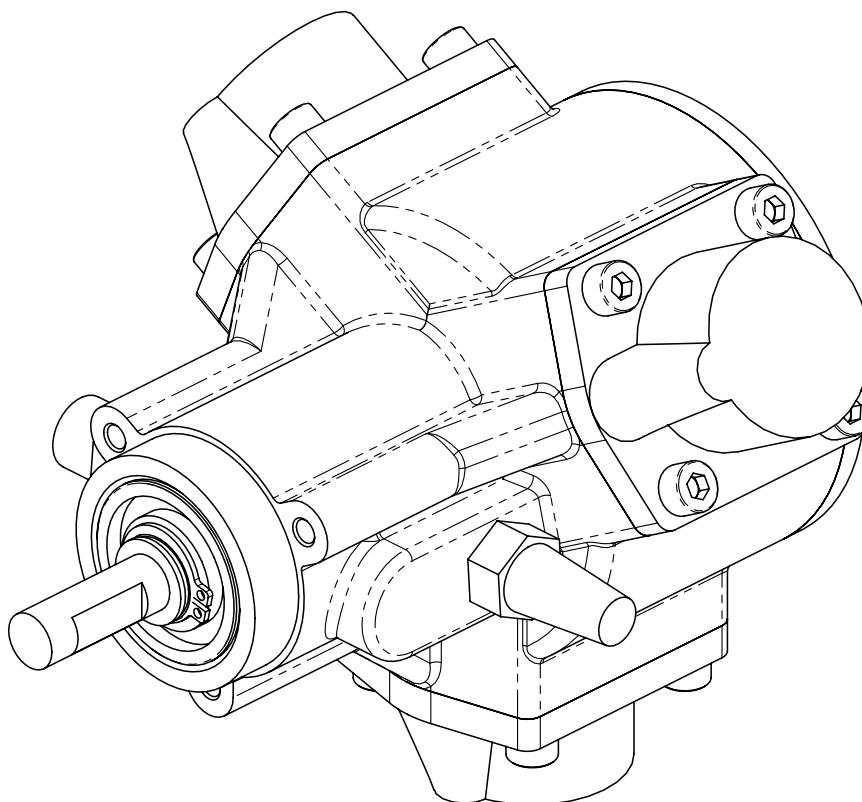




## Operation and Maintenance Guide



20 P M

Models	Descriptions
20PMTAAP	HUB Model with Lube / Lube-Free, Aluminum BSPP Variants

Read this manual carefully before installing, operating or servicing this equipment. It's the responsibility of the employer to ensure this manual is read by the operator. Please preserve this manual.

This document is issued with Product Serial No

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## Nomenclature

<b>X</b>	<b>XX</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<i>Size</i>	<i>Motor Type</i>	<i>Mounting</i>	<i>Lubricated or Lube-Free</i>	<i>Material of Construction</i>	<i>Threading on Inlet and Outlet</i>
10	PM - Piston Type	S- Foot Type	A- Lubricated O - Lube Free	A - Aluminum S - SS	P-BSPP
20		T - Hub			
30		D- IEC N - NEMA			

For example, 20PMTAAP is a size 20, Piston type, Hub Mounted, Lubricated, Aluminum MOC with BSPP threading

## Technical Data

<i>Power</i>	upto 0.07 kW (0.10HP)
<i>Air Consumption</i>	10.2 to 30.5 m3/hr (6 to 18 cfm)
<i>Max speed</i>	4000 rpm
<i>Operating Pressure</i>	6 Kg/cm2 (90 PSI)
<i>Motor Weight</i>	1 kgs (2 lbs)

## Intended And Prohibitive Use

Prohibitive use

Use with non-genuine spare parts or accessories is prohibited

## Safety Instructions

Following symbols are used through out this manual.

### **Warning: If not followed could cause personal injuries**

Caution: If not followed could result in damage to equipment.

### **Warning**

This manual must be read and the operating instructions carefully followed.

### **Warning**

Safety and protective clothing, eyewear, headgear, ear protection, gloves and footwear to be worn during operation of this piston motor

### **Caution**

Install proper guard around the output shaft as needed.

### **Warning.**

Operators under 18 not allowed to operate this Piston motor operators must be made familiar with the instructions in this manual before attempting to operate the piston motor Ensure that job site is clear of bystanders. Do Not dis-assemble in explosive atmosphere.

### **Caution**

Use only genuine Teryair or Teryair approved accessories.

### **Caution**

Completely turn off the piston motor and disconnect air supply line before attempting any service. Read Assembly and Dis-assembly instructions.

### **Warning**

Do not use a hammer on the shaft or connections. Do Not dis-assemble in explosive atmosphere.

### **Warning**

Take care not to exceed the supply air pressure maximum 7kg/cm<sup>2</sup>(100 psi) for Lubricated and maximum 5.6 kg/cm<sup>2</sup>(80 psi) for Lube-free .

### **Caution**

Do not exert excessive pressure against the work surface. Keep hoses in good condition. Check hoses for signs of wear, cracks & bulges and ensure that they are secure. Accidental disconnection while hose is pressurized makes the hose whip and can be a safety hazard.

### **Caution**

- Please check the hose connection prior to starting motor
- Keep hands & clothing away from moving parts.
- Store these piston motors in secure & dry environment.
- Do not modify this piston motor in any way as this will invalidate the warranty and could lead to serious injury.
- Do not drag this piston motor by air hose.

## Warning

Check the site to make sure that the piston motor will be adequately ventilated and that there is no external heat input.

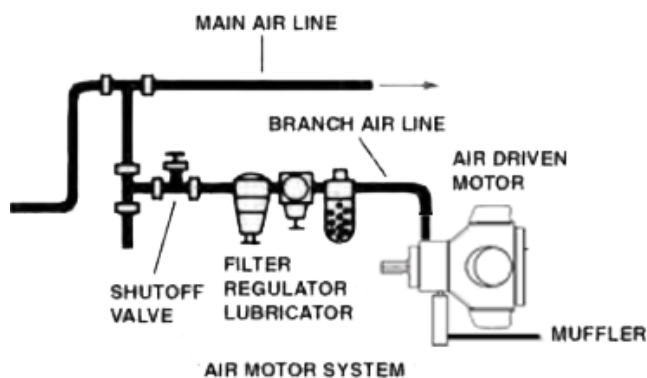
Safety wear mandatory while operating Piston motor

Air stream from product may contain solid or liquid particle that can result eye or skin damage. Eye and face and ear protection must be worn at all times during operation

Suitable gloves must be worn at all times during operation.

## Installation Instructions

An automatic air line lubricator should be installed in the air line as close as possible and no more than 18 inches (1/2 meter) from the air motor. Install the lubricator level with or above the air motor so that the oil mist will blow directly into or fall down into the motor. Install a filter in the air line before the connection to the motor. Next install an air pressure regulator to control motor speed and torque.



Clean the compressed air connection with low pressure air to remove any dirt from the line before connecting to the ports. Use the proper sized fasteners. For the most efficient output and control of speed, use air lines that are the same size as the motor inlet port if the connection is less than 7 feet (2 meters). For longer connections, use the next pipe size larger than the motor intake port. Connect lines to motor in the proper direction

## Operating instructions

Piston motors are rugged dependable product designed to give you years of satisfactory service. Follow the instructions mentioned here to enhance life and performance. Check the direction of the motor airflow. A single rotation motor will operate properly only in one direction. Single rotation motors require a muffler to be connected to the air port. Remove the plastic shipping plugs from the ports. Save plugs for future use during shutdown.

### Daily Before Operating

1. Disconnect air line and muffler.
2. