



Manzel® Model MH-3000 Lube-Meter

INSTALLATION

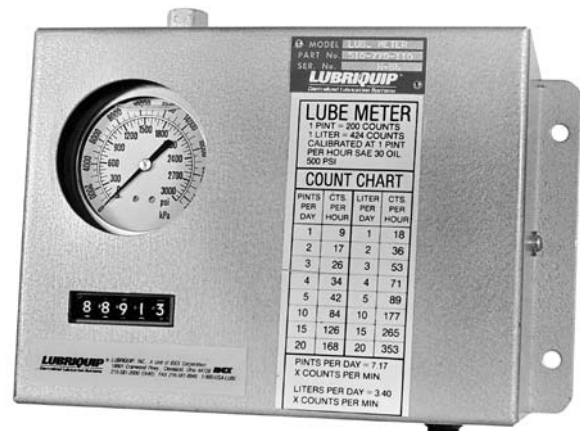
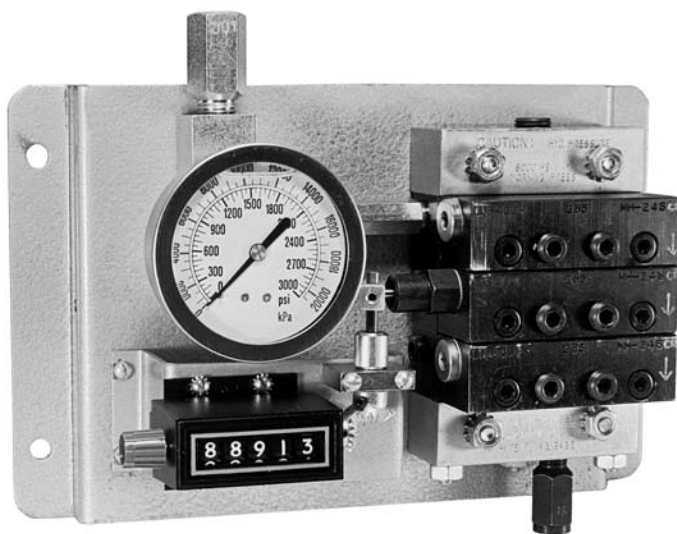
The Graco Lube-Meter is shipped completely assembled, adjusted and ready to install and operate.

Install the Lube-Meter in the lube oil line between the pump and master feeder. It can be mounted either on the equipment or on a separate panel, and should be located where the gauge and counter can be easily read. Be certain the inlet is at the bottom and the outlet is on the top to facilitate removal of air from the Lube-Meter.

NOTE: Installation of a 25 micron or finer filter in the oil line between the pump and Lube-Meter is recommended.

After mounting, remove air from the inlet line and Lube-Meter. To do this, leave the outlet line disconnected, connect the inlet line and run pump until air-free oil comes out of the outlet fitting. Then connect the outlet line, start the pump and remove air left in the Lube-Meter using the bleed screws at the top to the feeder assembly. (See Bulletin 30103, "How to Remove Air from a Trabon System", for further information.

NOTE: Do not use the Lube-Meter on systems which exceed 3,000 psi.



LUBE METER
1 PINT = 200 COUNTS
1 LITER = 424 COUNTS
CALIBRATED AT 1 PINT
PER HOUR SAE 30 OIL
500 PSI

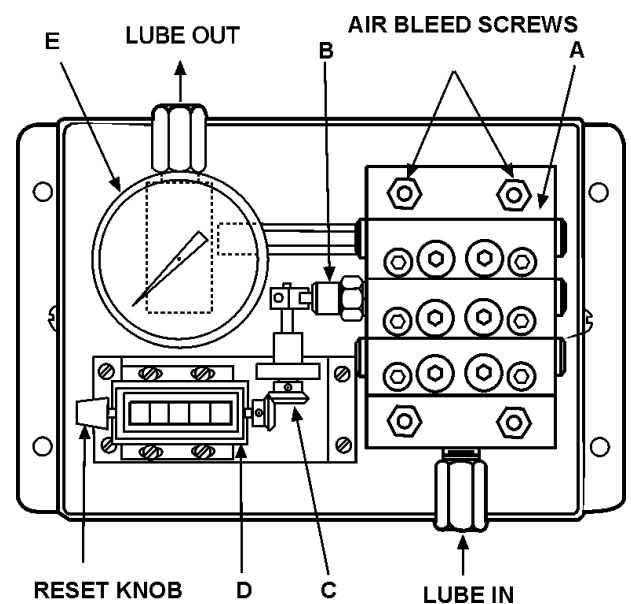
COUNT CHART			
PINTS PER DAY	CTS. PER HOUR	LITER PER DAY	CTS. PER HOUR
1	9	1	18
2	17	2	36
3	26	3	53
4	34	4	71
5	42	5	89
10	84	10	177
15	126	15	265
20	168	20	353

