressure	1,200 psi (83 bar)	750 psi (52 bar)
Typical Operating Pressure	1,500 psi (103 bar)	850 psi (59 bar)
Reset Pressure	200 psi (13.7 bar)	150 psi (10 bar)
Output Volume Per Cycle (adjustable)	0.001 to 0.003 in^3 (0.02 to 0.05 cm^3)	
Maximum Temperature Rating	350ºF (176ºC)	
Cycle Indication	Visual Pin	
Instruction Manual	334495	

Ordering Information

Number of Injectors	Inlet Thread	Outlet Fitting	GL-33 Grease		GL-42 Oil
			Carbon Steel	304 Stainless	Carbon Steel
Stand-Alone	1/8 in NPT male	1/8 in OD tube compression	24W487*	24W489*	24W493*
1	1/8 in NPT female		24W401	24W601	24W801
2			24W402	24W602	24W802
3			24W403	24W603	24W803
4			24W404	24W604	24W804
5			24X302	24X304	24X306
6			24W405	24W605	24W805
7			24R873	–	–
9			24W406	–	24W806
10			24W407	24W606	24W807
15			24W408	24W607	24W808
Replacement	N/A		24W483*	24W485*	24W491*
Stand-Alone	1/8 in NPT male	6 mm OD tube compression	24W488*	24W490*	24W494*
1	1/8 in BSPP female		24W501	24W701	24W901
2			24W502	24W702	24W902
3			24W503	24W703	24W903
4			24W504	24W704	24W904
5			24X303	24X305	24X307
6			24W505	24W705	24W905
10			24W506	24W706	24W906
15			24W507	24W707	24W907
Replacement	N/A		24W484*	24W486*	24W492*
Repair/Overhaul Kit	N/A	N/A	24W913	24W914	24W915

*Must be ordered in quantities of five.

See next page for alternate and replacement outlet fittings, and more accessories.

Accessories for GL-32™, GL-33™, GL-42™ and GL-43™ Injectors

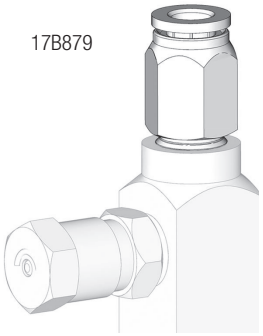
Ordering Information

		GL-32, GL-33, GL-42 and GL-43 Outlet Fittings		
		Carbon Steel	Stainless Steel	Nickle-Plated Brass
Porting	JIC-4 male	17B168	17B169	–
	1/8 in OD tube	24B677	24F943	–
	1/8 in OD Push-to-Connect	–	–	17B879
	1/4 in OD Push-to-Connect	–	–	17B880
	1/8 in NPT female	17B780	17B781	–
	4 mm OD tube	24F513	24F555	–
	6 mm OD tube	24F514	24F556	–
	Closure Plug	17B782	17B783	–

Accessories

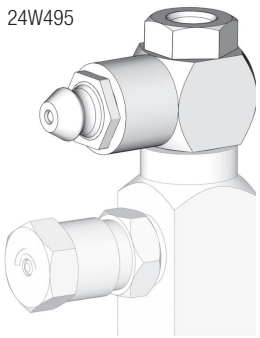
24W495	Manual grease fitting adapter – compatible with 1/8 in OD tube outlet only
17B785	Measuring chamber vinyl cap

17B879



17B780

24W495



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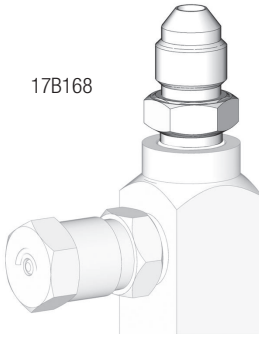

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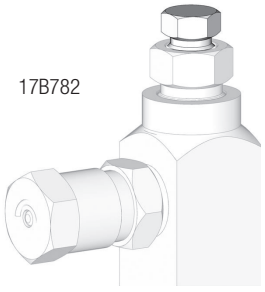

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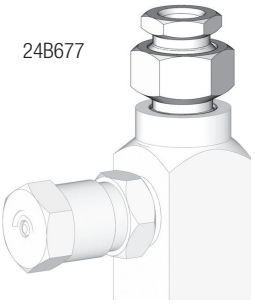

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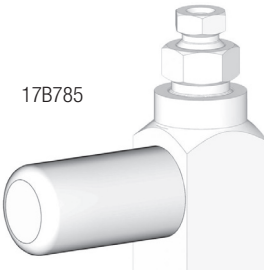


Graco Quality Provides Consistent Performance in Rugged Environments

Custom fit your system with Graco's adjustable GL-1 series grease injectors. Designed to meet the needs of each lube point, these systems provide years of reliable operation in the harshest operating environments.

Injector Covers

Clear, polycarbonate covers protect cycle pin indicators from contamination. (Included with GL-1 X and GL-1 XL models)

Hex-Head Adjustment Nut

Heavy-duty hex-head nut makes output adjustments simple.

Unibody Design

Rugged, single-piece body for use in harsh environments.

GL-1 Manifold

6,000 psi, 3/8 in NPT port manifolds fit pre-existing mounting patterns.

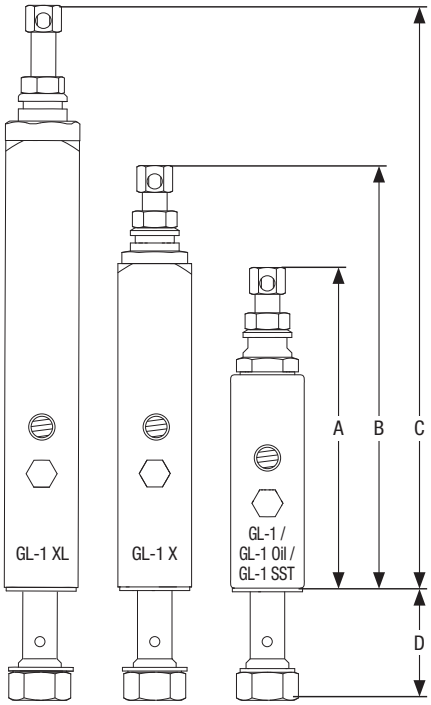
Output Spectrum Sleeves

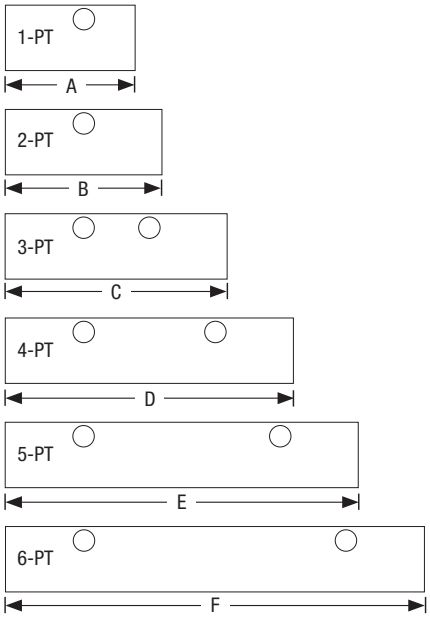
Colored-coded spacers enable simple, targeted output volume.

Technical Specifications

	GL-1	GL-1 Oil	GL-1 SST	GL-1 X	GL-1 XL
Maximum Operating Pressure	3,500 psi (241 bar)	3,500 psi (241 bar)	3,500 psi (241 bar)	6,000 psi (414 bar)	6,000 psi (414 bar)
Minimum Operating Pressure	1,850 psi (128 bar)	750 psi (52 bar)	1,850 psi (128 bar)	1,850 psi (128 bar)	1,850 psi (128 bar)
Reset Pressure	600 psi (41 bar)	150 psi (10 bar)	600 psi (41 bar)	1,000 psi (69 bar)	1,000 psi (69 bar)
Output Volume Per Cycle	0.008 to 0.08 in^3 (0.13 to 1.31 cm^3)	0.008 to 0.08 in^3 (0.13 to 1.31 cm^3)	0.008 to 0.08 in^3 (0.13 to 1.31 cm^3)	0.015 to 0.08 in^3 (0.25 to 1.31 cm^3)	0.035 to 0.305 in^3 (0.57 to 5.0 cm^3)
Materials	Zinc-plated carbon steel	Zinc-plated carbon steel	316 stainless steel	Zinc-plated carbon steel	Zinc-plated carbon steel

GL-1™ Injectors





114905

GL-1 Injector Dimensions

A	5.3 in (13.46 cm)
B	6.9 in (17.53 cm)
C	9.5 in (24.13 cm)
D	1.7 in (4.32 cm)

GL-1 Manifold Dimensions

A	2.5 in (6.35 cm)
B	3.0 in (7.62 cm)
C	4.2 in (10.67 cm)
D	5.5 in (13.97 cm)
E	6.7 in (17.02 cm)
F	8.0 in (20.32 cm)

24X807

Ordering Information

GL-1 Injectors and Manifold Assemblies

	GL-1	GL-1 Oil	GL-1 SST	GL-1 X	GL-1 XL
GL-1 one point assembly	114901	25T641	–	24X801	24X811
GL-1 two point assembly	114902	25T642	–	24X802	24X812
GL-1 three point assembly	114903	25T643	–	24X803	24X813
GL-1 four point assembly	114904	25T644	–	24X804	24X814
GL-1 five point assembly	114905	25T645	–	24X805	24X815
GL-1 six point assembly	117206	25T646	–	24X806	24X816
GL-1 single replacement injector (no manifold)	114909	25T649	25N109	24X807	24X817

GL-1 Bare Injector Manifolds (no injectors included)

One bank GL-1 manifold	114911	114911	25N101	114911	114911
Two bank GL-1 manifold	114912	114912	25N102	114912	114912
Three bank GL-1 manifold	114913	114913	25N103	114913	114913
Four bank GL-1 manifold	114914	114914	25N104	114914	114914
Five bank GL-1 manifold	114915	114915	25N105	114915	114915
Six bank GL-1 manifold	118206	118206	25N106	118206	118206

24X817

Ordering Information

GL-1 Injector Accessories

	GL-1	GL-1 SST	GL-1 X	GL-1 XL
Injector Cover Kit, polycarbonate	17L754	17L754	17L754*	17L755*
Injector Crossport Kit	133095	128139	133095	133095
Zerk and Cap Kit (5 pack)	17Y511	17Y498	17Y511	17Y511
Adjustment Screw and Lock Nut (5 pack)	17Y510	17Y489	–	–
Seal Repair Kit	241234	241234	25A081	25A080
GL-1 Oil Conversion Kit	25E349	25E349	–	–
Injector Port Manifold Plug	25D336	–	25D336	25D336

*Included with every GL-1 X and GL-1 XL injector.

GL-1 Manifold Mounting Weld Bar

One bank GL-1 manifold	17S392
Two bank GL-1 manifold	17S392
Three bank GL-1 manifold	17S393
Four bank GL-1 manifold	17S394
Five bank GL-1 manifold	17S395
Six bank GL-1 manifold	17S396

Output Spectrum Sleeves

GL-1 Output Target in^3 (cm^3)	Output Target Ratio		Color	10-Pack Part Number
	From Minimum	From Maximum		
GL-1 / GL-1 SST Injectors				
0.01 (0.1)	1.0	0.10	N/A	N/A
0.03 (0.5)	2.0	0.50	Red	17K601
0.05 (0.8)	3.0	0.60	Silver	17K602
0.06 (1.0)	4.0	0.80	Gold	17K603
0.08 (1.3)	5.0	1.00	Green	17K604
GL-1 X Injectors				
0.01 (0.3)	1.0	0.20	N/A	N/A
0.03 (0.5)	2.0	0.40	Red	17K601
0.04 (0.7)	3.0	0.50	Silver	17K602
0.06 (0.8)	3.3	0.60	Gold	17K603
0.07 (1.2)	5.0	0.75	Green	17K604
GL-1 XL Injectors				
0.04 (0.6)	1.0	0.10	N/A	N/A
0.05 (0.8)	1.5	0.15	Red	17K601
0.06 (1.0)	2.1	0.25	Silver	17K602
0.09 (1.5)	2.8	0.30	Gold	17K603
0.12 (2.0)	3.4	0.40	Green	17K604
0.13 (2.0)	3.9	0.45	Black	17N453
0.15 (2.5)	4.3	0.50	Purple	17N454
0.18 (3.0)	5.4	0.60	Blue	17N455
0.21 (3.5)	6.4	0.75	Orange	17N456
0.24 (4.0)	7.5	0.90	Brown	17N457
0.30 (5.0)	8.6	1.00	Yellow	17N458

GL-11 Injectors

High Volume Output at High Pressures for the Most Demanding Applications

Rugged, medium-pressure metering system for pumping grease; ideal for heavier-duty applications such as mobile mining vehicles, milling, cement batch plants or material processing equipment.

Convenient Top-Mounted Cycle Pin Indicator

Provides quick, at-a-glance confirmation that the injector is functioning properly.

Adjustable Output Volumes

To custom fit the system for each lube point.

24A918

Hex-Head Adjustment

For easy turning from most any orientation.

Typical Applications

- Rugged, medium-pressure metering system for pumping grease; ideal for heavier-duty applications such as mobile mining vehicles, milling, cement batch plants or material processing equipment.

Typical Fluids

- Grease up to NLGI #2

Technical Specifications

Reset Pressure	600 psi (41 bar)
Maximum Pressure	3,500 psi (241 bar)
Suggested Operating Pressure	2,500 psi (172 bar)
Minimum Operating Pressure	1,000 psi (69 bar)
Output Range	0.05 to 0.5 in^3 (0.82 to 8.2 cm^3)
Number of Adjustment Turns	14
Cycle Indicator	Visual
Instruction Manual	313704

Ordering Information

GL Injectors and Accessories

Part Number	Description
24A918	GL-11 Injector
24B359	GL-11 Injector Repair Kit
17Y511	GL-11 Zerk and Cap Kit (5 pack)

Graco Quality in a Compact Package

Compact Series Progressive (CSP) valve with broad-market versatility. Combine with field-proven Graco pumps for a complete system solution.

1/8 in NPT or BSPP Inlet

Built-in Durability

Zinc iron plating stands up to harsh environments.

Variety of Configurations

6 to 22 outlets, available with or without indicators.

High Output Pressure

Maximum working pressure of 5,076 psi (350 bar).

Output to Meet Your Needs

0.012 in^3 (0.2 cc)/stroke output with the ability to double-up outlets if greater output is required.

Typical Applications

- Industrial or mobile applications where space is at a premium

Typical Fluids

- Oil or grease up to NLGI #2

Technical Specifications

Maximum Pressure, psi (bar)	5,076 (350)
Output Single Outlet	0.012 in^3 (0.20 cm^3)
Cycle Indication	Electronic proximity switch, visual indicator
Max Operating Temperature	212ºF (100ºC)
Material	Carbon alloy steel with zinc iron plating
Instruction Manual	3A3995

Ordering Information

CSP Valves Without Cycle Pin

Number of Outlets	Inlet Port Thread	
	1/8 in NPT	1/8 in BSPP
6	24Z486	24Z477
8	24Z487	24Z478
10	24Z488	24Z479
12	24Z489	24Z480
14	24Z490	24Z481
16	24Z491	24Z482
18	24Z492	24Z483
20	24Z493	24Z484
22	24Z494	24Z485

CSP Valves With Cycle Pin

Number of Outlets	Inlet Port Thread	
	1/8 in NPT	1/8 in BSPP
6	24Z504	24Z495
8	24Z505	24Z496
10	24Z506	24Z497
12	24Z507	24Z498
14	24Z508	24Z499
16	24Z509	24Z500
18	24Z510	24Z501
20	24Z511	24Z502
22	24Z512	24Z503

Compact Series Progressive (CSP) Valves

Ordering Information

CSP Outlet Fittings

	Part Number	Description
	17Y692	1/4 in OD tube compression with check valve – for use with tubing
	17Y693	1/8 in NPT female thread with check valve
	17L441	1/4 in stud G-Lock Push-to-Connect – connects to G-Lock 1/4 in stud hose end fitting
	17L458	6 mm stud G-Lock Push-to-Connect – connects to hose with G-Lock 6 mm stud hose end fitting
	17L543	6 mm stud Push-to-Connect for nylon tubing
	17L550	6 mm stud compression fitting – connects to hose with 6 mm stud hose end fitting

Refer to page XXX for mating, tubing, hose studs and hoses.

CSP Valve Accessories

	Part Number	Description
	17L651	Output Doubling Plug – crossports/shunts flow to next outlet further from inlet
	17L879	Solid State Proximity Switch – for electronic cycle indication, 10-36 VDC PNP, M12 electrical connector
Image Coming Soon	17R703	M12 extension cable to connect to Solid State Prox Switches installed on divider valves mounted directly to bottom of G-Series pumps. 1 ft (30 cm) long.
Image Coming Soon	25E935	Acrylic Demo Kit with pneumatic squeeze bulb, CSP-8 without Indicator
Image Coming Soon	25N730	Weld Bar Kit
Image Coming Soon	26A478	Weld Stud Kit
Image Coming Soon	26A479	Weld Stud Template

CSP Compact Cycle Switches

New compact proximity switches mount to the cycle pin assembly on a CSP divider valve and provide electronic cycle indication to G3 and G-Mini pumps with built-in controllers, as well as most external controllers compatible with PNP sensors.

- Use with CSP divider valves with a cycle indicator pin
- LED light on each switch provides visual indication of cycles
- 10-30 VDC PNP, wires the same as other PNP switches
- Wiring diagram is included with each switch
- Rated IP67; UL, CE certified

	Part Number	Description
Image Coming Soon	26C822	Switch assembly with 9.5 in (24 cm) cable to M12 connector. Recommended for a divider valve mounted to the bottom of a G3 Max or SP, or G-Mini Controller pump.
Image Coming Soon	26C823	Switch assembly with 16.5 ft (5 m) cable to flying leads. Recommended for G-Series pumps with a remote mounted valve, and for GLC controllers. M12 connector 124594 (sold separately) is required when wiring to G-Series pumps.

Compact Valve Solution

The Trabon MD Series is the most compact series progressive solution making it a perfect fit for tight-spaced applications.

Available with 2, 3, 4 or 6 Outlets

Fluoroelastomer Seals

For high temperature applications or synthetic lubricants.

562658

Easy to Install

On new or existing equipment.

Typical Applications

- Industrial or mobile applications where space is at a premium

Typical Fluids

- Oil or grease grades up to NLGI #2

Technical Specifications

Material	Steel
Maximum Pressure	3,000 psi (207 bar)
Net Weight (approximate)	1 lb 8 oz (0.68 kg)
Max Operating Temperature	350ºF (176ºC)
Instruction Manual	312497

Ordering Information

	Number of Outlets	Output per Outlet, in^3 (cm^3)	Valve Only	Valve with Cycle Pin	Valve with Cycle Switch and Bracket Assembly
MD-2	2	0.040 (0.66)	562656	562653	563270
MD-3	3	Outlet 1 – 0.040 (0.66) Outlet 2 and 3 – 0.020 (0.33)	562657	562654	563271
MD-4	4	0.020 (0.33)	562658	562655	564356
MD-6	6	0.010 (0.16)	562659	N/A	

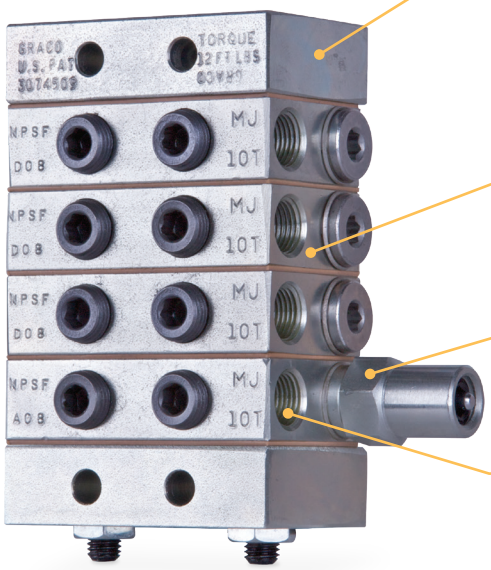
MD Parts and Accessories

Part Number	Description
17M380	Solid State Proximity Switch – for electronic cycle indication, 10-36 VDC PNP, M12 Electrical Connector
563555	Cycle Indicator Spud assembly
557720	Cycle Indicator Pin (replacement only, not compatible with valves that don't already have the pin)
557781	Replacement SPDT Cycle Switch
122276	Viton O-ring

Trabon® MJ Divider Valve

Compact Yet Configurable

The Trabon MJ series features a compact and easily customizable design that can be tailor fit to meet a variety of specific lube requirements. Capable of handling grease grades up to NLGI #1.



Easily Accessorized

Can be easily accessorized with cycle and performance indicators to provide positive assurance of a successful lube event.

Space Efficient

From 6 to 16 points from one block assembly.

Built-In Outlet Check Valves

Ensure accurate lube delivery, every time.

Output Options

Three different piston sizes, each offered as S (single) or T (twin) outlet valves, allow a variety of ratios without increasing the size of the valve assembly.

Typical Applications

- Machine tools
- Textile, glass and can machinery

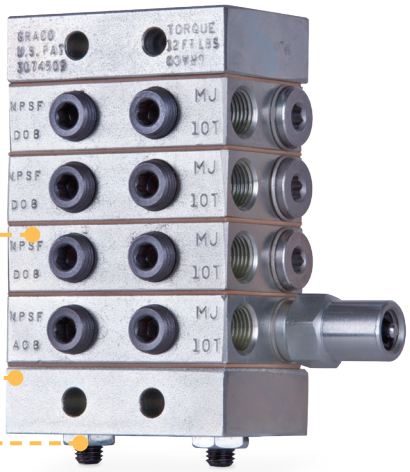
Typical Fluids

- Oil or Grease up to NLGI #1

Technical Specifications

Material	Plated Steel
Maximum Pressure	2,000 psi (137.89 bar)
Max Operating Temperature	200ºF (93ºC)
Max Cycle Rate with Cycle Pin	60 cycles/minute
Manual	312497

Steps to Build Your MJ Divider Valve System:



A Select Valve Working Sections

B Select Inlet and End Sections

C Select Tie Rods and Tie Rod Nuts

Choose from Optional Accessories

D Cross-port and Singling Bars

E Cycle Indicators and Proximity Switches

F Performance Indicators

G Mounting Bars

A Ordering Information

Valve Working Sections

Standard 1/8 in NPSF outlet ports accept NPT fittings. Must be ordered in multiples of five.

Outlet Configuration	Description	Output Per Outlet, in^3 (cm^3)	Part Number		
			Standard Section	With Cycle Pin – Right	With Cycle Pin – Left
Single	MJ-5S	0.010 (0.16)	562500	N/A	
	MJ-10S	0.020 (0.33)	562501	562508	562512
	MJ-15S	0.030 (0.49)	562502	562509	N/A
Twin	MJ-5T	0.005 (0.08)	562503	N/A	
	MJ-10T	0.010 (0.16)	562504	562510	562513
	MJ-15T	0.015 (0.26)	562505	562511	564205

MJ Spare Parts and Accessories

Part Number	Description
563948	Cycle Indicator Repair Kit
557514	Replacement Gasket
557349	Replacement Outlet Port Plug (one is already included with each "S" section)

B Ordering Information

Inlet and End Sections

Must be ordered in multiples of five.

Component	Description	Part Number
Inlet Section	Standard 1/8 in NPSF inlet, accepts NPT fittings.	560643
End Section	Standard end section.	560645

Note: Each valve, inlet and end section is packaged with a gasket, so a complete MJ assembly will have one gasket leftover.

C Ordering Information

Tie Rods and Tie Rod Nuts

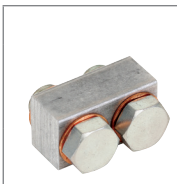
Two tie rods and two tie rod nuts required for each MJ assembly.

Component	Length	Part Number
Tie Rods	3-section	557515
	4-section	557516
	5-section	557517
	6-section	557518
	7-section	557519
	8-section	557520
Tie Rod Nuts	N/A	556371

D Ordering Information

Crossport and Singling Bars

For each bar used, order one of part number 557349 (1/8 in NPT pipe plug) to plug the unused outlet.



Part Number	Component	Description
562914	Right Crossport Bar	Provides a path to redirect output from one outlet to the next one below it, away from the inlet.
562915	Singling Bar	Converts a “T” valve to an “S” valve.

E Ordering Information

Cycle Indicators and Proximity Switches

These switches sense the divider valve piston’s action for accurate control and monitoring of lube cycles.

Part Number	Component	Description
563272	Single pole, double throw (SPDT) standard cycle switch and bracket assembly	Used in conjunction with the cycle indicator at cycle rates not exceeding 60 cpm, the switch provides an electrical signal to the system controller which counts cycles to monitor and verify completion of the lube cycle. Included bracket clamps to spud around cycle pin.
563273	Moisture-resistant SPDT cycle switch and bracket assembly	
564357	Double pole, double throw (DPDT) cycle switch and bracket assembly	
17M380	Solid State Proximity Switch (see page XX for mating cables)	This rugged switch has no moving parts, making it ideal for applications such as metal stamping presses and yellow iron equipment. 10-32 VDC PNP switching, M12 electrical connector, 200 cpm, 3,000 PSI (207 bar) maximum pressure. 50,000,000 cycle life, IP65, IP68, IP69 rated.

F Ordering Information

Performance Indicators

These vital safeguards react to excess lube pressure when points or lines become blocked. Installed in indicator ports on the working piston sections, they quickly identify the affected lines. 1/8 in NPT male thread installs in the indicator ports on the front of each valve.

Reset Indicators

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings

	Part Number	Indication Pressure
Image Coming Soon	563231	250 psi (17 bar)
	563232	500 psi (35 bar)
	563233	750 psi (52 bar)
	563234	1,000 psi (69 bar)
	563235	1,500 psi (103 bar)
	563236	2,000 psi (138 bar)

Automatic Relief Indicators

These performance indicators pinpoint lube line blockages but allow the lube system to continue to supply lubrication to points that are not blocked.

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings

	Part Number	Indication Pressure
Image Coming Soon	563163	750 psi (52 bar)
	563164	1,000 psi (69 bar)
	563165	1,250 psi (86 bar)
	563166	1,500 psi (103 bar)
	563167	2,000 psi (138 bar)

G Ordering Information

Mounting Bar

Part Number	Component	Description
561101	MJ Divider Valve Weld Bar	1/2 in (12.7 mm) thick steel bars are designed for welding to uneven metal surfaces. Tapped holes are provided for mounting the divider valves. This part is one individual bar, so order quantity 2 when needed.

Trabon® MSP Divider Valve

The Industry Standard for Quality and Reliability

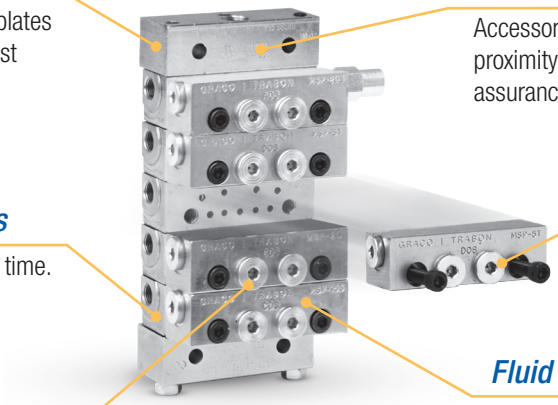
The Trabon MSP Series sets the industry standard for quality, reliability and ease-of-use features. It was the original modular-style series progressive divider valve and is still the best!

Baseplate Assemblies

Pre-assembled and tested base plates now available! Make your parts list shorter and assembly quicker.

Easily Accessorized

Accessories such as cycle indicating proximity switches provide positive assurance of a successful lube event.



Quick Change Valve Sections

Easily removed from the base assembly without disturbing any lube lines

Built-In Outlet Check Valves

Ensure accurate lube delivery, every time.

Indicator Ports

Alternate outlets on face of each valve can be fitted with optional performance indicators, taking the guesswork out of troubleshooting.

Fluid Flexibility

Use the same MSP components for oil or grease applications, reducing the number of parts that need to be stocked.

Series Progressive

Typical Applications

- Mobile, industrial, food and beverage, wind, and many more

Typical Fluids

- Oil or Grease up to NLGI #2

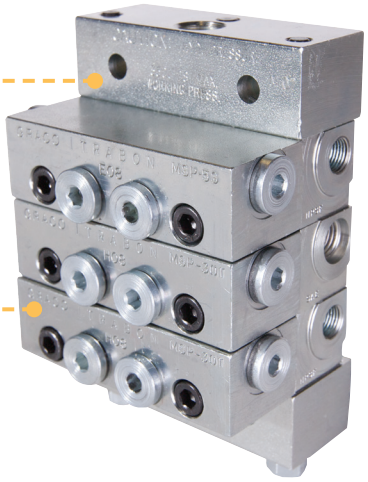
Technical Specifications

Material	Plated Steel
Maximum Pressure	3,500 psi (241 bar)
Max Operating Temperature	350ºF (176 ºC)
Max Cycle Rate with Cycle Pin	60 cycles/minute
Max Cycle Rate without Cycle Pin	200 cycles/minute
Manual	312497

Steps to Build Your MSP Divider Valve System:

A Select the Base Plate Assembly By the Number of Valve Sections Needed

B Select Valve Working Sections



Choose from Optional Accessories

- **C** Cross-port and Singling Bars
- **D** Performance Indicators
- **E** Cycle Indicators and Proximity Switches
- **F** Mounting Bars and Brackets
- **G** Modular Specialty Inlets

A Ordering Information

Factory-Tested MSP Base Plate Assemblies

How many valve sections are in the assembly? Count up the number of sections and order a base assembly that has the correct number of sections. Base plate assembly is delivered completely assembled and tested with inlet, intermediate base plate sections, end section, tie rods and nuts.

Item	Maximum Number of Outlets	Number of Valve Sections	Part Number	
			NPSF	BSPP
1/2/3/4/5	6	3	24G485	24N915
	8	4	24G486	24N916
	10	5	24G487	24N917
	12	6	24G488	24N918
	14	7	24G489	24N919
	16	8	24G490	24N920

A Ordering Information (continued)

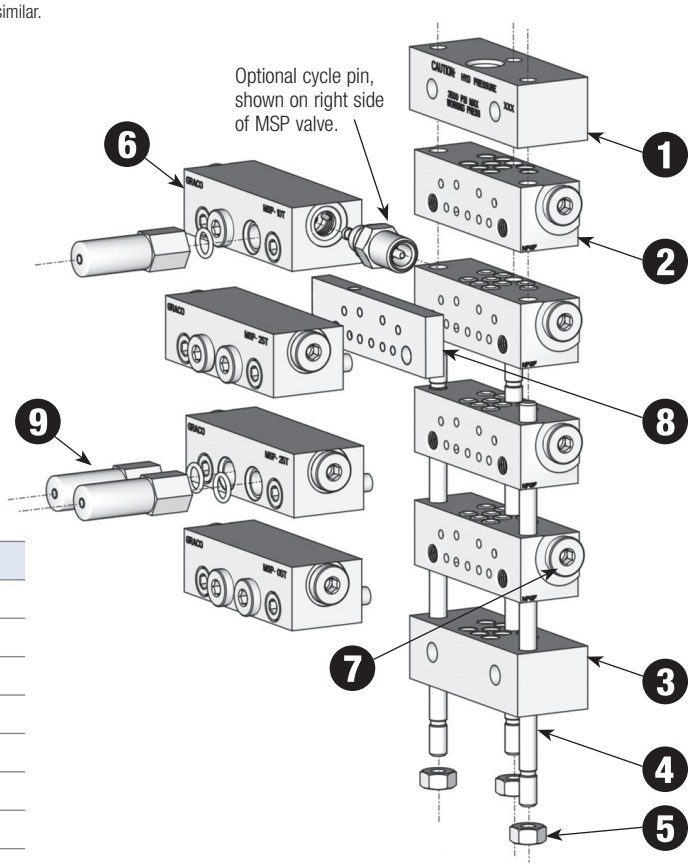
Build Your Own MSP Base Plate Assemblies

Item	Component	Description	Part Number			Note
			NPSF	BSPP	SAE-ORB	
1	Inlet section options See page XX for Zero Leak and Shunt inlet section options	Standard "MS" inlet section	560919	560936	560943	Must be ordered in multiples of 5.
		"MH" inlet with bleed ports	563421	N/A	563422	
2	Intermediate base plate	Two outlet ports	563425	563447	563451	
3	End section options	Standard end	563424			
		With alternate inlet port*	563279			
4	Tie Rods (3 required)	3-section	557731			3 tie rods and tie rod nuts required for assembly.
		4-section	557732			
		5-section	557733			
		6-section	557734			
		7-section	557735			
		8-section	557736			
		9-section	557738			
		10-section	557739			
		11-section	557740			
5	Tie Rod Nuts (3 required)	Tie rod nuts	556371			

*Alternate inlet port requires Leak Proof zerk fitting such as part number 555888, 556429 or similar.

Legend

1	Inlet Section
2	Intermediate Base Plate Section / Subplate
3	End Section
4	Tie Rod
5	Tie Rod Nut
6	MSP Valve Section
7	Outlet Port Plug
8	Cross-port or Singling Bar
9	Performance Indicator



MSP Section Spare Parts

Part Number	Description
122276*	Standard O-ring (90 DURO Fluoroelastomer), black
556540*	Alternate O-ring (70 DURO Buna-N), black
557721*	MSV O-ring (70 DURO Fluoroelastomer), brown
563929	Cycle Indicator Pin Repair Kit
556327	Outlet Check Ball
557508	Outlet Check Spring, NPSF and BSPP bases
556994	Outlet Check Spring, SAE-ORB bases

*Part numbers are for a single O-ring; each section requires nine O-rings.

B Ordering Information

MSP Valve Sections

Also called “Working” sections. Must be ordered in multiples of 5.

Outlet Configuration	Description	Output Per Outlet, in^3 (cm^3)	Part Number		
			Standard Section	With Cycle Pin – Right	With Cycle Pin – Left
Single	MSP-5S*	0.010 (0.16)	562711	N/A	
	MSP-10S*	0.020 (0.33)	562712		
	MSP-15S*	0.030 (0.49)	562713		
	MSP-20S*	0.040 (0.66)	562714	562729	562734
	MSP-25S*	0.050 (0.82)	562715	562730	562735
	MSP-30S*	0.060 (0.98)	562716	562731	562736
	MSP-35S*	0.070 (1.15)	562717	562732	562737
	MSP-40S*	0.080 (1.31)	562718	562733	562738
Twin	MSP-5T	0.005 (0.08)	562720	N/A	
	MSP-10T	0.010 (0.16)	562721		
	MSP-15T	0.015 (0.26)	562722		
	MSP-20T	0.020 (0.33)	562723	562739	562744
	MSP-25T	0.025 (0.41)	562724	562740	562745
	MSP-30T	0.030 (0.49)	562725	562741	562746
	MSP-35T	0.035 (0.57)	562726	562742	562747
	MSP-40T	0.040 (0.66)	562727	562743	–

*Each “S” section uses only one outlet, but each intermediate base has two outlets. For each “S” section in the assembly, order one Outlet Port Plug (below), to plug the unused outlet.

Outlet Port Plugs

Part Number			Note
NPSF	BSPP	SAE-ORB	
557349 (NPT)	558799 (with seal ring)	567251 (with O-ring)	1 outlet port plug is required for each “S” valve section.

Bypass Section

Part Number	Description
562660	MSP-BP Bypass Block takes the place of a valve, but has no output. Not a true working section. Requires two outlet port plugs for the unused outlets.

C Ordering Information

Cross-port and Singling Bars

Part Number	Component	Note
563469	Right Cross-port Bar	1 outlet port plug is required for each cross-port bar, to plug the unused outlet.
563470	Left Cross-port Bar	
563471	Right and Left Cross-port Bar	2 outlet port plugs are required for each double cross-port bar.
563472	Singling Bar	Converts a "T" valve to an "S" valve.

D Ordering Information

Performance Indicators

These vital safeguards react to excess lube pressure when points or lines become blocked. Installed in indicator ports on the working piston sections, they quickly identify the affected lines.

Reset Indicators with Memory

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/8 in NPSF thread with O-ring seal

	Part Number	Cracking Pressure
Image Coming Soon	563252	250 psi (17 bar)
	563253	500 psi (35 bar)
	563254	750 psi (52 bar)
	563255	1,000 psi (69 bar)
	563256	1,500 psi (103 bar)
	563257	2,000 psi (138 bar)
	563258	2,500 psi (172 bar)
	563261	3,000 psi (207 bar)
	563263	3,500 psi (241 bar)

Automatic Relief Indicators

Features and Benefits

These performance indicators pinpoint lube line blockages but allow the lube system to continue to supply lubrication to points that are not blocked.

- Allows machine to continue to run when non-critical bearings are blocked
- No time or effort required for reset after blockage is cleared
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/8 in NPSF thread with O-ring seal

	Part Number	Cracking Pressure
	563170	750 psi (52 bar)
	563171	1,000 psi (69 bar)
	563172	1,250 psi (86 bar)
	563173	1,500 psi (103 bar)
	563174	2,000 psi (138 bar)
	563175	2,500 psi (172 bar)
	563176	3,000 psi (207 bar)

Performance Indicator Spare Parts

Part Number	Description
556569	Standard O-ring (90 DURO Fluoroelastomer), black
556567	Alternate O-ring (90 DURO Buna-N), black
16U217	Indicator Port Plug, with O-ring 556569

E Ordering Information

Cycle Indicators and Proximity Switches

A wide variety of safeguards to monitor and verify lube cycles. These mechanical and electrical units sense the divider valve piston's action for accurate control and monitoring of lube cycles.

	Part Number	Component	Description
	563251	Magnetic Visual Cycle Indicator	The highly visible cycle indicator has a snap-action movement which allows the user to visually determine the timing of each divider valve cycle.
	563272	SPDT Cycle Switch, provides electrical signal to controller or PLC	Used in conjunction with the cycle indicator pin at cycle rates not exceeding 60 cpm, it provides an electrical signal to the system controller which counts cycles to monitor and verify completion of the lube cycle.
	564357	Double Pole, Double Throw (DPDT) Cycle Switch and bracket assembly	
Image Coming Soon	563273	SPDT Cycle Switch, provides electrical signal to controller or PLC, moisture resistant	
	17L983	Solid State Proximity Switch (see page XX for mating cables)	This rugged switch has no moving parts, making it ideal for applications such as metal stamping presses and yellow iron equipment. 10-32 VDC PNP switching, M12 electrical connector, 200 cpm, 7,500 PSI (518 bar) maximum pressure. 50,000,000 cycle life, IP65, IP68, IP69 rated.
Image Coming Soon	557741	Field-Sensitive Proximity Switch, 3-Pin BH, with O-ring	A ceramic-magnet switch for grease or oil systems up to 200 cpm at pressure up to 3,500 psi (241 bar), accurately signals piston cycles, and is ideal for high-cycle applications. Bradley-Harrison (BH) electrical connectors, 115 VAC. 7/16-20 thread with O-ring seal mates to MSP valves with date codes L94 and newer.
	557746	Field-Sensitive Proximity Switch, 5-Pin BH, with O-ring	

Proximity Switch Spare Parts

Part Number	Component
556570	Standard O-ring (90 DURO Fluoroelastomer), black
556568	Alternate O-ring (90 DURO Buna-N), black
567251	Enclosure Port Plug, with O-ring 556570

F Ordering Information

Mounting Bars

Part Number	Component	Description
560920	MSP/MHH Weld Bar	1/2 in (12.7 mm) thick steel bars are designed for welding to uneven metal surfaces. Mounting holes are threaded 1/4-20 to attach MSP or MHH valve assembly.
563465	Divider Valve Weld Bar Kit	Includes 2 mounting bars (560920), 4 screws, washers and lockwashers.

G Ordering Information

MSP Modular Specialty Inlets

Shunt Inlets

NEW – Graco has updated the Shunt Valve power connection to a DIN Connector. Previous versions used a 3-Pin Brad Harrison Connector. Adapter kit 25T585 (see below) is available to convert from 3-Pin BH to DIN.

Features and Benefits

- For use with oil and FLUID grease only – 3,500 psi maximum fluid pressure
- A three-way valve, incorporated into the MSP inlet section – can replace standard inlet or mount in-line with remote manifold kit.
- Options for 115 VAC, 24 VDC or pneumatic
- "Normal" state allows lubricant to enter divider valve
- Energized state sends fluid out the bypass port – to another divider valve, to a large bearing or back to tank.

	Power	Connection	Normal State	Shunt Inlet Part Number			Replacement Solenoids**
				Connection Thread			
				NPSF	BSPP	SAE-ORB	
Image Coming Soon	115 VAC	DIN	NO	25B534	–	25U054	20A339
	115 VAC	DIN	NC	25B535	–	25U053	
	24 VDC	DIN	NO	25B515	25U041	25U052	20A081
	24 VDC	DIN	NC	25B514	25U040	25U051	
	Pneumatic	1/8 NPSF*	NC*	563456	–	–	–

*Pneumatic Shunt 563456 ships in Normally Closed configuration, can be converted to Normally Open in the field. Air pressure range 40 to 150 psi, 1/8 in NPSF female air inlet port.
**Replacement Solenoids will NOT work in the old-style Shunt Inlets. If the coil or solenoid in an old style Inlet section has failed, replace the entire Inlet section.

Zero-Leak Shut-Off Inlets

NEW – Graco has updated the Zero-Leak Shut-Off Valve power connection to a DIN Connector. Previous versions used a 3-Pin Brad Harrison Connector. Adapter kit 25T585 (see below) is available to convert from 3-Pin BH to DIN.

Features and Benefits

- For use with oil only – 1,500 psi maximum oil pressure
- A two-way valve that can be used with either continuous or intermittent pressurized header systems.
- Replaces a standard inlet section or mounts in-line with a remote manifold kit.
- All models are Normally Closed

	Power	Connection	Normal State	Zero Leak Inlet Part Number			Replacement Solenoids**
				Connection Thread			
				NPSF	BSPP	SAE-ORB	
Image Coming Soon	115 VAC	DIN	NC	20A900	–	20A901	20A586
	24 VDC	DIN	NC	20A903	20A902	20A904	20A585
	Inlet restrictor with 90 micron last chance filter			563074	–	–	–

*Replacement Solenoids will NOT work in the old-style Zero-Leak Shut-Off Inlets. If the coil or solenoid in an old style Inlet section has failed, replace the entire Inlet section.

Other Components for Shunt and Zero-Leak Shut-Off Inlets

Connector and Cable Options

Part Number	Description
16U790	Power cable with DIN connector, 15 ft (4.5 m).
132924	Field-installable DIN connector, no wire provided.
25T585	Adapter Cable Kit, 3-Pin BH to DIN. To be used on retrofits. Some assembly required. Manual 3A8068.

Remote Mount Manifold Kit

Part Number	Description
563461	Includes manifold with 1/4 NPSF outlet, O-ring 556540 and two mounting screws.

Setting the Industry Standard for Quality, Reliability and Ease-of-Use Features

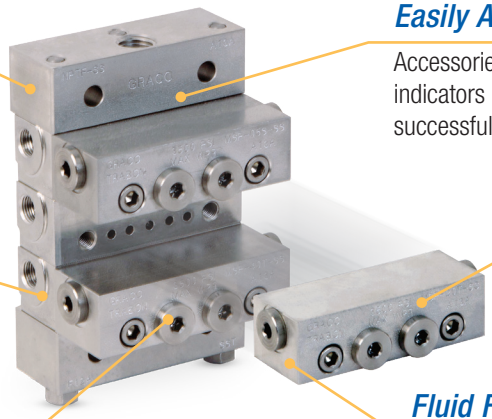
More durability with the same high-quality performance and precision machining as the carbon steel version. The stainless steel MSP valves and accessories overcome harsh conditions, such as salty air or areas needing repetitive cleaning, with durable 303 materials and a design with proven success.

Baseplate Assemblies

Pre-assembled and tested base plates now available! Make your parts list shorter and assembly quicker.

Easily Accessorized

Accessories such as proximity switch cycle indicators provide positive assurance of a successful lube event.



Built-In Outlet Check Valves

Ensure accurate lube delivery, every time.

Quick Change Valve Sections

Easily removed from the base assembly without disturbing any lube lines

Indicator Ports

Alternate outlets on face of each valve can be fitted with optional performance indicators, taking the guesswork out of troubleshooting.

Fluid Flexibility

Use the same MSP components for oil or grease applications, reducing the number of parts that need to be stocked.

Typical Applications

- Food and beverage, machine tools, textile, glass and can machinery, mobile equipment

Typical Fluids

- Oil or Grease up to NLGI #2

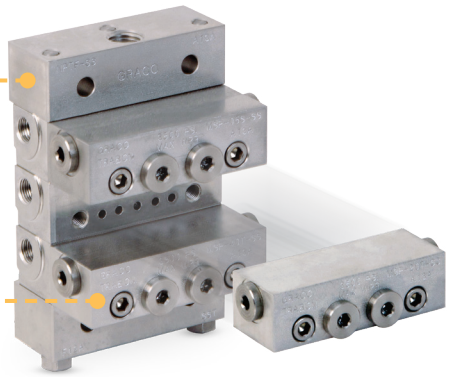
Technical Specifications

External Material	Stainless Steel
Internal Material	Carbon Steel
Maximum Pressure	3,500 psi (241 bar)
Max Operating Temperature	140ºF (60ºC)
Max Cycle Rate without Cycle Pin	200 cycles/minute
Manual	312497

Steps to Build Your MSP Stainless Steel Divider Valve System:

A Select the Base Plate Assembly By the Number of Valve Sections Needed

B Select Valve Working Sections



Choose from Optional Accessories

C Cross-port and Singling Bars

D Performance Indicators

E Cycle Indicators and Proximity Switches

A Ordering Information

Factory-Tested MSP Base Plate Assemblies

How many valve sections are in the assembly? Count up the number of sections and order a base assembly that has the correct number of sections. Base plate assembly is delivered completely assembled and tested with inlets, intermediate base plate sections, end section, tie rods and nuts.

Item	Maximum Number of Outlets	Number of Valve Sections	Part Number	
			NPSF	BSPP
1/2/3/4/5	6	3	24N382	24N388
	8	4	24N383	24N389
	10	5	24N384	24N390
	12	6	24N385	24N391
	14	7	24N386	24N392

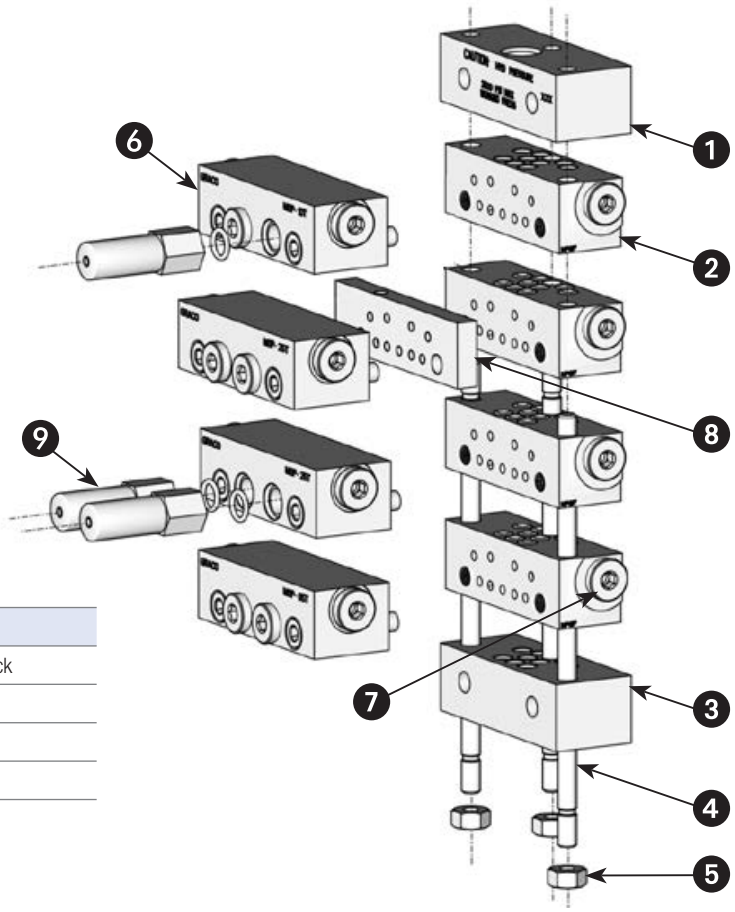
A Ordering Information (continued)

Build Your Own MSP Base Plate Assemblies

Item	Component	Description	Part Number		Note
			NPSF	BSPP	
1	303 stainless steel inlet section		15Y070	16P368	Must be ordered in multiples of 5
2	303 stainless steel intermediate base plate – with two outlet ports		24B497	24N369	
3	303 stainless steel end section		24B498		
4	416 stainless steel tie rods (3 required)	3-section	126247		3 tie rods and tie rod nuts required for assembly
		4-section	126248		
		5-section	126249		
		6-section	126250		
		7-section	126251		
5	Tie rod nuts (3 required)	Tie rod nuts	558633		

Legend

1	Inlet Section
2	Intermediate Base Section / Subplate
3	End Section
4	Tie Rod
5	Tie Rod Nut
6	MSP Valve Section
7	Outlet Port Plug
8	Cross-port or Singling Bar
9	Performance Indicator



MSP Section Spare Parts

Part Number	Description
122276*	Standard O-ring (90 DURO Fluoroelastomer), black
556540*	Alternate O-ring (70 DURO Buna-N), black
556327	Outlet Check Ball
557508	Outlet Check Spring

*Part numbers are for a single O-ring; each section requires nine O-rings.

B Ordering Information

MSP Valve Sections – 303 Stainless Steel

Also called "Working" sections. Must be ordered in multiples of 5.

Outlet Configuration	Description	Output Per Outlet, in^3 (cm^3)	Part Number
			Standard Section
Single	MSP-5S*	0.010 (0.16)	24B474
	MSP-10S*	0.020 (0.33)	562755
	MSP-15S*	0.030 (0.49)	24B475
	MSP-20S*	0.040 (0.66)	562756
	MSP-25S*	0.050 (0.82)	24B476
	MSP-30S*	0.060 (0.98)	24B477
	MSP-35S*	0.070 (1.15)	24B478
	MSP-40S*	0.080 (1.31)	562757
Twin	MSP-5T	0.005 (0.08)	24B479
	MSP-10T	0.010 (0.16)	562758
	MSP-15T	0.015 (0.26)	24B480
	MSP-20T	0.020 (0.33)	562759
	MSP-25T	0.025 (0.41)	24B481
	MSP-30T	0.030 (0.49)	24B482
	MSP-35T	0.035 (0.57)	24B483
	MSP-40T	0.040 (0.66)	562760

316 Stainless Steel Outlet Port Plugs

Part Number		Note
NPSF	BSPP	
555457 (NPT)	114172 (BSPT)	1 outlet port plug is required for each "S" valve section

C Ordering Information

Cross-port and Singling Bars – 303 Stainless Steel

Part Number	Component	Note
24R632	Right Cross-port Bar	1 outlet port plug is required for each cross-port bar
24R633	Left Cross-port Bar	
24R631	Right and Left Cross-port Bar	2 outlet port plugs are required for each double cross-port bar

D Ordering Information

Performance Indicators

These vital safeguards react to excess lube pressure when points or lines become blocked.
Installed in indicator ports on the working piston sections, they quickly identify the affected lines.

Reset Indicators with Memory

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/8 NPSF thread with O-ring seal
- 303 Stainless Steel

	Part Number	Cracking Pressure
Image Coming Soon	24B495	1,000 psi (69 bar)
	24B496	1,500 psi (103 bar)
	24N373	2,000 psi (138 bar)

Automatic Relief Indicators

Features and Benefits

These performance indicators pinpoint lube line blockages but allow the lube system to continue to supply lubrication to points that are not blocked.

- Allows machine to continue to run when non-critical bearings are blocked
- No time or effort required for reset after blockage is cleared
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/8 NPSF thread with O-ring seal
- 303 Stainless Steel

	Part Number	Cracking Pressure
	24N945	1,000 psi (69 bar)
	24N948	1,500 psi (103 bar)
	24N949	2,000 psi (138 bar)
	24N951	2,500 psi (172 bar)
	24N952	3,000 psi (207 bar)

Performance Indicator Spare Parts

Part Number	Description
556569	Standard O-ring (90 DURO Fluoroelastomer), black
556567	Alternate O-ring (90 DURO Buna-N), black
19B227	Indicator Port Plug, 303 stainless steel with O-ring 556569

E Ordering Information

Cycle Indicators and Proximity Switches

A wide variety of safeguards to monitor and verify lube cycles. These mechanical and electrical units sense the divider valve piston's action for accurate control and monitoring of lube cycles.

Part Number	Component	Description
563251	Magnetic Visual Cycle Indicator	The highly visible cycle indicator has a snap-action movement which allows the user to visually determine the timing of each divider valve cycle.
17L983	Solid State Proximity Switch (see page XX for mating cables)	This rugged switch has no moving parts, making it ideal for applications such as metal stamping presses and yellow iron equipment. 10-32 VDC PNP switching, M12 electrical connector, 200 cpm, 7,500 PSI (518 bar) maximum pressure. 50,000,000 cycle life, IP65, IP68, IP69 rated.
557741	Field-Sensitive Proximity Switch, 3-Pin BH, with O-ring	A ceramic-magnet switch for grease or oil systems up to 200 cpm at pressure up to 3,500 psi (241 bar), accurately signals piston cycles, and is ideal for high-cycle applications. Bradley-Harrison (BH) electrical connectors, 115 VAC.
557746	Field-Sensitive Proximity Switch, 5-Pin BH, with O-ring	

Proximity Switch Spare Parts

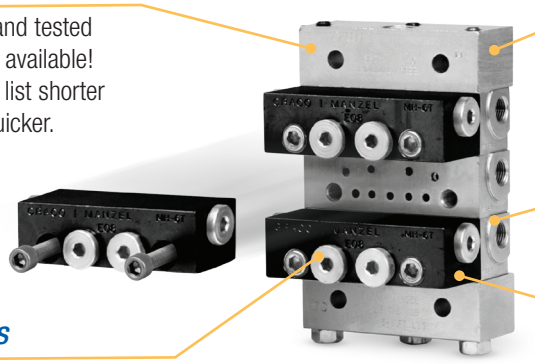
Part Number	Component
556570	Standard O-ring (90 DURO Fluoroelastomer), black
556568	Alternate O-ring (90 DURO Buna-N), black
19A574	Enclosure Port Plug, 303 stainless steel with O-ring 556570

Modular Design for Easy Maintenance

Same capable design as the Trabon MSP Series with even tighter and more exacting tolerances. The Manzel MHH Series delivers highly accurate lube delivery for demanding high-pressure grease and oil applications.

