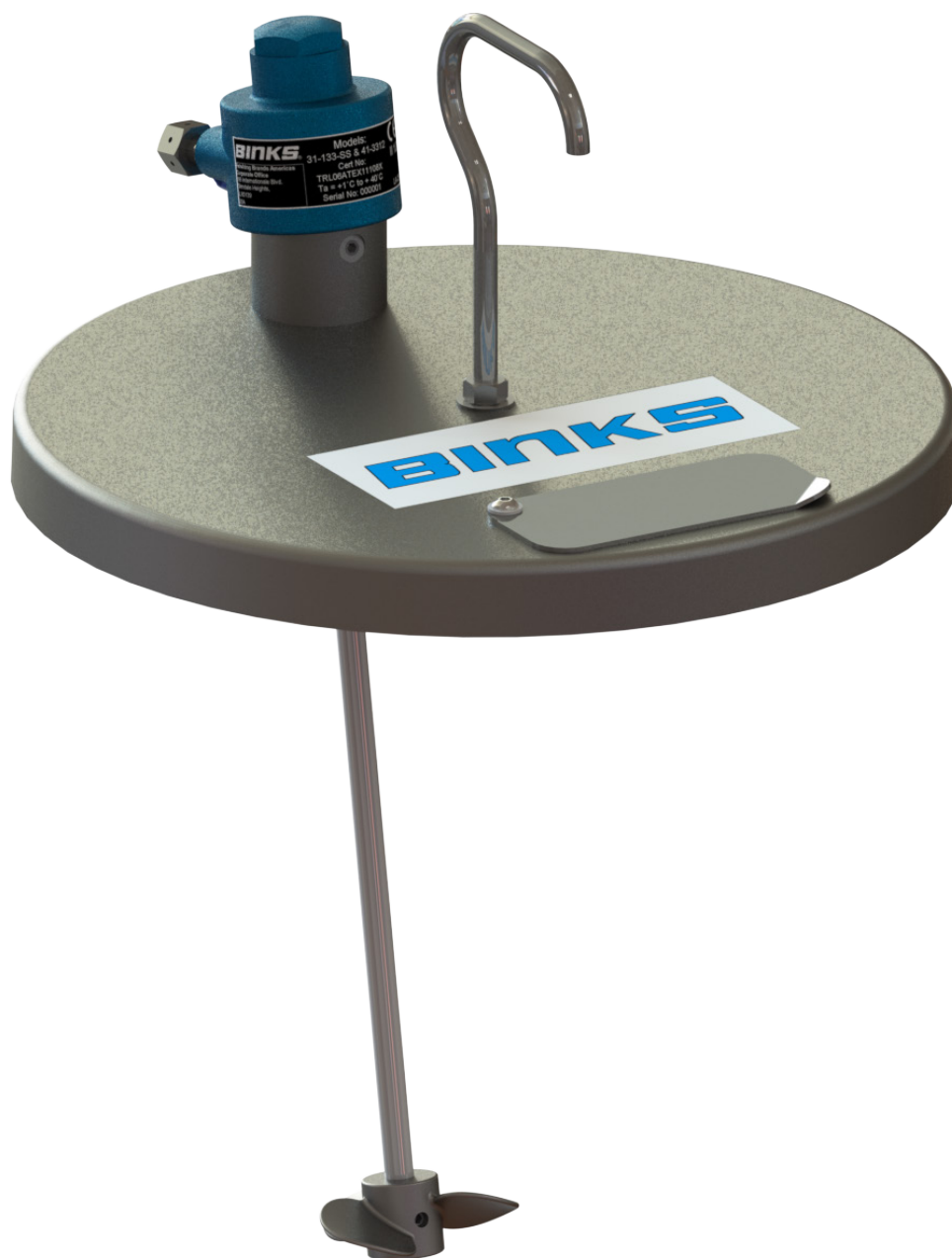


**BINKS**®

**31-425 AGITATED LID ASSEMBLY  
41-3312, 41-3312-S DIRECT DRIVE AGITATORS**



# AGITATOR ASSEMBLY FOR 25 Litre (5 Gal.) PAIL

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

## DESCRIPTION

**This manual covers the following models:**

**41-3312** Direct Drive Agitator (waterborne, 13.5" shaft)



**41-3312-S** Direct Drive Agitator (waterborne, 12" shaft) only for use with 25 litre (5 Gallon) pail. Stainless Steel wetted parts.

**31-425** Kit comprising of Agitator 41-3312-S and 31-428 Lid assembly for use with 25 litre (5 Gallon) pail.

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 2006/42/EC.

If installing this equipment in a potentially explosive atmosphere, check the ATEX equipment category and temperature ratings meet the requirements for the zoned area.

| Part Number                      | ATEX Classification   | Type approval certificate Number |
|----------------------------------|---|----------------------------------|
| 41-3312, 41-3312-S Agitator only |  II 1/2 G c T5 | TRL06ATEX11108X                  |
| 31-425 Agitator and Lid          |  II 1/2 G c T5 |                                  |

All Models Ambient temperature range: +1°C to 40°C (34 to 104°F)

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 T5 (100°C).

| AGITATOR SPECIFICATIONS    |                         |
|----------------------------|-------------------------|
| Air inlet connection:      | 1/4" NPS                |
| Propeller/Paddle Diameter: | 80mm [3.125 in]         |
| Maximum Shaft Speed:       | 3,000 RPM               |
| Power output:              | .19 kW [.25 HP]         |
| Air Consumption:           | 283-396 l/m [10-14 CFM] |
| Shipping Weight:           | 5.4 kg [12 lbs]         |
| Sound Level:               | 80 dBa                  |

| MATERIALS OF CONSTRUCTION |                      |
|---------------------------|----------------------|
| Air Motor bodies:         | Cast Iron            |
| Motor End Plates:         | Aluminium            |
| Motor Rotor:              | Cast Iron            |
| Lid:                      | Stainless Steel      |
| Shaft Seals:              | Steel/Nitrile Rubber |
| Vanes:                    | Phenolic             |
| Agitator Shaft:           | Stainless Steel      |
| Propeller:                | Stainless Steel      |

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.



### **WEAR SAFETY GLASSES**

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



### **DE-ENERGISE, DEPRESSURISE, DISCONNECT AND LOCK OUT ALL POWER SUPPLIES DURING MAINTENANCE**

Failure to De-energise ,disconnect and lock out all power supplies before performing equipment maintenance could cause serious injury or death.



### **OPERATOR TRAINING**

All personnel must be trained before operating finishing equipment.



### **KEEP EQUIPMENT GUARDS IN PLACE**

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



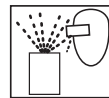
### **PRESSURE RELIEF PROCEDURE**

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



### **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.



### **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. Only use the agitator with the proper lid assembly 31-428.



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



**CA PROP 65**

### **PROP 65 WARNING**

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

## **SPECIAL CONDITIONS FOR SAFE USE REQUIRED BY ATEX CERTIFICATION**



### **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.



### **ELECTRIC SHOCK / GROUNDING**

Improper grounding or sparks can cause a hazardous condition and result in fire, explosion or electric shock and other serious injury. Check electrical continuity of the air supply to earth—should be no greater than 106 Ω. Electrically bond all metallic equipment to earth. Should be no greater than 1 Ω.



### **EQUIPMENT MISUSE HAZARD**

Do not exceed the stated maximum working pressures and motor speed as specified on page 4.



### **FIRE AND EXPLOSION HAZARD**

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



### **STATIC CHARGE**

Fluid and air 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. Use suitably approved static dissipating or conductive air supply hoses.



### **FIRE AND EXPLOSION HAZARD**

Use lubricating medium resistant to carburisation and has an auto ignition temperature of 185°C for T4 and 150°C for T5 equipment.