PINTS PER DAY = 7.17
X COUNTS PER MIN.
LITERS PER DAY = 3.40
X COUNTS PER MIN.

OPERATION

The Lube-Meter mounts in series in the oil line between the pump and the master feeder on the operating equipment. It is operated entirely by the flow of oil through it.

The Lube-Meter incorporates an MH Series Progressive Divider Valve (A) ported for one inlet and one outlet line. The pressure gauge (E) monitors system pressure in the outlet line. An indicator pin (B) is connected to one of the divider valve pistons. It makes one complete in-and-out cycle with passage of specific volume of oil. The pin's in-and-out motion rotates a sturdy bevel gear (C) which drives the mechanical counter (D). The counter, in turn, records one count (or cycle) with each completed valve.



OPERATION (continued)

The Lube-Meter continuously records the flow of oil to the lubrication system. All an operator does is to observe and record the counter reading as specified by local operating procedures. To determine lube oil usage for most applications, the operator can convert the number of counts per hour to pints per day or liters per day directly from a table on the nameplate. For volumes higher than 20 pints or 20 liters per day one of the following calculations must be made:

Counts per minute x 7.17 = Pints per day

Counts per minute x 3.40 = Liters per day

SERVICE AND MAINTENANCE

Periodically remove the cover. Check the counter drive system to be sure the gears mesh smoothly and the unit records one count for each indicator pin cycle. If needed, clean the gears of dirt and contaminants. They should be coated with a light film of oil. Also check all fitting and connections for leakage. Replace or repair defective parts or seals as needed.

DISASSEMBLY

Counter Linkage — To remove the assembly that connects the indicator pin to the counter:

SERVICE AND MAINTENANCE (Continued)

1. Loosen the set screw that holds the drive arm (Item 11) to the shaft (Item 13.)
2. Remove the two round head screws which hold the bearing assembly (Item 14) on the counter mounting bracket.

Feeder Assembly —

To remove the entire feeder assembly:

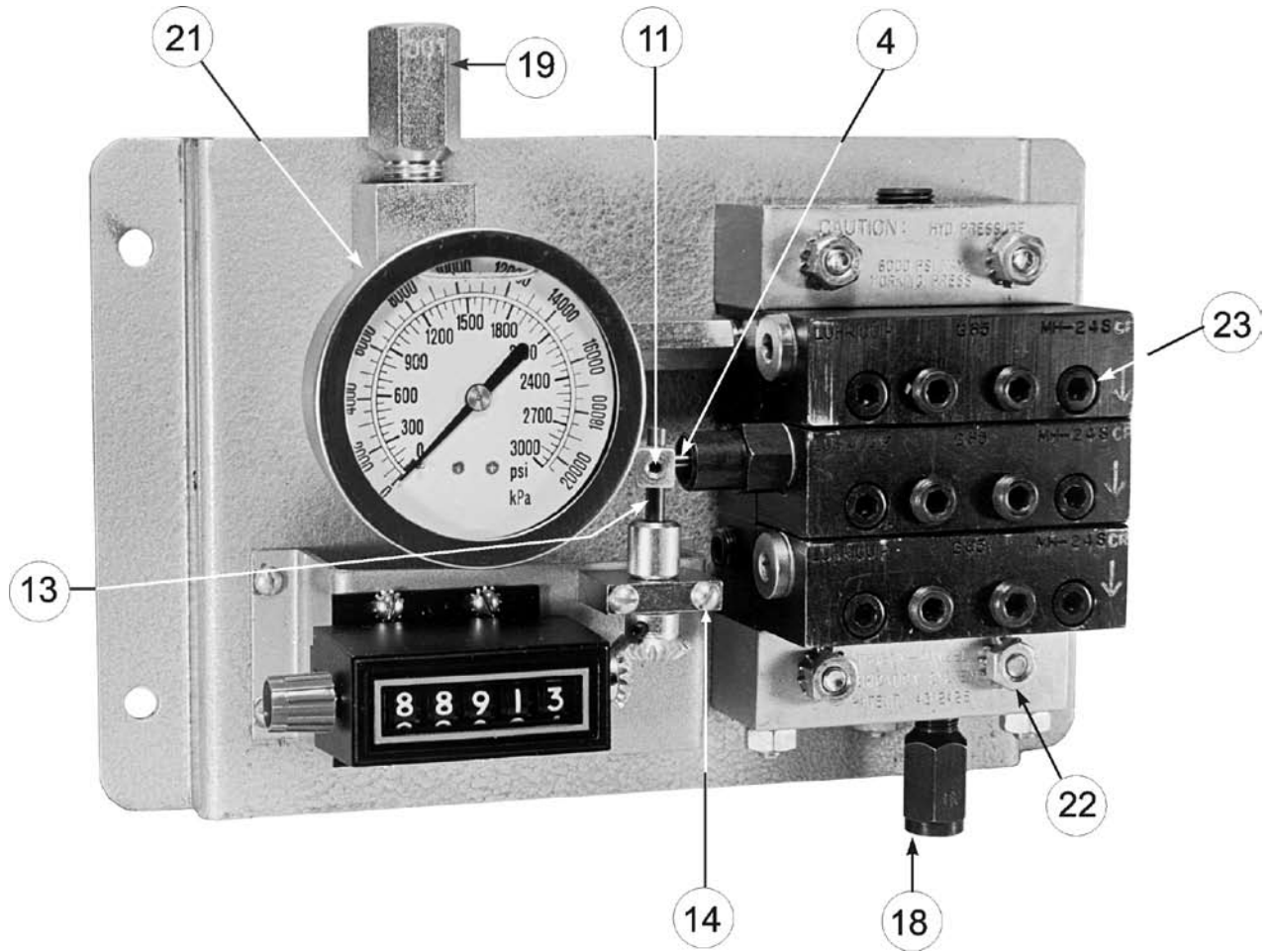
1. Disconnect inlet, (Item 18) and outlet (Item 19) lines at Lube-Meter.
2. Remove Lube-Meter from equipment.
3. Loosen the set screw which holds the drive arm (Item 11) to the shaft (Item 13) of the counter linkage assembly.
4. Remove the two screws which hold the gauge manifold block (Item 21) to the enclosure base.
5. Remove the four screws (Item 22) which hold the feeder assembly to the enclosure base.
6. Slide the feeder assembly up to disconnect the indicator pin assembly (Item 4) from the linkage assembly.