Baseplate Assemblies

Pre-assembled and tested base plates now available! Make your parts list shorter and assembly quicker.



Indicator Ports

Alternate outlets on face of each valve can be fitted with optional performance indicators, taking the guesswork out of troubleshooting.

Easily Accessorized

Accessories such as proximity switch cycle indicators provide positive assurance of a successful lube event.

Built-In Outlet Check Valves

Ensure accurate lube delivery, every time.

Quick Change Valve Sections

Easily removed from the base assembly without disturbing any lube lines – minimizing labor cost and maximizing your machine uptime.

Typical Applications

- Compressors, industrial equipment, and where high-pressure lubrication in required

Typical Fluids

- Synthetic or Mineral Oil

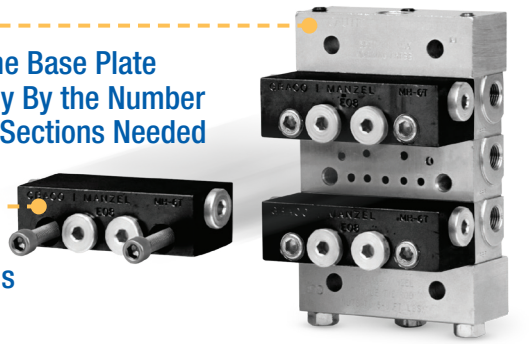
Technical Specifications

Material	Plated Steel
Maximum Pressure	7,500 psi (517 bar)
Maximum Operating Temperature	350ºF (176ºC)
Maximum Cycle Rate	200 cycles/min
Manual	312497

Steps to Build Your MHH Divider Valve System:

A Select the Base Plate Assembly By the Number of Valve Sections Needed

B Select Valve Working Sections



Choose from Optional Accessories

C Cycle Indicators and Proximity Switches

D Performance Indicators

E Mounting Bars and Brackets

A Ordering Information

Factory-Tested MHH Base Plate Assemblies

How many sections are in the assembly? Count up the number of sections, and order a base assembly that has the correct number of sections. Base plate assembly is delivered completely assembled and tested with inlets, intermediate base plate sections, end section, tie rods and nuts.

Item	Maximum Number of Outlets	Number of Valve Sections	Part Number	
			NPSF, Manzel Mount	NPSF, Wide Mount*
1/2/3/4/5	6	3	24F596	25T265
	8	4	24F597	25T266
	10	5	24F598	25T267
	12	6	24F599	25T268
	14	7	24F600	25T269
	16	8	24F601	25T270

*Wide Mount refers to wider spaced mounting holes in the Inlet and End sections to match competitors' mounting patterns.

A Ordering Information (continued)

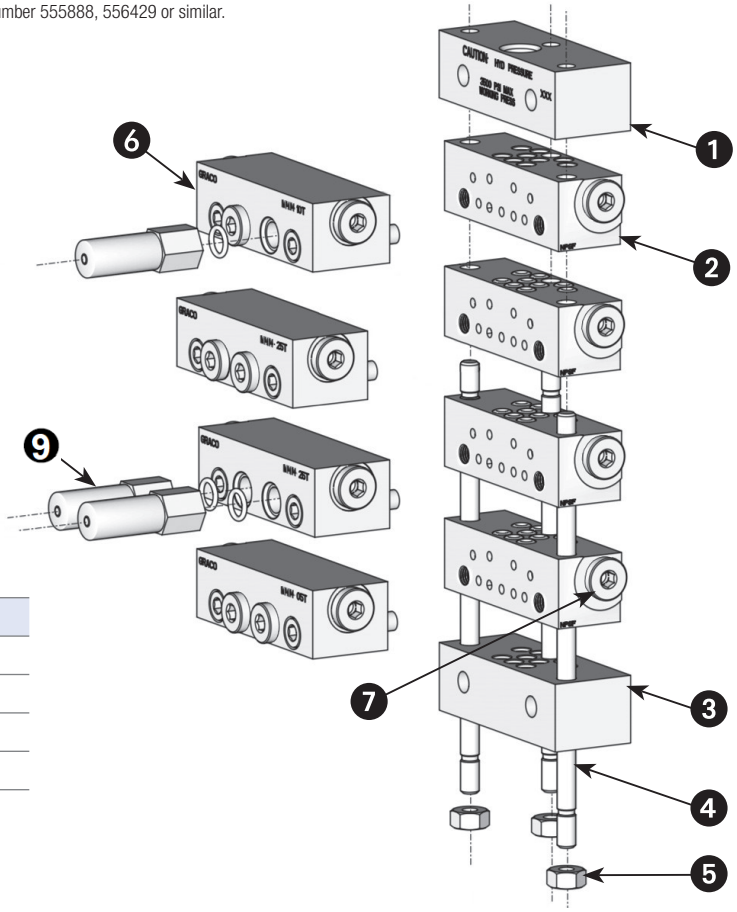
Build Your Own MHH Base Plate Assemblies

Item	Component	Description	Part Number		Note
			NPSF, Manzel Mount	NPSF, Wide Mount*	
1	Inlet section options	"MH" inlet with bleed ports	563421	N/A	Must be ordered in multiples of 5
		"MS" inlet without bleed ports	560919	18C434	
2	Intermediate base plate	Two outlet ports	563425		
3	End section options plate	Standard end	563424	18C435	
		With alternate inlet port**	563279	N/A	
4	Tie Rods (3 required)	3-section	557731		3 tie rods and tie rod nuts required for assembly
		4-section	557732		
		5-section	557733		
		6-section	557734		
		7-section	557735		
		8-section	557736		
		9-section	557738		
		10-section	557739		
		11-section	557740		
5	Tie Rod Nuts (3 required)	Tie rod nuts	556371		

*Wide Mount refers to wider spaced mounting holes in the Inlet and End sections to match competitors' mounting patterns.
**Alternate inlet port in end section 563279 requires Leak Proof zerk fitting such as part number 555888, 556429 or similar.
NOTE: Refer to MSP pages for BSPP and SAE inlet and base plate porting options.

Legend

1	Inlet Section
2	Intermediate Base Section / Subplate
3	End Section
4	Tie Rod
5	Tie Rod Nut
6	MSP Valve Section
7	Outlet Port Plug
9	Performance Indicator



MHH Section Spare Parts

Part Number	Description
122276*	Standard O-ring (90 DURO Fluoroelastomer), black
556540*	Alternate O-ring (70 DURO Buna-N), black
556327	Outlet check ball
557508	Outlet check spring

*Part numbers are for a single O-ring; each section requires nine O-rings.

B Ordering Information

MHH Valve Sections

Also called “Working” sections. Must be ordered in multiples of 5.

Outlet Configuration	Description	Output Per Outlet, in^3 (cm^3)	Part Number
			Standard Section
Single	MHH-6S*	0.012 (0.197)	562679
	MHH-9S*	0.018 (0.295)	562680
	MHH-12S*	0.024 (0.393)	562681
	MHH-15S*	0.030 (0.492)	24X029
	MHH-18S*	0.036 (0.590)	562682
	MHH-21S*	0.042 (0.688)	24X030
	MHH-24S*	0.048 (0.787)	562683
	MHH-30S*	0.060 (0.983)	562684
Twin	MHH-6T	0.006 (0.098)	562685
	MHH-9T	0.009 (0.149)	562686
	MHH-12T	0.012 (0.197)	562687
	MHH-15T	0.015 (0.246)	24X027
	MHH-18T	0.018 (0.295)	562688
	MHH-21T	0.021 (.0344)	24X028
	MHH-24T	0.024 (0.393)	562689
	MHH-30T	0.030 (0.492)	562690

*Each “S” section uses only one outlet, but each intermediate base has two outlets. For each “S” section in the assembly, order one of part number 557349 (1/8 in NPTF Outlet Port Plug) to plug the unused outlet.

C Ordering Information

Cycle Indicators and Proximity Switches

	Part Number	Component	Note
	563251	Magnetic Visual Cycle Indicator	The highly visible cycle indicator has a snap-action movement which allows the user to visually determine the timing of each divider valve cycle.
Image Coming Soon	557745	Explosion-Proof FSmech Proximity Switch	Explosion-proof dry contact switch dual rated for 115 VAC or 10-32 VDC. Includes potted 6 ft (1.8 m) cable with flying leads. Used at pressures that do not exceed 7,500 psi (517 bar) at cycle rates up to 200 cycles per minute. Approved for hazardous locations: Class I, Groups A, B, C and D – Division 1.
Image Coming Soon	558941	Micro-Monitor	LCD shows total cycle count up to 999,999. Reset to zero by inserting the reset magnet into the recessed opening. An LED will also flash with each cycle of the piston in the divider block indicating a complete stroke.
	132799	DNFT – Factory Set	The Digital No-Flow Timer (DNFT) acts as a proximity switch that counts cycles, with an alarm output. The Factory Set version is programmed for a 2 minute alarm time. The Programmable version alarm time can be set from 20 to seconds to 4 minutes and 15 second.
	132800	DNFT – Programmable	

Proximity Switch Spare Parts

Part Number	Component
556570	Standard O-ring (90 DURO Fluoroelastomer), black
556568	Alternate O-ring (90 DURO Buna-N), black
567251	Enclosure Port Plug, with O-ring 556570
132900	DNFT replacement battery

D Ordering Information

Performance Indicators

These vital safeguards react to excess lube pressure when points or lines become blocked.
Installed in indicator ports on the working piston sections, they quickly identify the affected lines.

Reset Indicators with Memory

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/8 NPSF thread with O-ring seal

	Part Number	Cracking Pressure
Image Coming Soon	563258	2,500 psi (172 bar)
	563261	3,000 psi (207 bar)
	563263	3,500 psi (241 bar)
	563262	5,000 psi (345 bar)

Disc-Type Pressure Indicator

Features and Benefits

A blow-out disc ruptures when lube line blockage occurs and lubricant forces a pin to protrude from the body of the indicator. There is no provision for relief and the pressure escalates until relieved elsewhere in the system. The disc must be replaced and the pin reset manually after the blockage is eliminated.

- Easy information on blocked lines, high system pressure or blocked bearings
- 1/8 NPSF thread with O-ring seal

	Part Number	Cracking Pressure	Replacement Rupture Discs
	563229	2,800 psi (193 bar)	557422
	563221	3,700 psi (255 bar)	557423
	563222	4,600 psi (317 bar)	557424
	563224	5,500 psi (380 bar)	557425
	563226	6,400 psi (441 bar)	557427
	N/A	7,300 psi (503 bar)	557428
	N/A	8,200 psi (565 bar)	557429

Performance Indicator Spare Parts

Part Number	Description
556569	Standard O-ring (90 DURO Fluoroelastomer), black
556567	Alternate O-ring (90 DURO Buna-N), black
16U217	Indicator Port Plug, with O-ring 556569

E Ordering Information

"Manzel Mount" MHH valves have the same footprint as the Trabon MSP valves. Please refer to the MSP pages for mounting bar and bracket options available from Graco.

Trabon® MX Divider Valve

Greater Output Volumes for Heavy Service Requirements

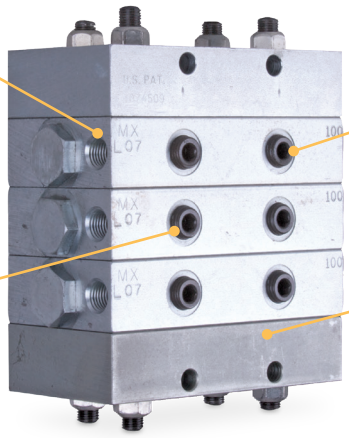
The Trabon MX Series is ideal for steel and paper mill systems with it's economical and compact design.

Durable Design

Withstands harsh environments and operating conditions.

Indicator Ports

Alternate outlets on face of each valve can be fitted with optional performance indicators, taking the guesswork out of troubleshooting.



Easily Accessorized

Accessories such as proximity switch cycle indicators provide positive assurance of a successful lube event.

Built-In Outlet Check Valves

Ensure accurate lube delivery, every time.

Series Progressive

Typical Applications

- Pulp and paper, steel mills, heavy- and high-volume industrial applications
- **Please Note:** MX valves are primarily offered for replacement of existing MX, MXS, and MXO valve assemblies. For new application, consider the MXP series instead.

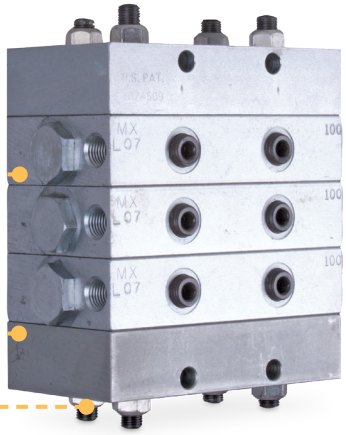
Typical Fluids

- Oil or Grease up to NLGI #2

Technical Specifications

Material	Plated Steel
Maximum Pressure	3,000 psi (207 bar)
Maximum Operating Temperature	200ºF (93ºC)
Maximum Cycle Rate with Cycle Pin	60 cycles/min
Manual	312497

Steps to Build Your MX Divider Valve System:



A Select Valve Working Sections

B Select Inlet and End Sections

C Select Tie Rods and Tie Rod Nuts

Choose from Optional Accessories

D Cross-port and Singling Bars

E Cycle Indicators and Proximity Switches

F Performance Indicators

G Mounting Bars

A Ordering Information

Valve Working Sections

Must be ordered in multiples of two.

Outlet Configuration	Description	Output Per Outlet, in3 (cm3)	Part Number		
			Standard Section	With Cycle Pin – Right	With Cycle Pin – Left
Single	MX-25S	0.050 (0.82)	562514	N/A	
	MX-50S	0.100 (1.64)	562516	562518	562528
	MX-75S	0.150 (2.46)	562538	562519	562529
	MX-100S	0.200 (3.28)	562540	562520	562530
	MX-125S	0.250 (4.10)	562542	562521	562531
	MX-150S	0.300 (4.92)	562545	562522	562532
Twin	MX-25T	0.025 (0.41)	562515	N/A	
	MX-50T	0.050 (0.82)	562517	562523	562533
	MX-75T	0.075 (1.23)	562539	562524	562534
	MX-100T	0.100 (1.64)	562541	562525	562569
	MX-125T	0.125 (2.05)	562543	562526	562535
	MX-150T	0.150 (2.46)	562546	562527	562536

MX Spare Parts and Accessories

Part Number	Description
563917	Cycle indicator repair kit
557509	Replacement intermediate gasket
557391	Replacement 1/4 in NPTF outlet port plug (one is already included with each "S" section)

B Ordering Information

Inlet and End Sections

Must be ordered in multiples of two.

Component	Description	Part Number
Inlet Section	Standard 3/8 in NPSF inlet, accepts NPT fittings	560620
End Section	Standard end section	563287

Note: Each valve, inlet and end section is packaged with a gasket, so a complete MX assembly will have one gasket leftover.

C Ordering Information

Tie Rods and Tie Rod Nuts

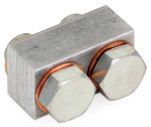
Four tie rods and eight tie rod nuts required for each MX assembly.

Component	Length	Part Number
Tie Rods (4 required)	3-section	557488
	4-section	557489
	5-section	557490
	6-section	557491
	7-section	557492
	8-section	557493
	9-section	560576
	10-section	560577
Tie Rod Nuts (8 required)	N/A	557494

D Ordering Information

Cross-port and Singling Bars

For each bar used, order one of part number 557391 (1/4 in NPT pipe plug) to plug the unused outlet.



Part Number	Component	Description
562917	Right or Left Cross-port Bar	Provides a path to redirect output from one outlet to the next one below it, away from the inlet.
562916	Singling Bar	Converts a “T” valve to an “S” valve

E Ordering Information

Cycle Indicators and Proximity Switches

A wide variety of safeguards monitor and verify lube cycles. These switches sense the divider valve piston’s action for accurate control and monitoring of lube cycles.

Part Number	Component	Description
563260	Magnetic Visual Cycle Indicator	The highly visible cycle indicator has a snap-action movement which allows the user to visually determine the timing of each divider valve cycle.
563272	Single Pole, Double Throw (SPDT) Standard Cycle Switch and Bracket Assembly	Used in conjunction with the cycle indicator pin at cycle rates not exceeding 60 cpm, the switch provides an electrical signal to the system controller which counts cycles to monitor and verify completion of the lube cycle. Included bracket clamps to spud around cycle pin.
563273	Moisture-resistant SPDT Cycle Switch and Bracket Assembly	
564357	Double Pole, Double Throw (DPDT) Cycle Switch and Bracket Assembly	
17L880	Solid State Proximity Switch (see page XX for mating cables)	This rugged switch has no moving parts, making it ideal for applications such as metal stamping presses and yellow iron equipment. 10-32 VDC PNP switching, M12 electrical connector, 200 cpm, 7,500 PSI (518 bar) maximum pressure. 50,000,000 cycle life, IP65, IP68, IP69 rated.
563476	Field-Sensitive Proximity Switch, 3-Pin BH, with O-ring	A ceramic-magnet switch for grease or oil systems up to 200 cpm at pressure up to 3,500 psi (241 bar), accurately signals piston cycles, and is ideal for high-cycle applications. Bradley-Harrison (BH) electrical connectors, 115 VAC.
564399	Field-Sensitive Proximity Switch, 5-Pin BH, with O-ring	

F Ordering Information

Performance Indicators

These vital safeguards react to excess lube pressure when points or lines become blocked. Installed in indicator ports on the working piston sections, they quickly identify the affected lines. 1/4 in NPT male thread installs in the indicator ports on the front of each valve.

Reset Indicators with Memory

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/4 in NPTF thread

Part Number	Indication Pressure
563239	250 psi (17 bar)
563240	500 psi (35 bar)
563241	750 psi (52 bar)
563242	1,000 psi (69 bar)
563243	1,500 psi (103 bar)
563244	2,000 psi (138 bar)
563245	2,500 psi (172 bar)

Automatic Relief Indicators

These performance indicators pinpoint lube line blockages but allow the lube system to continue to supply lubrication to points that are not blocked.

Features and Benefits

- Allows machine to continue to run while non-critical bearings are lubricated
- No time or effort required for reset after blockage is cleared
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/4 in NPTF thread

Part Number	Indication Pressure
563156	750 psi (52 bar)
563157	1,000 psi (69 bar)
563158	1,250 psi (86 bar)
563159	1,500 psi (103 bar)
563160	2,000 psi (138 bar)
563161	3,000 psi (207 bar)

G Ordering Information

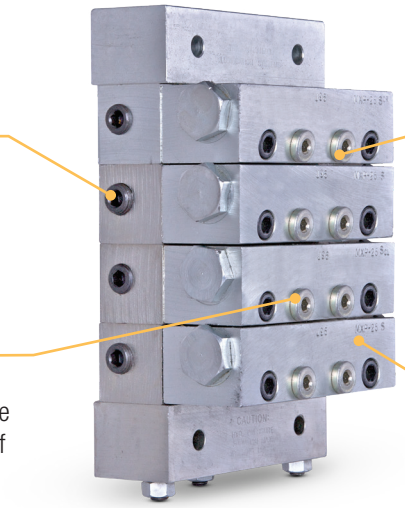
Mounting Bars

Part Number	Component	Description
561102	MX/MXP Mounting Bar	For welding to uneven metal surfaces. Two sets of mounting holes are threaded 5/16-18 to attach MXP or MX. This part is one individual bar, so order quantity 2 when needed.

Trabon® MXP Divider Valve

Modular Version Of MX Valves – Same Function, But Modern Design.

The “big brother” of the MSP. Uses same performance indicators as MSP!



Built-In Outlet Check Valves

Ensure accurate lube delivery, every time.

Easily Accessorized

Accessories such as proximity switch cycle indicators provide positive assurance of a successful lube event.

Indicator Ports

Alternate outlets on face of each valve can be fitted with optional performance indicators, taking the guesswork out of troubleshooting.

Quick Change Valve Sections

Easily removed from the base assembly without disturbing any lube lines.

Series Progressive

Typical Applications

- Pulp and paper, steel mills, heavy- and high-volume industrial applications

Typical Fluids

- Oil or Grease up to NLGI #2

Technical Specifications

Material	Plated Steel
Maximum Pressure	3,000 psi (207 bar)
Maximum Operating Temperature	350ºF (176ºC)
Maximum Cycle Rate with Cycle Pin	60 cycles/min
Maximum Cycle Rate without Cycle Pin	110-200 cycles/min (see chart below)
Manual	312497

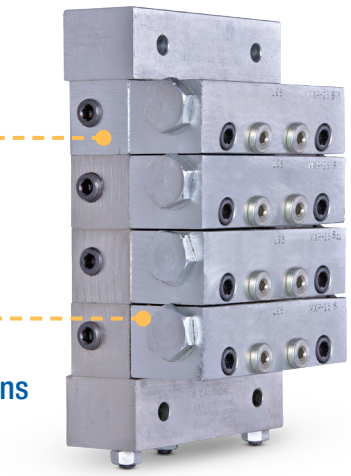
MXP Maximum Cycle Rates without Cycle Pin (cycles/min)

		Number of Sections							
		3	4	5	6	7	8	9	10
Smallest Piston in the Assembly	MXP-150	200	200	200	200	200	200	180	165
	MXP-125	200	200	200	200	200	195	175	155
	MXP-100	200	200	200	200	200	185	165	150
	MXP-75	200	200	200	200	200	175	155	140
	MXP-50	200	200	200	200	195	165	145	130
	MXP-25	200	200	200	200	165	140	125	120

Steps to Build Your MXP Divider Valve System:

A Build Your Base Plate Assembly From the Chart Below

B Select Valve Working Sections



Choose from Optional Accessories

- **C** Cross-port and Singling Bars
- **D** Performance Indicators
- **E** Cycle Indicators and Proximity Switches
- **F** Mounting Bars

A Ordering Information

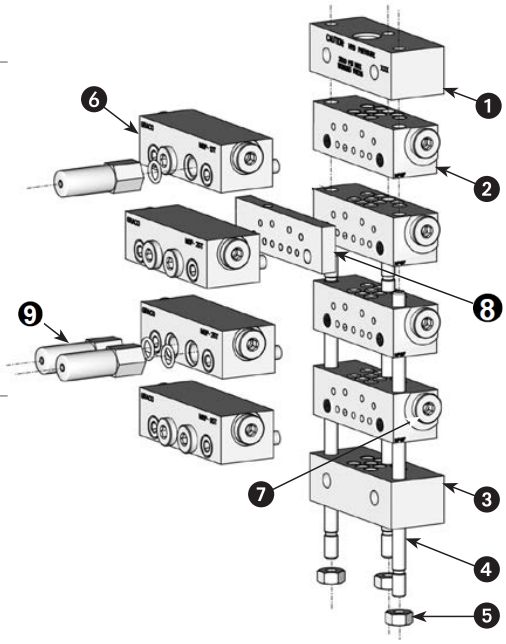
Build Your Own MXP Base Plate Assemblies

How many sections are in the assembly? This includes working sections and bypass blocks. Count up the number of sections and order at least one Intermediate Base Plate for each section. Then add one Inlet and one End section. Finally choose the correct tie rods and order three of them and also three nuts.

Item	Component	Description	Part Number			Note
			NPSF	BSPP	SAE-ORB	
1	Inlet section option	Includes one threaded port	15R993 (3/8-18)	561029 (3/8-19)	15R994 (3/4-16)	Must be ordered in multiples of 5
2	Intermediate base plate	Standard base with outlet checks	563519 (1/4-18)	563522 (1/4-19)	563521 (9/16-18)	
		"MXPO" base, no outlet checks	563527	24Z675	N//A	
3	End section options	Standard	563518			
4	Tie rods (3 required)	3-section	557766			3 tie rods and tie rod nuts required for assembly
		4-section	557767			
		5-section	557768			
		6-section	557769			
		7-section	557770			
		8-section	557771			
		9-section	557772			
		10-section	563520			
5	Tie rod nuts (3 required)	Tie rod nuts	555406			

Legend

1	Inlet Section
2	Intermediate Base Section / Subplate
3	End Section
4	Tie Rod
5	Tie Rod Nut
6	MXP Valve Section
7	Outlet Port Plug
8	Cross-port or Singling Bar
9	Performance Indicator



MXP Section Spare Parts

Part Number	Description
115010*	Standard O-ring (90 DURO Fluoroelastomer), black
563917	Cycle indicator pin repair kit
556328	Outlet check ball
557484	Outlet check spring, NPSF and BSPP bases
556997	Outlet check spring, SAE-ORB bases

*Part numbers are for a single O-ring; each section requires nine O-rings.

B Ordering Information

MXP Valve Sections

Also called “working” sections. Must be ordered in multiples of 2.

Outlet Configuration	Description	Output Per Outlet, in^3 (cm^3)	Part Number	
			Standard Section	With Cycle Pin – Right
Single	MXP-25S*	0.050 (0.82)	562819	N/A
	MXP-50S*	0.100 (1.64)	562820	562830
	MXP-75S*	0.150 (2.46)	562821	562831
	MXP-100S*	0.200 (3.28)	562822	562832
	MXP-125S*	0.250 (4.10)	562823	562833
	MXP-150S*	0.300 (4.92)	562824	562834
Twin	MXP-25T	0.025 (0.41)	562813	N/A
	MXP-50T	0.050 (0.82)	562814	562825
	MXP-75T	0.075 (1.23)	562815	562826
	MXP-100T	0.100 (1.64)	562816	562827
	MXP-125T	0.125 (2.05)	562817	562828
	MXP-150T	0.150 (2.46)	562818	562829

*Each “S” section uses only one outlet, but each intermediate base has two outlets. For each “S” section in the assembly, order one Outlet Port Plug (below), to plug the unused outlet.

Outlet Port Plugs

Part Number			Note
NPSF	BSPP	SAE-ORB	
557391 (NPT)	556427 (with seal ring)	556430 (with O-ring)	1 outlet port plug is required for each “S” valve section.

C Ordering Information

Cross-port and Singling Bars

Part Number	Component	Note
563525	Right Cross-port Bar	1 outlet port plug is required for each cross-port bar
563524	Left Cross-port Bar	
563526	Right and Left Cross-port Bar	2 outlet port plugs are required for each double cross-port bar

D Ordering Information

Performance Indicators

These vital safeguards react to excess lube pressure when points or lines become blocked. Installed in indicator ports on the working piston sections, they quickly identify the affected lines.

Reset Indicators with Memory

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/8 NPSF thread with O-ring seal

	Part Number	Cracking Pressure
Image Coming Soon	563252	250 psi (17 bar)
	563253	500 psi (35 bar)
	563254	750 psi (52 bar)
	563255	1,000 psi (69 bar)
	563256	1,500 psi (103 bar)
	563257	2,000 psi (138 bar)
	563258	2,500 psi (172 bar)
	563261	3,000 psi (207 bar)

Automatic Relief Indicators

Features and Benefits

These performance indicators pinpoint lube line blockages but allow the lube system to continue to supply lubrication to points that are not blocked.

- Allows machine to continue to run when non-critical bearings are blocked
- No time or effort required for reset after blockage is cleared
- Easy information on blocked lines, high system pressure or blocked bearings
- 1/8 NPSF thread with O-ring seal

	Part Number	Cracking Pressure
	563170	750 psi (52 bar)
	563171	1,000 psi (69 bar)
	563172	1,250 psi (86 bar)
	563173	1,500 psi (103 bar)
	563174	2,000 psi (138 bar)
	563175	2,500 psi (172 bar)
	563176	3,000 psi (207 bar)

Performance Indicator Spare Parts

Part Number	Description
556569	Standard O-ring (90 DURO Fluoroelastomer), black
16U217	Indicator Port Plug, with O-ring 556569

E Ordering Information

Cycle Indicators and Proximity Switches

A wide variety of safeguards monitor and verify lube cycles. These switches sense the divider valve piston's action for accurate control and monitoring of lube cycles.

Part Number	Component	Description
563260	Magnetic Visual Cycle Indicator	The highly visible cycle indicator has a snap-action movement which allows the user to visually determine the timing of each divider valve cycle.
563272	Single Pole, Double Throw (SPDT) Standard Cycle Switch and Bracket Assembly	Used in conjunction with the cycle indicator pin at cycle rates not exceeding 60 cpm, the switch provides an electrical signal to the system controller which counts cycles to monitor and verify completion of the lube cycle. Included bracket clamps to spud around cycle pin.
563273	Moisture-resistant SPDT Cycle Switch and Bracket Assembly	
564357	Double Pole, Double Throw (DPDT) Cycle Switch and Bracket Assembly	
17L880	Solid State Proximity Switch (see page XX for mating cables)	This rugged switch has no moving parts, making it ideal for applications such as metal stamping presses and yellow iron equipment. 10-32 VDC PNP switching, M12 electrical connector, 200 cpm, 7,500 PSI (518 bar) maximum pressure. 50,000,000 cycle life, IP65, IP68, IP69 rated.
563476	Field-Sensitive Proximity Switch, 3-Pin BH, with O-ring	A ceramic-magnet switch for grease or oil systems up to 200 cpm at pressure up to 3,500 psi (241 bar), accurately signals piston cycles, and is ideal for high-cycle applications. Bradley-Harrison (BH) electrical connectors, 115 VAC.
564399	Field-Sensitive Proximity Switch, 5-Pin BH, with O-ring	

Proximity Switch Spare Parts

Part Number	Component
556572	Standard O-ring (90 DURO Fluoroelastomer), black
557774	Enclosure Port Plug, requires O-ring 556572 (not included)

F Ordering Information

Mounting Bars

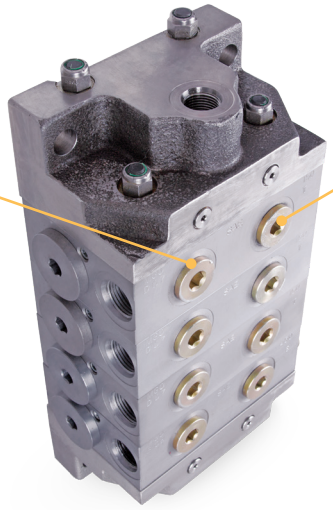
Part Number	Component	Description
561102	MXP/MX Mounting Bar	For welding to uneven metal surfaces. Two sets of mounting holes are threaded 5/16-18 to attach MXP or MX. This part is one individual bar, so order quantity 2 when needed.

Offers The Largest Output Available In A Series Progressive System

Ideal for heavy-duty and large bearing applications with wide temperature variations and high volume requirements. Can be easily accessorized with magnetic and electronic proximity switch cycle indicators to provide positive assurance of a successful lube event.

Indicator Ports

Alternate outlets on face of each valve can be fitted with optional performance indicators, taking the guesswork out of troubleshooting.



Robust Design

Is virtually indestructible and built to perform in extreme environments.

Typical Applications

- Pulp and paper, steel mills, heavy- and high-volume industrial applications

Typical Fluids

- Oil or Grease up to NLGI #2

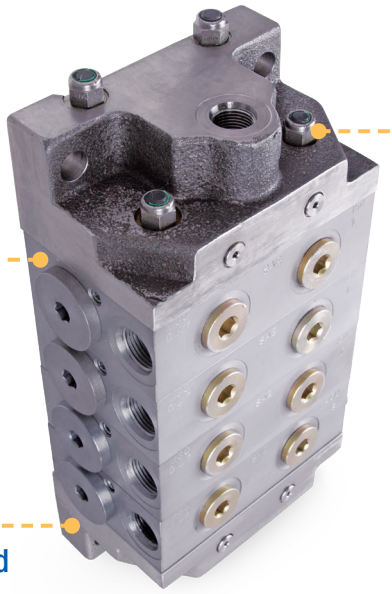
Technical Specifications

Material	Plated Steel
Maximum Pressure	6,000 psi (413 bar)
Maximum Operating Temperature	350ºF (176ºC)
Maximum Cycle Rate with Cycle Pin	60 cycles/min
Maximum Cycle Rate without Cycle Pin	110-200 cycles/min (see chart below)
Manual	312497

MGO Maximum Cycle Rates without Cycle Pin (cycles/min)

		Number of Sections							
		3	4	5	6	7	8	9	10
Smallest Piston in the Assembly	MGO-600	185	140	110	90	80	70	60	55
	MGO-450	185	135	110	90	75	65	60	50
	MGO-300	180	130	100	80	70	60	55	50
	MGO-150	180	125	100	80	65	55	50	45
	MXP-50	200	200	200	200	195	165	145	130
	MXP-25	200	200	200	200	165	140	125	120

Steps to Build Your MGO Divider Valve System:



A Select Valve Working Sections

B Select Inlet and End Sections

C Select Tie Rods and Tie Rod Nuts

Choose from Optional Accessories

D Cycle Indicating Switches

E Performance Indicators

A Ordering Information

Valve Working Sections

Standard 7/8 in-14 SAE-ORB outlet ports.

Outlet Configuration	Description	Output Per Outlet, in^3 (cm^3)	Part Number	
			Standard Section	With Cycle Pin – Right
Single	MGO-150S	0.300 (4.92)	562570	562578
	MGO-300S	0.600 (9.83)	562571	562579
	MGO-450S	0.900 (14.7)	562572	562580
	MGO-600S	1.200 (19.7)	562573	562581
Twin	MGO-150T	0.150 (2.46)	562574	562582
	MGO-300T	0.300 (4.92)	562575	562583
	MGO-450T	0.450 (7.37)	562576	562584
	MGO-600T	0.600 (9.83)	562577	562585

MGO Spare Parts and Accessories

Part Number	Cracking Pressure
563926	Replacement MGO section O-ring kit – 1 kit per section
556424	Replacement 7/8 in-14 SAE-ORB outlet port plug, with O-ring (one is already included with each "S" section)

B Ordering Information

Inlet and End Sections

Component	Description	Part Number
Inlet Section	Standard 7/8-14 SAE-ORB inlet	563277
End Section	Standard end section	563278

C Ordering Information

Tie Rods and Tie Rod Nuts

Four tie rods and eight tie rod nuts required for each MGO assembly.

Component	Length	Part Number
Short Tie Rods (2 required)	3-section	560591
	4-section	560592
	5-section	560593
	6-section	560594
	7-section	560595
	8-section	560596
	9-section	560597
	10-section	560598
Long Tie Rods (2 required)	3-section	560600
	4-section	560601
	5-section	560602
	6-section	560603
	7-section	15U857
	8-section	560604
	9-section	560605
	10-section	560606
Tie Rod Nuts (8 required)	N/A	557494

D Ordering Information

Cycle Indicating Switches

A wide variety of safeguards monitor and verify lube cycles. These switches sense the divider valve piston's action for accurate control and monitoring of lube cycles.

Part Number	Component	Description
563269	SPDT Cycle Switch, provides electrical signal to controller or PLC	Used in conjunction with the cycle indicator pin at cycle rates not exceeding 60 cpm, it provides an electrical signal to the system controller which counts cycles to monitor and verify completion of the lube cycle.
17L881	Solid State Proximity Switch (see page XX for mating cables)	This rugged switch has no moving parts, making it ideal for applications such as metal stamping presses and yellow iron equipment. 10-32 VDC PNP switching, M12 electrical connector, 200 cpm, 6,000 PSI (518 bar) maximum pressure. 50,000,000 cycle life, IP65, IP68, IP69 rated.
563970	Field-Sensitive Proximity Switch, 3-Pin BH, with O-ring, 3,500 psi (241 bar) maximum	A ceramic-magnet switch for grease or oil systems up to 200 cpm, accurately signals piston cycles, and is ideal for high-cycle applications. Bradley-Harrison (BH) electrical connectors, 115 VAC.
564402	Field-Sensitive Proximity Switch, 5-Pin BH, with O-ring, 10,000 psi (690 bar) maximum	

Trabon® MGO Divider Valve

E Ordering Information

Performance Indicators

These vital safeguards react to excess lube pressure when points or lines become blocked.
Installed in indicator ports on the working piston sections, they quickly identify the affected lines.

Reset Indicators with Memory

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings
- 7/8 in-14 SAE-ORB thread, with O-ring

	Part Number	Cracking Pressure
Image Coming Soon	564200	1,500 psi (103 bar)

Solid State PNP Proximity Switches

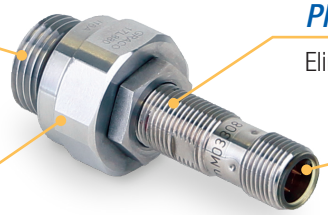
Solid State switches use a transistor instead of moving parts, making them the most durable option. They are the first choice for all applications that run on DC power. Note: all G3 Max pumps run DC power on their cycle switches, even when the pumps are AC powered.

Options for All Graco Trabon Valves

Mating threads for all valves including MSP, CSP and even MJ and MD!

Stainless Steel Construction

IP65, IP68 and IP69 rated.



PNP Transistor

Eliminates moving parts for maximum durability.

M12 Electrical Connector

Mating cables are readily available with options for LED indication and NPN conversion.

Typical Applications

- Cycle Indication for Series Progressive Divider Valves
- Metal stamping, construction equipment, nearly any application with a Series Progressive Divider Valve
- A great match to the G3 Max and G-Mini Controller pumps

Typical Fluids

- Oil or Grease up to NLGI #2

Technical Specifications

Material	Stainless Steel
Operating Voltage	9.6 - 32 VDC
Electrical Design	DC PNP
Max Operating Temperature	176ºF (80 ºC)
Switch state	Normally Open
Rated Life Cycles	50,000,000
Maximum Cycles per Minute	200
Approval or Classification	IP65, IP68, IP69
Manual	3A41444

Ordering Information

Solid State Proximity Switches

Part Number	Divider Valve Series	Maximum Pressure PSI (bar)
17L879	CSP	5,075 (350)
17M380	MD or MJ	3,000 (207)
17L983	MSP or MHH	7,500 (518)
17L880	MX or MXP	8,000 (552)
17L881	MGO	6,000 (414)

Adapter Cables

Convert M12 to the various connections that have traditionally been offered on Trabon proximity switches. See Graco manual number 3A4481 for more information on adapter cables.

Part Number	Notes
24Z714	M12 to 5-pin BH cable also converts signal from PNP to NPN.
24Z715	M12 to 3-pin BH cable also converts signal from PNP to NPN.
24Z719	M12 to 4-pin CH cable; signal remains PNP

M12 Wiring Harnesses

Part Number	Proximity Switch Connection	2nd Connection	Length	Note
For use with a G3 Max or G3 SP when connecting directly to the pump, when LED is required.				
25M602	M12 female, straight	Flying leads	16.5 ft (5 m)	PNP switch with NPN LED – requires 124594
25M603	M12 female, straight	M12 male, straight	16.5 ft (5 m)	PNP switch with NPN LED
For use with an external lubrication controller, G-Mini, PLC or other controller, when LED is required.				
25M604	M12 female, straight	Flying leads	16.5 ft (5 m)	–
24Z720	M12 female, 90º		16.5 ft (5 m)	
26A782	M12 female, 90º		33 ft (10 m)	

Other M12 Cables, Without LED Indication

Part Number	Proximity Switch Connection	2nd Connection	Length	Note
126331	M12 female, straight	Flying lead	16.5 ft (5 m)	Requires 124594 when used with G3 Max or G-Mini
124300	Flying leads	M12 male, straight	16.5 ft (5 m)	Requires 124301 when used with solid state proximity switch
124333	M12 female, straight		16.5 ft (5 m)	–
131214	M12 female, 90º		3.3 ft (1 m)	
131215			6.6 ft (2 m)	
131216			9.8 ft (3 m)	
130282	M12 female, straight		3.3 ft (1 m)	
130280			6.6 ft (2 m)	
130283			9.8 ft (3 m)	

FSM Cycle Indicating Proximity Switches

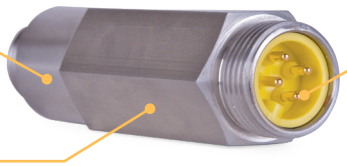
The Field-Sensitive Magnetic proximity switch is a dry contact magnetically actuated switch. Recent design improvmenets allow for reliable operation with AC and DC power. For metal stamping applications and other high-shock locations, use the Solid State proximity switches instead.

Stainless Steel Construction

Pressure ratings up to 8,000 PSI (552 bar).

Options for Most Graco Trabon Valves

Mating threads for valves including MSP, MXP and MGO.



Electrical Connector

Mating cables are readily available with options for LED indication (DC only) and NPN conversion.

Typical Applications

- Cycle Indication for Series Progressive Divider Valves

Typical Fluids

- Oil or Grease up to NLGI #2

Technical Specifications

Material	Stainless Steel
Operating Voltage	110 to 240 VAC, 24 VDC
Switch State	Normally Open
Rated Life Cycle	50,000,000+
Maximum Cycles Per Minute	125
Approval or Classification	UL & CSA
Manual	313228, 313229, 313230, 3A0884

Ordering Information

FSM Proximity Switches

Part Number	Electrical Connector	Maximum Pressure PSI (bar)	Manual
MSP or MHH			
557741	3-pin BH	3,500 (241)	313228
557745	Pigtail**,†	7,500 (518)	313228
557746	5-pin BH	3,500 (241)	313228
557747	4-pin CH	3,500 (241)	313230
MX or MXP			
557752	4-pin CH	8,000 (552)	313229
558938	5-pin BH	8,000 (552)	313229
563476*	3-pin BH	3,500 (241)	313228
564399	5-pin BH	3,500 (241)	313228
564403	M12	8,000 (552)	3A0884
MGO			
563970	3-pin BH	3,500 (241)	313228
563495	4-pin CH	8,000 (552)	313229
564402	5-pin BH	8,000 (552)	313229

*For gasket-seal MX and MXO valves, use part number 563969 instead of 563476

**Includes 6 ft, 3 conductor cable

†UL and CSA approved for hazardous locations: Class I, Groups A, B, C and D – Division 1; Class II, Groups E, F and G – Division 1

BH = Brad Harrison 7/8"

CH = Crouse-Hinds 7/8"

FSM Wiring Harnesses

Part Number	Proximity Switch Connection	2nd Connection	Length	Note
558021	3-pin BH, straight	Flying leads	6 ft (1.83 m)	–
558022	3-pin BH, straight		12 ft (3.66 m)	–
558968	4-pin CH, straight		12 ft (3.66 m)	NPN LED, 10 to 30 VDC only
558025	4-pin CH, straight		12 ft (3.66 m)	PNP LED, 10 to 30 VDC only
558026	4-pin CH, 90°		12 ft (3.66 m)	
558023	5-pin BH, straight		6 ft (1.83 m)	–
558024	5-pin BH, straight		12 ft (3.66 m)	–

Proximity Switch Thread Adapters

	MSP to MX/MXP	MXP to MGO	MSP to MGO
Threads, female by male	7/16-20 f x 3/4-16 m	3/4-16 f x 1 3/8-16 m	7/16-20 f x 1 3/8-16 m
Adapter (bare)	561028	560583	561140
O-ring (one required)	556572	555694	555694

Air Over Oil Manifolds For MSP Valves

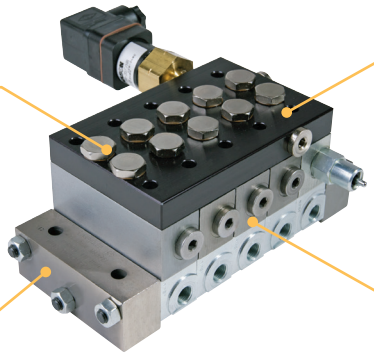
A Graco Exclusive Design! The Air Oil solution that detects air line or oil line faults in your system. Series progressive monitoring ensures your critical bearings are lubricated properly.

Convenient Manifold Design

Mounts directly to the face of standard MSP series progressive divider valve assembly.

Air Combines With The Oil

After the fluid outlet check, preventing air from backing up into your source oil system.



24B240

Shown installed on MSP divider valve assembly

Check Valve Design

Prevents oil from being forced into the air system if lube lines get crushed or bearings get blocked.

Complete Kits

Include manifold, air sensor, and check valves for easy installation.

Typical Applications

- Steel mills, pulp and paper processing, high temperature and dirty environments

Typical Fluids

- Oil

Technical Specifications

Material	Aluminum
Minimum Air Pressure	45 psi (3.1 bar)
Maximum Air Pressure	250 psi (17 bar)
Output	3, 4, 5 or 6 Section Divider Valve Assemblies
Manual	313848

Air/Oil

Ordering Information

AO Series Divider Valves

Part Number	Description
24B237	Air/oil manifold assembly, 3-section
24B239	Air/oil manifold assembly, 4-section
24B240	Air/oil manifold assembly, 5-section
24B241	Air/oil manifold assembly, 6-section
24J814	Air/oil manifold assembly, 3-section without air sensor
24J815	Air/oil manifold assembly, 4-section without air sensor
24J816	Air/oil manifold assembly, 5-section without air sensor
24J817	Air/oil manifold assembly, 6-section without air sensor

ACCESSORIES

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GRACO®

Features and Benefits

- Conserves air – air required only during spray interval.
- Versatile – can be used with any centralized lube system or mechanical oiler and will handle grease or oil.
- External mix nozzle purges itself and prevents clogging.
- Saves lubricant by spraying smaller amounts at frequent intervals, provides better film, with no waste.
- Not to be used with G-Series Pumps or other low flow pumps.

Ball mills run at peak performance with Graco's Air-Lube Spra-Control Valve

Typical Fluids Handled

- Oil – minimum of 100 SUS at 100ºF
- Grease – NLGI #1 at any temperature, NLGI #2 at 32ºF or above

Technical Specifications

Minimum Air Pressure.....20 psi (1.4 bar)
Maximum Air Pressure.....150 psi (10.3 bar)
Spray Patterns.....4 in or 8 in (10.2 cm or 20.3 cm)

Ordering Information

Gear Spray Valves	
563275	Air-lube control valve and nozzle assembly – 4 in spray diameter, normal
563276	Air-lube control valve and nozzle assembly – 8 in spray diameter, wide

Zone Valves

Features and Benefits

- Designed to custom fit lubrication systems and control when sections or zones of the system will receive lubricant
- Available in two- or three-way styles
- Available with normally closed and normally open valves for added convenience
- DC models meet typical application requirements

24P976

24P977

Ordering Information

Zone Valves	
24P976	Two-way valve, 24 VDC, normally open, Deutsch cable, 3,500 psi (241 bar)
24T296	Two-way valve, 24 VDC, normally closed, Deutsch cable, 3,500 psi (241 bar)
24P977	Three-way valve, 24 VDC, normally closed, Deutsch cable, 3,500 psi (241 bar)

Features and Benefits

- Provides quick troubleshooting tool with visual indication
- No tools for reset or parts to replace after indication
- Easy information on blocked lines, high system pressure or blocked bearings

563242

Simple point troubleshooting with visual indication

Technical Specifications

Reset w/Memory psi (bar)	250 (17)	500 (35)	750 (52)	1,000 (69)	1,500 (103)	2,000 (138)	2,500 (172)
MJ	•	•	•	•	•	•	
MSP	•	•	•	•	•	•	•
MXP	•	•	•	•	•	•	•
MX	•	•	•	•	•	•	•
MGO					•		

Ordering Information

Divider Valve Reset Indicator w/Memory for MJ, MSP, MHH and MXP	
563231	250 psi (17 bar)
563232	500 psi (35 bar)
563233	750 psi (52 bar)
563234	1,000 psi (69 bar)
563235	1,500 psi (103 bar)
563236	2,000 psi (138 bar)
563237	2,500 psi (172 bar)
563238	3,500 psi (241 bar)
Divider Valve Reset Indicator w/Memory and O-Ring Seal for MX	
563239	250 psi (17 bar)
563240	500 psi (35 bar)
563241	750 psi (52 bar)
563242	1,000 psi (69 bar)
563243	1,500 psi (103 bar)
563244	2,000 psi (138 bar)
563245	2,500 psi (172 bar)
Divider Valve Reset Indicators w/Memory and O-Ring Seal for MSP, MHH and MXP	
563252	250 psi (17 bar)
563253	500 psi (35 bar)
563254	750 psi (52 bar)
563255	1,000 psi (69 bar)
563256	1,500 psi (103 bar)
563257	2,000 psi (138 bar)
563258	2,500 psi (172 bar)
563261	3,000 psi (207 bar)
563262	5,000 psi (345 bar)
563263	3,500 psi (241 bar)
Divider Valve Reset Indicators w/Memory and O-Ring Seal for MGO	
564200	1,500 psi (103 bar)

Automatic Relief Indicator

Features and Benefits

These performance indicators pinpoint lube line blockages but allow the lube system to continue to supply lubrication to points that are not blocked.

- Allows machine to continue to run while non-critical bearings are lubricated
- No time or effort required for reset after blockage is cleared
- Easy information on blocked lines, high system pressure or blocked bearings

563159

Keep your machine running while lubrication gets to critical points

Typical Applications

- Works with MSP, MX, MXP, MJ and MHH divider valves

Technical Specifications

Auto Relief psi (bar)	750 (52)	1,000 (69)	1,250 (86)	1,500 (103)	2,000 (138)	2,500 (172)	3,000 (207)
MJ	•	•		•	•		
MSP	•	•	•	•	•	•	•
MXP	•	•	•	•	•	•	•
MX		•		•	•	•	•

Ordering Information

Divider Valve Automatic Relief Indicators for MX	
563156	750 psi (52 bar)
563157	1,000 psi (69 bar)
563158	1,500 psi (103 bar)
563159	2,000 psi (138 bar)
563160	2,500 psi (172 bar)
563161	3,000 psi (207 bar)
Divider Valve Automatic Relief Indicators for MSP, MHH, MXP and MJ	
563163	750 psi (52 bar)
563164	1,000 psi (69 bar)
563165	1,250 psi (86 bar)
563166	1,500 psi (103 bar)
563167	2,000 psi (138 bar)
563168	2,500 psi (172 bar)
563169	3,000 psi (207 bar)
Divider Valve Automatic Relief Indicators with O-RIng Seal for MSP, MHH and MXP	
563170	750 psi (52 bar)
563171	1,000 psi (69 bar)
563172	1,250 psi (86 bar)
563173	1,500 psi (103 bar)
563174	2,000 psi (138 bar)
563175	2,500 psi (172 bar)
563176	3,000 psi (207 bar)

Features and Benefits

Used on MH divider valve applications where lube system pressures exceed 2,500 psi.

- High pressure from blockage causes a disc to rupture
- Lubricant forces an indicator pin to protrude, indicating the blockage
- High pressure backs up through the system and trips a switch to shut the system off
- When fault is corrected, disc must be replaced and pin reset

563229

Know quickly when critical bearings aren't getting lubricated

Typical Applications

- Works with MHH divider valves

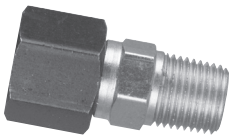
Ordering Information

Divider Valve Rupture Indicators w/Memory	
563220	3,700 psi (255 bar)
563227	7,300 psi (503 bar)
563228	2,800 psi (193 bar)
564355	4,600 psi (317 bar)
563223	5,500 psi (379 bar)
563225	6,400 psi (441 bar)
563229	2,800 psi (193 bar) with o-ring seal
563221	3,700 psi (255 bar) with o-ring seal
563222	4,600 psi (317 bar) with o-ring seal
563224	5,500 psi (379 bar) with o-ring seal
563226	6,400 psi (441 bar) with o-ring seal
Replacement Rupture Discs	
557422	2,800 psi (193 bar)
557423	3,700 psi (255 bar)
557424	4,600 psi (317 bar)
557425	5,500 psi (379 bar)
557427	6,400 psi (441 bar)
557428	7,300 psi (503 bar)
557429	8,200 psi (565 bar)

Rupture to Atmosphere Indicator

Features and Benefits

- Used in conjunction with system pressure switch – can warn of a fault while allowing lube system to continue to deliver to critical bearings
- Requires replacement of the rupture disc to restart the lube system
- Easy information on blocked lines, high system pressure or blocked bearings



563191

Blockages are easy to detect with the simple Rupture to Atmosphere indicator

Rupture to Atmosphere psi (bar)	1,450 (100)	1,750 (121)	2,050 (141)	2,350 (162)	2,950 (203)	3,250 (224)
MJ		•		•	•	•
MSP		•		•	•	•
MX	•	•	•	•	•	

Ordering Information

Rupture-to-Atmosphere Indicators for MJ, MSP, MHH and MXP	
564059	1,750 psi (121 bar)
563191	2,350 psi (162 bar)
563192	2,950 psi (203 bar)
563193	3,250 psi (224 bar)
563194	5,000 psi (345 bar)
563218	6,400 psi (441 bar)
563219	7,300 psi (503 bar)
563217	5,500 psi (379 bar)
Rupture-to-Atmosphere Indicators for MX	
563179	1,450 psi (100 bar)
563182	1,750 psi (121 bar)
563183	2,050 psi (141 bar)
563184	2,350 psi (162 bar)
563185	2,950 psi (203 bar)
563186	1,450 psi (100 bar), with spud assembly
563187	1,750 psi (121 bar), with spud assembly
563188	2,350 psi (162 bar), with spud assembly
Replacement Rupture Packs of 6 (11/16 in / 17.5 mm diameter discs)	
563962	1,450 psi (100 bar) – yellow
563963	1,750 psi (121 bar) – red
563964	2,050 psi (141 bar) – orange
563965	2,350 psi (162 bar) – aluminum
563966	2,940 psi (203 bar) – blue
Replacement Rupture Packs of 25 (3/8 in / 9.5 mm diameter discs)	
563952	900 psi (62 bar) – black
563954	1,450 psi (100 bar) – yellow
563955	1,750 psi (121 bar) – red
563956	2,050 psi (141 bar) – orange
563957	2,350 psi (162 bar) – aluminum
563958	2,650 psi (183 bar) – pink
563959	2,950 psi (203 bar) – blue
563960	3,250 psi (224 bar) – purple
563961	5,000 psi (345 bar) – brown

Features and Benefits

Six steel balls in a clear sleeve follow a magnet which moves with the cycling piston, providing a clear visual indication of lube cycles.

