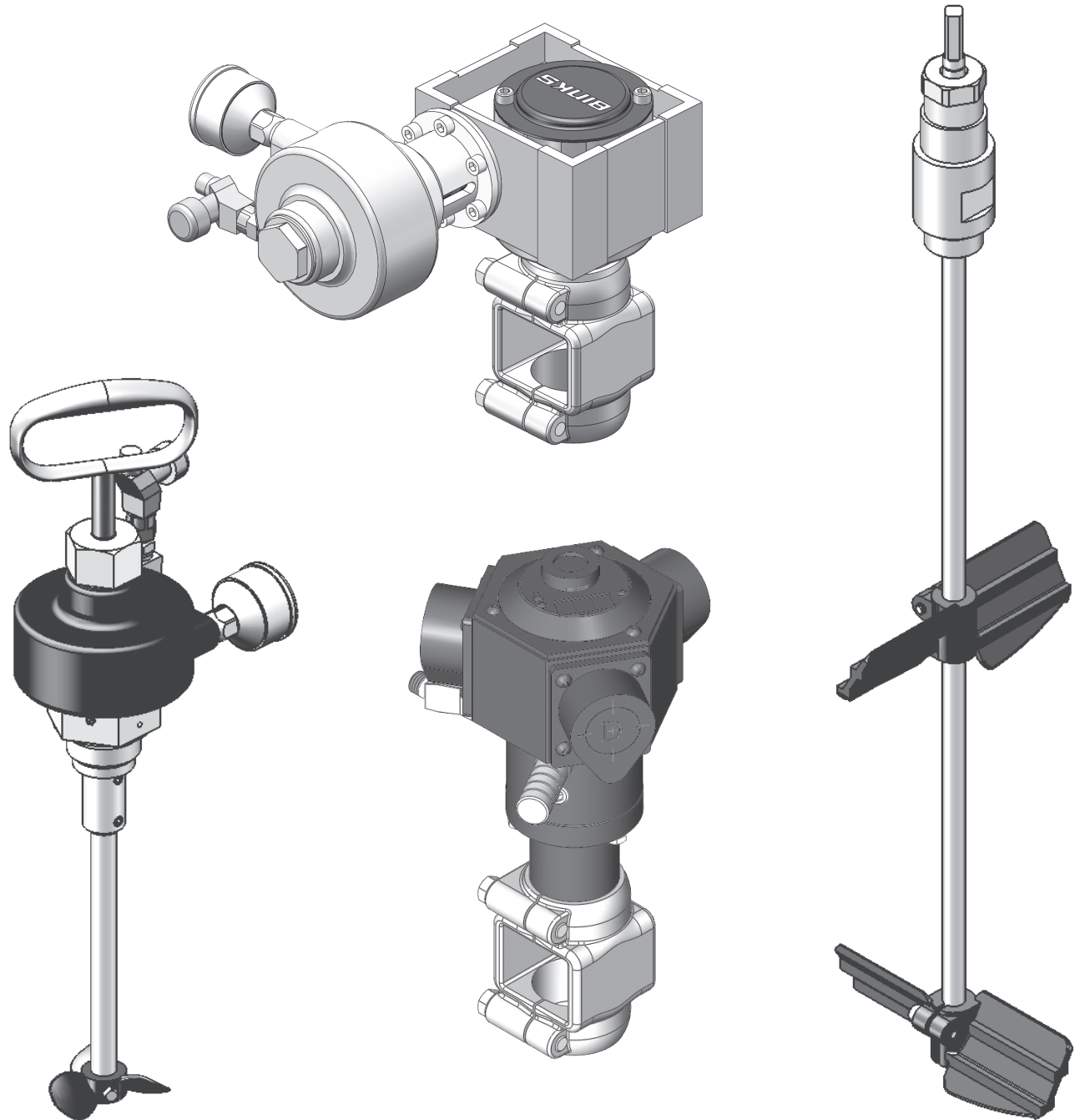




AIR MOTOR DRIVES AND AGITATORS FOR PRESSURE FEED TANKS



In this part sheet, the words **WARNING**, **CAUTION** and **NOTE** are used to emphasize important safety information as follows:

WARNING

Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage.

CAUTION

Hazards or unsafe practices which could result in minor personal injury, product or property damage.

NOTE

Important installation, operation or maintenance information.

WARNING

Read the following warnings before using this equipment.



READ THE MANUAL

Before operating finishing equipment, read and understand all safety, operation and maintenance information provided in the operation manual.



OPERATOR TRAINING

All personnel must be trained before operating finishing equipment.



EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture, malfunction, or start unexpectedly and result in serious injury.



LOCK OUT / TAG-OUT

Failure to de-energize, disconnect, lock out and tag-out all power sources before performing equipment maintenance could cause serious injury or death.



AUTOMATIC EQUIPMENT

Automatic equipment may start suddenly without warning.



PRESSURE RELIEF PROCEDURE

Always follow the pressure relief procedure in the equipment instruction manual.



KEEP EQUIPMENT GUARDS IN PLACE

Do not operate the equipment if the safety devices have been removed.



KNOW WHERE AND HOW TO SHUT OFF THE EQUIPMENT IN CASE OF AN EMERGENCY



WEAR SAFETY GLASSES

Failure to wear safety glasses with side shields could result in serious eye injury or blindness.



INSPECT THE EQUIPMENT DAILY

Inspect the equipment for worn or broken parts on a daily basis. Do not operate the equipment if you are uncertain about its condition.



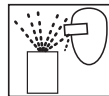
NEVER MODIFY THE EQUIPMENT

Do not modify the equipment unless the manufacturer provides written approval.



NOISE HAZARD

You may be injured by loud noise. Hearing protection may be required when using this equipment.



PROJECTILE HAZARD

You may be injured by venting liquids or gases that are released under pressure, or flying debris.



PINCH POINT HAZARD

Moving parts can crush and cut. Pinch points are basically any areas where there are moving parts.



STATIC CHARGE

Fluid may develop a static charge that must be dissipated through proper grounding of the equipment, objects to be sprayed and all other electrically conductive objects in the dispensing area. Improper grounding or sparks can cause a hazardous condition and result in fire, explosion or electric shock and other serious injury.



WEAR RESPIRATOR

Toxic fumes can cause serious injury or death if inhaled. Wear a respirator as recommended by the fluid and solvent manufacturer's Safety Data Sheet.



TOXIC FLUID & FUMES

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, injected or swallowed. LEARN and KNOW the specific hazards of the fluids you are using.



FIRE AND EXPLOSION HAZARD

Improper equipment grounding, poor ventilation, open flame or sparks can cause a hazardous condition and result in fire or explosion and serious injury.



MEDICAL ALERT

Any injury caused by high pressure liquid can be serious. If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor you suspect an injection injury.
- Show the doctor this medical information or the medical alert card provided with your airless spray equipment.
- Tell the doctor what kind of fluid you were spraying or dispensing.



GET IMMEDIATE MEDICAL ATTENTION

To prevent contact with the fluid, please note the following:

- Never point the gun/valve at anyone or any part of the body.
- Never put hand or fingers over the spray tip.
- Never attempt to stop or deflect fluid leaks with your hand, body, glove or rag.
- Always have the tip guard on the spray gun before spraying.
- Always ensure that the gun trigger safety operates before spraying.

IT IS THE RESPONSIBILITY OF THE EMPLOYER TO PROVIDE THIS INFORMATION TO THE OPERATOR OF THE EQUIPMENT. FOR FURTHER SAFETY INFORMATION REGARDING THIS EQUIPMENT, SEE THE GENERAL EQUIPMENT SAFETY BOOKLET (77-5300).

