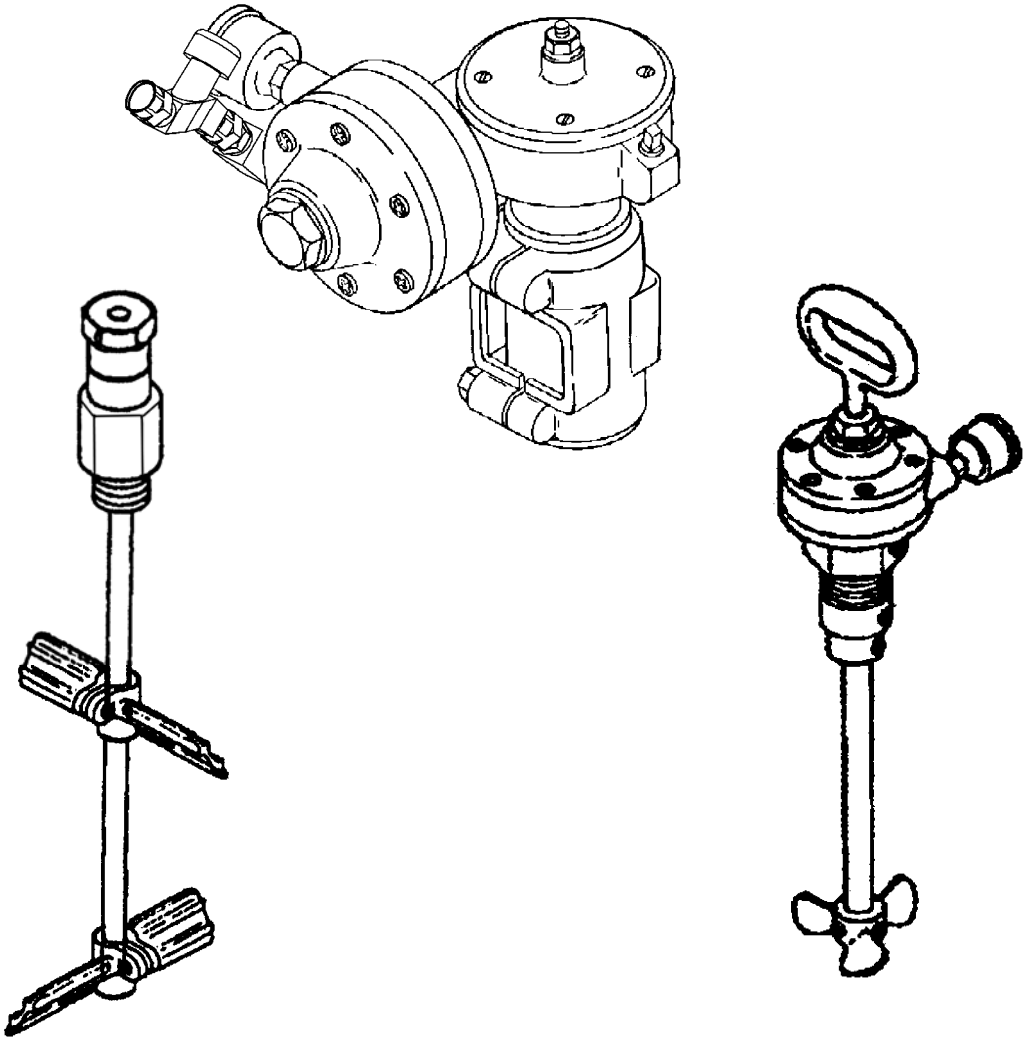
BINKS

AIR MOTOR DRIVES and AGITATORS for PRESSURE FEED TANKS

IMPORTANT: Read and follow all instructions and SAFETY PRECAUTIONS before using this equipment. Retain for future reference.



EN	P 1 - 12	D	P 24 - 34
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IT	P 46 - 56		

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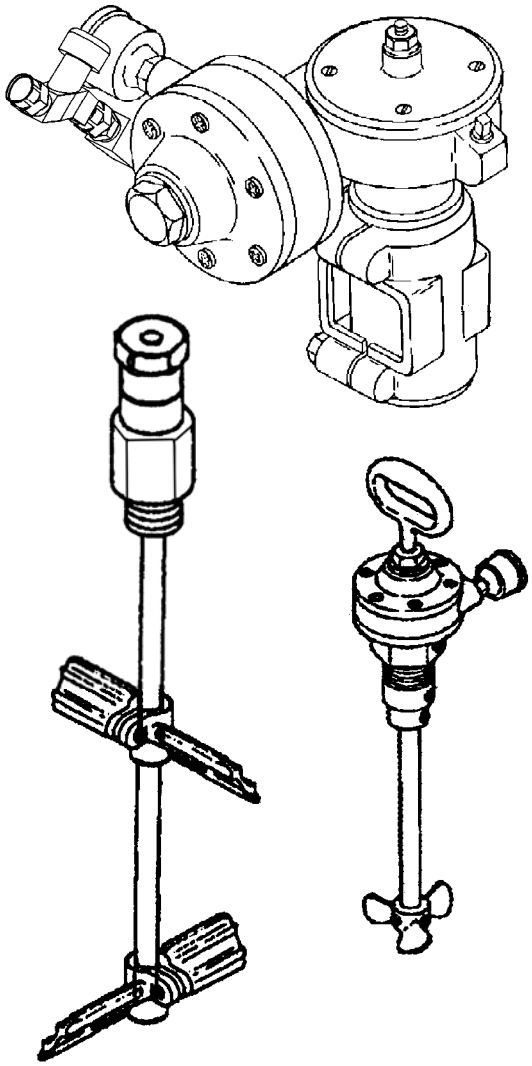


DESCRIPTION

This manual covers the following models;

QS-5012-CE Air motor drive with 15:1 gear reduction. Includes air adjusting for speed control with hose and fittings for tank regulator connection.

QMS-431-CE, 433-CE and 434-CE Agitator for use with QS-5012-CE Gear reduction drive on 2, 10 and 15 gall tanks models. Alternatively can be used without a drive motor for manual operation.

QMS-430-CE direct drive air motor and Agitator. Used on 83S-211-CE SS Pressure Feed tanks. Includes air adjusting for speed control with hose and fittings for tank regulator connection.

PT-427/418-CE direct drive air motor for use on 83C and 83Z-211-CE pressure feed tanks.

PT-419/428-CE agitator shaft and impellor for use with PT-427-CE/418-CE.

All models are suitable for use with flammable coating materials and for use in a Zone 1 classified hazardous area.

These Agitators are CE marked in accordance with the ATEX Directive 94/9/EC for hazardous area use and Machinery Safety Directive 98/37/EC.

These Agitators are designed for use with Pressure Tanks. These are pressure containers to supply liquid material at a constant preset pressure up to a maximum of 7.0 bar. Read all the information contained in this bulletin and the pressure feed tank bulletin before attempting installation.

Part Number	ATEX classification	Type approval certificate Number
QS-5012-CE	**II 2 G c T4**	**TRL06ATEX21105X**
QMS-431-CE, 433-CE & 434-CE	**II 1/2 G c T4**	**TRL06ATEX21107X**
QMS-430-CE	**II 1/2 G c T4**	**TRL06ATEX21106X**
PT-427-CE/418-CE & PT-419-CE/428-CE	**II 1/2 G c T4**	**TRL06ATEX21109X**
All Models	Ambient temperature range	+1ºC to 40ºC (34 to 104ºF)

All models are certified for use in Hazardous areas, Zone 1 for areas around the tank and Zone 0 for inside the tank. Temperature class T4 (135˚C).

SAFETY PRECAUTIONS

This manual contains information that is important for you to know and understand. This information relates to USER SAFETY and PREVENTING EQUIPMENT PROBLEMS. To help you recognize this information, we use the following symbols. Please pay particular attention to these sections

CAUTION

Important information that tells how to prevent damage to equipment, or how to avoid a situation that may cause minor injury.

WARNING

Important safety information - A hazard that may cause serious injury or loss of life.

NOTE

Information that you should pay special attention to.

WARNING

The following hazards may occur during the normal use of this equipment. Please read the following chart.

HAZARD	CAUSE	SAFEGUARDS
EXPLOSION 	**STATIC ELECTRICITY** Use of this equipment in a potentially explosive atmosphere. Vapours from flammable liquids can catch fire or explode from static electricity discharges.	1. If installing this equipment in a potentially explosive atmosphere, check the ATEX equipment category and temperature ratings meet the requirements for the zoned area. 2. Check electrical continuity of the air supply to earth - should be no greater than 10^6 Ω. 3. Electrically bond all metallic equipment to earth. Should be no greater than 1 Ω.
INHALING TOXIC SUBSTANCES 	Certain materials may be harmful if inhaled, or there is contact with the skin.	**1. Follow the requirements of the Material Safety Data Sheet supplier by the coating manufacturer.** **2. Adequate exhaust must be provided to keep the air free of accumulations of toxic materials.** **3. Use a mask or respirator wherever there is a risk of inhaling sprayed materials. The mask must be suitable for the material being sprayed.**
GENERAL SAFETY	Air stream from product may contain solid or liquid material that can result in eye injury. Sound level from air motors may exceed 80 dba. Improper operation or maintenance may create a hazard.	1. Wear eye protection when using this equipment. 2. Wearing of ear protection is recommended. 3. Operators should be given adequate training in the safe use and maintenance of this equipment. Refer to Pressure Systems Safety Regulations 2000 Approved Code of Practice.
SPECIAL CONDITIONS FOR SAFE USE REQUIRED BY ATEX CERTIFICATION	Over pressurization of equipment can cause equipment failure or injury. Use lubricating medium resistant to carburisation. Improper operation or maintenance may create a hazard.	1. Do not exceed the stated maximum working pressures and motor speed as specified on page 3. 2. Only a suitably approved static dissipating or conductive air supply hoses shall be attached to the equipment and terminated to the air supply. 3. 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 material into the parts where compression takes place. 4. Use lubricating medium resistant to carburisation and has an auto ignition temperature of more than 185ºC for T4 equipment. 5. User shall verify the presence of gearbox lubricant (QS-5012-CE only) in accordance with the instructions on P5, before operating the air motor. 6. User shall ensure all metallic parts of the equipment are suitably bonded to earth. Should be no greater than 1 Ω.

SPECIFICATION

Agitator cross reference chart					
Agitator Code	Type of Agitation	Used with;	Max rpm	Max recommended rpm	Max pressure
QS-5012-CE	Indirect Geared Drive Agitator & motor	QMS-431-CE, 433-CE & 434-CE	200	60	7 bar
QMS-431-CE	Agitator only (less drive) for 8 ltr tanks	83S-213-CE	200	60	7 bar
QMS-433-CE	Agitator only (less drive) for 40 ltr tanks	83S-1013-CE 83G-1013-CE	200	60	7 bar
QMS-434-CE	Agitator only (less drive)	83S-1513-CE	200	60	7 bar
QMS-430-CE	Direct Drive	83S-211-CE	3000	1000	7 bar
PT-427-CE/418-CE	Direct drive	83Z-211-CE	3000	1000	7 bar
PT-419-CE/428-CE	Direct drive	83C-211-CE	3000	1000	7 bar

Materials of Construction

All Air Motors	Motor bodies	Cast Iron
	End Plates	Aluminium
	Rotors	Cast Iron rotor, Stainless Steel Shaft (except PT-419-CE Carbon Steel)
QS-5012-CE	Gearbox Housing	Cast Iron
QMS-431-CE, 433-CE, 434-CE	Bearing housing & Drive Shaft	Stainless Steel with Oilite bearings
	Paddles	Conductive Nylon
	Shaft Seals	Turcon (modified PTFE)

WARNING

INSTALLATION

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 material into the parts where compression takes place.

Pressure Relief Procedure

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 following steps:

1. Turn off the main air supply to the tank.

2. Close air inlet valve located on tank air manifold.

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 or fill plug installation.

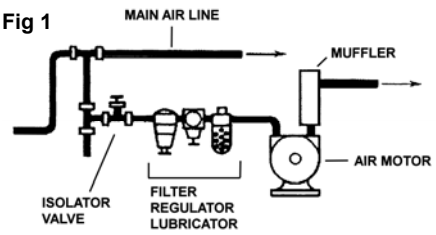
4. Leave the air relief valve open until you have reinstalled the cover or fill plug.

Air Motor Lubrication (all models)

An automatic air line filter/lubricator should be installed in the air supply line no more than 0.5m from the air motor. The filter should be 5 micron. 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.

Fig 1



Adjust lubricator to feed 1 drop of oil for every 1400 litres (50 cfm) of air or 1 drop per minute for continuous running.

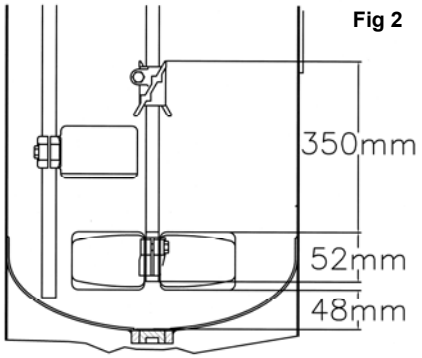
QS-5012-CE Gear reduction drive—INSTALLATION onto Pressure Feed Tank with Agitator (Fig. 5)

1. These instructions are for fitting of the QS-5012-CE drive unit to an installed QMS-431-CE, 433-CE or 434-CE agitator. (See QMS-431-CE, 433-CE and 434-CE installation section).
2. Make sure lower clamp bolt (61) is loosened, then take the drive unit and slide the support (60) over the bearing assembly, making sure the square drive on the shaft engages the drive socket of the gearbox. Rotate the unit if necessary to align the shaft and socket.
3. Tighten the lower clamp bolt (61) and check the upper bolt.
4. Remove main air supply inlet valve from the tank regulator and install service tee (67) in open port.
5. Connect tank air supply inlet valve to open end port of service tee (67). Install nipple (64) in open port of service tee.
6. If not already connected, install elbow (63) in air motor inlet port and upper nipple (64) in open elbow port. Connect air adjusting valve (65) to upper nipple. Connect hose assembly (66) between lower nipple (64) and air adjusting valve.

QMS-431-CE, 433-CE and 434-CE Agitator—INSTALLATION into Pressure Feed Tank

1. Follow the pressure relief procedure at the start of the INSTALLATION section.
2. Unscrew the centre blanking plug from the tank cover.
3. Remove the paddle(s) from the shaft by loosening the paddle clamp screw.
4. Make sure the O ring (26) is located correctly in the housing (25). Screw housing into the centre hole in the tank lid. Fully tighten with a spanner (1.875 AF).
5. Refit the paddles in the position as

Fig 2



shown in fig 2. The curved edge of the paddle should be at the bottom. Upper paddle on 60L QMS-434-CE only.

QS-430-CE Direct Drive Agitator—INSTALLATION into Pressure Feed Tank (Fig. 9)

1. Follow the pressure relief procedure at the start of the INSTALLATION section.
2. Unscrew the centre blanking plug from the tank cover. Clean the sealing surface around the port.
3. Loosen the propeller screw (56A) and remove the propeller.
4. Make sure the O ring (65) is fully seated in the groove in the adaptor (34). Insert the agitator through the port and screw in until fully tightened.
5. If required, loosen the screw (34A) in the adaptor to rotate the motor body to align the hose connection to the required position. Re-tighten the screw (34A)
6. Replace the propeller (56) onto the shaft (54). Make sure the screw is aligned with the flat on the shaft and tighten screw (56A).
7. Remove main air supply inlet valve from the tank regulator and install service tee (23) in open port.
8. Connect tank air supply inlet valve to open end port of service tee (23). Install nipple (20) in open port of service tee.
9. If not already connected, install elbow (19) in air motor inlet port and upper nipple (20) in open elbow port. Connect air adjusting valve (21) to upper nipple. Connect hose assembly (22) between lower nipple (20 and air adjusting valve.

PT-427-CE/418-CE & PT-419-CE/428-CE Agitator—INSTALLATION into Pressure Feed Tank (Fig.8)

1. The PT-428/PT-419 direct drive Agitator is designed for the 83C-211-CE and 83Z-211-CE tanks only. This Agitator would be supplied with the tank and is not supplied as a retro-fit or upgrade, but only as a replacement.
2. Follow the pressure relief procedure at the start of the INSTALLATION section.
3. If replacing the original unit, disconnect the air supply hose from the air motor, remove the propeller (56), then un-screw the large nut (53). The unit will now withdraw from the tank lid.
4. Re-fit the new unit in the reverse order. Make sure the nut (53) is fully tightened with a spanner (1—5/8" AF). Re-fit hoses air hose.

CAUTION

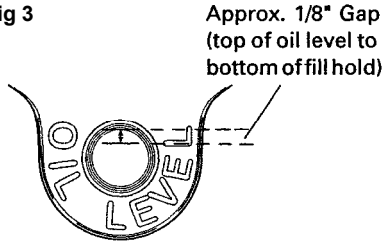
OPERATION

Failure to operate and maintain these agitators correctly could result in premature motor failure and void warranty.

Before operating any of these agitators lubricate the air motor by adding 4 of 5 drops of SAE 10 weight oil into the air fitting

QS-5012-CE Operation (Fig. 5)

Fig 3



1. Before operating the air motor, check the oil level of the gearbox.
2. Remove the oil fill plug (88) and check the oil level (see Fig. 3 below).
3. If oil level is low, add 140 weight SAE motor oil. Replace the plug and tighten to 27Nm (20 ftlbs).
4. Before turning on the air supply, screw in the air adjusting valve (65) fully. Turn on the air supply and slowly open up the air adjusting valve until the desired speed is reached. A good starting point is 1 rev per second (60 rpm).
5. Run the agitator continuously whist using the tank.
6. When the tank is empty, the motor speed will rise. Stop the motor to avoid un-necessary high speed running.

QMS-430-CE and PT-428-CE Direct drive models (Fig. 9)

1. Before turning on the air supply, screw in the air adjusting valve (21) fully. Turn on the air supply and slowly open up the air adjusting valve until the desired speed is reached. Use a minimum of 4 bar air pressure. Do not exceed the maximum of 7 bar.
2. Run the agitator continuously whist using the tank.
3. When the tank is empty, the motor speed will rise. Stop the motor to avoid un-necessary high speed running.

WARNING

PREVENTATIVE MAINTENANCE

Pressure Relief Procedure

Before attempting any MAINTENANCE of agitators onto pressure feed tanks, the tanks must be relieve 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 following steps:

1. Turn off the main air supply to the tank.
2. Close air inlet valve located on tank air manifold.
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 or fill plug installation.
4. Leave the air relief valve open until you have reinstalled the cover or fill plug.

QS-5012-CE Preventative Maintenance

1. Every 2 days, check the oil level as described in the operation section. Top up as necessary.
2. After the first 250 hours of operation, remove the gearbox (see replacement of parts section) and drain the gearbox oil. Replace the oil as per the operation section. Note—do this when the gearbox is warm as the oil will drain easier.
3. After 6 months or 2500 operating hours, replace the oil as in 2 above.

All Air Motors

1. Lubricate Air Motor as per Installation section on page 3.
2. Check exhaust muffler filter every 500 hours. Clean or replace as necessary.
3. If the Air motor starts to run slowly or is sluggish, flushing the motor with solvent may restore its performance due to excessive contamination from oil, moisture and foreign particles. Use only Gast #AH255B Flushing Solvent or equivalent for this.
4. This cleaning operation should only be carried out in a well ventilated area.
5. Wear eye protection.
6. Do not use combustible solvents for flushing.
7. Disconnect the airline and muffler. Add

about 100ml (4 fluid oz) of solvent into the air intake port of the motor. Rotate the motor by hand in both directions for a few minutes.