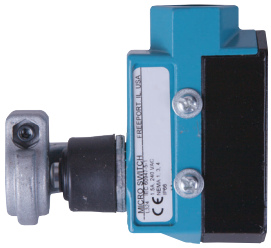
563251

Ordering Information

Divider Valve Cycle Indicators and Switches	
563251	MS/MHH visual cycle indicator assembly – o-ring seal
563260	MX/MXP visual cycle indicator assembly
563250	MS/MHH visual cycle indicator assembly – gasket seal

Cycle Switch

- Monitors piston movement to ensure completed lubrication cycle – must have cycle indicator pin
- Provides positive feedback based on actual metering piston movement
- Mounts to MJ, MSP, MXP, or MX divider with cycle pin option with simple install
- Able to be set for normally open or normally closed operation



563272

Integrates to controllers, starters or PLCs

Technical Specifications

Voltage	Amp Rating
125/250/480 VAC	15A
125 VDC	1/2A
250 VDC	1/4A
24 VDC	6A*

*non-inductive

Ordering Information

Cycle Switches	
563270	MD-2, cycle switch, bracket assembly
563271	MD-3, cycle switch, bracket assembly
564356	MD-4, cycle switch, bracket assembly
563269	MGO cycle switch (SPDT), bracket assembly
557781	Replacement cycle switch for 563269, 563270, 563271, 564356, 563272
564357	MHP cycle switch (DPDT) bracket assembly
563272	MJ/MS/MHH/MXP cycle switch (SPDT) bracket assembly
563273	MJ/MS/MHH/MXP cycle switch (SPDT) bracket assembly – moisture resistant
557546	Replacement bracket – 563272, 563273, 564357
260067	1/2 in NPT cord grip for use with switch 557781

Pressure Sensors

Features and Benefits

- Used in Single Line Parallel systems to signal the controller to stop the pump and start venting when the lube system reaches pressure
- In Series Progressive systems, signals possible development of blockages, dirty filters, or other system problems

24K414 – Easy to adjust M12 by 1/4 in NPT pressure switch

- Orange dials to easily adjust set pressure and reset pressure
- LED lights visually display pressure switch operation
- 4-pin M12 connector easily connects to G3 Max pressure input via cable 124333 (sold separately)
- 1 /4 in NPT connection matches GL-32 and GL-43 inlet thread
- Set pressure range 290 to 5,800 psi (20 to 400 bar), reset pressure range 175 to 5,685 psi (12 to 392 bar)
- 9.6-32 VDC PNP polarity, also works with AC-powered G3 Max pumps
- IP67 protection rating

24K414

Physical dials allow for easy visual adjustment of set and reset pressures

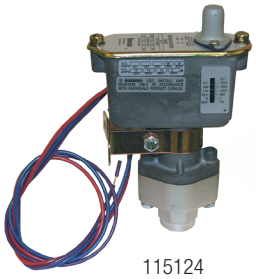
557829 – Time proven, moisture resistant pressure switch

- Dry contact switch can be wired both Normally Open and/or Normally Closed
- Spare part for many Trabon pumps, including Modu-Flo
- Adjustable set pressure range 400 to 4,700 psi (28 to 324 bar), factory set at 1,150 psi (79 bar),
- Compatible with AC and DC voltage
- NEMA 4 rated, Moisture resistant, UL and CE marked

557829 shown with M12 connector 124595 (sold separately)

High-Low, Adjustable Pressure Switches

115124	Single post pressure switch, NEMA 3
24N181	IP65 rated for harsh environments. Adjustable from 580-5,800 psi (40 to 400 bar). Fluoroelastomer seals are suitable for use in high temperature environments and synthetic lubricants. Large orifice reduces grease solidification. DIN connector (Form-A), includes mating connector.



115124

24N181

New Pressure Sensors

- With DT connectors for mobile applications
- 3/8 in NPT thread options for use with GCI and GL-1 injectors
- Analog transducer works with GLC X controller

133353	3,500 psi Fixed Pressure Switch (non-adjustable) – 3-pin DT electrical connector, 1/4 in NPT male thread, SPDT, watertight SST body.
133357	Pressure Transducer – analog sensor, 0-5,000 psi, 0.5-4.5 VDC, 3-pin DT electrical connector, 3/8 in NPT male thread, watertight SST body.
133356	Cable – 3-socket DT to flying leads, 10 ft (3 m). Requires M12 connector 124594 or 124595 to connect to G3 Max.
25U286	Switch Kit – includes fixed pressure switch 133353, cable 133356 and 3/8 in NPT thread adapter for GCI and GL-1 systems.
25U285	Pressure Transducer Kit – includes pressure sensor 133357 and cable 133356.

Image Coming Soon

133353

Non-Adjustable Pressure Switch – factory set at 3,500 PSI

133357

Pressure Transducer – analog output 0.5 to 4.5 VDC

Features and Benefits

- Monitors lube line integrity to ensure lubricant is delivered to critical bearings
- Provides a visual or electronic indication
- Works with terminating oil or grease systems as well as recirculating systems

563079

The only device that provides visual indication that bearing lines are intact

Technical Specifications

	BLI500	BLI1000	BLI1500
Simulator Pressure	60 psi (4.1 bar)	100 psi (6.9 bar)	150 psi (10.3 bar)
Minimum Pump Pressure	1,000 psi (69.0 bar)	1,500 psi (103.4 bar)	2,500 psi (172.4 bar)
Application	Recirculating Oil	Recirculating Oil or Terminating Oil	Grease

Ordering Information

Broken Line Indicators

System Type	BLI Rating	Simulator Rating	ΔP	Pressure Switch Setting (psi)	Pump Relief Valve (psi)	Blowout Disc (psi)	Minimum Pump Capacity (psi)	BLI Kit Part Number	BLI Part Number	Simulator Part Number
Re-Circulating Oil	500	60	440	400	700	N/A	1,000	563078	563068	563075
Re-Circulating Oil	1,000	100	900	850	1,400	N/A	1,500	563079	563069	563076
Terminating Oil	1,000	100	900	850	N/A	1,450	2,000	563079	563069	563076
Terminating Grease	1,500	150	1,350	1,300	N/A	2,350	2,500	563080	563070	563077

Ordering Information

All filter ports are female both end (fbe) unless otherwise stated. For more details, search www.graco.com for brochure L15200.

MSP Inlet Oil Filters – Typically used as a secondary filter at the inlet of MSP divider valve assemblies.

Part Number	Type	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating
563091	MSP standard inlet filter	3,500 (241)	1/4-18 NPTF female x male	557134	10
563074	MSP zero-leak inlet "last chance" filter/restrictor		1/4-18 NPSF f x 1/4-18 NPTF m	N/A	90
563094	MSP standard/zero-leak/shunt valve inlet filter		1/4-18 NPSF f x 1/4-18 NPTF m		
564327	MSP standard/zero-leak/shunt valve inlet filter and check valve		1/4-18 NPSF f x 1/4-18 NPTF m		
564326	MSP standard Inlet filter and check valve		7/16-20 SAE-ORB female x male		
563073	MSP zero-leak and shunt "last chance" filter		9/16-18 SAE-ORB female x male		
564342	MSP standard and zero-leak inlet filter		1/4-19 BSPP female x male		
563480	ZMSP modular filter block	3,000 (207)	Mounts on base 563479		25

Cartridge Oil Filters equipped with "HF2" replacement elements – Versatile medium pressure oil filters for applications up to 3 gpm (11 lpm).

Part Number	Type	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating
564004	Single element with electrical and visual indicator	3,000 (207)	3/4-14 BSPP (ISO-1179)	556031	10
564003			3/4-14 BSPP (ISO-1179)	556032	20
564005			M27 x 2 (ISO-6149)	556031	10
564006			M27 x 2 (ISO-6149)	556032	20
562880			1 1/16-12 SAE (ISO-11926)	556031	10
564007			1 1/16-12 SAE (ISO-11926)	556032	20
562881	Single element with visual indicator		3/4-14 BSPP (ISO-1179)	556031	10
564008			3/4-14 BSPP (ISO-1179)	556032	20
564009			M27 x 2 (ISO-6149)	556031	10
564010			M27 x 2 (ISO-6149)	556032	20
562882			1 1/16-12 SAE (ISO-11926)	556031	10
562883			1 1/16-12 SAE (ISO-11926)	556032	20

Note: for NPT applications, choose one of the "SAE" options above and add quantity 2 of part number 113613 to adapt to 1/2-14 NPTF thread.

Replacement Elements For Legacy Single and Dual Cartridge Filters – Use to replace string filters and pleated elements in legacy Trabon/Manzel canister filters.

Part Number	Dimensions	Micron Rating	Where used – legacy filter part number
557803	2-5/8 in (67 mm) OD x 3-5/8 in (92 mm) L	10	183-000-001, 183-000-041, 183-000-141
557804		25	183-000-011, 183-000-051, 183-000-151
557805		50	50 micron alternate for 3-5/8 in elements (above)
557806	2-5/8 in (67 mm) OD x 9-5/8 in (244 mm) L	10	183-000-071, 183-000-111, 183-000-201
557807		25	183-000-081, 183-000-121, 183-000-211
557808		50	50 micron alternate for 9-5/8 in elements (above)
557811		1	1 micron alternate for 9-5/8 in elements (above)

Spin-On Oil Filters – Low pressure, high flow oil filters for applications up to 20 gpm (76 lpm). Typical applications include return lines in recirculating systems, and fill lines.

Part Number	Type	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating
563092	Assembly with internal 25 PSI (1.7 bar) bypass	200 (13.8)	3/4-14 NPT	563093	10
563095	Assembly with external 150 PSI (10.3 bar) relief				
564343	Assembly 563095 with fill stud and mounting bracket				
563096	Assembly with external 150 PSI (10.3 bar) relief			563097	25
563099	Assembly with external 150 PSI (10.3 bar) relief	150 (10.3)	3/4-14 BSPP (ISO 1179-1)		
563100	Assembly with external 150 PSI (10.3 bar) relief		M27x2 (ISO 6149)		

Ordering Information

In-Line Oil Filter – High-Pressure – Use with Trabon and G-series pumps in medium duty applications. Miniature Meter-Flo and Modu-Flo oil tanks include a bracket designed to receive these filters.

Part Number	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating
563511	7,500 (517)	1/4-18 NPTF	563509	10
563512			563510	25
563513		9/16-18 SAE	563509	10
563514			563510	25
563516		1/4-19 BSPP (ISO 1179)	563509	10
563515			563510	25

In-Line Grease/Heavy Oil Strainer – High-Pressure – Use with Trabon and G-series pumps in medium duty applications. Install on reservoir fill line or near pump outlet to protect system from contaminants.

Part Number	Type	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating (Mesh Rating)
563508	Heavy oil strainer	7,500 (517)	1/4-18 NPTF	557701	44 (325)
563507	Grease strainer		1/4-18 NPTF	557700	149 (100)
564406			1/4-19 BSPP (ISO 1179)		
563517			M14x1.5 (ISO 6419)		

Fill Point Strainers with Removable Element – Installs in fill port on reservoirs with 1/4 in NPT thread.

Part Number	Type	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating (Mesh Rating)
563103	Oil	3,000 (207)	1/4-18 NPSF f x 1/4-18 NPTF m	557154	44 (325)
563102	Grease			557153	149 (100)

System-Specific Oil Filters – Filters designed for use with application-specific oil systems.

Part Number	Type	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating
564053	Thrif-T Luber (TLLF-00) in-line oil filter	500 (34)	1/8-27 NPSF	557132	25
561031	High-speed SpindL-Gard inlet block filter	N/A	N/A	563489	10

Barrel Pump Fill Line Filter – Small inline filter for use as a fill filter for barrel pump modules including Fire-Ball and Dyna-Star families.

Part Number	Type	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating
77X523	Inline fill line filter	5,000 (344)	3/8-18 NPTF female inlet x male outlet	77X541	400

"Red Alert" Grease Filter – Ideal for use as a fill line filter for barrel pump modules including Fire-Ball and Dyna-Star families. The indicator provides gradual warning of a dirty element.

Part Number	Type	Max Pressure PSI (bar)	Ports	Replacement Element	Micron Rating
17L366	36 in^2 steel mesh filter, 2 gpm (7.57 lpm) flow capacity	3,000 (207)	3/4-14 NPT	129031	380

Oil Brushes

Part Number	Material	Dimensions	Maximum Temperature	Thread
124089	Horsehair	3/4 in (20 mm) diameter	176°F (80°C)	1/4 in-19 BSPP female
124090		1.2 in (30 mm) x 1.6 in (40 mm)		
124091		1.2 in (30 mm) x 2.4 in (60 mm)		
124092		1.2 in (30 mm) x 3.9 in (100 mm)		
124114	Nylon	5/8 in (16 mm) diameter	160°F (71°C)	1/8 in-27 NPT male
124115		1/2 in (13 mm) x 2 in (51 mm)		

124089

124090

Ordering Information

Pressure Gauges - Bottom and Back Mounted	
126005	0 to 5,000 psi (0 to 344.7 bar), 1/4 in (6.4 mm) NPT brass back mount connection, liquid-filled, operating range -40ºF to 150ºF (-40ºC to 66ºC)
557866	0 to 3,000 psi (0 to 206.8 bar), standard
558948	0 to 150 psi (0 to 10.3 bar), 1/4 in (6.4 mm) NPT brass bottom mount connection, standard
557713	0 to 3,000 psi (0 to 206.8 bar), 1/4 in (6.4 mm) NPT stainless steel bottom mount connection, liquid-filled
102814	0 to 5,000 psi (0 to 344.7 bar), 1/4 in (6.4 mm) NPT brass bottom mount connection, standard
557278	0 to 1,500 psi (0 to 103.4 bar), 1/4 in (6.4 mm) NPT brass back mount connection, standard
557864	0 to 3,000 psi (0 to 206.8 bar), 1/4 in (6.4 mm) NPT brass back mount connection, standard
558297	0 to 10,000 psi, 1/4 in NPT brass back mount connection, standard
558298	0 to 10,000 psi (0 to 689.5 bar), 1/4 in (6.4 mm) NPT steel back mount connection, liquid-filled
Outlet Check Valves	
563196	Single check valve, 1/8-27 in (3.2 mm-68.6 cm) NPTF x 1/8-27 in (3.2 mm-68.6 cm) NPSF carbon steel, steel ball, 5,000 psi (344.7 bar) max
563052	Single check valve, 7/16-20 in (11.1 mm-50.8 cm) x 7/16-20 in (11.1 mm-50.8 cm) SAE stainless steel, fluoroelastomer ball, 7,500 psi (517.1 bar) max
563054	Single check valve, 7/16-20 in (11.1 mm-50.8 cm) x 7/16-20 in (11.1 mm-50.8 cm) SAE stainless steel, steel ball, 3,500 psi (241.3 bar) max
Maxi-Flo Relief Valve - Field-Installed Only	
563375	600 psi (41.4 bar)
Single Ball Check Valves	
563195	10 psi (.69 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPTF (M) x 1/8 in (3.2 mm) NPSF (F), steel body/ball, 5,000 psi (344.7 bar) max
563199	15 psi (1.03 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPSF (F) x 1/8 in (3.2 mm) NPTF (M), steel body/ball, 5,000 psi (344.7 bar) max
563196	35 psi (2.4 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPTF (M) x 1/8 in (3.2 mm) NPSF (F), steel body/ball, 5,000 psi (344.7 bar) max
563200	35 psi (2.4 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPSF (F) x 1/8 in (3.2 mm) NPTF (M), steel body/ball, 5,000 psi (344.7 bar) max
563201	60 psi (4.1 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPSF (F) x 1/8 in (3.2 mm) NPTF (M), steel body/ball, 5,000 psi (344.7 bar) max
563197	125 psi (8.6 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPTF (M) x 1/8 in (3.2 mm) NPSF (F), steel body/ball, 5,000 psi (344.7 bar) max
563198	250 psi (17.2 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPTF (M) x 1/8 in (3.2 mm) NPSF (F), steel body/ball, 5,000 psi (344.7 bar) max
563202	250 psi (17.2 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPSF (F) x 1/8 in (3.2 mm) NPTF (M), steel body/ball, 5,000 psi (344.7 bar) max
563051	360 psi (24.8 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPTF (M) x 1/8 in (3.2 mm) NPSF (F), Steel Body/Ball, 5,000 psi (344.7 bar) max
563206	10 psi (.69 bar) nominal cracking pressure, 1/4 in (6.4 mm) (M) x 1/4 in (6.4 mm) (F), steel body/ball, 5,000 psi (344.7 bar) max
563210	10 psi (.69 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPSF (F) x 1/4 in (6.4 mm) NPTF (M), steel body/ball, 5,000 psi (344.7 bar) max
563207	35 psi (2.4 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPTF (M) x 1/4 in (6.4 mm) NPSF (F), steel body/ball, 5,000 psi (344.7 bar) max
563211	35 psi (2.4 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPSF (F) x 1/4 in (6.4 mm) NPTF (M), steel body/ball, 5,000 psi (344.7 bar) max
563208	100 psi (6.9 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPTF (M) x 1/4 in (6.4 mm) NPSF (F), steel body/ball, 5,000 psi (344.7 bar) max
563209	250 psi (17.2 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPSF (F) x 1/4 in (6.4 mm) NPTF (M), steel body/ball, 5,000 psi (344.7 bar) max
563054	35 psi (2.4 bar) nominal cracking pressure, 7/16-20 in (14.3 mm-50.8 cm) SAE (M) x 7/16-20 in (14.3 mm-50.8 cm) SAE (F), SS body/steel ball, 3,500 psi (241.3 bar) max
563055	35 psi (2.4 bar) nominal cracking pressure, 9/16-18 in (14.3 mm-45.7 cm) SAE (M) x 9/16-18 in (14.3 mm-45.7 cm) SAE (F), SS body/steel ball, 3,500 psi (241.3 bar) max
563052	35 psi (2.4 bar) nominal cracking pressure, 7/16-20 in (14.3 mm-50.8 cm) SAE (M) x 7/16-20 in (14.3 mm-50.8 cm) SAE (F), SS body/FKM ball, 7,500 psi (517.1 bar) max
563047	42 psi (2.9 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPSF (F) x 1/4 in (6.4 mm) NPSF (F), SS body/NBR ball, 7,500 psi (517.1 bar) max
563046	48 psi (3.3 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPSF (F) x 1/4 in (6.4 mm) NPSF (F), SS body/FKM ball, 7,500 psi (517.1 bar) max
563048	35 psi (2.4 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPSF (F) x 1/8 in (3.2 mm) NPTF (M), steel body/FKM ball, 100 psi (6.9 bar) max
563049	35 psi (2.4 bar) nominal cracking pressure, 1/8 in (3.2 mm) NPTF (M) x 1/8 in (3.2 mm) NPSF (F), steel body/FKM ball, 100 psi (6.9 bar) max
Double Ball Check Valves	
562642	90 psi (6.2 bar) nominal cracking pressure, 1/8 in NPT(F) x 1/8 in NPT(M), carbon steel body, SS ball, 8,000 psi (551.6 bar) max
562647	90 psi (6.2 bar) nominal cracking pressure, 1/8 in NPT(F) x 1/8 in NPT(M), SS body/ball, 8,000 psi (551.6 bar) max
563203	45 psi (3.1 bar) nominal cracking pressure, twin tandem, 1/4 in (6.4 mm) NPTF (M) x 1/8 in (3.2 mm) NPTF (M), SS body/ball, 10,000 psi (690 bar) max
563205	45 psi (3.1 bar) nominal cracking pressure, twin tandem, 1/4 in (6.4 mm) NPTF (M) x 1/4 in (6.4 mm) NPTF (M), SS body/ball, 10,000 psi (690 bar) max
563058	100 psi (2.4 bar) nominal cracking pressure, 1/4 in (6.4 mm) IP (F) x 1/4 in (6.4 mm) IP (M), brass body/ball, 3,000 psi (206.9 bar) max
563059	100 psi (2.4 bar) nominal cracking pressure, 1/4 in (6.4 mm) in O.D. pipe inlet (F), 1/4 in (6.4 mm) NPT (M) outlet, brass body/ball, 3,000 psi (206.9 bar) max
563061	48 psi (3.3 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPSF (F) x 1/4 in (6.4 mm) NPSF (F), SS body/FKM ball, 7,500 psi (517.1 bar) max
563060	48 psi (3.3 bar) nominal cracking pressure, 1/4 in (6.4 mm) NPSF (F) x 1/4 in (6.4 mm) NPSF (F), SS body/NBR ball, 7,500 psi (517.1 bar) max

Ordering Information

8.6 mm OD Hoses and Accessories				
Hose – 8.6 mm OD, 5/32 in (4 mm) ID, 3,000 PSI, braided with polyurethane cover				
17S552	82 ft (25 m)			
17S553	164 ft (50 m)			
17S554	328 ft (100 m)			
17S555	656 ft (200 m)			
Hose Ends – threaded, hose sleeve already included				
17Y690	Field-installable swivel hose end fitting, 8.6 mm OD hose, #4 JIC, SAE 7/16-20 female			
17Y691	Field-installable swivel hose end fitting, 8.6 mm OD hose, 1/8 NPT Male			
Hose Ends – 6 mm OD studs				
17L648	Hose sleeve, 8.6 mm OD hose – combine with any of the hose studs below			
G-Lock P-T-C	Compression			
17L649	17R565	Straight 6 mm hose stud		
17L650	17R566	90 deg. elbow 6 mm hose stud		
NPT and BSP Fittings – 6 mm ID on one end to receive 6 mm hose stud, male pipe thread on other end				
G-Lock P-T-C		Compression		
Straight	Elbow (90)	Straight	Elbow (90)	Pipe Thread
17Y689	N/A	17T780	17T781	1/8 in NPT
N/A	N/A	17T782	17T783	1/4 in NPT
17L545	17L449	17L548	17L546	1/8 in BSP
17R569	N/A	17R571	17R572	1/4 in BSP
1/8 in ID Hoses and Accessories				
128570	Hose, 1/8 in ID, 3,000 PSI, 200 feet, braided with polyurethane cover			
128571	Hose, 1/8 in ID, 3,000 PSI, 400 feet, braided with polyurethane cover			
128862	Hose, 1/8 in ID, 3,000 PSI, 2,000 feet, braided with polyurethane cover			
128579	Hose guard, 3/8 in ID, 160 feet			
128580	Hose guard, 3/8 in ID, 320 feet			
128561	Field-installable swivel hose end fitting, 1/8 in ID hose, #4 JIC, SAE 7/16-20 female			
128562	Field-installable swivel hose end fitting, 1/8 in ID hose, 1/8 NPT male			
128006	Clamp, 3/8 in OD hose			
17L941	Hose repair kit, 1/8 in OD			
1/4 in ID Hoses and Accessories				
128572	Hose, 1/4 in ID, 2,750 PSI, 100 feet, braided with polyurethane cover			
128573	Hose, 1/4 in ID, 2,750 PSI, 125 feet, braided with polyurethane cover			
130281	Hose, 1/4 in ID, 2,750 PSI, 250 feet, braided with polyurethane cover			
131164	Hose, 1/4 in ID, 2,750 PSI, 500 feet, braided with polyurethane cover			
128581	Hose guard, 1/2 in ID 80 feet			
128582	Hose guard, 1/2 in ID 100 feet			
128563	Field-installable swivel hose end fitting, 1/4 in ID hose, #4 JIC, SAE 7/16-20 female			
128564	Field-installable swivel hose end fitting, 1/4 in ID hose, 1/4 NPT male			
128565	Field-installable swivel hose end fitting, 1/4 in ID hose, 1/8 NPT male			
557944	Clamp, 7/16 in OD hose			
17L942	Hose repair kit, 1/4 in OD			
3/8 in ID Hoses and Accessories				
17P336	Hose, 3/8 in ID, 4750 PSI, 100 feet, steel braided with synthetic rubber cover			
17P337	Field-installable swivel hose end fitting, 3/8 in ID hose, #6 JIC, SAE 9/16-18 female			
117832	Fitting, #6 JIC SAE 9/16-18 male x 3/8 in NPT male			
1/8 in OD Tubing and Accessories				
127554	Tubing, 1/8 in OD, 625 PSI, 100 feet			
127551	1/8 in tube x 1/8 in NPT straight compression fitting			
1/4 in OD Tubing and Accessories				
127555	Tubing, 1/4 in OD, 625 PSI, 100 feet			
127552	1/4 in tube x 1/4 in NPT straight compression fitting			
555726	1/4 in tube x 1/4 in NPT elbow compression fitting			
127553	1/4 in tube x 1/8 in NPT straight compression fitting			
556634	1/4 in tube x 1/8 in NPT elbow compression fitting			