DESCRIPTION

This manual covers the following gear reduced drive models:

31-452 Air motor drive with 15:1 gear reduction. Includes air adjusting valve for speed control with hose and fittings for tank regulator connection.

QMG-417, 418, 419, and 420 Plated steel agitators for use with 31-452 Drive Units (15:1 gear reduction) on all galvanized tank models.

QMS-431, 432, 433, and 434 Stainless steel agitators for use with 31-452 Drive Units (15:1 gear reduction) on all stainless steel tank models.

This manual covers the following direct drive models:

31-502 Direct Drive Agitator. Includes air adjusting valve for speed control with hose and fittings for tank regulator connection.

QMG-416 Direct Drive Agitator. Used on 183G-211, 221, 231, and 241 Galvanized Pressure Feed tanks. Includes air adjusting valve for speed control with hose and fittings for tank regulator connection.

QMS-430 Direct Drive Agitator. Used on 183S-211, 221, 231, and 241 Stainless Steel Pressure Feed tanks. Includes air adjusting valve for speed control with hose and fittings for tank regulator connection.

These Agitators are designed for use with Pressure Tanks. Read all the information contained in this bulletin and the pressure feed tank bulletin before attempting installation.

AGITATOR CROSS REFERENCE CHART

Agitator Part No.	Type of Agitation	Used with:	Max rpm	Typical rpm
31-452	Indirect Geared Drive Agitator & Motor	QMG-417, 418, 419, & 420 & QMS-431, 432, 433, & 434	100	60-80
31-502	Direct Drive Agitator & Motor	QMG-417, 418, 419, & 420 & QMS-431, 432, 433, & 434	300	60-80
QMG-416	Direct Drive (plated steel shaft)	183G-211, 221, 231, & 241	3000	Up to 1000 RPM Max
QMG-417	Agitator only (less drive) for 2-gallon ASME galvanized tanks	183G-213	100	60-80
QMG-418	Agitator only (less drive) for 5 gallon ASME galvanized tanks	183G-513	100	60-80
QMG-419	Agitator only (less drive) for 10 gallon ASME galvanized tanks	183G-1013	100	60-80
QMG-420	Agitator only (less drive) for 15 gallon ASME galvanized tanks	183G-1513	100	60-80
QMS-430	Direct Drive (SS shaft)	183S-211, 221, 231, & 241	3000	Up to 1000 RPM Max
QMS-431	Agitator only (less drive) for 2-gallon ASME SS tanks	183S-213	100	60-80
QMS-432	Agitator only (less drive) for 5 gallon ASME SS tanks	183S-513	100	60-80
QMS-433	Agitator only (less drive) for 10 gallon ASME SS tanks	183S-1013	100	60-80
QMS-434	Agitator only (less drive) for 15 gallon ASME SS tanks	183S-1513	100	60-80

⚠ WARNING

Before attempting any installation of agitators onto pressure feed tanks, the tanks must be relieved of pressure as high pressure can cause a serious injury. Pressure is maintained in a pressure tank after the system has been shut down. Before attempting removal of cover, fill cap, or center plug, pressure must be relieved using the following steps:

PRESSURE RELIEF PROCEDURE

1. Turn off the main air supply to the tank.
2. Close air inlet valve located on tank air manifold. Remove air inlet hose.
3. Bleed off air in the tank by turning the air relief valve thumb screw counter-clockwise. Wait until all the air has escaped through the valve before removing the pressure tank cover, fill cap, or center plug.
4. Leave the air relief valve open until you have reinstalled the cover, fill cap, or center plug.

AIR SUPPLY

Air supplies (compressors etc.) shall be sited in a non-hazardous area with a filter on the air intake system to prevent the ingress of dust or similar foreign materials into the parts where compression takes place.

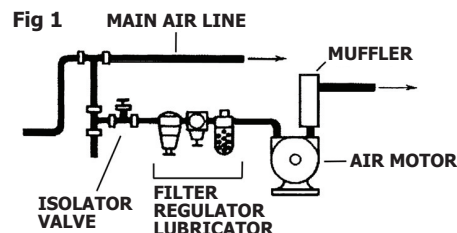
OPTIONAL AIR MOTOR LUBRICATION

(Lubrication will extend the life of the motor)

An automatic air line filter/lubricator should be installed in the air supply line no more than 18" from the air motor. A 5 micron filter is recommended. Install the lubricator level with or above the motor so the oil mist will blow directly into or down into the motor (see Fig. 1).

Fill the oil reservoir with SAE 10W motor oil.

Adjust lubricator to feed 1 drop of oil for every 50 cfm of air or 1 drop per minute of continuous running.

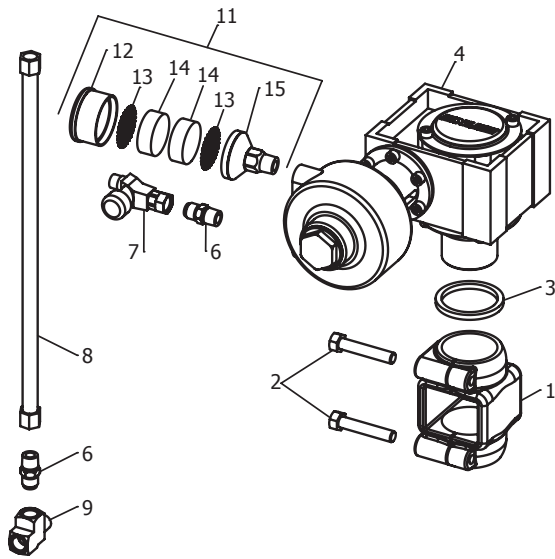


The unit may also be lubricated manually by adding 10-20 drops of oil SAE 10 weight oil into the air inlet fitting at the start of each shift.

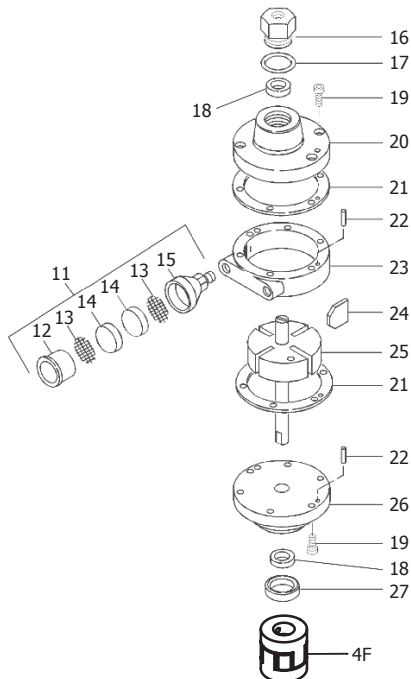
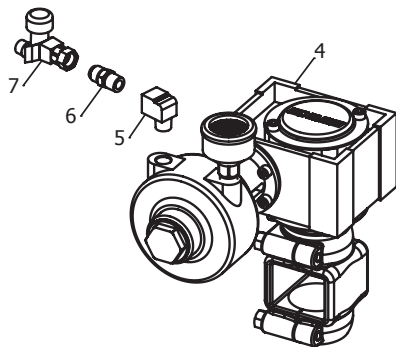
Periodically—Remove air adjusting valve and air strainer and flush motor with a clean suitable solvent. Remove trapped particles from screen and clean air strainer felt.

31-452 GEAR REDUCTION DRIVE

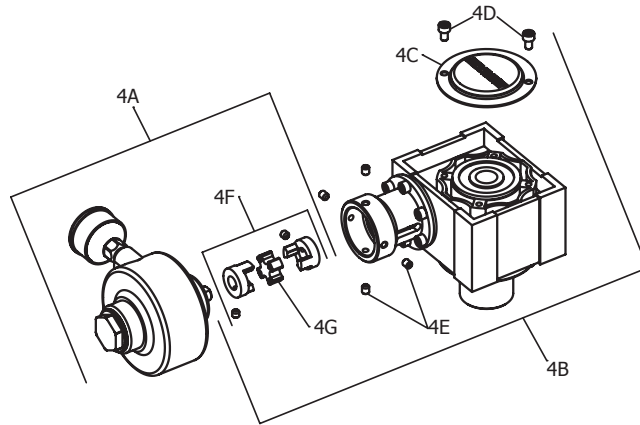
5, 10, & 15 GALLON CONFIGURATIONS



2 GALLON CONFIGURATION



31-434 GEAR REDUCTION DRIVE



31-452 15:1 GEAR REDUCTION DRIVE ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	QMS-35	AIR MOTOR SUPPORT	1
2	Purchase Locally	HEX HEAD CAP SCREW, 3/8-16 X 2"	2
3	32243-133	WASHER	1
4	31-434	AGITATOR DRIVE	1
4A	31-437-K	AIR MOTOR WITH COUPLING (INCL W/ 31-434)	1
4B	31-435-K	15:1 REDUCER WITH COUPLING (INCL W/ 31-434)	1
4C	31-422	COVER PLATE (INCL W/ 31-435-K)	1
4D	Purchase Locally	CAP HEAD SCREW, M6 X 10mm	2
4E	Purchase Locally	SET SCREW, 1/4-20 X 5/16"	4
4F	20-6990	COUPLING ASSEMBLY	1
4G	20-1068	COUPLING SPIDER	1
5	SSP-1917-NI	STREET ELBOW, 1/4" NPT M X F	1
6	H-2008	ADAPTER, 1/4 NPSM X NPT PLATED BRASS	2
7	HAV-500	ADJUSTING VALVE	1
8	HA-57011	AIR HOSE	1
9	23425-282	STREET TEE, 1/4" NPT F X F X M	1
10			
11	QSK-071	MUFFLER & AIR STRAINER ASSEMBLY (DUAL FELT)	1
12		STRAINER CAP	1
13	▲	SCREEN	2
14	▲●	FELT	2
15		STRAINER BODY	1

31-437-K AIR MOTOR & COUPLING ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
4F	20-6990	COUPLING ASSEMBLY	1
16	QS-190	END CAP	1
17	●	END CAP GASKET	1
18	PT-58	BEARING	2
19	Purchase Locally	MACHINE SCREW, 1/4-28 X 1/2"	12
20		FRONT PLATE	1
21	PT-59-1-K10 ●	END PLATE SPACER KIT	2
22	QS-189-1-K10	DOWEL PIN	4
23		BODY	1
24	●	VANE	4
25		ROTOR ASSEMBLY	1
26		END PLATE	1
27	37-90	SEAL	1

Refer to page 10 for rebuild instructions.

Parts are included within the following packing kits:

- KK-5001-1A AIR MOTOR REPAIR KIT
- ▲ KK-5006 STRAINER SCREEN AND FILTER KIT

INSTALLATION—DRIVE UNIT 31-452

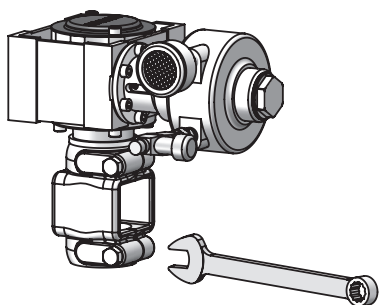
⚠ WARNING

Before attempting any installation of agitators onto pressure feed tanks, the tanks must be relieved of pressure as high pressure can cause a serious injury. Pressure is maintained in a pressure tank after the system has been shut down. Before attempting removal of cover, fill cap, or center plug, pressure must be relieved using the steps on page 3.

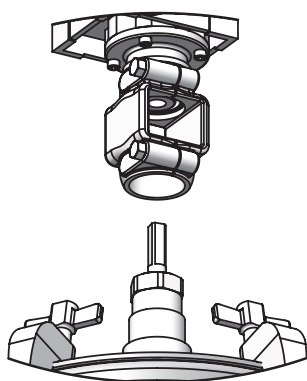
⚠ CAUTION

Failure to properly lubricate the air motor will result in premature motor failure and will void the warranty. See lubrication instructions on page 3.

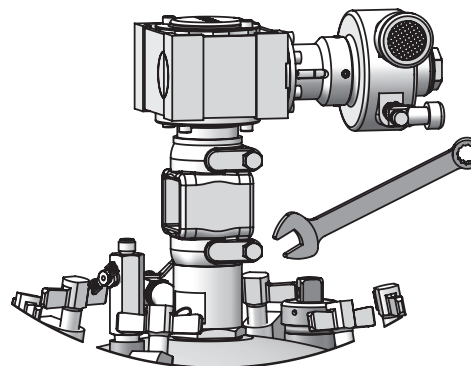
Using a 9/16 wrench, loosen the lower cap screw (2).



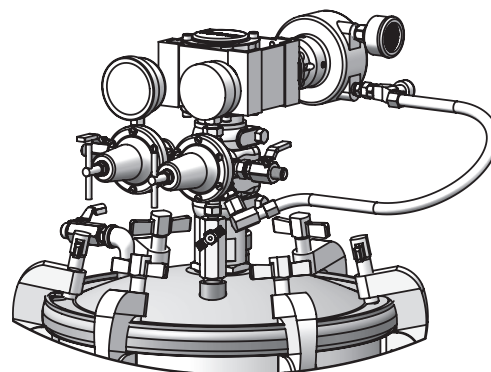
Install drive unit over the bearing assembly. Make sure that the square drive of the shaft engages the drive socket of the gearbox. Rotate the unit as necessary to align the shaft and the socket.



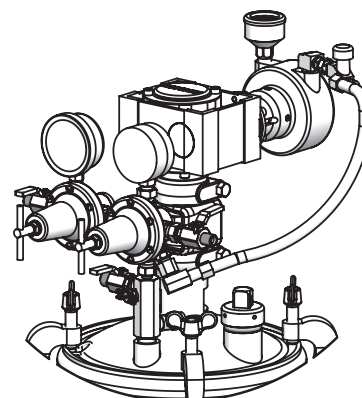
Rotate the drive unit to the desired position. Then tighten the cap screws (2) Use 9/16 wrench.



After the drive unit is positioned connect the air hose (8) from the regulator to the air motor as shown.