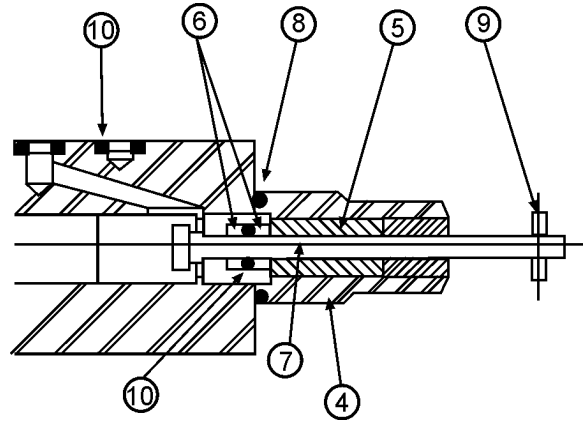
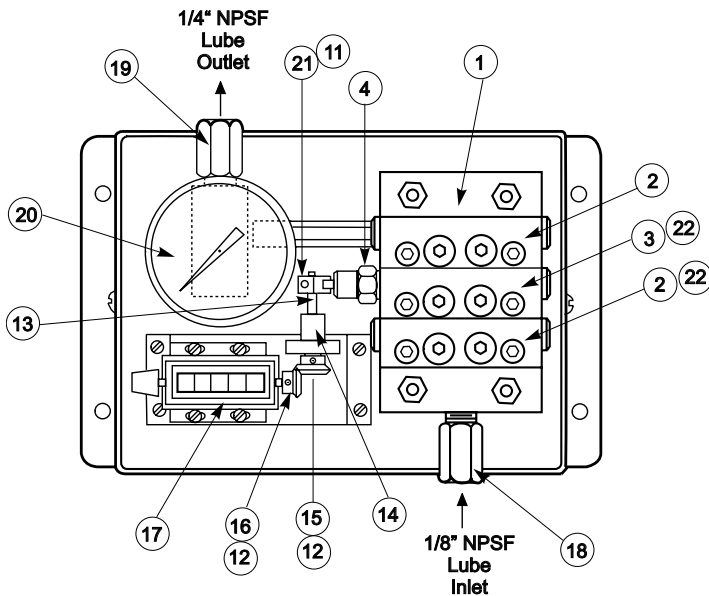
Valve Blocks — To remove a valve block from the feeder assembly, remove the two socket head screws (Item 23) which hold the block to the intermediate section. For the center valve block, also loosen the set screw which holds the drive arm (Item 11) to the shaft of the counter linkage assembly, pivot the block up and slide the drive arm off the shaft.

TESTING

After re-assembly bleed air from the oil lines and Lube-Meter and make the following two tests:

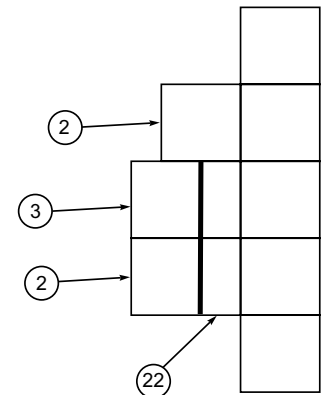
- a. Plug the outlet. Raise the oil pressure to 3,000 psi on the pressure gauge and look for oil leaks.
- b. Connect the outlet line and begin pumping oil. Be sure the counter records one count for each indicator pin cycle.





LUBE-METER 564358 (510-770-110) PARTS LIST

Item	Qty	Description	Part No.	Old Part No.
1	1	Feeder Assembly (includes items 2, 3, 4 & 22)	564359	510-770-210
*2	2	Valve Block Assembly, 0.024	564364	510-770-405
*3	1	Valve Cycle Pin Assembly (includes items 4-10)	564362	510-770-345
4	1	Indicator Assembly (includes items 5, 6 & 10)	563426	527-000-891
5	1	Bearing Insert	560889	527-000-470
6	2	Backup Ring	557719	527-000-760
7	1	Cycle Indicator Pin	561402	510-770-350
8	1	O-Ring, -004 Viton, Brown	556570	422-240-040
9	1	Groove Pin, 1/16 dia x 3/8 lg	555425	411-100-570
10	1	O-Ring, -006 Viton, Brown (used on Valve Block Assembly & on Base Intermediate Assembly)	557721	527-000-810
11	1	Drive Arm	558919	511-356-001
12	2	4-40 x 1/4 fl pt Set Screw	558662	417-500-030
13	1	Shaft	561400	510-770-290
14	1	Bearing Assembly	564360	510-770-260
15	1	Miter Gear 20T	558913	510-770-270
16	1	Miter Gear 16T	564361	510-770-280
17	1	Counter	558909	507-800-000
18	1	Inlet Check Valve	563200	509-355-030
19	1	Outlet Check Valve	563207	509-360-030
20	1	Gauge, 0-3000 psi, Liquid Filled	-	510-770-240
21	1	# 6-32 x 1/4 Socket Set Screw	555539	417-540-030
*22	2	Crossport Kit, RH	563469	527-005-320



Crossport Kit Installation

* When replacing items 2 & 3 on older units having factory drilled crossported sections, 2 pc's, item 22 must be ordered as separate line items and installed below new working sections as indicated above.

All written and visual data contained in this document are based on the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Contact us today!

To receive product information or talk with a Graco representative, call 800-533-9655 or visit us online at www.graco.com.