128862

128571

128572

Ordering Information

3/16 in OD Tubing and Bulk Fittings	
16A169	Tubing, 3/16 in OD, Single Tube, 1,350 PSI, 100 Feet
16A171	Tubing, 3/16 in OD, Double Tube, 1,350 PSI, 100 Feet
16A172	Tubing, 3/16 in OD, Triple Tube, 1,350 PSI, 100 Feet
127722	Male Elbow, 3/16 in Tube x 1/8 in NPT, Brass, Quantity 250
127723	Male Connector, 3/16 in Tube x 1/8 in NPT, Brass, Quantity 250
127724	Union, 3/16 in Tube, Brass, Quantity 50
127725	Union, 5/16 in Tube, Brass, Quantity 50
Elbows	
556763	#4 JIC SAE 7/16-20 male x 1/8 in NPT male
556764	#4 JIC SAE 7/16-20 male x 1/4 in NPT male
15K740	1/4-28 SAE male x 1/8 in NPT female
15K783	1/8 NPT male x 1/8 NPT female, PTF SAE Short
560530	1/8 NPT male x 1/4 NPT female
15M045	1/4 NPT male x 1/4 NPT female
560533	1/4 NPT male x 1/8 NPT female
560534	3/8 NPT male x 3/8 NPT female
158683	1/2 NPT male x 1/2 NPT female
45° Elbows	
557395	1/8 NPT male x 1/8 NPT female
560532	1/4 NPT male x 1/4 NPT female
Reducing Bushings	
556402	1/4 NPT male x 1/8 NPT female
556403	3/8 NPT male x 1/8 NPT female
556404	3/8 NPT male x 1/4 NPT female
100206	1/2 NPT male x 1/4 NPT female
Expanding Bushings	
556416	1/8 NPT male x 1/4 NPT female
156580	1/8 NPT male x 3/8 NPT female
150287	1/4 NPT male x 3/8 NPT female
159842	1/4 NPT male x 1/2 NPT female
156022	3/8 NPT male x 1/2 NPT female
Pipe Extensions M x F	
557392	1/8 NPT male x 1/8 NPT female, 3/4 long
557393	1/8 NPT male x 1/8 NPT female, 1-1/4 long
563178	1/8 NPT male x 1/8 NPT female, 2-1/4 long
Adapter	
555749	#4 JIC SAE 7/16-20 male x 1/8 in NPT male
556762	#4 JIC, SAE 7/16-20 male x 1/4 in NPT male
555453	1/4 NPT male x 1/4 NPT male
556408	1/4 NPT male x 1/8 NPT male
156296	3/8 NPT male x 1/8 NPT male
165198	3/8 NPT male x 1/4 NPT male
156849	3/8 NPT male x 3/8 NPT male
17G422	1/8 NPT female x 1/8 BSPT male short
17K061	1/8 NPT female x 1/8 BSPT male elbow
17K062	1/8 NPT female x 1/8 BSPT male long

15K783

557395

556402

556416

557392

555453

Ordering Information

Anchor Mounts	
560540	180° Straight Anchor Fitting ,1/8 in NPSF
560541	180° Straight Anchor Fitting, 1/4 in NPSF
558910	180° Straight Anchor Fitting, 1/2 in NPSF
560542	Cross Anchor Fitting, 1/4 in NPSF
560543	Cross Anchor Fitting, 1/8 in NPSF
561430	180° Straight Anchor Fitting, 2 lines, 1/4 in NPSF
560535	90° Drop Elbow Brass, 1/8 in NPSF
560537	Wing Tee, 1/4 in NPTF
Grease Zerks	
557969	Grease Zerk Cover
555888	1/8 in NPT, 5,000 PSI, Straight, Leakproof
556429	1/8 in NPTF, 5,000 PSI, 90 Degree, Leakproof, Buna-N
100054	1/8 in, 10,000 PSI
100848	1/4 in, 10,000 PSI
Fill Studs	
24M644	QD Style w/Cap
110712	1/4 in Button Head
100854	3/8 in Button Head
Mounting Weld Studs	
127512	1/4-20 x 0.710 in long
127513	1/4-20 x 0.96 in long
127514	1/4-20 x 1.2 in long
17D024	1/4-20 x 2 in long
17D023	3/8-16 x 1.25 in long
Clamps	
127012	3/8 in clamp diameter x 9/32 mounting hole
557944	1/2 in clamp diameter x 9/32 mounting hole
127515	1 1/2 in clamp diameter x 9/32 mounting hole
Bulkheads	
128566	1/4 NPT
557950	1/8 NPT
Hose Vise Block	
127145	1/8 in, 1/4 in, 1/2 in ID hose
Hex Coupling	
560528	1/8 NPT female x 1/8 NPT female
113093	1/4 NPT female x 1/4 NPT female
162024	3/8 NPT female x 3/8 NPT female
Male Run Tee	
556419	1/8 NPT male x 1/8 NPT female (2)
556420	1/4 NPT male x 1/4 NPT female (2)
128568	3/8 NPT male x 3/8 NPT female (2)
Male Branch Tee	
558795	1/8 NPT male x 1/8 NPT female (2)
556407	1/4 NPT male x 1/4 NPT female (2)
128567	3/8 NPT male x 3/8 NPT female (2)
Plugs	
557349	1/8 in NPT socket head
111697	1/4 in NPT square head
100040	3/8 in NPT square head
Cable Tie	
17K063	Cable tie 14 in x .30 in, qty 100

100848

110712

557950

560528

556419

100040

Ordering Information

Pipe Fittings	
560532	45º Street Elbow - 1/4 in (6.4 mm) Female x 1/4 in (6.4 mm) male, steel
560530	90º Street Elbow - 1/4 in (6.4 mm) Female x 1/8 in (3.2 mm) male, steel
15M045	90º Street Elbow - 1/4 in (6.4 mm) Female x 1/4 in (6.4 mm) male, steel
560533	90º Street Elbow - 1/8 in (3.2 mm) Female x 1/4 in (6.4 mm) male, steel
560534	Fitting - Street Elbow, 3/8 in (9.5 mm) Male x 3/8 in (9.5 mm) female
560528	Hex Coupling - 1/8 in (3.2 mm) female, steel
556402	Reducing Brushing - 1/4 in (6.4 mm) male x 1/8 in (6.4 mm) female, steel
563178	Extension Nipple - 1/8 in (6.4 mm) female x 1/8 in (6.4 mm) male, 2-1/4 in (5.7 cm) length, steel
556632	Male Connector - 1/4 in (6.4 mm) T x 1/8 in (3.2 mm) male, brass
556633	Male Connector - 1/4 in (6.4 mm) T x 1/4 in (6.4 mm) male, brass
556634	Male Elbow - 1/4 in (6.4 mm) T x 1/8 in (3.2 mm) male, brass
555726	Male Elbow - 1/4 in (6.4 mm) T x 1/4 in (6.4 mm) male, brass
555727	Tube Sleeve - 3/16 in (4.8 mm) T, brass
556635	Tube Sleeve - 1/4 in (6.4 mm) T, brass
Straight and Angle Swivels	
563212	90º Angle Swivel - 1/8 in (3.2 mm)
563214	90º Angle Swivel - 1/4 in (6.4 mm)
564350	90º Angle Swivel - 1/2 in (12.7 mm)
563213	180º Straight Swivel - 1/8 in (3.2 mm)
563215	180º Straight Swivel - 1/4 in (6.4 mm)
563154	180º Straight Swivel - 1/2 in (12.7 mm)
564352	180º Straight Swivel - 1 in (2.5 cm)
563146	90º Compact Swivel - 1/4 in (6.4 mm)
563147	180º Compact Swivel - 1/4 in (6.4 mm)
563150	180º Compact Swivel - 1/8 in (3.2 mm)
563148	90º Swivel Adapter - 1/8 in (3.2 mm) NPT x 1/8 in (3.2 mm) NPT female
Tube Fittings	
556448	Zerk Adapter Quick Fitting
556636	Male Tee - 5/16 in (7.9 mm) tube, 1/8 in (3.2 mm) NPTF
556637	Union Tee - 5/16 in (7.9 mm) tube
556638	Male Elbow - 3/16 in (4.8 mm) tube 1/8 in (3.2 mm) NPTF
556639	Male Elbow - 5/16 in (7.9 mm) tube, 1/8 in (3.2 mm) NPTF
556640	Male Elbow - 5/16 in (7.9 mm) tube, 1/4 in (6.4 mm) NPT
556642	Female Connector - 3/16 in (4.8 mm) tube, 1/8 in (3.2 mm) NPT
556643	Female Connector - 5/16 in (7.9 mm) tube, 1/8 in (3.2 mm) NPT
556644	Male Connector - 3/16 in (4.8 mm) tube, 1/8 in (3.2 mm) NPTF
556645	Male Connector - 5/16 in (7.9 mm) tube, 1/8 in (3.2 mm) NPTF
556646	Male Connector - 5/16 in (7.9 mm) tube, 1/4 in (6.4 mm) NPT
556647	Union - 3/16 in (4.8 mm) tube
556648	Union - 5/16 in (7.9 mm) tube
556649	Nut - 3/16 in (4.8 mm) tube
556650	Nut - 5/16 in (7.9 mm) tube
556652	Sleeve - 3/16 in (4.8 mm) tube
556653	Sleeve - 5/16 in (7.9 mm) tube
556656	5/16 in (7.9 mm) Tube Brass Insert - minimum order of 20 (price each)
556660	3/16 in (4.8 mm) Tube Nut and Sleeve
562995	Male Connector - 3/16 in (4.8 mm) Tube, 1/4-28 in (6.4 mm-71.1 cm) SAE male
556661	Straight Connector - push-to-connect 3/16 in (4.8 mm) tube, 1/8 in (3.2 mm) PM
556662	Elbow - 90 ft (27.4 m), push-to-connect 3/16 in (4.8 mm) tube, 1/8 in (3.2 mm) PM
556666	5/16 in (7.9 mm) Tube Nut and Sleeve
556670	90º Elbow - 3/16 in (4.8 mm) Tube, 1/8 in (3.2 mm) NPT female
15K783	90º Elbow - 1/8 in (3.2 mm) NPTF male/female, PTF SAE short
557395	45º Street Elbow - 1/8 in (3.2 mm) NPTF male/female
560534	Street Elbow Fitting - 3/8 in (9.5 mm) male, 3/8 in (9.5 mm) female
563759	Air-Operated Tractor Hardware Package - 30 point
557954	Adapter - 45º elbow, 1/4-28 in (6.4 mm-71.1 cm) SAE male x 1/8 in (3.2 mm) NPTF female
557968	Zerk Fitting - 1/8 in (3.2 mm) NPT @ 65º angle
563776	Zerk Adapter - 90º
563777	Zerk Adapter - straight
G-Lock Push-to-Connect (PTC) Fittings For use with 1/8 in ID hose only	
17L441	1/4 in stud PTC, M10, CSP outlet
25M496	90 degree 1/4 in field-installable stud
25M497	Straight 1/4 in field-installable stud
17L442	1/4 in stud PTC with male 1/8 in NPT, inlet or LP
17L547	1/4 in stud PTC with male 1/4 in NPT, pump outlet
Nylon Tube Push-To-Connect (PTC) Fittings For use with 1/4 in OD nylon tube	
17L440	1/4 in OD nylon tube PTC, M10, CSP outlet
17L652	90 degree 1/4 in OD nylon tube PTC, male 1/8 in NPT, inlet or LP
17L653	Straight 1/4 in OD nylon tube PTC, male 1/8 in NPT, inlet or LP
CSP Outlet Fittings	
25M498	1/8 in NPT female with check, M10
25M499	1/4 in compression with check, M10
Miscellaneous Adapters and Fittings	
556403	Reducing Bushing - 3/8 in (9.5 mm) NPT x 1/8 in (3.2 mm) NPT female
556407	Fitting Tee - 1/8 in (6.4 mm) male x (2) 1/8 in (6.4 mm) female
556420	Fitting Tee - 1/4 in (6.4 mm) male x (2) 1/4 in (6.4 mm) female
15M037	Press-to-Fit - 1/8 in (3.2 mm) NPSF
563148	90º Swivel Adapter - 1/8 in (3.2 mm) NPT x 1/8 in (3.2 mm) NPT female
557392	Extension - 1/8 in (3.2 mm) NPT x 1/8 in (3.2 mm) NPTF, 3/4 in (19 mm) long
557393	Extension - 1/8 in (3.2 mm) NPT x 1/8 in (3.2 mm) NPTF, 1-1/4 in (3.18 cm) long
557950	Bulkhead FTG - 1/8 in (3.2 mm) NPT
15K740	Elbow Adapter - 1/4-28 in (6.4 mm-71.1 cm) SAE male x 1/8 in (3.2 mm) NPTF female
15K784	Elbow Adapter - 1/4-28 in (6.4 mm-71.1 cm) SAE male x 1/8 in (3.2 mm) NPTF female, short
557955	Straight Adapter - 1/4-28 in (6.4 mm-71.1 cm) SAE male x 1/8 in (3.2 mm) NPTF female
Hose Fittings	
555749	Connector - 1/8 in (3.2 mm) NPT, #4 JIC
556762	Connector - 1/4 in (6.4 mm) NPT, #4 JIC
556763	90º Elbow - 1/8 in (3.2 mm) NPT, #4 JIC
556764	90º Elbow - 1/4 in (6.4 mm) NPT, #4 JIC

MANZEL®

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GRACO®

Manzel® MBL Box Lubricators

Features and Benefits

- Provide a proven, cost-effective way to assemble customized oil systems that meet specific requirements by using standard modular components
- Increase opportunities to standardize lube system components and reduce lube maintenance and service costs
- Dependable and backed by the industry's most comprehensive international distributor network–with application expertise, parts stocks, and factory-trained service nearby, wherever you are located

Typical Fluids Handled

- Mineral oil base or synthetics

Typical Applications

- Provide lubrication to cylinder walls, bearings and other moving parts of equipment such as refineries, injection and storage, general manufacturing, air systems, and food processing equipment

Application	Industry	Use
Compressors	Petrochemical, Refineries, Gas Transmission, Injection and Storage, Cold Storage, General Manufacturing, Air Systems	Lubricate cylinder walls and piston shaft packing
Edgers, Planers, Band Saws	Lumber	Lubricate slides and ways. Blade coolant.
Mixers	Rubber	Used in the bleeding process and to lubricate dust stop seals
Can Lid Presses	Food Processing	Lubricate high-speed bearings
Band Saws	Lumber	Saw guides

Modularity

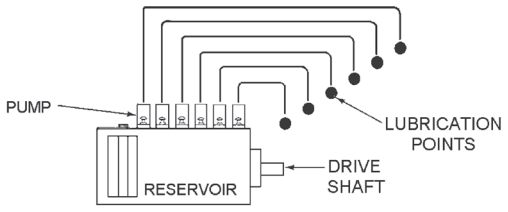
Force Feed Box Lubricators provide true modularity that permits customizing a pump-to-point lubrication system from off-shelf components. The modular variables consist of the following categories of components:

- Pumps
- Reservoir
- Reservoir Heaters
- Reservoir Oil Level Controls
- Drives
- Shaft Rotation Alarm
- Motor and Motor Mounting Bases

In addition to these Force Feed Box Lubricator components, Graco offers a complete line of auxiliary equipment. Also, MBL pumping packages can be used with divider valves in a series progressive installation. Graco's performance-proven products that may be used with Modular Box Lubricators are listed on the next page along with the respective literature number.

Description

A basic pump-to-point system is shown in the illustration which depicts six pumps mounted on a common reservoir from which each pump is dispensing oil to a single lubrication point. These pumps are operated by individual cams on one common drive shaft.



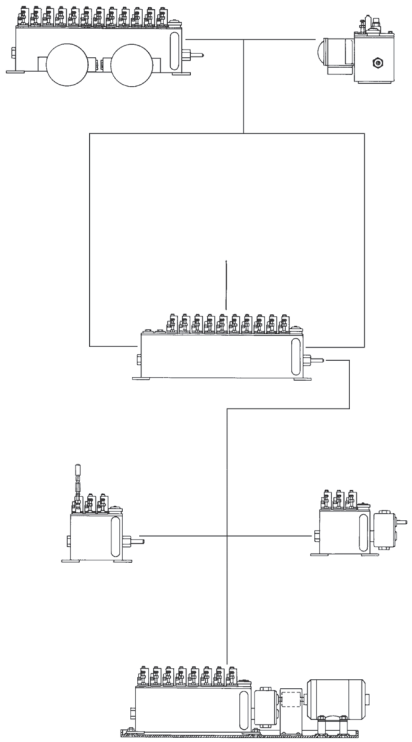
Pump-to-Point System

Interchangeability, Conversion and Retrofits

Graco GBL 7500 Pumps have been designed to be easily interchangeable with other manufacturers' pumps. For details contact your local Graco representative or call on us for system design and application assistance.

MBL Force Feed Box Lubricator = True Modularity

Wide choice of standard modular components helps you meet application requirements more exactly without the added costs of a custom system.



Pumps

Graco GBL 7500 pumps for pressures up to 7,500 psi.

24J391 – GBL 7500 Suction Pump, 3/16 in
24J392 – GBL 7500 Suction Pump, 1/4 in
24J393 – GBL 7500 Suction Pump, 3/8 in

- Ideal for heavy duty applications
- Interchangeable with pumps from competitive lubricators
- Suction (vacuum feed) pumps are available installed
- Pressure feed and gravity feed pumps are sold separately
- See manual 3A2257 for more information

Alarm Pump

Shaft Rotation/Low Level alarm based on GBL 7500 pump.

- Available as part number 24K466.
- Mounts in a pump slot
- Order separately for field installation.

Reservoirs and Mounting Bases

Eight reservoir capacities are available to hold from 4 to 40 pints and accommodate from 1 to 24 pumps. Blank cover assemblies included on unused pump stations. Eight sizes of motor mounting bases are available to accommodate the various reservoir sizes.

Reservoir Accessories

Automatic fill, low level, and electric heater options.

Drive Options

Over twenty drive options are available from direct drive to a reduction ratio of 400:1. Options provide left- or right-hand end of reservoir mounting, end or rear rotary drives, end ratchet drives and gear reducers. For details, see pages 9 and 10. See literature 352389 for MB60 (60:1) and MB118 (118:1) specialty box lubricators. See Graco manual 3A2953 for center rear drive options.

Motors

Single- and three-phase motors are available at ratings of 1/3,1/4 and 1/2 HP, for 115/230 volt or 230/460 volt, in explosion-proof, TEFC or TENV configuration. Some motor configurations are available foot-mounted and/or face-mounted.

“Smart” Part Numbers

- Graco part numbers are 6-digits long
- MBL Smart Part Numbers start with “MB”
- The next four letters each specify one or more options:
  - **Option A**: Reservoir and Motor Mounting Base
  - **Option B**: Pump Style and Monitor
  - **Option C**: Pump Quantity
  - **Option D**: Drive
- MBabcd – replace lower case letters with selections offered in **Smart Menu Code** to form a **Smart Part Number**

Literature

L54000	Lube Line Alert
L15831	Lube Sentry
L15825	Check Valves
L15200	In-Line Filters
L10103	MH Modular Divider Valves
3A2100	Modular Box Lubricator (MBL) manual
3A2257	GBL7500 pumps manual
352389	Manzel MB60 & MB118 flyer
3A2953	Center Drive Box Lubricator manual

Manzel® MBL Pump/Reservoir Combinations

NOTE: LH option currently available only on MBL-G01, G02, G03, G04, and G12 drives. All part numbers on the chart below use "OA" to indicate assemblies with NO pumps. Refer to Smart Code ordering details.

= Not compatible

		Reservoirs Without Motor Mounting Bases								Reservoirs Combined With Motor Mounting Bases							
		T1	T2	T3	T4	T5	T6	T7	T8	T1 + P1	T2 + P2	T3 + P3	T4 + P4	T5 + P5	T6 + P6	T7 + P7	T8 + P8
		4 pint / 2 feed	6 pint / 3 feed	8 pint / 5 feed	12 pint / 8 feed	16 pint / 12 feed	24 pint / 16 feed	32 pint / 20 feed	40 pint / 24 feed	4 pint / 2 feed	6 pint / 3 feed	8 pint / 5 feed	12 pint / 8 feed	16 pint / 12 feed	24 pint / 16 feed	32 pint / 20 feed	40 pint / 24 feed
G01R	Direct, 1:1	MBA0AA	MBB0AA	MBC0AA	MBD0AA	MBE0AA	MBF0AA	MBG0AA	MBH0AA								
G02R	End Ratchet	MBA0AB	MBB0AB														
G03R	37.5:1 Ratchet	MBA0AC	MBB0AC														
G04R	75:1 Ratchet	MBA0AD	MBB0AD														
G01L	Direct, 1:1	MBA0AE	MBB0AE	MBC0AE	MBD0AE	MBE0AE	MBF0AE	MBG0AE	MBH0AE								
G02L	End Ratchet	MBA0AF	MBB0AF														
G03L	37.5:1 Ratchet	MBA0AG	MBB0AG														
G04L	75:1 Ratchet	MBA0AH	MBB0AH														
G05R	25:1 End Rotary	MBA0AJ	MBB0AJ	MBC0AJ	MBD0AJ	MBE0AJ				MBJ0AJ	MBK0AJ	MBL0AJ	MBM0AJ	MBN0AJ			
G06R	50:1 End Rotary	MBA0AK	MBB0AK	MBC0AK	MBD0AK	MBE0AK				MBJ0AK	MBK0AK	MBL0AK	MBM0AK	MBN0AK			
G07R	100:1 End Rotary	MBA0AL	MBB0AL	MBC0AL	MBD0AL	MBE0AL				MBJ0AL	MBK0AL	MBL0AL	MBM0AL	MBN0AL			
G08R	200:1 End Rotary	MBA0AM	MBB0AM	MBC0AM	MBD0AM	MBE0AM				MBJ0AM	MBK0AM	MBL0AM	MBM0AM	MBN0AM			
G09R	400:1 End Rotary	MBA0AN	MBB0AN	MBC0AN	MBD0AN	MBE0AN				MBJ0AN	MBK0AN	MBL0AN	MBM0AN	MBN0AN			
G10R	25:1 Right Angle	MBA0AP	MBB0AP	MBC0AP	MBD0AP	MBE0AP											
G11R	50:1 Right Angle	MBA0AR	MBB0AR	MBC0AR	MBD0AR	MBE0AR											
G12R	188:1 Right Angle	MBA0AS	MBB0AS														
G13R	375:1 Right Angle	MBA0AT	MBB0AT														
G14R	100:1 Heavy Duty														MBP0AU	MBR0AU	MBS0AU
G15R	150:1 Heavy Duty														MBP0AV	MBR0AV	MBS0AV
G16R	200:1 Heavy Duty														MBP0AW	MBR0AW	MBS0AW
G17R	300:1 Heavy Duty														MBP0AX	MBR0AX	MBS0AX
G18R	400:1 Heavy Duty														MBP0AY	MBR0AY	MBS0AY
G12L	188:1 Right Angle	MBA0AZ	MBB0AZ														
G05L	25:1 End Rotary																
G06L	50:1 End Rotary																
G07L	100:1 End Rotary																
G08L	200:1 End Rotary																
G09L	400:1 End Rotary																
G10L	25:1 Right Angle																
G11L	50:1 Right Angle																
G14L	100:1 Heavy Duty																
G15L	150:1 Heavy Duty																
G16L	200:1 Heavy Duty																
G17L	300:1 Heavy Duty																
G18L	400:1 Heavy Duty																

MBL Smart Code Ordering Menu

MB – X – X – X – X

Reservoir (Smart Code Option A)

Code	Former Code(s)	Description	Code	Former Code(s)	Description
A	T1	4 pt, 2 pump stations max	J	T1 and P1	4 pt, 2 pump stations max, motor mount base
B	T2	6 pt, 3 pump stations max	K	T2 and P2	6 pt, 3 pump stations max, motor mount base
C	T3	8 pt, 5 pump stations max	L	T3 and P3	8 pt, 5 pump stations max, motor mount base
D	T4	12 pt, 8 pump stations max	M	T4 and P4	12 pt, 8 pump stations max, motor mount base
E	T5	16 pt, 12 pump stations max	N	T5 and P5	16 pt, 12 pump stations max, motor mount base
F	T6	24 pt, 16 pump stations max	P	T6 and P6	24 pt, 16 pump stations max, motor mount base*
G	T7	32 pt, 20 pump stations max	R	T7 and P7	32 pt, 20 pump stations max, motor mount base*
H	T8	40 pt, 24 pump stations max	S	T8 and P8	40 pt, 24 pump stations max, motor mount base*

*Cannot use double reduction or right angle drives.

Pump Size – GBL 7500 Suction Pumps (Smart Code Option B)

Code	Former Code(s)	Description
0	00	No pumps
1	76/88B	3/16 in Suction Pump 24J391
2	76/88C	1/4 in Suction Pump 24J392
3	76/88E	3/8 in Suction Pump 24J393
4	76/88B and F3	3/16 in Suction Pump plus RENS Level Controller
5	76/88C and F3	1/4 in Suction Pump plus RENS Level Controller
6	76/88E and F3	3/8 in Suction Pump plus RENS Level Controller
7	76/88B and F4	3/16 in Suction Pump plus GARZO Level Controller
8	76/88C and F4	1/4 in Suction Pump plus GARZO Level Controller
9	76/88E and F4	3/8 in Suction Pump plus GARZO Level Controller

NOTES:

1. When pump quantity is less than maximum pump stations of specified reservoir, a blank cover assembly is installed at Graco.
2. When low level is specified, deduct one pump for each option.
3. When ordering a ratchet drive, the maximum number of pumps allowable is 3.

Pump Quantity (Smart Code Option C)

Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty
A	0	E	4	J	8	N	12	T	16	X	20
B	1	F	5	K	9	P	13	U	17	Y	21
C	2	G	6	L	10	R	14	V	18	Z	22
D	3	H	7	M	11	S	15	W	19		

Drive Options (Smart Code Option D)

Code	Former Code	Description	Code	Former Code	Description	Code	Former Code	Description
A	G01R	Direct End Rotary (50 rpm max)	J	G05R	Double Reduction End Rotary 25:1	T	G13R	RT Angle Rotary 375:1
B	G02R	End Ratchet (without drive arm 563005)	K	G06R	Double Reduction End Rotary 50:1	U	G14R	100:1 Ratio Gear Reducer**
C	G03R	End Rotary Ratchet 37-1/2:1 – max input of 800 RPM	L	G07R	Double Reduction End Rotary 100:1	V	G15R	150:1 Ratio Gear Reducer**
D	G04R	End Rotary Ratchet 75:1 – max input of 800 RPM	M	G08R	Double Reduction End Rotary 200:1	W	G16R	200:1 Ratio Gear Reducer**
E	G01L	Direct End Rotary	N	G09R	Double Reduction End Rotary 400:1	X	G17R	300:1 Ratio Gear Reducer**
F	G02L	End Ratchet (without drive arm 563005)	P	G10R	RT Angle Rotary 25:1	Y	G18R	400:1 Ratio Gear Reducer**
G	G03L	End Rotary Ratchet 37-1/2:1 – max input of 800 RPM	R	G11R	RT Angle Rotary 50:1	Z	G12L	Left Angle Rotary 188:1
H	G04L	End Rotary Ratchet 75:1 – max input of 800 RPM	S	G12R	RT Angle Rotary 188:1			

**U (G14) through Y (G18) require motor mounting base; can only be used with reservoir options P, R, and S.

Manzel® MBL Box Lubricator Accessories

Ordering Information

Manzel® MBL Box Lubricator Motors	
558289	M2 – 1/4 hp, 1,725 rpm, 115/230V, 1 ph., TENV, Foot-Mounted (56F)
558293	M3 – 1/4 hp, 1,725 rpm, 115/230V, 1 ph., Hazardous Area, Class 1, Group D, Foot-Mounted (56F)
558290	M5 – 1/4 hp, 1,725 rpm, 230/460V, 3 ph., TENV, Foot-Mounted (56F)
558292	M6 – 1/4 hp, 1,725 rpm, 230/460V, 3 ph., Hazardous Area, Class 1, Group D, Foot-Mounted (56F)
558294	M7 – 1/2 hp, 1,725 rpm, 115/230V, 1 ph., Hazardous Area, Class 1, Group C, Severe Duty, Tropical Insulation, Face-Mounted or Foot-mounted (56C with feet)
558295	M8 – 1/2 hp, 1,725 rpm, 230/460V, 3 ph., Hazardous Area, Class 1, Group C, Severe Duty, Tropical Insulation, Face-Mounted or Foot-mounted (56C with feet)
558291	M10 – 1/2 hp, 1,725 rpm, 230/460V, 3 ph., 60Hz, Class 1, Group D, Face-Mounted (56C)
557271	M11 – 1/2 hp, 1,725 rpm, 115/230V, 1 ph., 60Hz, TEFC, Face-Mounted (56C)
557270	M12 – 1/2 hp, 1,725 rpm, 230/460V, 3 ph., 60Hz, TEFC, Face-Mounted (56C)
Note: Heavy Duty drives (G14 - G18) require 56C, face-mount. Normally a 1/2 hp motor would be used because more pumps are being operated by the HD drives.	
Auto-Fill Options	
559037	F1 Gravity Supply
Note: F2 – obsolete, use F1 instead. F3 – ordered with pumps (see page 133). F4 – ordered with pumps (see page 133).	
Low Level Switches	
563013	L1 – Low Level Switch Hazardous Area. Class 1, Group C and D; Class 2 Group, E, F and G.
564015	L2 – Low Level, 10 Watts at 120 VAC, SPST Reed Switch, NC
Shaft Rotation Arm	
24K466	GBL 7500 Suction Alarm Pump
Heater Options	
557207	120 VAC Electric Heater, Hazardous Area, Class 1, Group B, one-prong heater. Can be installed in 1 in NPT port on MBL reservoirs.
557208	240 VAC Electric Heater, Hazardous Area, Class 1, Group B, one-prong heater. Can be installed in 1 in NPT port on MBL reservoirs.
Note: Former codes H3, H4 and H6 use 557207. For H1, H2 and H5, contact factory for details about part number 564058 (two prong heater) Class 1, Group D	

Features and Benefits

- Provide a proven, cost-effective way to assemble customized oil systems that meet specific requirements by using standard modular components
- Increase opportunities to standardize lube system components and reduce lube maintenance and service costs
- 60:1 – 2 or 4 pump stations max, use with GBL 7500 Gravity-Fed or Pressure-Fed Box Lubricator
- 118:1 – 4 or 6 pump stations max, use with any GBL 7500 pump

24V068

Typical Applications

- MB60 is perfect for bolt-on gas compressor box lubrication solutions
- MB118 is the right size and durable for triplex and quintuplex mud pump applications

24W636

Typical Fluids Handled

- Mineral oil base or synthetics

Ordering Information

Manzel® MB Specialty Box Lubricators		
MB60	24V068	2 pint reservoir (2 pump stations max), no pumps installed, 60:1
	24U750	6 pint reservoir (4 pump stations max), no pumps installed, 60:1
MB118	24W633	4 pint reservoir (4 pump stations max), no pumps installed, 118:1
	24W634	6 pint reservoir (6 pump stations max), no pumps installed, 118:1
	24W636	4 pint reservoir (4 pump stations max), 1/4 in GBL 7500 pump (qty 3), 118:1
	24W635	6 pint reservoir (6 pump stations max), 1/4 in GBL 7500 pump (qty 5), 118:1

Manzel® GBL 7500 Pump

Features and Benefits

Each GBL 7500 single-piston pump is mechanically driven from a camshaft in the reservoir. They are adjustable from 1 to 27 drops per stroke and develop pressures up to 7500 psi (517 bar), depending on the piston size. All working parts are totally enclosed away from dirt, water, and impurities and are self-lubricated at all times by the fluid in the reservoir. Rugged construction for high performance and durability with easy to adjust pump output.

Typical Applications

- Compressors

Typical Fluids Handled

- Mineral or synthetics oil

Technical Specifications

Piston Size		Max Outlet Pressure			Drops/Stroke		Cubic Inch/ Stroke		Cubic cm/ Stroke		Strokes/minute	
inches	mm	PSI	MPa	bar	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
3/16	4.8	7500	51.7	517	0	7	0	0.014	0	0.229	3	50
1/4	6.4	6000	41.4	414	0	12	0	0.024	0	0.393	3	50
3/8	9.5	3500	24.1	241	0	27	0	0.054	0	0.885	3	50

Ordering Information

GBL 7500	
24J391	3/16 in (4.8 mm) suction
24J392	1/4 in (6.4 mm) suction
24J393	3/8 in (9.5 mm) suction
24J394	3/16 in (4.8 mm) gravity
24J395	1/4 in (6.4 mm) gravity
24J396	3/8 in (9.5 mm) gravity
24J397	3/16 in (4.8 mm) pressure
24J398	1/4 in (6.4 mm) pressure
24J399	3/8 in (9.5 mm) pressure
24K466	Suction alarm pump
GBL Accessories and Spare Parts	
564332	Outlet Check Valve Assembly – maintains prime when changing out pumps
126070	Replacement Pump Gasket – used by all pumps
24T306	Sight Glass Replacement Kit – for use with suction, gravity and alarm pumps
563101	Replacement Suction Strainer – for use with suction and alarm pumps

Suction
24J391

Pressure
24J397

Features and Benefits

The high pressure lubricator comprises one to six integral sight and pump assemblies in a cast iron reservoir. The unit is designed for direct connection to an electric motor/speed reducer power source. A Manzel® terminal check valve is recommended in the lubrication system. When required to maintain proper oil viscosity, the reservoir can be fitted with an electric heater.

562951

Typical Applications

- Multi-stage gas compression

Typical Fluids Handled

- Mineral or synthetic oil

Technical Specifications

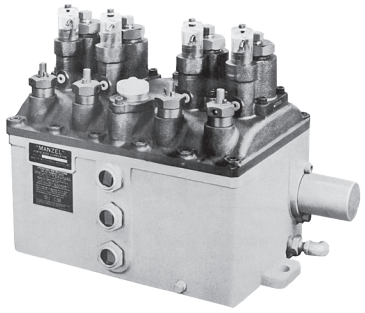
Number of Feeds	Max. Pressure	Reservoir Capacity (Quarts) (1)	Plunger Diameter (inches)	Drops Per Stroke		Cubic Inches Per Stoke		Cubic cm Per Stroke		Strokes Per Minute	
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1-6	18,000	7	1/4	1	4	0.002	0.008	0.033	0.113	3	36

Ordering Information

562918	HP-15 6 feed gear box without pumps
562919	HP-15 6 feed gear box with 6 HP-15 pumps
562951	HP-15 pump
564151	HP-15 sight glass kit – includes sight “glass” made of polyamide, o-ring and rubber plug
563113	HP-15 plunger and cylinder assembly
564336	Check valve – 3/8 in OD tube compression fittings on both ends. Use in line or as the lubrication point.

Manzel® HP-50™ High Pressure Lubricator

Features and Benefits



- Operating pressures to 60,000 psi for lubricating compressor and circulator cylinder walls, heavily loaded bearings and other moving parts
- Single plunger force feed design is highly efficient for injecting lubricants and/or compatible fluids into high pressure systems
- Vacuum sight feeds on self-contained pumping units show output of lubricant to individual lubrication points
- All working parts are totally enclosed and self-lubricated
- Individual pumping units easily removed for service
- Feed rate infinitely variable from minimum to maximum with simple hand adjustment

Typical Applications

- Compressors and industrial equipment

Typical Fluids Handled

- Mineral or synthetic oil

Technical Specifications

Number of Feeds	Max. Pressure	Reservoir Capacity (Quarts) (1)	Plunger Diameter (Inches)	Drops Per Stroke		Cubic Inches Per Stoke		Cubic cm Per Stroke		Strokes Per Minute	
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1-4	60,000	9	1/4	1	4	0.002	0.008	0.033	0.113	3	36

Ordering Information

HP-50 Pump	
562952	HP-50 Pump Assembly
HP-50 Lubricator Boxes	
564276	HP-50 Lubricator without Pumps or Options
562925	HP-50 Lubricator with 4 Pumps
562926	HP-50 Lubricator with 2 Pumps
562927	HP-50 Lubricator with 4 Pumps, Provision for Flange Mounted Auto Fill, and Nitrogen Purge Port
562928	HP-50 Lubricator with 4 Pumps, Low Level and Shaft Rotation Alarm
562929	HP-50 Lubricator with 4 Pumps, Provisions for Flange Mounted Auto Fill and Low Level in Fill Plate
564277	HP-50 Lubricator with 4 Pumps and Steam Heater
564278	HP-50 Lubricator with 3 Pumps and Steam Heater
564279	HP-50 Lubricator with 4 Pumps, Provision for Flange Mounted Auto Fill, Nitrogen Purge and Shaft Rotation/Low Level Alarm on Left
564280	HP-50 Lubricator with 4 Pumps, Provision for Flange Mounted Auto Fill, Nitrogen Purge and Shaft Rotation/Low Level Alarm on Right
564282	HP-50 Lubricator with 4 Pumps, Shaft Rotation and Low Level Alarm
564283	HP-50 Lubricator with 4 Lubricator Boxes with 15 Pumps, Provision for Center Mounted Motor and Base
258262	HP-50 Lubricator with 4 Pumps and Low Level
258263	HP-50 Lubricator with 4 Pumps, Provisions for Flange Mounted Auto Fill and Low Level in Fill Plate, and Proximity Switch Shaft Rotation Indicator on Right
HP-50 Accessories	
563111	HP-50 plunger and cylinder
564336	HP-50 check valve
558881	Electric heater, 120/240 VAC
563020	Shaft rotation alarm
563024	Low level
556808	Ren Oil Level Controller/Auto-fill, 5 psi maximum
558221	Garzo Oil Level Controller/Auto-fill, 70 psi maximum, Class 1, Groups C and D, Division I

Features and Benefits

The MVB lubrication system is a single line, series progressive system which divides pump output into predetermined proportional amounts and distributes these amounts to points of lubrication.

- One main supply from single pump
- Central monitoring of normal operation
- Automatic proportioning of lubricant through positive displacement valves
- Quick indication of problem areas

563565

Typical Applications

- Compressors and reciprocating engines

Typical Fluids Handled

- Oil

Technical Specifications

Output per Pump in Pints (Liters) per Day

Single Camshaft rpm (pump strokes per min)	1/4 piston				3/8 piston			
	Min. Output Adj.		Max. Output Adj.		Min. Output Adj.		Max. Output Adj.	
	0.12456*(constant)		0.59832		0.29909*(constant)		1.4902	
20	2.49	(1.18)	11.97	(5.66)	5.98	(2.83)	29.92	(14.15)
30	3.74	(1.77)	17.95	(8.49)	8.97	(4.24)	44.88	(21.23)
40	4.98	(2.36)	23.93	(11.32)	11.96	(5.66)	59.84	(28.30)
50	6.23	(2.95)	29.92	(14.15)	14.95	(7.07)	74.80	(35.38)
60	7.47	(3.53)	35.90	(16.98)	17.95	(8.49)	89.76	(42.46)
70	8.72	(4.12)	41.88	(19.81)	20.94	(9.90)	104.72	(49.53)

*Constant X strokes per minute = output in pints per day. For 2 and 3 lobe cams, multiply camshaft RPM times 2 or 3.

Ordering Information

563565	MVB 0.250 in (6.35 mm) Piston Pump
563566	MVB 0.375 in (9.53 mm) Piston Pump
563920	Seal kit for MVB pump
563919	3/8 in piston and sleeve replacement
563918	1/4 in piston and sleeve replacement
557824	25 micron filter replacement element
557827	10 micron filter replacement element

MVB Box lubricator

Manzel® MVB Box Lubricator Configurator

Ordering Menu Code

MV – X – X – X – X

Drive

Code	(Former Code) – Description
A	(DAA) Ratchet Drive (102-2)
B	(DAB) Standard Drive (203-2)
C	(DAC) Standard Drive (207-2)
D	(DAD) Reverse Drive (303-2)
E	(DAE) 90-Degree Drive (401-2)
F	(DAF) Vertical Drive (501-2)
G	(N/A) Tandem Drive

Gear Box Ratio and Mounting Base Option

Code	(Former Code) – Description	Code	(Former Code) – Description	Code	(Former Code) – Description
A	(RAA) 1:1 Ratio Gear Box	J	(RAE) 3:1 Ratio Gear Box	T	(RAJ) 8:1 Ratio Gear Box
D	(RAB) 1:2 Ratio Gear Box	M	(RAF) 1:4 Ratio Gear Box	U	(RAJ-KOA) 8:1 Ratio Gear Box with a KOA Base
E	(RAC) 2:1 Ratio Gear Box	N	(RAG) 4:1 Ratio Gear Box	W	(RAK) 16:1 Ratio Gear Box
H	(RAD) 1:3 Ratio Gear Box	S	(RAH) 1:8 Ratio Gear Box	X	(RAK-KOA) 16:1 Ratio Gear Box with a KOA Base

Pump Station One Configuration*

Code	Cam Style	Pump Size	Gauge PSI	Relief PSI	Code	Cam Style	Pump Size	Gauge PSI	Relief PSI
A	Single Lobe	No Pump	None	None	K	Double Lobe	1/4 in	10,000	4,600
B	Single Lobe	1/4 in	None	6,400	L	Double Lobe	3/8 IN	None	1,750
C	Single Lobe	1/4 in	3,000	2,350	M	Double Lobe	3/8 IN	3,000	1,750
D	Single Lobe	1/4 in	10,000	6,400	N	Triple Lobe	No Pump	None	None
E	Single Lobe	3/8 in	None	2,350	P	Triple Lobe	1/4 in	None	3,700
F	Single Lobe	3/8 IN	3,000	2,350	R	Triple Lobe	1/4 in	3,000	2,350
G	Double Lobe	No Pump	None	None	S	Triple Lobe	1/4 in	10,000	3,700
H	Double Lobe	1/4 in	None	4,600	T	Triple Lobe	3/8 IN	None	1,450
J	Double Lobe	1/4 in	3,000	2,350	U	Triple Lobe	3/8 IN	3,000	1,450

*Former codes AOA and AOC referred to 1/4 in pump. Former codes AOB and AOD referred to 3/8 in pump. Former code POA referred to standard (2,350 psi) blowout indicator. Former codes GOA, GOB, GOC, and GOD referred to gauge options; choose from standard gauge options shown above.

Pump Station Two Configuration**

Code	Cam Style	Pump Size	Gauge PSI	Relief PSI	Code	Cam Style	Pump Size	Gauge PSI	Relief PSI
A	Single Lobe	No Pump	None	None	K	Double Lobe	1/4 in	10,000	4,600
B	Single Lobe	1/4 in	None	6,400	L	Double Lobe	3/8 IN	None	1,750
C	Single Lobe	1/4 in	3,000	2,350	M	Double Lobe	3/8 IN	3,000	1,750
D	Single Lobe	1/4 in	10,000	6,400	N	Triple Lobe	No Pump	None	None
E	Single Lobe	3/8 in	None	2,350	P	Triple Lobe	1/4 in	None	3,700
F	Single Lobe	3/8 IN	3,000	2,350	R	Triple Lobe	1/4 in	3,000	2,350
G	Double Lobe	No Pump	None	None	S	Triple Lobe	1/4 in	10,000	3,700
H	Double Lobe	1/4 in	None	4,600	T	Triple Lobe	3/8 IN	None	1,450
J	Double Lobe	1/4 in	3,000	2,350	U	Triple Lobe	3/8 IN	3,000	1,450

**Former codes BOA and BOC referred to 1/4 in pump. Former codes BOB and BOD referred to 3/8 in pump. Former code HOA referred to standard (2,350 psi) blowout indicator. Former codes JOA, JOB, JOC, and JOD referred to gauge options; choose from standard gauge options shown above.

NOTE: Motors for KOA base with 8:1 or 16:1 drives:
558289 (MOA) - 1/4 HP, 115/230 VAC, 60 Hz, single-phase, 1,725 rpm, TENV, 56F
558290 (MOB) - 1/4 HP, 230/460 VAC, 60 Hz, three-phase, 1,725 rpm, TENV, 56F

Pump Station One is located on the left side, above the sight glass, for all MVB configurations.

Features and Benefits

- Indicates Flow or No-Flow at any point in the system ahead of the Lube-Line Alert inlet. Not affected by discharge pressure.
- Operates under continuous or intermittent low-flow rates
- Universal use – operates in any air free force feed lubrication system–any make lubricator
- Sensitive to a wide range of flow from .006 cubic inches to 190 cubic inches per minute
- Many type lubricants and viscosities–mineral or synthetic
- Time delay adjustment to compensate for viscosity and/or flow rate. Quick and easy to adjust.
- Explosion-proof – UL and CSA Listed for Class I Groups C and D and Class II Groups E, F and G. Division 1 and 2 when installed as per NEC 501.
- For connection to any electrical warning system–lights, sound devices, machinery shut-off relays, telephones, etc.
- A low-level and shaft rotation

563030

Technical Specifications

UL and CSA Electrical Ratings ..... Single pole, Throw magnetically operated switch, 115 VAC, 60Hz, 10 watt, 28 VDC, 0.5 amp Resistive, 28 VDC, 0.5 amp Inductive
Maximum Switch Rating ..... 350 VAC/VDC, 50 watt, 2 amp
Maximum Operating Pressure ..... 10,000 psi
Minimum Pressure Drop Access Alert ..... 150 psi
Flow Rate ..... 0.006 in^3 to 190 in^3/min @ 100 SUS
0.006 in^3 to 75 in^3/min @ 2,000 SUS
Fluid Viscosity ..... 100 to 9,000 SUS
Weight ..... 0.6 lbs

Ordering Information

Lube-Line Alert	
563030	N.C. Configuration w/Check Valves for 1/4 in O.D. Tube
563032	N.O. Configuration w/Check Valves and Fittings for 1/8 in NPTF Connections
Inlet Check Valves	
563042	with 1/4 in O.D. Tube Fitting (supplied with 563030)
563041	with 7/16-20 Straight Female Thread (supplied with 563032)
Outlet Check Valves	
563044	with 1/4 in O.D. Tube Fitting (supplied with 563030)
563043	with 7/16-20 Straight Female Thread (supplied with 563032)
Fittings	
556624	7/16-20 Straight Male Thread x 1/8 in NPTF (2 supplied with 563032)
Springs	
556944	Standard Springs (installed at factory)
556939	Light Spring for Low Flow Applicator*
Repair Parts	
556812	Switch Assembly

**When using the Light Spring 556939, fluid viscosity should not exceed 350 SUS.*

Pneumatic/Electric Lube Sentry Valve

Features and Benefits

The Lube Sentry Valve provides automatic warning and shutdown of compressors, pumps and engines when oil is not flowing properly to primary dividers in series type lube systems.

- Absence of check valves to avoid trapping contamination from included solids in the lubricant
- Bolted-together components simplifying maintenance. The microswitch assembly on the pneumatic valve can be removed without disturbing existing lines or shutting down the equipment being lubricated.

563506

Technical Specifications

Material	Steel
Max Pressure	6,000 psi (414 bar)
Flow Rate (per day)	4 to 400 pints (1.89 to 189.2 liters)
Pressure Drop	250 psi (17 bar)
Seals	Fluoroelastomer
Lubricant	Oil (450-2,000 SUS)
Net Weight	0.5 lb (2.265 kg)
Operating Temperature	-20ºF to 180ºF (-29ºC to 82ºC)
Air Pressure (Max Pneumatic Valve)	125 psi (9 bar)
Electrical Rating	5 amps @ 125/250 VAC
	A,B or C @ 28 VDC, A- Inductive - 3 amp, B- Resistive - 5 amp, C- Max Inrush - 15 amp

Ordering Information

563506	Pneumatic Lube Sentry, Complete
563503	Pneumatic Valve
563502	Actuator
563505	Electric Lube Sentry, Complete
563504	Switch Assembly

Features and Benefits

The Graco® Balancing Valve assists divider valves to accurately proportion lubricant at high differential pressures. It is recommended for use when a pressure difference greater than 1,000 PSI exists between two or more of the points in a Graco divider valve system.

- Balancing valve is not affected by downstream pressure, assures accurate flow to all lubrication points
- Balancing valve is field adjustable. Reduces on-site inventory costs as one model meets all your system needs.
- Balancing valve is in-line mounted, so it lowers installation costs
- Balancing valve uses a wear-resistant tungsten-carbide ball to reduce maintenance costs

Technical Specifications

Material	Steel
Max Operating Pressure	6,500 psi
Adjustable	From 1,000 to 6,500 psi (Factory set at 3,000 psi)
Operating Temperature	-10ºF to 250ºF (-23ºC to 121ºC)
Lubricant	Oil
Seals	Fluoroelastomer
Net Weight	1.19 lb (0.54 kg)

Ordering Information

563230	Balancing Valve
563911	Valve Seal Kit

ON-ROAD LUBRICATION

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GRACO

Electric Grease Jockey

The Grease Jockey system increases fleet utilization. It extends component life up to four times because automatic lubrication continuously flushes contaminants and reduces friction. Auto lube supports 50,000 mile service intervals, optimally lubricates when the vehicle needs it the most, and reduces operating costs. Service more vehicles in less time by utilizing modern automatic lubrication within your fleet.

Ruggedized Construction

U.V., chemical, and high-impact resistant – rigorously tested and field-proven.

NLGI #2 Compatible

NLGI #000 to #2 and 2,000 psi (138 bar).

Low Level Signal

Alerts when out of grease.

Electrical Drive

12 VDC (7 Amp) or 24 VDC (4 Amp) power. Protected against motor burn-out.

*Data Management System**

Track critical lubrication data. Fast programming.

Integrated Controls

Includes adjustable ON/OFF times, PIN code lockout and on-panel alerts.

*In-Cab Feedback**

Tri-color LED system feedback indicator with Manual Run button.

*DMS version optional equipment

Technical Specifications

Maximum Pressure	2,000 psi (352 bar)
Power	12 VDC, 24 VDC
Operating Temperature	-40° F to 158° F (-40° C to 70° C)
Reservoir Size	2 liter
Maximum Run Time	30 minutes
Output per Element/Min	0.5 in^3 (8 cm^3)
Certifications/Standards	IP69K, CE, ROHS, EMC, Pressurized Equipment Directive, National Fluid Power Association
Instruction Manual	3A5082

How to Select Your Graco Electric Grease Jockey Automatic Lubrication System

Determining the Electric Grease Jockey system best suited to your needs is accomplished by following steps A-D.

A — ELECTRIC PUMP

Choose an Electric Grease Jockey Pump with or without Data Management System (DMS)

Basic Pump:
- #2 grease
- Motor burn-out protection
- Low level feedback
- Power cable

DMS Pump:
All Standard Pump features, plus DMS:
- Performance data
- In-cab feedback
- Easy load profile option – plug and play programing

Pump Description	Part Number (select one)	
	12 VDC	24 VDC
Electric Grease Jockey	25C990	25C991
Electric Grease Jockey with DMS	25C992	25C993

Now that you've selected your pump configuration, it's time to determine the system lube points.

B — LUBE POINTS – FRONT

Determine Your System's Front Lube Points

Front modules all include king pin, tie rod end points, and drag link (left side).

What is your front braking system?
Do you have greaseable or sealed spring pins?

Braking System	Spring Pins	Part Number		
		Left Side		Right Side
Drum brakes (2 points each side)	Spring pins (3 points each side)	25C854 (10 points total)	and	25C859 (8 points total)
	Sealed springs (0 points)	25C858 (7 points total)	and	25C851 (5 points total)
Disc brakes (0 points)	Spring pins (3 points each side)	25C857 (8 points total)	and	25C850 (6 points total)
	Sealed springs (0 points)	25C849 (5 points total)		25C852 (3 points total)

C — LUBE POINTS – REAR BRAKES

Determine Your System's Rear Brake Lube Points

What is your rear braking system?
Do you have single or tandem axles?

Braking System	Axles	Part Number
Drum brakes	Tandem axle/TAX (8 points)	25C856
	Single axle/SAX (4 points)	25D084*
Disc brakes (0 points)	No kit needed	–

*If lubricating 5th wheel, order package 25C855 from section D instead of package 25D084.

D — LUBE POINTS – 5TH WHEEL

Determine Your System's 5th Wheel Lube Points

What is your 5th wheel configuration?

5th Wheel System	Part Number
5th wheel (6 points)	25C853
5th wheel/SAX drum (10 points)	25C855

The ***NEW*** G-Mini® Compact Electric Pump is also suitable for on-road mobile lubrication applications. Refer to pages 13-14 for details.

Ordering Information

Electric Grease Jockey Pump Packages

	Package Number	25C990	25C991	25C992	25C993
Package Includes	Pump	24Z764	24Z959	24Z660	24Z958
	Power	12V	24V	12V	24V
	Data Management System	–	–	Yes	Yes
	Power Cable	129644	129644	127782	127782
	Manual Run Button	–	–	25C981	25C982

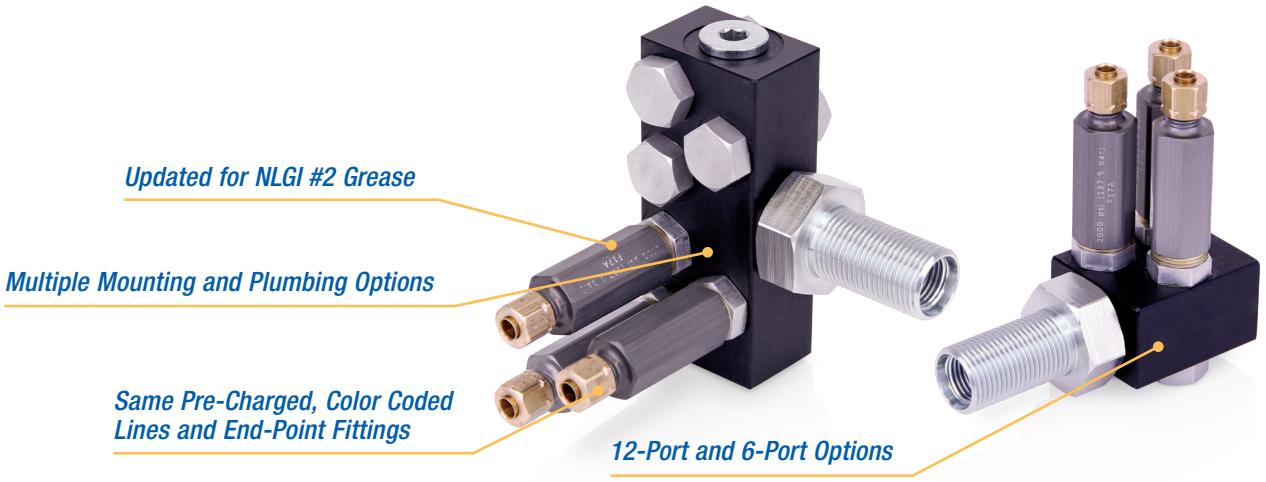
Electric Grease Jockey System Installation Kits

		Truck with Greaseable Spring Pins			Truck with Sealed Spring Pins (non-greaseable)		
		Drum Brakes		Disc Brakes	Drum Brakes		Disc Brakes
		6 x 4 Tandem Axle	4 x 2 Single Axle		6 x 4 Tandem Axle	4 x 2 Single Axle	
		32 Point / 4 Module Kit	*28 Point / 3 Module Kit*	*20 Point / 3 Module Kit*	*26 Point / 4 Module Kit*	*22 Point / 3 Module Kit*	*14 Point / 3 Module Kit*
	Package Number	25C971	25C972	25C973	25C974	25C975	25C976
Package Includes	12 VDC Grease Jockey pump	25C990			25C990		
	18 ft mainline section/installable end kit	17S970			17S970		
	12 ft mainline section/installable end kit	17S969			17S969		
	6 ft mainline section/installable end kit (qty)	17S968 (2)	17S968 (1)	17S968 (1)	17S968 (2)	17S968 (1)	17S968 (1)
	Mainline tee (qty)	129759 (3)	129759 (2)	129759 (2)	129759 (3)	129759 (2)	129759 (2)
	Mainline elbow (2)	129755			129755		
	Front left meter module	25C854	25C854	25C857	25C858	25C858	25C849
	Front right meter module	25C859	25C859	25C850	25C851	25C851	25C852
	5th wheel meter module	25C853	25C855	25C853	25C853	25C855	25C853
	Rear axle meter module	25C856		–	25C856		–
	3/16 in to 1/8 NPT elbows, 10-Pack (qty)	25C977 (3)	25C977 (3)	25C977 (2)	25C977 (3)	25C977 (2)	25C977
	3/16 in to 1/8 NPT straights, 10-Pack	25C978			25C978		
	1/4-28 SAE to 1/8 NPT (F), 5-Pack	25C979			25C979		
	Mounting bracket	17S107			17S107		
	Zip ties, 100-count	17K063			17K063		
	Zip ties, looped, 10-count (qty)	25C980 (3)	25C980 (2)	25C980 (1)	25C980 (3)	25C980 (2)	25C980 (1)

Electric Grease Jockey® Manifolds

Customize and Commonize Your Fleet Lubrication

Grease Jockey modular design makes it easy to add or subtract lube points and commonize service parts across your fleet. Modules hold up to 6 or 12 lubrication point meters.



Ordering Information

Build Your Own Module

Part Number	24Z682	24Z683	24Z684	24Z685	24Z686	24Z681
Grease Jockey Injector Size	#0	#1	#2	#3	#4	#8
Output Spacers	0	1	2	3	4	4
Dispense Amount in^3 (cm^3)	0.002 (0.03)	0.005 (0.08)	0.009 (0.15)	0.012 (0.20)	0.015 (0.25)	0.026 (0.43)
Typical Truck/Trailer Lube Points	S-Cam, Clutch	Slack Adjuster, Pivot Pins	Tie-Rod End, Drag Link	King Pin, Spring Pin	5th Wheel Cylinders	5th Wheel Face Plate

Metering Module Service Items and Accessories

	Part Number	Description
Image Coming Soon	25D012	One replacement #3 meter with pre-charged, 15 ft tube
	25D013	Two replacement #3 meters with pre-charged, 15 ft 2-tube bundle
Image Coming Soon	26C105	Two replacement #4 meters with pre-charged 30 ft 2-tube bundle
	15W165	Feed Line, 3/16 in tube, pre-charged, 30 ft, black
	563789	Feed Line, 3/16 in tube, pre-charged, 15 ft, orange
	564090	Feed Line, 3/16 in 2-tube bundle, pre-charged, 30 ft, orange/black

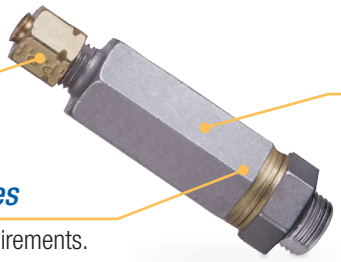
	Part Number	Description
	563796	Feed Line 3/16 in 3-tube bundle, pre-charged, 30 ft, orange/blue/black
Image Coming Soon	24Z808	Manifold meter port plugs with O-rings
	129752	Manifold inlet plugs
	25C988	Bare manifold with stem, nut and washer, 6 port
	25C989	Bare manifold with stem, nut and washer, 12 port

Injectors Designed for Frequent Medium-Pressure Metering

Designed for frequent metering and includes system pressure monitoring.

Compression Nut With Captured Ferrule Included

For fast, easy connection to 3/16 in OD tubing.



Adjustable Output Volume

Easy to adjust by adding or removing spacers, design also prevents tampering.

Injectors Come In Six Sizes

To meet a wide range of lube requirements.

Typical Applications

- On road mobile equipment such as trucks, semi-tractors, semi-trailers, and other vehicles and on-highway equipment.

Typical Fluids

- Grease up to NLGI #2

Technical Specifications

Maximum Operating Pressure	2,000 psi (138 bar)
Minimum Operating Pressure	450 psi (31 bar)
Reset Pressure	250 psi max (17.2 bar)
Maximum Temperature	149°F (65°C)
Cycle Indication	Optional cycle indicator, 563769
Wetted Parts	Aluminum, nitrile rubber (Buna-N), brass, carbon steel, alloy steel
Instruction Manual	312054, 3A5082

Ordering Information

Part Number	Size #	Output in^3 (cm^3)	Adjustment Spacers Quantity
24Z682	0	0.002 (0.033)	0
24Z683	1	0.005 (0.082)	1
24Z684	2	0.009 (0.15)	2
24Z685	3	0.012 (0.19)	3
24Z686	4	0.015 (0.25)	4
24Z681	8	0.026 (0.43)	4

Accessories

Part Number	Description
563769	Injector Cycle Indicator – installs in outlet of each injector, converts outlet to 1/8 in OD tubing
556665	Replacement 1/8 in tube nut for cycle indicator 563769
556660	Replacement 3/16 in tube nut for injector outlets
557901	Injector Outlet Plug – used to disable unneeded injectors without removing from manifold
557898	Output adjustment spacer, brass
556586	Black replacement O-ring for grease injectors
133804	1/8 in NPT outlet adapter for injectors
24Z808	Injector port plugs with O-ring – used to plug unused injector ports

For manifold options, refer to Grease Jockey Accessories sections.

Electric Grease Jockey® Accessories

Ordering Information

Electric Grease Jockey Pump Accessories

	Part Number	Description
	24Z962	Protective pump cover
	25T767	Pump mounting flat bracket with mounting bolts
Image Coming Soon	25T567	Pump mounting offset bracket. For use inside of frame rail; requires 25T767 flat bracket.
Image Coming Soon	557966	Universal “Swiss Cheese” Flat Mounting Adapter
Image Coming Soon	25A170	Fill extension kit
	25C983	Output doubling kit
Image Coming Soon	25C985	Fuse kit, in-line, 12 VDC
Image Coming Soon	25C986	Fuse kit, in-line, 24 VDC

Ordering Information

Electric Grease Jockey Pump Service Items

	Part Number	Description
	24Z764	12 VDC, 2 L, bare pump with vent valve
	24Z959	24 VDC, 2 L, bare pump with vent valve
	24Z660	DMS, 12 VDC, 2 L, bare pump with vent valve
	24Z958	DMS, 24 VDC, 2 L, bare pump with vent valve
Image Coming Soon	129644	Power cable, 30 ft (9.1 m), 2-wire CPC to flying leads
	127782	DMS power cable, 30 ft (9.1 m), 5-wire CPC to flying leads
Image Coming Soon	17S477	Power cable, 3 ft (1 m), 2-wire CPC to 2-pin automotive connector
	25C981	Manual run button, 12 VDC
	25C982	Manual run button, 24 VDC
Image Coming Soon	25C987	Electric Grease Jockey pump element
Image Coming Soon	25C965	Vent valve assembly, 12 VDC
Image Coming Soon	25C966	Vent valve assembly, 24 VDC
Image Coming Soon	129801	Vent valve power cable

Electric Grease Jockey® Accessories

Ordering Information

Metering Modules

Front Modules all include king pin and tie rod end points.

Part Number	Description
25C849	Left Front – 5 points (Drag Link)
25C850	Right Front – 6 points (Spring Pins)
25C851	Right Front – 5 points (Drum Brakes)
25C852	Right Front – 3 points
25C853	5th Wheel – 6 points (Plate, Pivot pins)
25C854	Left Front – 10 points (Spring Pins, Drum Brakes, Drag Link)
25C855	5th Wheel – 10 points (Single Axle Drum Brakes, Plate, Pivot pins)
25C856	Tandem axle – 8 points (Drum Brakes)
25C857	Left front – 8 points (Spring Pins, Drag Link)
25C858	Left front – 7 points (Drum Brakes, Drag Link)
25C859	Right Front – 8 points (Spring Pins, Drum Brakes)
25D084	Single axle – 4 points (Drum Brakes)
26C081	TAX/5th Wheel – 14 point (Drum Brakes, Plate, Pivot pins) Double Module
26C101	Drop Axle, 8 Point (King Pins, drum brakes)
26C100	Drop Axle, 10 Point (King Pins, Tie-rod ends, drum brakes)
26C104	Dump Body, 10 Point
25D216	6 point (#3) meter module, pre-charged lines
25D217	12 point (#3) meter module, pre-charged lines

Notes: ***Meter modules do not include end-point fittings***. Customized meter modules available upon request, minimum order 50 units.

Lubricant

Part Number	Description
557941	NLGI #00 grease, 35 lb bucket

Grease Jockey Fill Pump Kits

Part Number	Description
26A318	Mini Fire-Ball 35 lb fill pump kit
26A319	Mini Fire-Ball 120 lb fill pump kit
26A320	Mini Fire-Ball 400 lb fill pump kit
247886	Manual 35 lb fill pump kit
121474	Coupler, hydraulic quick disconnect, 1/4 in NPT

Ordering Information

End-Point Fittings (not included with injector manifolds) and Installation Accessories

	Part Number	Description
	25C977	10 pack of P/N 556638, 3/16 in OD tube to 1/8 NPT elbows
	26A405	200 pack of P/N 556638, 3/16 in OD tube to 1/8 NPT elbows
	25C978	10 pack of P/N 556644, 3/16 in OD tube to 1/8 NPT straight connectors
	26A404	200 pack of P/N 556644, 3/16 in OD tube to 1/8 NPT straight connectors
	25C979	5 pack of P/N 15K740, 1/4-28 SAE (m) to 1/8 NPT(F) elbow, 90°
	26A406	100 pack of P/N 15K740, 1/4-28 SAE (m) to 1/8 NPT(F) elbow, 90°
	556660	3/16 in tube nut sleeve with captivated ferrule
	15K783	1/8 NPT(M) to 1/8 NPT(F) elbow, 90°
	560534	1/8 NPT(M) to 1/8 NPT(F) elbow, 45°
	557392	0.75 in extension, 1/8 NPT(M) to 1/8 NPT(F)
	557393	1.25 in extension, 1/8 NPT(M) to 1/8 NPT(F)
Image Coming Soon	25M544	6 ft conduit sleeve
	17K063	Cable ties, 100 pack
	25C980	Figure-8 cable ties, 10 pack
Image Coming Soon	26C326	Mainline purge adapter, JIC-6 x 1/4 in QD male

Pneumatic Grease Jockey®

Keep Your Chassis Operating, Even in Harsh On-Road Conditions

Lubricant goes where it's supposed to, automatically, with little or no waste. Field-proven – some of the largest fleets have been using Grease Jockey for decades.

High-Strength, Shatter-Resistant Reservoir

Utilizes a high-quality, polycarbonate reservoir that is securely mounted to the pump with rigid tie rods for optimal sealing.

Field-Proven Reliability

Over four decades of over-the-road experience.

Rugged Cast Aluminum Construction

9:1 pump with 6 lb capacity.

High-Capacity Fill Port

Saves time and keeps you on the road.

Digital Control Timer

PIN code lockout keeps your air-powered lubrication system profile safe.

Technical Specifications

Construction	Cast aluminum body and bracket
Lubricant	NLGI #0, #00 or #000 grease
Output per Cycle	1.5 in^3 (24.6 cm^3)
Reservoir Capacity	6 lb (2.7 kg), 12 lb (5.4 kg)
Inlet Supply (dry) (air pump)	150 psi (1034 kPa) max; 60 psi (414 kPa) min
Air-to-Lube Ratio (maximum)	9:1
Solenoid Voltage (air)	12 or 24 VDC
Electrical	9 to 32 VDC (12 or 24 VDC Nominal)
Enclosure (air pump)	High-impact sealed plastic
Component Technology	Solid-state
Pump "ON" Time	Programmable: 1 second to 99 minutes
Lube Cycle Frequency	Programmable: 1 minute to 99 hours
Main Supply to Modules	5/16 in O.D. heavywall nylon
Module to Point	3/16 in O.D. heavywall nylon
Operating Pressure (nylon lines)	1,350 psi (9,310 kPa)
Instruction Manual	312054

Ordering Information

Pneumatic Grease Jockey Pumps

	Package Number	563625	563589	563590	563593	563888	563854	563874
Package Includes	Reservoir Size	Pump only	6 lb	12 lb	6 lb	6 lb	6 lb	12 lb
	Fill Port	Straight	Straight	Straight	Elbow	Elbow	Straight	Straight
	Solenoid	–	–	–	–	12 VDC	12 VDC	12 VDC
	Timer/Wiring Harness Kit	–	–	–	–	–	25A118	25A118
	Mounting Plate	–	–	–	–	–	Yes	Yes
	Mainline and Hardware	–	–	–	–	–	Yes	Yes
	Extra Fittings Kit	–	–	–	–	–	Yes	Yes

Pneumatic Grease Jockey System Installation Kits

		Truck with Greaseable Spring Pins			Truck with Sealed Spring Pins (non-greaseable)		
		Drum Brakes		Disc Brakes	Drum Brakes		Disc Brakes
		6 x 4 Tandem Axle	4 x 2 Single Axle		6 x 4 Tandem Axle	4 x 2 Single Axle	
		34 Point / 4 Module Kit	*28 Point / 3 Module Kit*	*20 Point / 3 Module Kit*	*26 Point / 4 Module Kit*	*22 Point / 3 Module Kit*	*14 Point / 3 Module Kit*
	Package Number	563814	24Z809	24Z810	24Z811	24Z812	24Z813
Package Includes	12 VDC Grease Jockey Pump and Reservoir	563589 / 563854	24Z526	24Z526	24Z526	24Z526	24Z526
	Front Left Meter Module	563644	24W623	563654	563706	563706	563728
	Front Right Meter Module	563645	563858	563655	24W335	24W335	24H994
	5th Wheel Meter Module	563648	258348	563648	563648	258348	563648
	Rear Axle Meter Module	563646		–	563646		–
	Mounting Bracket	128256	128256	128256	128256	128256	128256
	Control Timer	25A118			25A118		

Accessories

	Part Number	Description
	128256	Mounting bracket
	24W482	Digital control timer for air-powered systems

Pneumatic Grease Jockey®

How to Select Your Graco Pneumatic Grease Jockey Automatic Lubrication System

Determining the Pneumatic Grease Jockey system best suited to your needs is accomplished by using the following steps.

A — PUMP

Pneumatic Grease Jockey Pump

Pump Description	Part Number
Pneumatic Grease Jockey 9:1 ratio, 6 lb reservoir, 12 VDC, controller, solenoid, mainline, and mounting hardware	563854

Now that you've selected your pump configuration, it's time to determine the system lube points.

B — LUBE POINTS – FRONT LEFT

Determine Your System's Front Left Lube Points

What is your front braking system?
Do you have greaseable or sealed spring pins?

Braking System	Spring Pins	Part Number
Drum brakes (2 points)	Spring lube (3 points)	563644 (10 points total)
	Sealed springs (0 points)	563706 (7 points total)
Disc brakes (0 points)	Spring lube (3 points)	563654 (8 points total)
	Sealed springs (0 points)	563728 (5 points total)

C — LUBE POINTS – FRONT RIGHT / TRANSMISSION

Determine Your System's Front Right / Transmission Lube Points

Does your transmission have lube points? What is your front braking system?
Do you have greaseable or sealed spring pins?

Clutch Points	Braking System	Spring Pins	Part Number
2 clutch points	Drum brakes (2 points)	Spring lube (3 points)	563645 (10 pts total)
		Sealed springs (0 points)	563859 (7 pts total)
	Disc brakes (0 points)	Spring lube (3 points)	24X743 (8 pts total)
		Sealed springs (0 points)	563727 (5 pts total)
No clutch points	Drum brakes (2 points)	Spring lube (3 points)	563858 (8 pts total)
		Sealed springs (0 points)	563860 (5 pts total)
	Disc brakes (0 points)	Spring lube (3 points)	563655 (6 pts total)
		Sealed springs (0 points)	24H994 (3 pts total)

D — LUBE POINTS – REAR BRAKES

Determine Your System's Rear Brake Lube Points

What is your rear braking system?
Do you have single or tandem axles?

Braking System	Axles	Part Number
Drum brakes	Tandem axle/TAX (8 points)	563646
	Single axle/SAX (4 points)	563647*
Disc brakes (0 points)	No kit needed	–

*If lubricating 5th wheel, order package 258348 from Section E instead of package 563647.

E — LUBE POINTS – 5TH WHEEL

Determine Your System's 5th Wheel Lube Points

What is your 5th wheel configuration?

5th Wheel System	Part Number
5th wheel (6 points)	563648
5th wheel/SAX drum (10 points)	258348

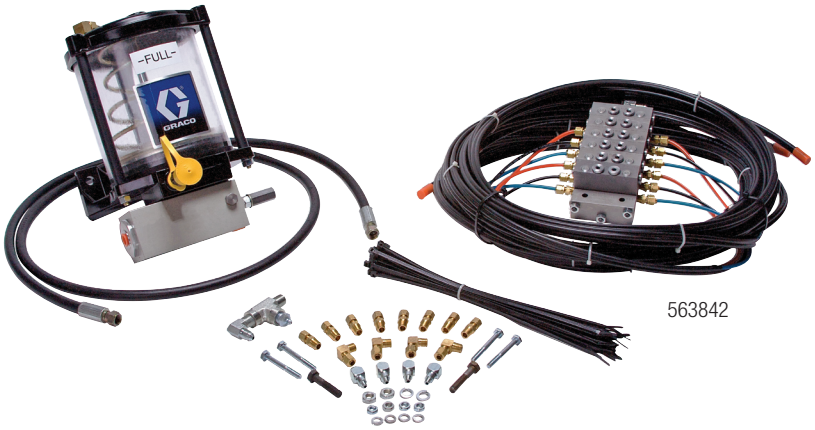
ADDITIONAL SYSTEM PRODUCTS

Additional Grease Jockey System Products

Product Description	Part Number
Steering assist lube points for front right	563862 (2 points)
Steerable drop axle lube points	564194 (10 points)
Non-steerable drop axle lube points	563856 (6 points)
Dump body kit	563857 (6 points)

Features and Benefits

- Smooth landing gear operation
- Innovative design works with your parking or service brakes – no electrical power needed
- Adjustable pump output volume puts you in control
- Slack adjuster and S-Cam lubrication help stop brakes from sticking – improves brake operation and extends component life



563842

Typical Applications

- Pre-designed kits for all popular trailer types
- Tractors with 1, 2, 3, 4, 5 and 6 axles

Typical Fluids

- Grease up to NLGI #2

Technical Specifications

Construction	Cast aluminum body and steel mounting bracket
Lubricant	NLGI #2 or lower
Output per Cycle	0.010-0.030 cu. in (0.16-.49 cm^3)
Reservoir Capacity (rigid clear plastic)	4 lb (1.8 kg)
Inlet Supply (dry) (air pump)	40-150 psi (3-10 bar)
Air-to-Lube Ratio (maximum)	20:1
Main Supply to Modules	1/4 in I.D. hose
Module to Point	3/16 in O.D. heavywall nylon
Operating Pressure (nylon lines)	1,350 psi (9,310 kPa)

Ordering Information

Universal Trailer Kits

Pneumatic trailer pump included

			Grease Points Covered in Kit				
		Part Number	Slack Adjuster	S-Cam	Clevis Pin	Landing Gear	Total Number of Grease Points
Package Includes	One Axle with Inner and Outer S-Cams	563829	2	4	–	–	6
	Two Axle with Enclosed S-Cams	563850	4	4	–	–	8
	Two Axle with Inner and Outer S-Cams	563842	4	8	–	–	12
	Two Axle with Enclosed S-Cams and Clevis Pins	563878	4	4	4	–	12
	Two Axle with Inner and Outer S-Cams and Clevis Pins	563851	4	8	4	–	16
	Two Axle with Inner and Outer S-Cams and Landing Gear	563840	4	8	–	5	17
	Three Axle with Enclosed S-Cams	563880	6	6	–	–	12
	Four Axle with Enclosed S-Cams and Clevis Pins	563881	8	8	8	–	24
	Five Axle with Enclosed S-Cams	563866	10	10	–	–	20
	Five Axle with Inner and Outer S-Cams and Clevis Pins	563848	10	20	10	–	40
	Six Axle with Enclosed S-Cams	563865	12	12	–	–	24
	Six Axle with Inner and Outer S-Cams and Clevis Pins	563852	12	24	12	–	48

Features and Benefits

- 11 different kits let you customize your EZ Greaser system
- Once installed, use your manual grease gun to lubricate multiple lube points from one fitting

Typical Applications

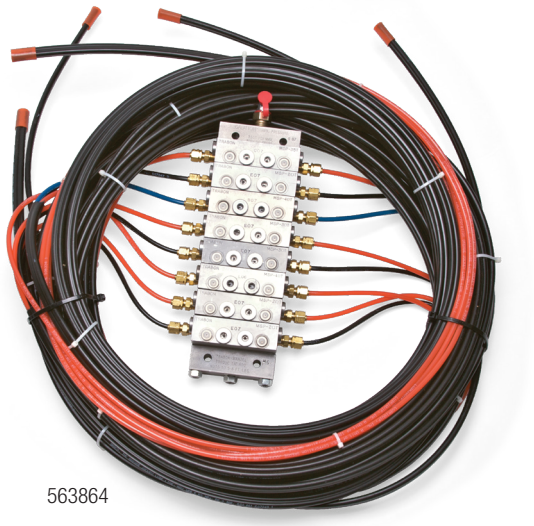
- Truck, tractor, and trailer chassis lubrication

Typical Fluids

- Grease up to NLGI #2

Technical Specifications

Recommended Fluids	NLGI #2 or lower
Maximum Operating Pressure	3,500 psi (241 bar)



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Ordering Information

Truck Kit Ordering Information

	Total Number of Grease Points	Part Number	Left Front											Right Front									Left and Right Rear			
			Upper King Pin	Lower King Pin	Drag Link	Slack Adjuster	S-Cam	Tie Rod	Spring Pin	Spring Hanger – Upper	Spring Hanger – Lower	Steer Assist	Steer Assist	Upper King Pin	Lower King Pin	Drag Link	Slack Adjuster	S-Cam	Tie Rod	Spring Pin	Spring Hanger – Upper	Spring Hanger – Lower	Slack Adjuster	S-Cam	Slack Adjuster	S-Cam
			Number of Grease Points																							
Front Brakes	4	563895				1	1										1	1								
Front Left and Right	8	563853	1	1	1			1						1	1	1			1							
Front Left and Right	14	563855	1	1	1			1	1	1	1			1	1	1			1	1	1	1				
Front Left and Right	16	563864	1	1	1			1	1	1	1	1	1	1	1	1			1	1	1	1				
Tandem Axle with Spring Trunnions – Dump Truck	10	563893							1											1			2	2	2	2
Tandem Axle with Spring Pivots – Dump Truck	10	563896							1											1			2	2	2	2

Trailer Kit Ordering Information

	Total Number of Grease Points	Part Number	Slack Adjuster	S-Cam	Bearing	Gear Nut	Crank
			Number of Grease Points				
EZ Greaser Landing Gear Kit	5	563824			2	2	1
Single Axle Trailer Kit – EZ Greaser MSP Manual with Standard Fittings	6	563810	2	4			
EZ Greaser Tandem Axle with Enclosed S-Cams	8	563863	4	4			
EZ Greaser Trailer Tandem Axle Kit with Non-enclosed S-Cams	12	563877	4	8			

Standard Graco Warranty

1-Year Warranty Policy

raco warrants all equipment manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve (12) months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective.

This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations. This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

Graco makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by Graco. These items sold, but not manufactured, by Graco (such as electric motors, switches, hose, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

Graco Automatic Lubrication Equipment Extended Warranty

This warranty does not cover, and Graco shall not be liable for, general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within one (1) year post the warranty period.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ANY ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO.

These items sold, but not manufactured, by Graco (such as electric motors, switches, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English.

Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaries exécutés, donnés ou intentés à la suite de ou en rapport, directement ou indirectement, avec les procedures concernées.

Graco Automatic Lubrication Equipment Extended Warranty (cont.)

Graco warrants all equipment referenced in this document that is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the distributor. Graco will, for a period as defined in the table below from the date of sale, repair or replace equipment covered by this warranty and determined by Graco to be defective. This warranty applies only when the equipment is installed, operated, and maintained in accordance with Graco's written recommendations.

Products	Warranty Period
Oil King, Coolant King and Oil Ace	5 Years
Pulse Fluid Management HUBs, TLMs, PACs and Extenders	2 Years
Pulse Level	2 Years
GL-1 X Injector	2 years
Electric Grease Jockey	5 Years
Cord and Light Reels	2 Years
Electrical Components	1 Year
LDX Series Hose Reels	5 Years
Wear Parts, including but not limited to hose, seals, swivel seats and roller guides	1 Year
SDX Series Hose Reels	7 Years
Power Springs	3 Years
Wear Parts, including but not limited to hose, seals, swivel seats and roller guides	1 Year
XD and XDX Series Hose Reels	7 Years
Power Springs	3 Years
Wear Parts, including but not limited to hose, seals, swivel seats, roller guides and motors	1 Year
Mechanical Meters	5 years
Wear parts, including but not limited to O-rings, seals and valves	1 Year
LD Preset Meters	5 years
Electronics	2 Years
Wear parts, including but not limited to O-rings, seals and valves	1 Year
EM, Pulse and SD Meters	5 Years
Electronics	3 Years
Wear parts, including but not limited to O-rings, seals and valves	1 Year
LD Oil/Grease Pumps	5 Years
Wear Parts, including but not limited to O-rings, packings and seals	1 Year
Hoses with pump packages	1 Year
AODD Pumps	5 Years
Wear Parts, including but not limited to O-rings, packings and seals	1 Year
Hoses with pump packages	1 Year
Mini Fire-Ball 225 and Fire-Ball 300 Oil and Grease Pumps	7 Years
Wear Parts, including but not limited to O-rings, packings and seals	1 Year
Hoses with pump packages	1 Year
Fire-Ball 425 Oil and Grease Pumps	10 Years
Wear Parts, including but not limited to O-rings, packings and seals	1 Year
Hoses with pump packages	1 Year
Fast-Ball and FastBall-100	5 Years
LD Blue and SD Blue Diesel Exhaust Fluid Pumps	2 Years

GRACO

Every Graco purchase comes with A+ Customer Service.

Questions?
Call (800) 533-9655

For more information visit graco.com