Typical 5/10/15 Gallon ASME Tank Configuration

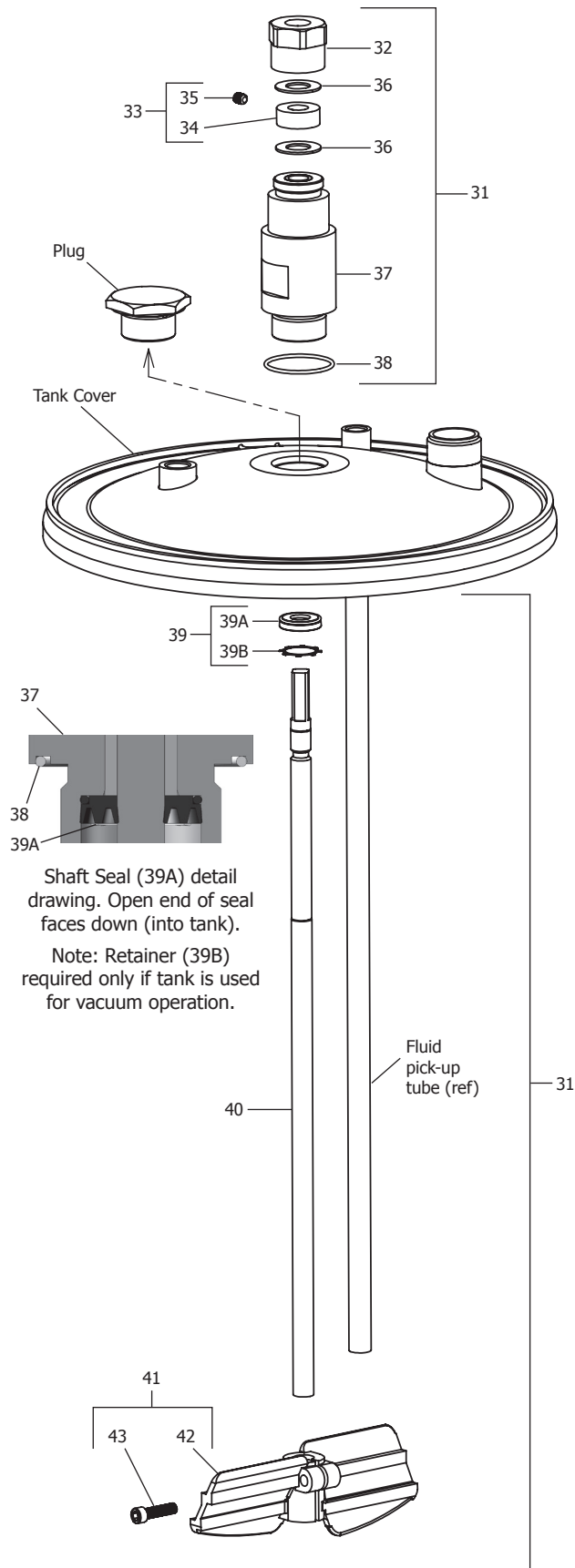


Typical 2 Gallon ASME Tank Configuration

OPERATION

1. Lubricate air motor. Follow the lubrication instructions on page 3.
2. Open the valve to the main air line and slowly open the air adjusting valve (7) until the agitator turns.
3. Adjust speed of the agitator with the air adjustment valve (7). Do not run at excessive speeds. Typical speeds are 50 to 70 RPM.

AGITATOR ASSEMBLIES TO SUIT GEAR DRIVE AND 31-502 DIRECT DRIVE



⚠ WARNING

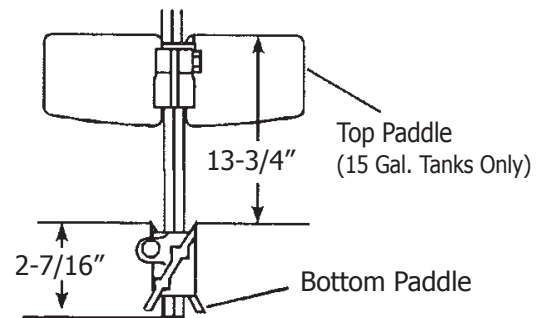
Before attempting any installation of agitators onto pressure feed tanks, the tanks must be relieved of pressure as high pressure can cause a serious injury. Pressure is maintained in a pressure tank after the system has been shut down. Before attempting removal of fill plug or cover, pressure must be relieved using the steps on page 3.

INSTALLATION—AGITATOR ASSEMBLY

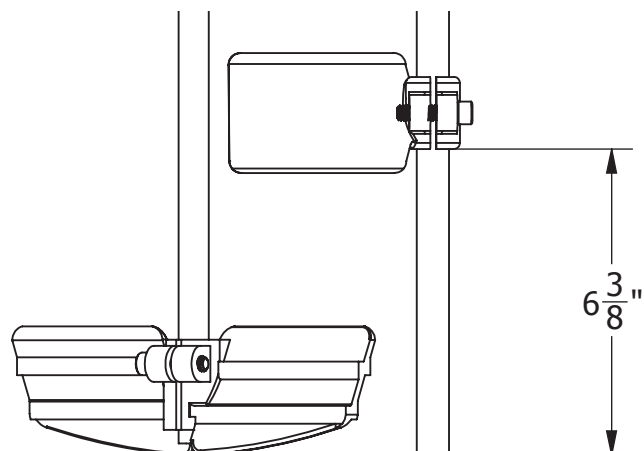
QMG-417, 418, 419, & 420 (PLATED STEEL)

QMS-431, 432, 433, & 434 (STAINLESS STEEL)

1. Unscrew the center plug from the tank cover.
2. Remove the paddle(s) (41) from the shaft by loosening the paddle clamp screw (43).
3. Make sure the O-ring (38) is located correctly in the housing (37). Screw housing into the center hole in the tank lid. Fully tighten with a wrench (1.875").
4. Refit the paddles (41) in the position as shown. The curved edge of the paddle should be at the bottom. The upper paddle is used on 15 gallon QMG-420 and QMS-434 only.



5. 10 and 15 Gallon Tanks Only: Assemble stationary paddle (44) to the fluid pick-up tube with a hexagon socket head cap screw (31) so that the paddle is located 6-3/8 inches from the bottom of the fluid pick-up tube as shown.

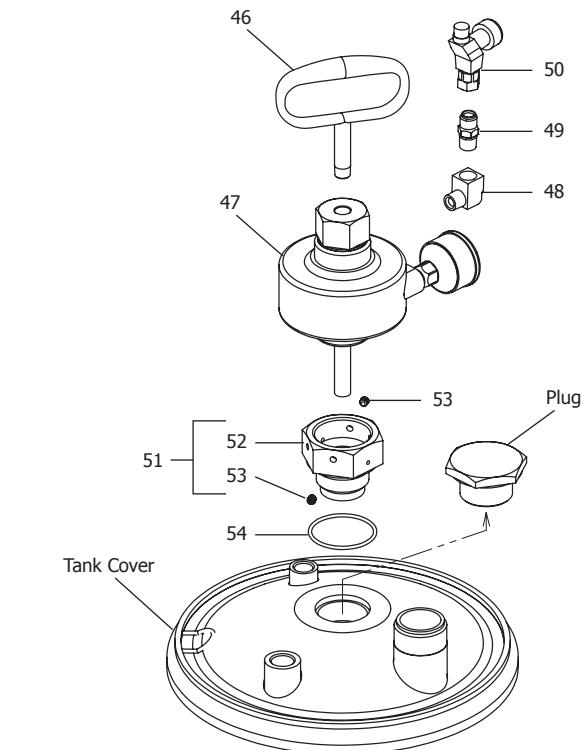


PARTS LIST - GEAR DRIVEN AND 31-502 DIRECT DRIVE AGITATOR ASSEMBLIES

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
31	QMG-417	AGIT ASS'Y (Includes items 32 to 43) 2 gallon tank; Galvanized	1
	QMG-418	AGIT ASS'Y (Includes items 32 to 43) 5 gallon tank; Galvanized	1
	QMG-419	AGIT ASS'Y (Includes items 32 to 45) 10 gallon tank; Galvanized	1
	QMG-420	AGIT ASS'Y (Includes items 32 to 45) 15 gallon tank; Galvanized	1
	QMS-431	AGIT ASS'Y (Includes items 32 to 43) 2 gallon tank; Stainless Steel	1
	QMS-432	AGIT ASS'Y (Includes items 32 to 43) 5 gallon tank; Stainless Steel	1
	QMS-433	AGIT ASS'Y (Includes items 32 to 45) 10 gallon tank; Stainless Steel	1
	QMS-434	AGIT ASS'Y (Includes items 32 to 45) 15 gallon tank; Stainless Steel	1
32	QMS-46	RETAINING NUT	1
33	QMS-447	THRUST COLLAR KIT (Includes items 34 & 35)	1
34	----	THRUST COLLAR	1
35	----	SET SCREW (5/16" -18 X 3/8")	1
36	KK-5049	THRUST WASHER KIT (Includes 2 washers)	1
37	QMG-409	BEARING ASSEMBLY, GALVANIZED TANKS	
	QMS-407	BEARING ASSEMBLY, STAINLESS STEEL TANKS	1
38	SSG-8184-K2	O-RING (Kit of 2)	1
39	KK-5042	SHAFT SEAL KIT (Includes items 39A & 39B)	2
39A	----	SHAFT SEAL	1
39B	----	RETAINER	1
40	QMS-5	AGITATOR SHAFT for 2 Gallon Tanks	1
	QMS-6	AGITATOR SHAFT for 5 Gallon Tanks	1
	QMS-7	AGITATOR SHAFT for 10 Gallon Tanks	1
	QMS-8	AGITATOR SHAFT for 15 Gallon Tanks	1
41	QMS-449	AGITATOR PADDLE KIT for 2 Gallon Tanks (Includes items 42 & 43)	1
	QMS-444-CE	AGITATOR PADDLE KIT for 5, 10, & 15 Gal Tanks (Includes items 42 & 43; 15 gal tanks have two)	1 or 2
42	----	AGITATOR PADDLE	1
43	Purchase Locally	HEX SOCKET HEAD CAP SCREW (5/16" x 1-1/4", Stainless Steel)	1/Kit
44	QMS-445-CE	STATIONARY PADDLE KIT (Includes items 43 & 45 for 10 & 15 Gal Tanks only)	1
45	----	STATIONARY PADDLE	1

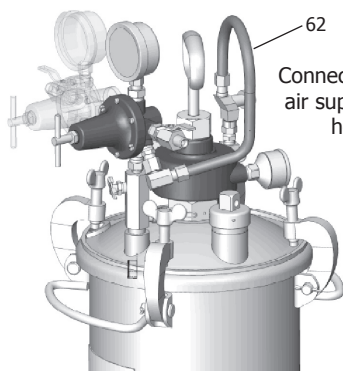
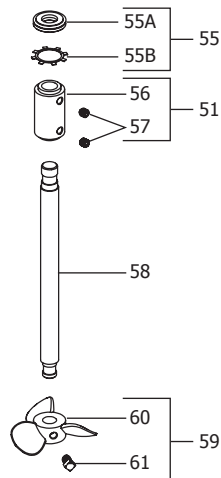
DIRECT DRIVE AGITATOR ASSEMBLIES & AIR MOTORS (QMG-429 & QMS-428)

DIRECT DRIVE AGITATOR ASSEMBLIES FOR ASME 2-GALLON TANKS QMG-416, PLATED STEEL QMS-430, STAINLESS STEEL



Shaft Seal (55A) detail drawing. Open end of seal faces down (into tank).

Note: Retainer (55B) required only if tank is used for vacuum operation.



Connect the agitator to the air supply as shown using hose HA-57011.

⚠ WARNING

Before attempting any installation of agitators onto pressure feed tanks, the tanks must be relieved of pressure as high pressure can cause a serious injury. Pressure is maintained in a pressure tank after the system has been shut down. Before attempting removal of fill plug or cover, pressure must be relieved using the steps on page 3.

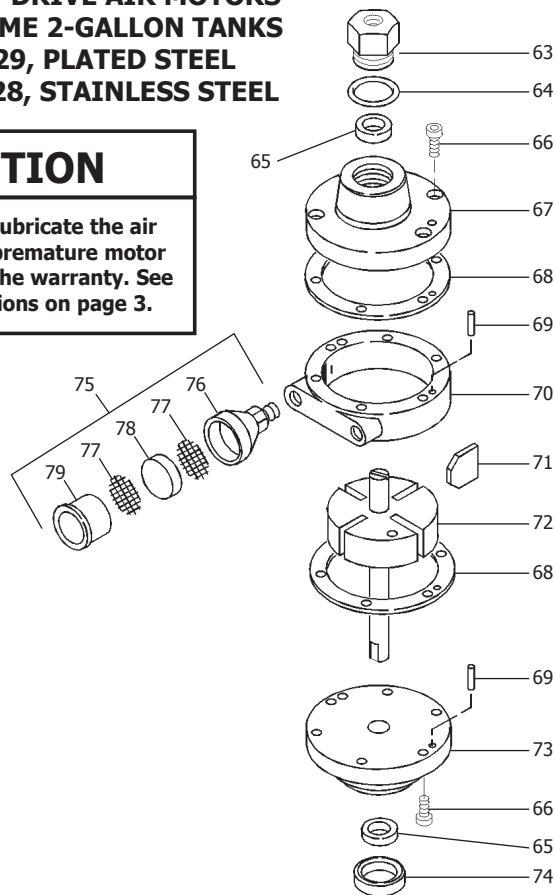
INSTALLATION—QMG-416 & QMS-430

1. Unscrew the center plug from the tank cover. Clean the sealing surface around the port.
2. Loosen the propeller screw (61) and remove the propeller (60).
3. Make sure the o-ring (54) is fully seated in the groove in the adapter (52). Insert the agitator through the port and screw in until fully tightened.
4. If required, loosen the screw (53) in the adaptor to rotate the motor body to align the hose connection to the required position. Re-tighten the screw (53).
5. Replace the propeller (60) onto the shaft (58). Make sure the screw (61) is aligned with the flat on the shaft and tighten the screw.
6. Connect agitator to air supply regulator with air hose (62).

DIRECT DRIVE AIR MOTORS FOR ASME 2-GALLON TANKS QMG-429, PLATED STEEL QMS-428, STAINLESS STEEL

⚠ CAUTION

Failure to properly lubricate the air motor will result in premature motor failure and will void the warranty. See lubrication instructions on page 3.



**QMG-416 PLATED STEEL
DIRECT DRIVE AGITATOR
PARTS LIST**

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
46	QN-97	CARRYING HANDLE	1
47	QMG-429	AIR MOTOR ASS'Y	1
48	Purchase Locally	STREET ELBOW, 1/4 NPT (M) X 1/4 NPT (F)	1
49	H-2008	NIPPLE, 1/4 NPT (m) X 1/4 NPS (m)	1
50	HAV-500	AIR ADJUSTING VALVE	1
51	KK-4990	ADAPTER KIT (Includes Items 52, 53, 56, 57)	1
#52	-----	ADPATER	1
#53	-----	SET SCREW (1/4-20 x 1/4)	2
54	SSG-8184-K2	O-RING (Kit of 2)	1
55	KK-5041	SHAFT SEAL KIT	1
55A	-----	SHAFT SEAL	1
55B	-----	RETAINER	1
51	KK-4990	SEAL RETANIER KIT (Includes Items 52, 53, 56, 57)	1
#56	-----	Shaft Coupling	1
#57	-----	SET SCREW (1/4-20 x 1/4) Purchase locally	2
58	QMG-56	AGITATOR SHAFT	1
59	QMS-448	AGITATOR PROPELLER KIT (Includes Items 60, 61)	1
60	-----	AGITATOR PROPELLER	1
61	-----	SET SCREW (1/4-20 x 3/8, S.S.) Purchase Locally	1
62	HA-57011	AIR HOSE ASSEMBLY	1