8. Re-connect the airline and cover the exhaust port with a cloth. Apply low pressure 0.7bar (10psi) and re-start the motor. Run until no more traces of solvent can be seen.
9. The motor should be running smoothly. If not, then a re-build may be required (see QS-4016 Replacement of Parts).

REPLACEMENT OF PARTS

QS-5012-CE Replacement of parts (see Figs 5 & 6)

Before attempting any MAINTENANCE of agitators on pressure feed tanks, the tanks must be relieve of pressure as stated previously.

1. Turn off and disconnect the mains air supply hose with the air adjusting valve (65).
2. Loosen the upper clamp screw (61) and remove the air motor and gearbox assembly.
3. Separate the motor and gearbox by loosening locking screw (91).
4. Remove the spacer (94) and key (95) from the motor shaft.
5. For the Air motor refer to QS-4016 Air motor section.

Gear box

1. Remove the oil fill plug (88) or cover plate (84) and drain gear box lubricant.
2. Disassemble the gearbox by removing the cover (84), withdraw the gear shaft (86) and washer (85).
3. Withdraw the worm gear (93) .
4. Inspect the seal (90) for signs of wear, leaks or damage. Only remove if it needs replacing.
5. Clean the seal housing and remove any burrs or contaminants. These could distort the new seal during fitting.
6. Inspect the gear shaft assembly (86) for wear grooves, burrs or contamination of seal sealing area on the shaft diameter. If the seal sealing area is damaged the shaft must be replaced.
7. Inspect all other parts for signs of wear, chipping or other damage. Replace damaged or worn parts.
8. If the oil seal (90) is being replaced, check the new seal carefully for damage before installing. Use an arbour press to press the seal in. Use a close fitting tool to the casting bore diameter to avoid damaging the seal. Make sure the seal lip is towards the bottom of the bore. Press in squarely into the bore to avoid warping. Check that the seal is fully seated in the bottom of the bore.
9. Reassemble gear box in the reverse order. Use new gaskets (87 and 92). When re-fitting the air motor, slide spacer (94) and fit key (95) before engaging the motor to the gearbox. Apply thread locking compound to the locking screws (91) and tighten to 6.8 Nm (60 lbins). Refill the gearbox with oil (SAE 10) as per previous section.

QMS-431-CE, 433-CE and 434-CE Agitator Replacement of parts (see Fig. 7)

Before attempting any MAINTENANCE of agitators on pressure feed tanks, the tanks must be relieve of pressure as stated previously.

1. Remove lid from pressure feed tank.
2. Remove paddles by loosening screw(s) (31).
3. Unscrew retaining nut (20) and remove.
4. Hold the shaft (28), loosen set screw (23) on the collar (22). The collar (22) and washers (24) can now be removed.
5. The shaft can now be withdrawn from the bearing housing (25). Be careful with the shaft seal (27) as any burrs or dried paint could damage the lip seal.
6. If the O ring (26) is to be replaced, unscrew and remove the bearing assembly (25).
7. Examine the Shaft seal (27A) for any damage. If it needs replacement, prise out the retaining clip (27B), then the seal (27A). Take care not to damage the seat in the bearing housing (25).
8. Check the size of the oilite bearings in the housing (25) for wear. These are 15.6mm when new. Replace when the size is 15.9mm (0.626") or greater.
9. Take a new seal (27A) and apply a small amount of water or oil to the outside to lubricate the fitted O ring.
10. Place the seal in the housing (25) O ring first with the grooves facing outwards. Press the seal in making sure it is seated fully in the housing.
11. Clean the O ring groove in the housing (25) and make sure the seating surface on the tank lid is clean. Place the O ring (26) in the groove and lightly lubricate it with water or light oil. Screw the housing (25) into the lid and fully tighten with a spanner.
12. Take the shaft (28) and insert the paddle end into the top of the housing (25) and feed through, taking care when feeding through the Shaft seal (27A).
13. Hold the shaft (28) with the groove about 12mm from then top of the housing (25) and slip thrust washer (24) then collar (22) over the end. Align the set screw (23) in the collar (22) with the groove and tighten. Fit 2nd washer (24).
14. Screw on retainer nut (20) onto the bearing housing (25) and tighten with a spanner.
15. Slide paddle(s) (29) over the shaft and position as shown in Fig. 2 in the installation section.
16. Re-fit the drive motor QS-5012-CE as per installation section.

QMS-430-CE and PT-428-CE/PT-419-CE Replacement of parts (Figs 8 & 9)

Before attempting any MAINTENANCE of agitators on pressure feed tanks, the tanks must be relieve of pressure as stated previously.

1. Turn off air supply with the air adjusting valve (21) and disconnect the main air supply hose.
2. Remove Lid from pressure feed tank.
3. Remove propeller (55).
4. Loosen screws (49) and remove retainer (32A), Shaft (54) with the propeller (55).
5. Loosen screws (34A) or (49) and Air motor (33) or (35) can be withdrawn from the housing (34) or (48).
6. For replacement of parts procedure for the Air motor see section for QS-4016 below. Some of the references are different but the procedure is the same.
7. Examine the Seal (50) for damage or wear. Only remove if it needs replacing.
8. Take a new seal (50A) and apply a small amount of water or oil to the outside to lubricate the fitted O ring.
9. Place the seal in the housing (34) O ring first with the grooves facing outwards. Press the seal in making sure it is seated fully in the housing.
10. Replace the Air motor and shaft assembly in reverse order.

QS-4016 Air Motor Replacement of parts (for QS-5012-CE)

1. Remove the end cap (36) or (64) for QMS-430-CE.
2. Remove dead end plate bolts (39).
3. Remove dead end plate (40). Use a puller, do not use screwdriver to remove the end plate.)
4. Remove the dowel pins (42) from the body and push back into end plate (40) until flush or just below the machined surface of the dead end plate. Remove rotor (45) using an arbor press.
5. Remove vanes (44).
6. Remove shaft seal (47) and bearing (38) or (69) from drive end plate (46) and bearing (38) from dead end plate (40). Do Not remove drive end plate bolts or drive end plate (46).
7. Clean parts. Check for scoring on the

end plates and rotor assembly. If scoring exists, send unit to a Gast Authorized Service Facility.

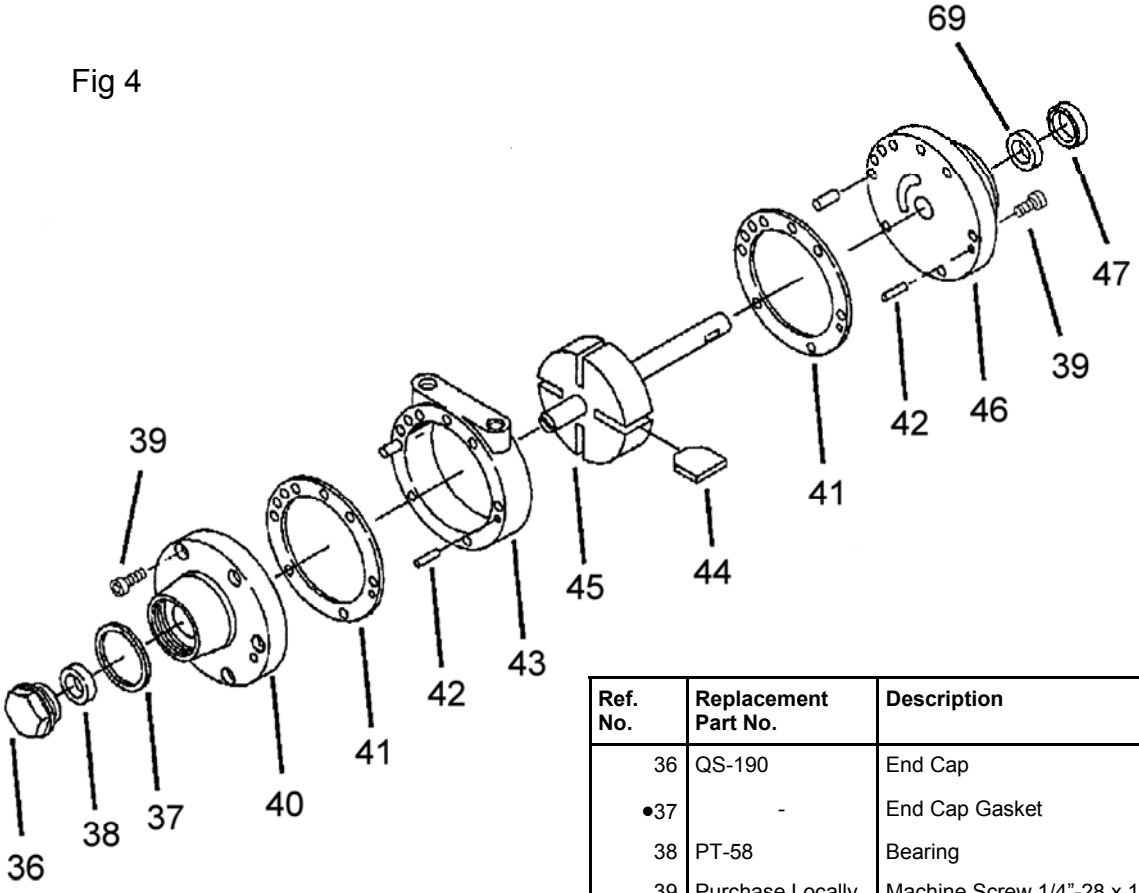
8. Check the bearings for signs of wear. Replace the bearings at least every 2 years.
9. Place the drive shaft of the rotor assembly (45) through the drive end plate (46). Press the drive bearing (69) onto the drive shaft using a bearing pusher.
10. Using a suitable tool, lightly tap on inner race of the drive end bearing (69) to snug up rotor (45) to drive end plate (46).
11. Check the vanes (44) for wear. If the height of the vanes are less than 17.5mm (11/16") then re-new the vanes. Install new vanes (44), the angle cuts on the vane face to the center of the rotor.
12. Place the end plate gasket (41) on the body of dead end (40). If the original is damaged, replace with a new one supplied in the service kit.
13. Place the dead end plate (40) on the body.
14. Install the dead end bearing (38) and press into place with bearing pusher tool.
15. Install the dowel pins (42).
16. Fully tighten the remaining bolts to 8.5 - 11.3 Nm (75-100 in-lbs).
17. Set end clearance to the values at the end of this section. lightly tap on the inner race of the dead end bearing to free up and center the rotor in the body.
18. Apply a small amount of grease to bearing seal (47) and install the drive end bearing seal by pressing flush with bearing pushing tool from Tool Kit.
19. Reattach end cap (36) or (64) with new gasket ((37).
20. Apply a few drops of 10w oil lubricant into ports and rotate shaft by hand for a few rotations.

End Clearances

Total clearance
.063mm (0.0025")

Top end clearance
.038mm (0.0015")

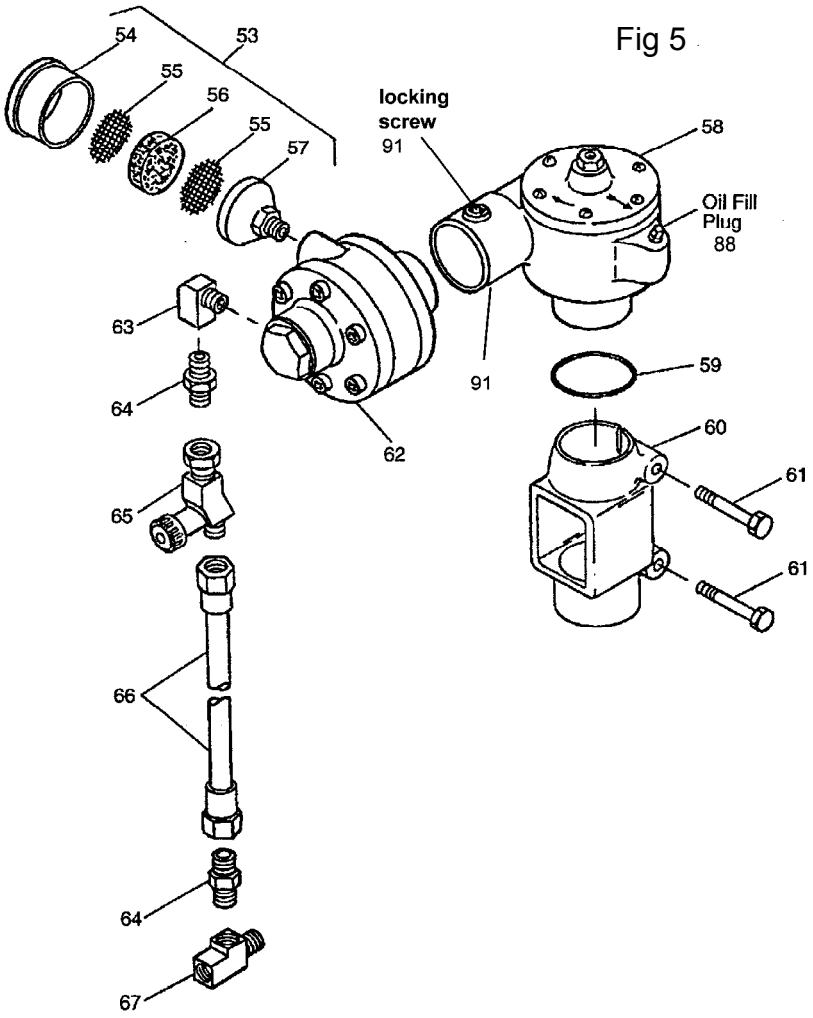
Fig 4



Ref. No.	Replacement Part No.	Description	Individual Parts Req.
36	QS-190	End Cap	1
•37	-	End Cap Gasket	1
38	PT-58	Bearing	1
39	Purchase Locally	Machine Screw 1/4"-28 x 1/2"	1
40	QS-333	Front plate	1
•41	PT-59-1-K10	End Plate Gasket Kit (kit of 10)	2
42	QS-189-1-K10	Dowel Pin (kit of 10)	4
43	QS-335	Body	1
•44	-	Vane	4
45	QS-442	Rotor and Shaft Assy	1
46	QS-334	End Plate	1
47	QS-197	Bearing	1
68	QS-336	Oil Seal	1

• Included in KK-5001-1 Air Motor Repair Kit.