## INSTALLATION

### **⚠ WARNING**

#### Air Supply

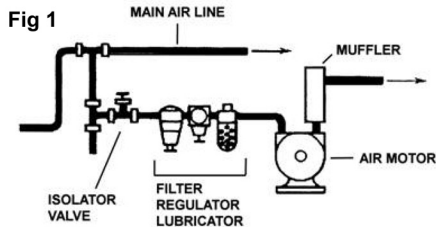
Air supplies (compressors, etc.) shall be sited in a non-hazardous area with a filter on the air intake system to prevent the ingress of dust or similar foreign material into the parts where compression takes place.

## AIR MOTOR LUBRICATION

### **⚠ WARNING**

An automatic air line filter/lubricator should be installed in the air supply line no more than 0.5m (19 in) 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. Adjust lubricator to feed 1 drop of oil for every 1400 litres (50 cfm) of air or 1 drop per minute for continuous running.



## KIT ASSEMBLY

Only Use the proper Lid assembly 31-428 with this Agitator.

1. Remove the propeller (10) from the shaft (3) by loosening the lock screw (9).
2. Unscrew the locknut (5) from the housing, and remove washer (8).
3. Insert the shaft into the aperture in the lid and rotate until the pin locates in the slot.
4. Slide the washer (8) over the shaft, the raised centre towards the locknut.
5. Replace the locknut (5) and tighten.

6. Replace the propeller (10) and secure with screw (9).
7. Place the lid assembly over the pail or drum.

### **⚠ CAUTION**

Make sure the pail has a minimum depth of 340 mm for a 25 mm clearance, or the propeller may contact the bottom and create possible sparking hazards.

8. Before operating any of these agitators lubricate the air motor by adding 4 or 5 drops of SAE 10 weight oil into the air fitting.
9. Close the Air Adjusting valve (2) by rotating clockwise.
10. Connect the airline to the valve (2). The Agitator is now ready for use.

## OPERATION

### **⚠ CAUTION**

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

If not already done so, before operating any of these agitators lubricate the air motor by adding 4 or 5 drops of SAE 10 weight oil into the air fitting.

1. Before turning on the air supply, screw in the air adjusting valve (2) fully. Turn on the air supply and slowly open up the air adjusting valve.
2. The optimum speed is dependent on the type of coating material being agitated. If the speed is too high, the propeller will cavitate and aerate the material.
3. It is not recommended to run the motor faster than 1000 rpm. Do not exceed 3000 rpm.
4. When the tank is empty, the motor speed will rise. Stop the motor to avoid unnecessary high speed running. Prolonged high speed running may result in premature wear and failure of the motor.

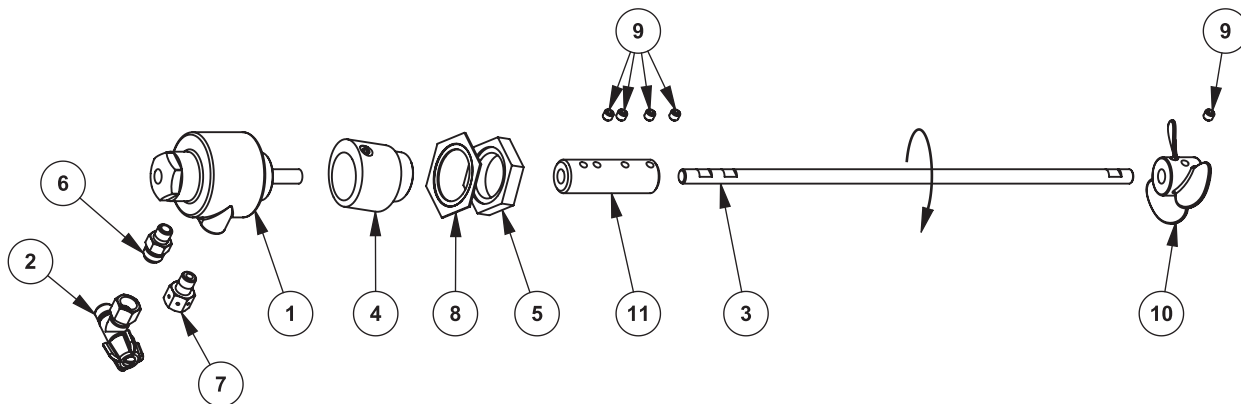
## PREVENTATIVE MAINTENANCE

1. Turn off the main air supply to the Agitator with the isolator valve.
2. Check exhaust muffler for blockage. Clean if 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 Replacement of Parts).