**QMS-430 STAINLESS STEEL
DIRECT DRIVE AGITATOR
PARTS LIST**

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
46	QN-97	CARRYING HANDLE	1
47	QMS-428	AIR MOTOR ASS'Y	1
48	Purchase Locally	SERVICE TEE, 1/4" Galv.	1
49	H-2008	NIPPLE, 1/4 NPS (m) X 1/4 NPT (m)	1
50	HAV-500	AIR ADJUSTING VALVE	1
51	KK-4991	ADAPTER KIT (Includes Items 52, 53, 56, 57)	1
#52	-----	ADPATER	1
#53	-----	SET SCREW (1/4-20 x 1/4)	2
54	SSG-8184-K2	O-RING (Kit of 2)	1
55	KK-5041	SHAFT SEAL KIT	1
55A	-----	SHAFT SEAL	1
55B	-----	RETAINER	1
51	KK-4991	SEAL RETANIER KIT (Includes Items 52, 53, 56, 57)	1
#56	-----	Shaft Coupling	1
#57	-----	SET SCREW (1/4-20 x 1/4) Purchase locally	2
58	QMS-73	AGITATOR SHAFT	1
59	QMS-448	AGITATOR PROPELLER KIT (Includes Items 60, 61)	1
60	-----	AGITATOR PROPELLER	1
61	-----	SET SCREW (1/4-20 x 3/8, S.S.) Purchase Locally	1
62	HA-57011	AIR HOSE ASSEMBLY	1

**QMG-429 AIR MOTOR (REF. QMG-416) & QMS-428 AIR MOTOR (REF. QMS-430)
PARTS LIST**

63	QMG-18	END CAP	1
● 64	----	END CAP GASKET	1
65	PT-58	BEARING	1
66	Purchase Locally	MACHINE SCREW (1/4-28 x 1/2")	12
67	-----	FRONT PLATE	1
● 68	PT-59-1-K10	END PLATE SPACER KIT (Kit of 10)	2
69	QS-189-1-K10	DOWEL PIN (Kit of 10)	4
70	-----	BODY	1
● 71	-----	VANE	4
72	PT-57	ROTOR ASSEMBLY FOR QMG-429	1
	-----	ROTOR ASSEMBLY FOR QMS-428 NOT AVAILABLE SEPARATELY. ORDER QMS-428	

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
73	-----	END PLATE	1
74	37-90	SEAL	1
75	350-401	MUFFLER / STRAINER	1
76	-----	MUFFLER BODY	1
▲ 77	-----	SCREEN	2
●▲ 78	-----	FELT	1
79	-----	MUFFLER CAP	1

● Parts included in KK-5001-1A Air Motor Repair Kit. # Order KK-4990 for QMG models. Order KK-4991 for QMS models ▲ Order KK-5006 Strainer Screen and Felt Kit.

AIR MOTOR DRIVE (31-437) SERVICE CHECKS

CONDITION	CAUSE	CORRECTION
Air motor sluggish or inefficient.	Air motor muffler (11) or (75) is clogged.	Clean or replace the felt (14) or (78). Replace muffler (11) or (75) if necessary.
	Air motor needs lubrication or cleaning.	Lubricate (see "Air Motor Lubrication" section). Disassemble and clean per parts replacement instructions.
	Motor vanes need replacing or contaminants present in motor chamber.	Disassemble, clean motor per parts replacement instructions. Replace worn vanes.
	Air motor bearing (18 or 28) worn.	Replace bearings per parts replacement instructions.

AIR MOTOR REBUILD

(SEE EXPLODED VIEW OF 31-437-K ON PAGE 4.)

NOTE

Instructions for QMG-429 and QMS-428 are similar.

Do not pry front plate (20) or end plate (26) from air motor body (23) with a screwdriver. This will dent the surface of the body and plates and causing leaks. A puller tool should be used to remove the plate from the motor body while maintaining the positions of the shaft.

Always install new spacers (21) when re-assembling air motor.

Assemble the end plates to the body using an arbor press with a pusher acting on both races of the bearing while rigidly supporting the opposite (drive) end of the shaft.

GEAR BOX OIL

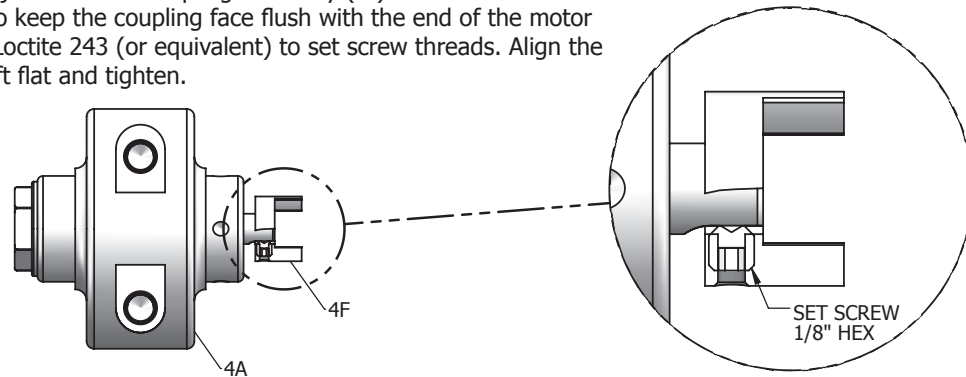
The gearbox (4B), page 4, contains a special high quality gear oil, made specifically for worm drive gearboxes. The oil that was installed at the factory should be sufficient for the life of the gearbox. If oil should ever be required, drain the gearbox completely. Then add 80mL [2.7 oz] of 31-439 gear oil.

WARNING

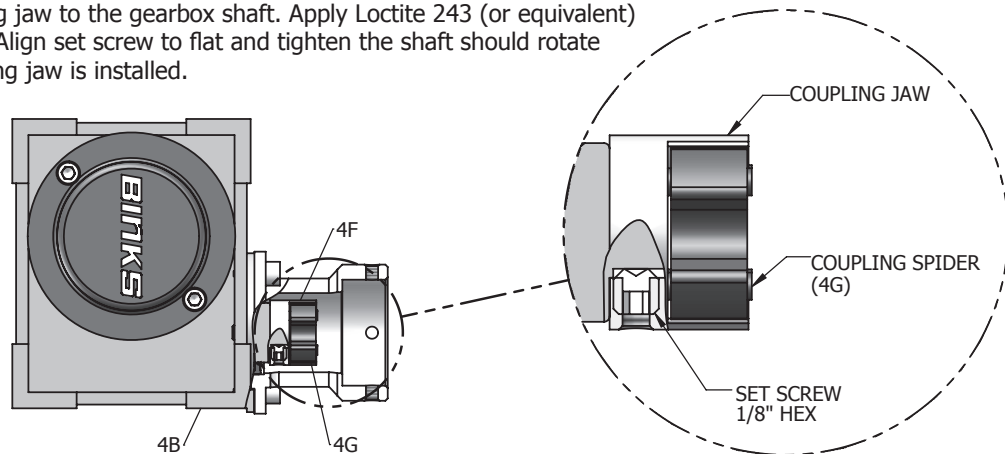
Do not substitute another gear oil or it may result in damage to your equipment.

15:1 AGITATOR DRIVE FLEX COUPLING INSTALLATION

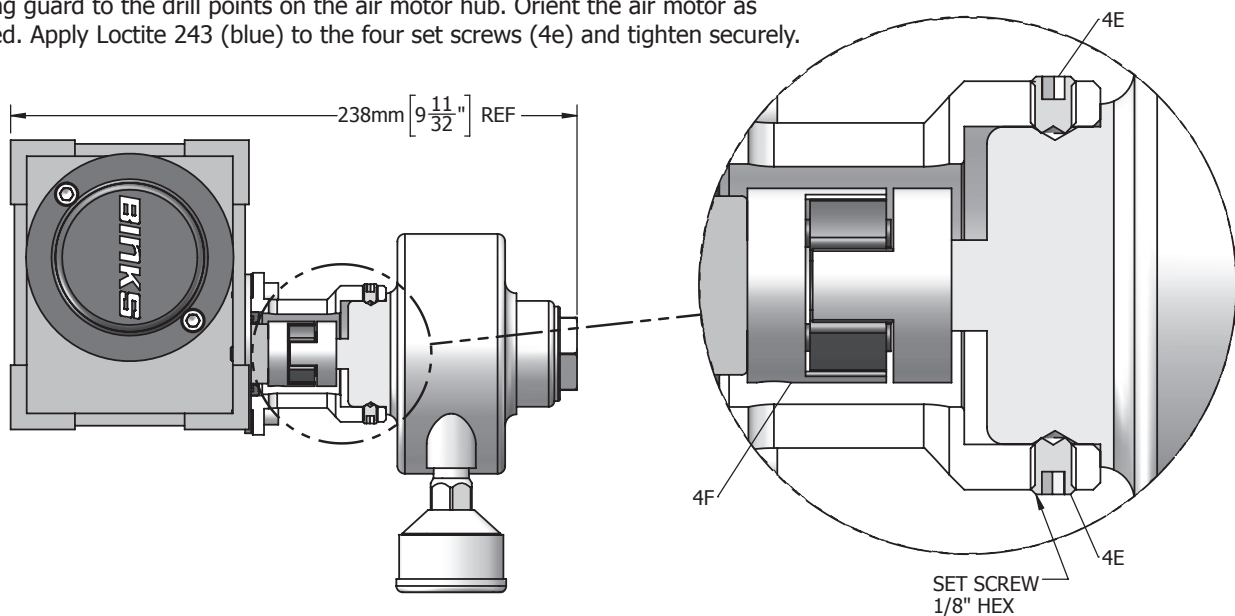
Assemble one coupling jaw from the coupling assembly (4f) onto the air motor shaft (4a). Make sure to keep the coupling face flush with the end of the motor shaft as shown. Apply Loctite 243 (or equivalent) to set screw threads. Align the set screw to motor shaft flat and tighten.



Assemble one coupling jaw to the gearbox shaft. Apply Loctite 243 (or equivalent) to set screw threads. Align set screw to flat and tighten the shaft should rotate freely after the coupling jaw is installed.



After assembling the coupling jaws and spider as shown above, align the coupling jaws of the air motor (4a) to the spider and jaws of the gearbox coupling (4b), and insert the air motor into the coupling guard. Align the set screw holes on the coupling guard to the drill points on the air motor hub. Orient the air motor as required. Apply Loctite 243 (blue) to the four set screws (4e) and tighten securely.



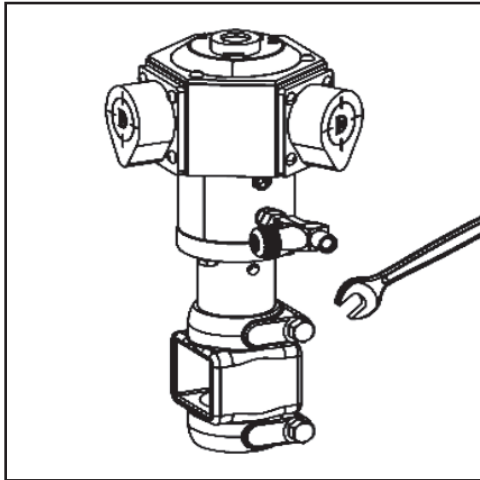
INSTALLATION—DIRECT DRIVE UNIT 31-502

⚠ WARNING

Before attempting any installation of agitators onto pressure feed tanks, the tanks must be relieved of pressure as high pressure can cause a serious injury. Pressure is maintained in a pressure tank after the system has been shut down. Before attempting removal of cover, fill cap, or center plug, pressure must be relieved using the steps on page 3.

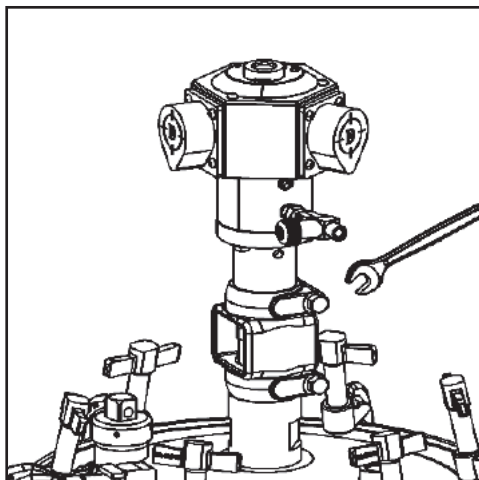
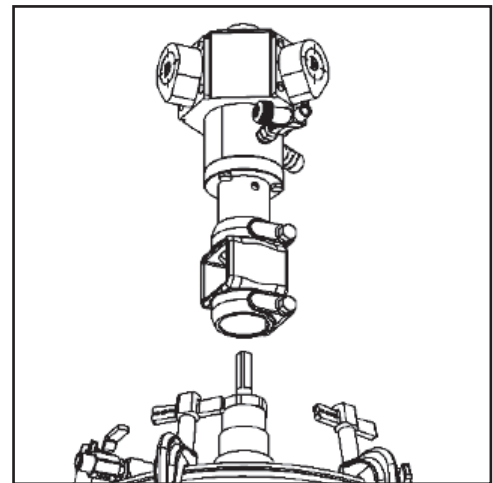
⚠ CAUTION

Failure to properly lubricate the air motor will result in premature motor failure and will void the warranty. See lubrication instructions on page 3.



Using a 9/16 wrench, loosen the lower cap screw.

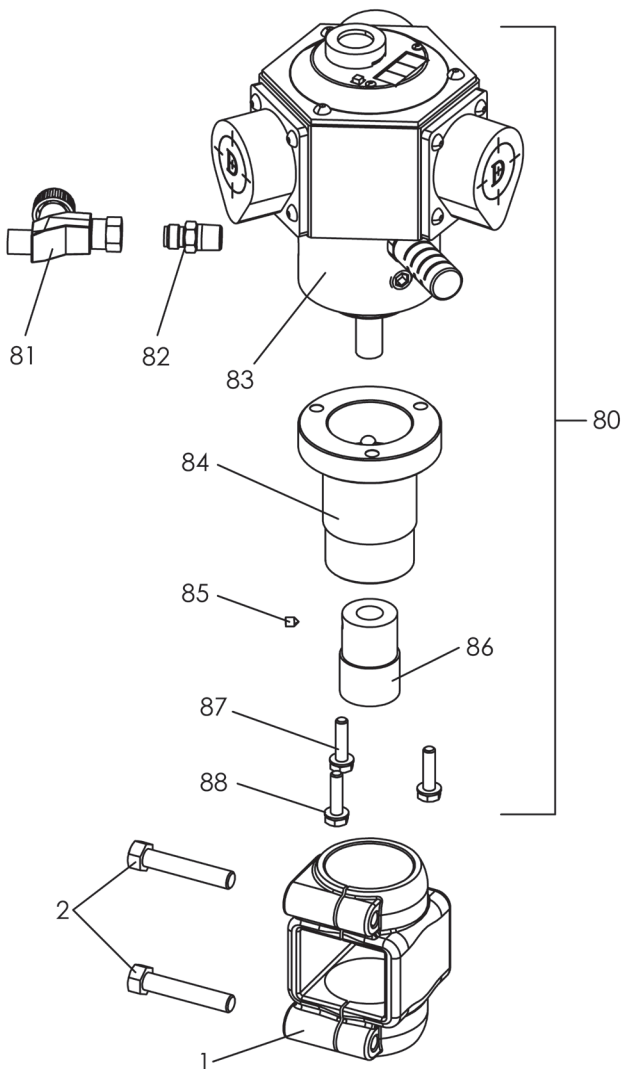
Install drive unit over the bearing assembly. Make sure that the square drive of the shaft engages the drive socket of the gearbox. Rotate the unit as necessary to align the shaft and the socket.



Rotate the drive unit to the desired position. Then tighten the cap screws. Use 9/16 wrench. After the drive unit is positioned connect the air hose from the regulator to the air motor.

OPERATION—DIRECT DRIVE UNIT 31-502

- Lubricate air motor: Remove vent and add 2 shots of grease into crank pin, while slowly rotating crankshaft.
- Open the valve to main air line and slowly open the air adjusting valve until the agitator turns.
- Adjust speed of the agitator with the air adjustment valve. Do not run at excessive speeds, typical speeds are 50 to 70 RPM.
- For more information see air motor 77-3356.



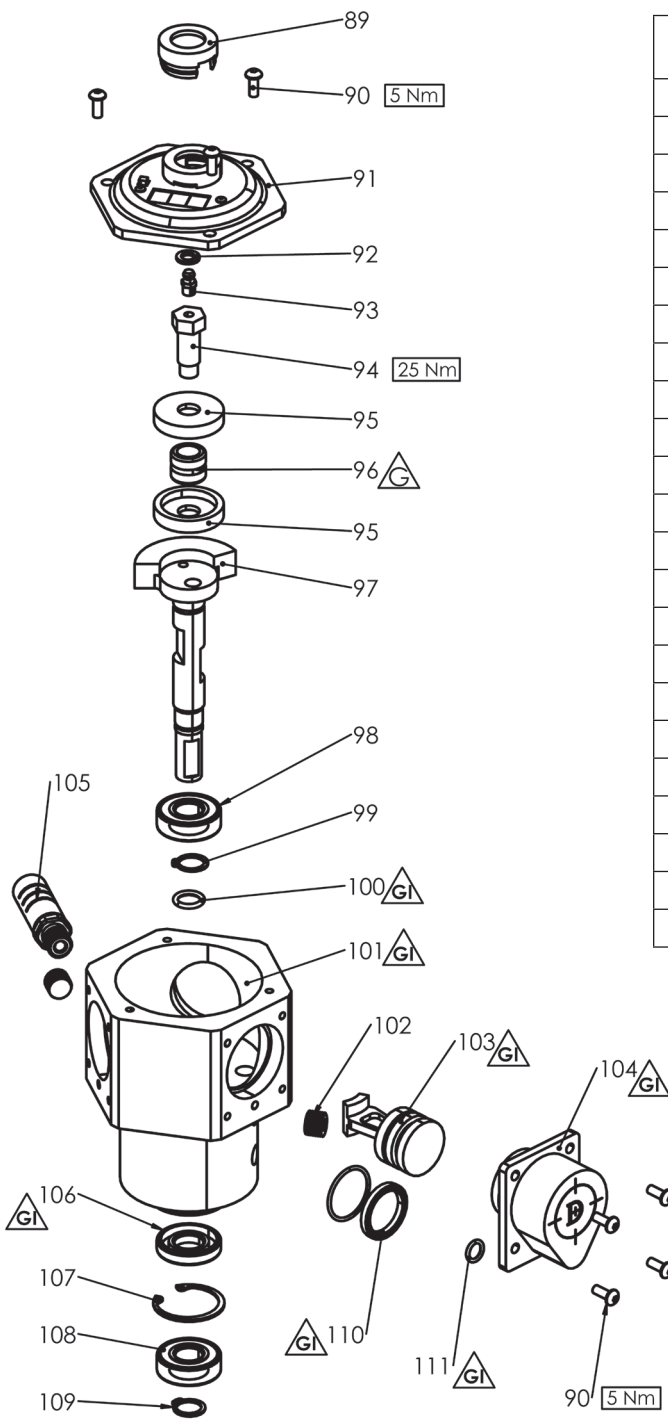
31-502 DIRECT DRIVE ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	QMS-35	AIR MOTOR SUPPORT	1
2	SS-29-CD	HEX HEAD CAP SCREW, 3/8-16 X 2"	2
80	31-501	AIR MOTOR C/W DPT HOUSING, ADJUSTING VALVE & HOSE	1
81	—	ADJUSTING VALVE	1
82	—	ADAPTER, 1/4 NPSM x NPT M x F	1
83	—	AIRMOTOR	1
84	—	DPT COUPLING	1
85	•	GRUB SCREW	1
86	•	COUPLING	1
87	•	HEX HD BOLT	3
88	•	WASHER	3

Parts are available within the following kits

•	31-563-K	DRIVE KIT (Parts not shown)
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31-500 AIR MOTOR



ITEM NO.	PART NO.	DESCRIPTION	QTY
89	31-511	VENT	1
90	■	SCREW	15
91	31-515	HEADCOVER / DIGITAL TACHOMETER	1
92	■	WASHER	1
93	■	GREASE FITTING	1
94	◆■	CRANK PIN	1
95	◆■	THRUST WASHER	2
96	◆■	NEEDLE BEARING	1
97	■	CRANKSHAFT	1
98	■	BEARING	1
99	■	CIRCLIP	1
100	■	ORING	1
101		MOTOR BODY ASSEMBLY	1
102	■	PLUG	2
103	◆■	ROD ASSEMBLY	3
104	31-520	CYLINDER CAP	3
105	31-522	SILENCER	1
106	■	CRANK SEAL	1
107	■	CIRCLIP	1
108	■	BEARING	1
109	■	CIRCLIP	1
110	◆◆■	PISTON SEAL	3
111	◆◆■	ORING	3

Parts are available within the following kits

•	31-553-K	PISTON SEAL KIT
◆	31-554-K	MOTOR REPAIR KIT
■	31-555-K	AIR MOTOR OVERHAUL KIT

SPARES

31-511	VENT
31-515	HEADCOVER / DIGITAL TACHOMETER
31-520	CYLINDER CAP
31-522	SILENCER

KEY

	= Grease (AGMD-010)
	= Bearing Grease (Part no. 502375)
	= Torque
#	= Maintenance order (reverse for assembly)

NOTES

WARRANTY POLICY

This product is covered by Carlisle Fluid Technologies' materials and workmanship limited warranty. The use of any parts or accessories, from a source other than Carlisle Fluid Technologies, will void all warranties. Failure to reasonably follow any maintenance guidance provided may invalidate any warranty.

For specific warranty information please contact Carlisle Fluid Technologies.

For technical assistance or to locate an authorized distributor, contact one of our international sales and customer support locations.

Region	Industrial / Automotive	Automotive Refinishing
Americas	Tel: 1-800-992-4657 Fax: 1-888-246-5732	Tel: 1-800-445-3988 Fax: 1-800-445-6643
Europe, Africa, Middle East, India	Tel: +44 (0)1202 571 111 Fax: +44 (0)1202 573 488	
China	Tel: +8621-3373 0108 Fax: +8621-3373 0308	
Japan	Tel: +81 45 785 6421 Fax: +81 45 785 6517	
Australia	Tel: +61 (0) 2 8525 7555 Fax: +61 (0) 2 8525 7575	

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