Fig 5

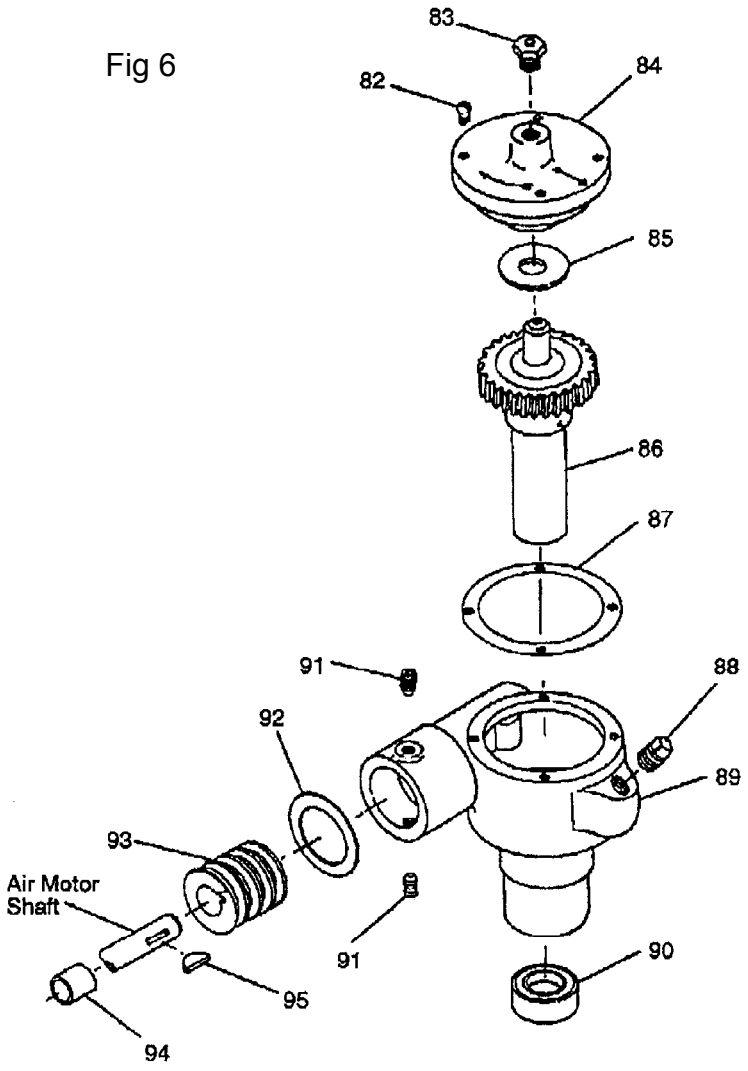


Ref. No.	Replacement Part No.	Description	Individual Parts Req.
53	350-401	Air Strainer	1
54	-	Strainer Cap	1
+ 55	-	Screen	1
+ 56	-	Felt	1
57	-	Strainer Body	1
58	-	Gearbox Assembly (see fig 6)	1
59	32243-133	Washer	1
60	QMS-35	Air Motor Support	1
61	-	Cap screw 3/8" x 16 UNC x 2"	2
62	QS-4016	Air Motor	1
63	-	Street Elbow 1/4"(M) 1/4"NPT(F)	1
64	H-2008	Nipple 1/4" NPS(M)	1
65	HAV-500	Air Adjusting Valve	1
66	HA-57011	Hose Assembly	1
67	-	Service Tee 1/4"	1

+ Ref. No. (55) 2ea and Ref. No. (56) 4ea included in KK-5006 Strainer Screen and Felt Kit.

• Included in KK-5001-1 Air Motor Repair Kit. See fig 4 for full list of parts in the kit.

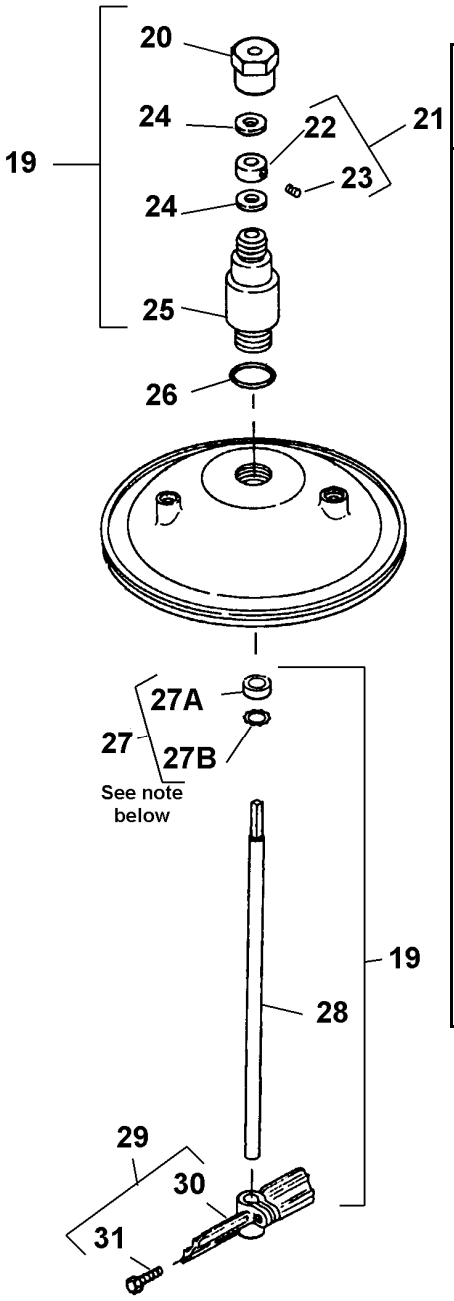
Fig 6



Ref. No.	Replacement Part No.	Description	Individual Parts Req.
• 82	-	Filister Head Machine screw 10-24 x 5/8"	4
83	QS-108	Pressure Relief fitting	1
84	QS-37-1	Cover Plate	1
• 85	-	Washer	1
86	QS-416-1	Gear & Shaft assy.	1
• 87	-	Gasket	1
88	Purchase locally	Pipe Plug 1/4" Galvanized	1
89	QS-36-1	Housing	1
• 90	-	Oil Seal	1
• 91	-	Cup point setscrew 5/16" x 3/8"	2
• 92	-	Gasket	1
93	QS-59	Worm Gear	1
• 94	-	Spacer	1
• 95	-	Key, No.5, 5/8"/x 1/8"	1

• Included in KK-5010 Gearbox Repair Kit.