## REPLACEMENT OF PARTS

1. Remove the propeller (10) from the shaft (3) by loosening the lock screw (11).
2. Unscrew the locknut (5) from the housing, and remove washer (8).
3. Withdraw the Agitator from the aperture in the lid.
4. Loosen the top 2 screws (9) in the coupling (11) and remove the shaft and coupling from the motor drive shaft.
5. Loosen the screw (4) and separate the motor from the housing.

### 41-3312, 41-3312-S DIRECT DRIVE AGITATORS



#### PARTS LIST

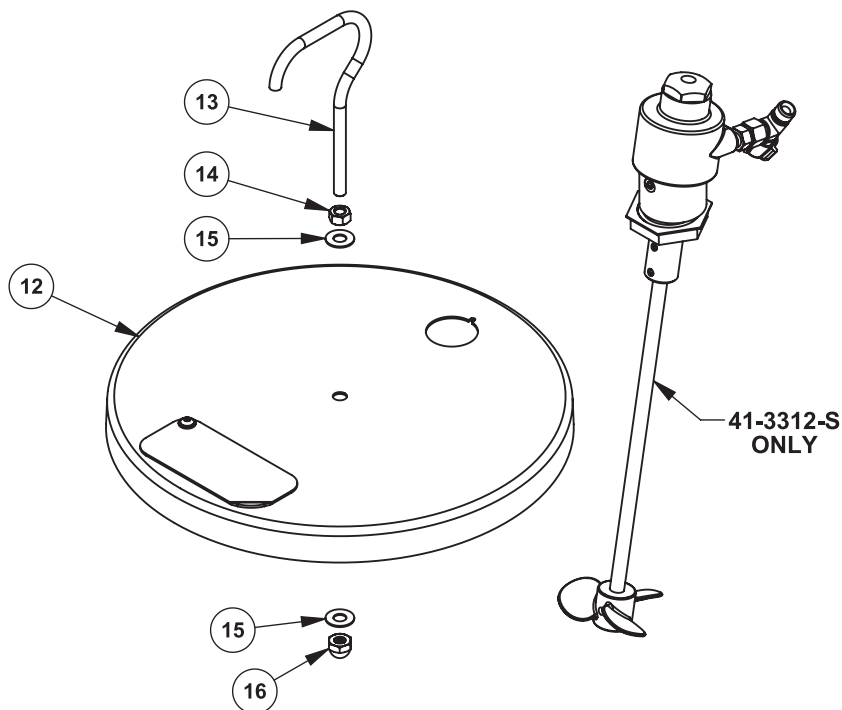
| Item | Part No. | Description                      | Qty. | Notes                 |
|------|----------|----------------------------------|------|-----------------------|
| 1    | 37-478   | AIR MOTOR                        | 1    |                       |
| 2    | 73-159   | METERING VALVE ASSEMBLY          | 1    |                       |
| 3    | 31-92    | AGITATOR SHAFT, 13.5", S.S.      | 1    | 41-3312               |
|      | 31-92-S  | AGITATOR SHAFT, 12", S.S.        | 1    | 41-3312-S             |
| 4    | 41-650   | HOLDER ASSEMBLY                  | 1    |                       |
| 5    | 20-6450  | 1" NPT LOCKNUT, S.S.             | 1    | 41-3312,<br>41-3312-S |
| 6    | 71-28    | DM NIPPLE, 1/8 NPT X 1/4 NPS     | 1    |                       |
| 7    | 41-646   | MUFFLER                          | 1    |                       |
| 8    | 41-718   | REDUCING WASHER                  | 1    |                       |
| 9    | 20-2141  | SET SCREW, 1/4 - 20 X 1/4", S.S. | 5    | 41-3312,<br>41-3312-S |
| 10   | 31-91    | PROPELLER, S.S.                  | 1    | 41-3312,<br>41-3312-S |

| Item | Part No. | Description       | Qty. | Notes  |
|------|----------|-------------------|------|--------|
| 11   | 41-645   | SHAFT COUPLING    | 1    |        |
| 12   | 31-428   | S.S. LID ASSEMBLY | 1    | 31-425 |
| 13   | 83-1899  | HANDLE            | 1    |        |
| 14   | 20-2079  | HEX NUT           | 1    |        |
| 15   | 20-6928  | FLAT WASHER       | 2    |        |
| 16   | 20-6933  | ACORN NUT         | 1    |        |

#### Included, but not shown:

|  |         |                            |   |           |
|--|---------|----------------------------|---|-----------|
|  | 71-1109 | AIR HOSE ASSEMBLY, 13"     | 1 | 41-3312   |
|  | 71-1112 | AIR HOSE ASSEMBLY, 16 1/2" | 1 | 41-3312-S |
|  | 20-2002 | HEX WRENCH, 1/8"           | 1 |           |

### 31-425 AGITATED LID ASSEMBLY



## BINKS MODEL 37-478 VERTICAL AIR MOTOR

### SPEED

The speed of the air motor is regulated by the 73-159 air adjusting valve. The speed of the propeller shaft will be determined by the fluid, but it should never be run faster than 3,000 RPM.

### AIR SUPPLY

The air supply leading to the motor should have a minimum of 60 and a maximum of 100 PSI gauge pressure for best results. Use air filter and moisture trap.

### PREVENTIVE MAINTENANCE AIR MOTOR LUBRICATION

Lubricate air motor daily by adding 4 or 5 drops of SAE 10 weight oil into **air inlet fitting**. For convenience, an automatic oiler may be connected to the air inlet.

### **⚠ CAUTION**

**Failure to properly lubricate the air motor will result in premature motor failure and will void warranty.**

### **⚠ CAUTION**

**Avoid any end or side thrust on the shaft when coupling the motor to a driven member. Especially, do not hammer on shaft itself or on the coupling. This can cause internal damage to vanes, bearings and housing surfaces.**

### 37-478 AIR MOTOR REPLACEMENT OF PARTS (SEE FIG 3)

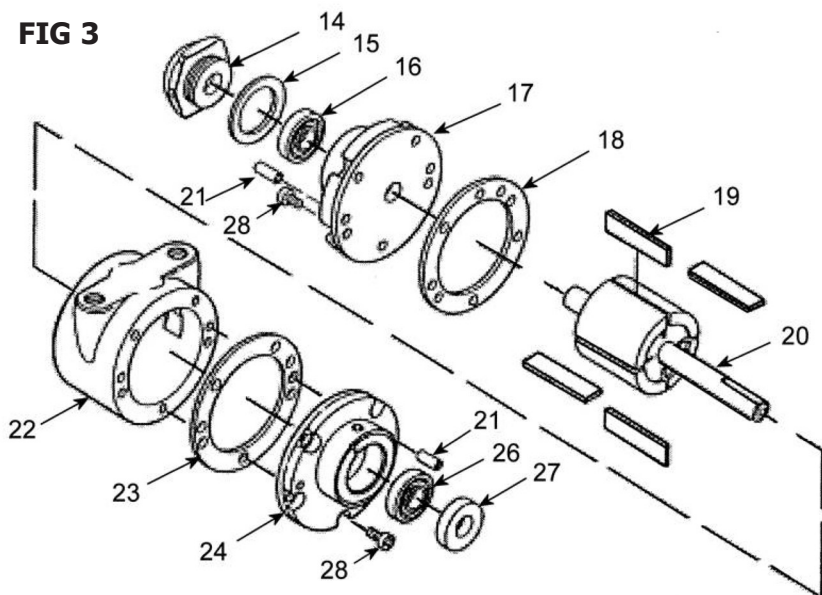
1. Remove the end cap (14).
2. Remove dead end plate bolts (28).
3. Remove dead end plate (17). Use a puller, do not use screwdriver to remove the end plate.)
4. Remove the dowel pins (21) from the body and push back into end plate (17) until flush or just below the machined surface of the dead end plate. Remove rotor (20) using an arbor press.
5. Remove vanes (19).
6. Remove shaft seal (27) and drive end plate bearing (26) from drive end plate (24) and bearing (16) from dead end plate (17). Do Not remove drive end plate bolts or drive end plate.
7. Clean parts. Check for scoring on the end plates and rotor assembly. If scoring exists, replace the end plates.
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 (20) through the body into the drive end plate (24). Press the drive end bearing (26) onto the drive shaft using a bearing pusher.
10. Using a suitable tool, lightly tap on inner race of the drive end bearing (26) to snug up rotor (20) to drive end plate (24).
11. Check the vanes (19) for wear. If the height of the vanes are less than 6.8mm (0.270") then re-new the vanes. Install new vanes (19), the angle cuts on the vane face to the center of the rotor.
12. Place the dead end plate gasket (18) on the body (22). If the original is damaged, replace with a new one supplied in the service kit.
13. Place the dead end plate (17) on the body.
14. Install the dead end bearing (16) and press into place with bearing pusher tool.
15. Install the dowel pins (21).
16. Fully tighten the bolts (28).
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 (27) and install the drive end bearing seal by pressing flush with bearing pushing tool.
19. Reattach end cap (14) with new gasket (15).
20. Apply a few drops of 10w oil lubricant into ports and rotate shaft by hand for a few rotations.
21. Re-assemble in reverse order.

### END CLEARANCES

Total clearance .051mm (0.002")

Top end clearance .038mm (0.0015")

FIG 3



| Ref. No. | Description             | Ind. Parts Req. |
|----------|-------------------------|-----------------|
| 14       | End Cap                 | 1               |
| 15*      | Gasket                  | 1               |
| 16*      | Bearing Dead End Plate  | 1               |
| 17       | Dead End Plate          | 1               |
| 18*      | Gasket Dead End Plate   | 1               |
| 19*      | Vane                    | 4               |
| 20       | Rotor                   | 1               |
| 21       | Dowel Pin               | 2               |
| 22       | Body                    | 1               |
| 23       | Gasket Drive End Plate  | 1               |
| 24       | Drive End Plate         | 1               |
| 26       | Bearing Drive End Plate | 1               |
| 27*      | Seal                    | 1               |
| 28       | Screw                   | 10              |

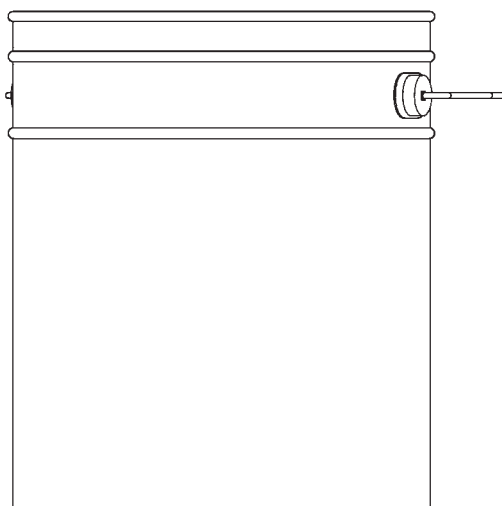
\* 6-196 Motor repair kit

### 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 page 4  |
| 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.<br>Exhaust restricted | Use larger bore airline and/or shorten airline.<br>Change muffler filter or flush motor or strip and clean |

### ACCESSORIES

41-661 5 GALLON PAIL



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## 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.

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