Fig 7



QMS-431, 433 and 434 AGITATOR PARTS LIST

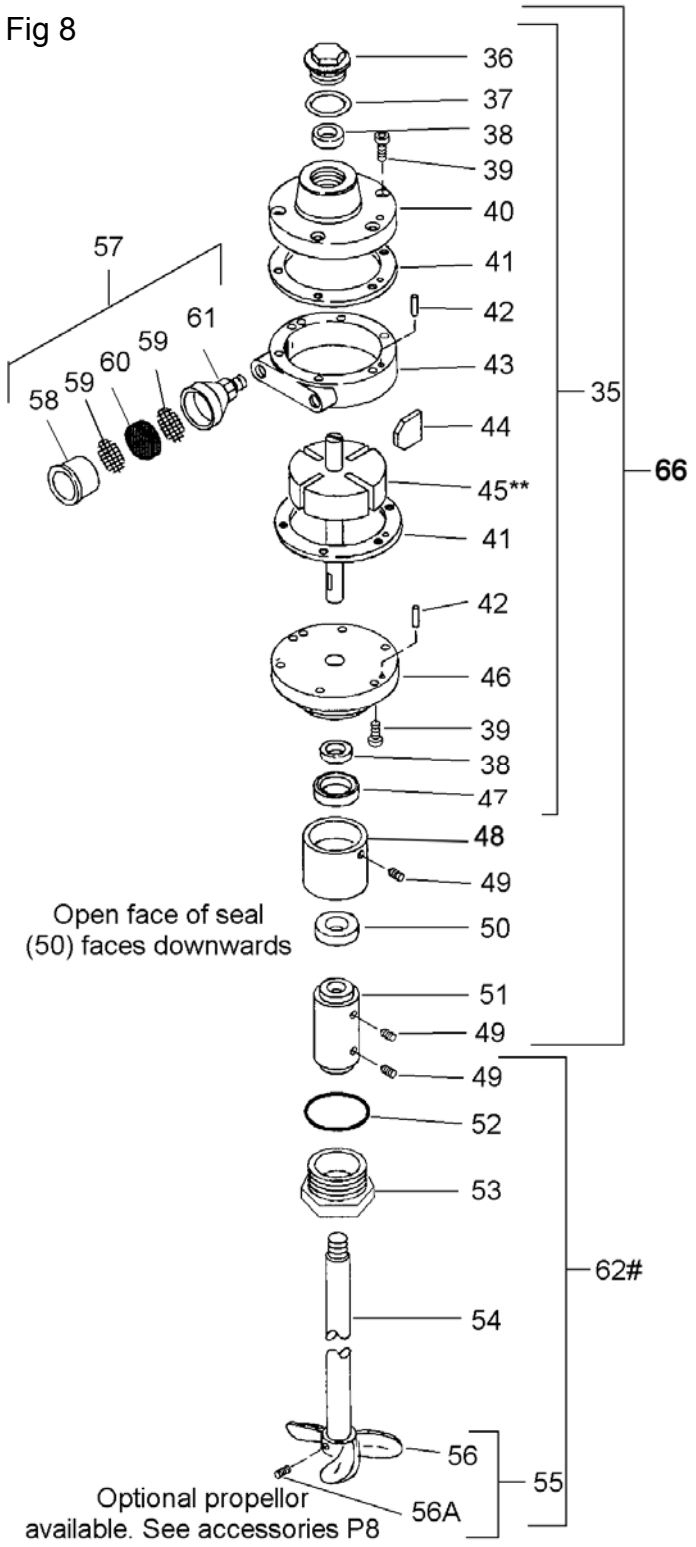
Ref. No.	Part No.	Description	No of Parts Req.
19	QMS-431-CE	Agitator Assembly 8L (includes items 20 to 31)	1
	QMS-433-CE	Agitator Assembly 40L	1
	QMS-434-CE	Agitator Assembly 60L	1
20	QMS-46	Retaining Nut	1
21	QMS-447	Thrust Collar Kit (includes items 22 and 23)	1
22	—	Thrust Collar	1
♦23	—	Set Screws (5/16" - 18 x 3/8")	1
24	KK-5049	Thrust Washer Kit (includes 2 Washers)	1
25	QMS-407	Bearing Assembly	1
26	SSG-8184-K2	O-Ring (kit of 2)	1
27	KK-5042	Shaft Seal Kit	2
27A	—	Shaft Seal	1
27B	—	Retainer	1
28	QMS-5	Agitator Shaft for QMS-431-CE	1
	QMS-7	Agitator Shaft for QMS-433-CE	1
	QMS-8	Agitator Shaft for QMS-434-CE	1
29	QMS-444-CE	Agitator Paddle Kit (includes items 30 and 31) QMS-434-CE 60L models has 2	1 2
	QMS-449-CE	Agitator Paddle Kit for 8L QMS-431-CE	
30	—	Agitator Paddle	1
♦31	—	Hex Socket head Cap Screw (5/16" x 1-1/4", stainless Steel)	1

♦ Purchase locally

Note
Open side of Shaft Seal (27A) faces downwards
Retainer 27B only necessary to replace if tank used for vacuum operation. Not necessary for pressure use.

Parts list for PT-427-CE, PT-418-CE, PT-419-CE & PT-428-CE

Fig 8



Ref. No.	Replacement Part No.		Description	Individual Parts Req.
* 35	PT-410 QMS-455	83C 83Z	Air Motor Assembly	1
36	QS-190 PT-65	83C 83Z	End Cap	1
* 37	——		End Cap Gasket	1
38	PT-58		Bearing	1
39	——		Screw (1/4”-28 x 1/2”)	12
* 40	——		Front Plate	1
* 41	PT-59-1-K10		End Plate Gasket	2
42	QS-189-1-K10		Dowel Pin (Kit of 10)	4
• 43	——		Body	1
* 44	——		Vane	4
• **45	——		Rotor Assembly	1
• 46	——		End Plate	1
47	PT-56		Shaft Seal	1
48	PT-50		Air Motor Adaptor	1
49	——		Set Screw (1/4”-20 x 1/4”)	4
50	KK-5041		Seal Assembly	1
51	QMG-441 QMS-453	83C 83Z	Shaft Coupling Kit (includes No 49)	1
52	SSG-8096-K5		“O” Ring (Kit of 5)	1
53	PT-70		Adaptor Nut	1
54	QMG-56 QMS-73	83C 83Z	Shaft Shaft SS	1 1
55	QMS-448-CE		Propeller Assy	1
56	——		Propeller	1
56A	——		Set Screw (1/4”-20 x 3/8” S.S)	1
57	350-401		Muffler Assembly	1
58	——		Body	1
♦ 59	——		Screen	2
♦ * 60	——		Felt	1
61	——		Cap	1
# 62	PT-428-CE PT-419-CE	83C 83Z	Agitator Shaft Kit	1
66	PT-418-CE PT-427-CE	83C 83Z	Air Motor & Adaptor	1

* Parts included in KK-5001-1 Air Motor Repair Kit

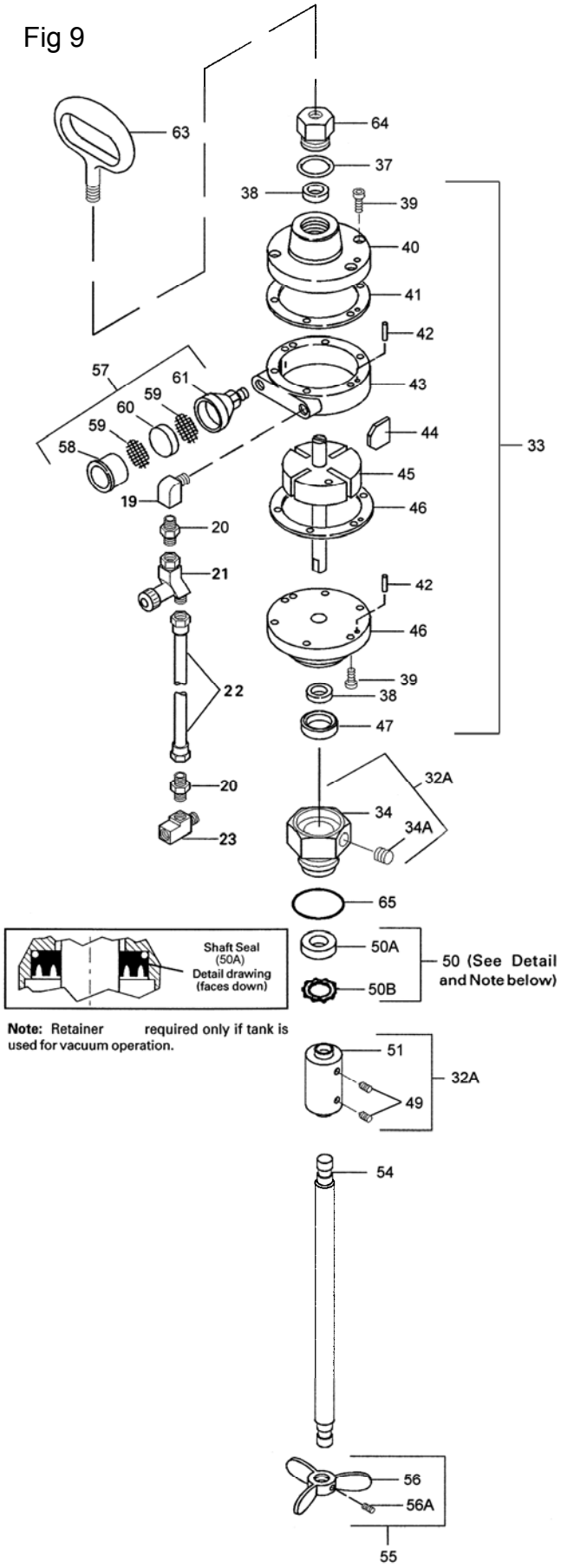
• Parts included in (35) PT-410/QMS-455 Air Motor Assembly

♦ Ref. No. (59) 2 ea. & Ref. No. (60) 4 ea. Included in KK-5006 Strainer Screen & Felt kit

** Not available separately, order (35) PT-410/QMS-455

Parts list for QMS-430-CE

Fig 9



Ref. No.	Replacement Part No.	Description	Individual Parts Req.
19	——--	Street Elbow 1/4”(M) 1/4”NPT(F)	1
20	H-2008	Nipple 1/4” NPS(M)	2
21	HAV-500	Air Adjusting Valve	1
22	HA-57001	Hose assembly	1
23	——-	Service Tee 1/4”	1
32A	KK-4991	Agitator Kit	1
33	QMS-428	Motor Assembly (incl parts #4 to 18). Use #1, 2 & 3 from old motor.	1
34	——-	Air Motor Adaptor	1
34A	——-	Set Screw (1/4”-20 x 1/4”)	1
* 37	———	End Cap Gasket	1
38	PT-58	Bearing	1
39	———	Screw (1/4”-28 x 1/2”)	12
40	———	Front Plate	1
* 41	PT-59-1-K10	End Plate Gasket	2
42	QS-189-1-K10	Dowel Pin (Kit of 10)	4
43	———	Body	1
*44	———	Vane	4
**45	———	Rotor Assembly	1
46	———	End Plate	1
47	PT-56	Shaft Seal	1
#49	——-	Set Screw (1/4”-20 x 1/4” S.S)	2
50	KK-5041	Shaft Seal Kit	1
50A	——-	Shaft Seal	1
50B	——-	Retainer	1
#51	——-	Shaft Coupling	1
54	QMS-73	Shaft SS	1
55	QMS-448-CE	Propeller Assy	1
56	———	Propeller	1
57	350-401	Muffler Assembly	1
58	———	Strainer Cap	1
♦59	———	Screen	2
♦*60	———	Felt	1
61	———	Body	1
63	QN-97	Handle	1
64	QMG-18	End Cap	1
65	SSG-8184-K2	O Ring (Kit of 2)	1

* Parts included in KK-5001-1 Air Motor Repair Kit

♦ Ref. No. (59) 2 ea. & Ref. No. (60) 4 ea. Included in KK-5006 Strainer Screen & Felt kit

** Not available separately, order (33) QMS-428

Service Checks

Condition	Cause	Correction
Air motor is sluggish or rotates slowly or stops	Dirt or foreign object trapped in the motor or from Internal corrosion	Flush the motor, or strip motor and clean as instructed on P4
Air motor runs hot and slows down	Vanes misaligned	Strip and rebuild motor
Air motor runs slowly	Low air pressure	Raise air pressure
Motor runs slowly even at max pressure	Air line bore too small and/or length of airline. Exhaust restricted	Use larger bore airline and/or shorten airline. Change muffler filter or flush motor or strip and clean.

ACCESSORIES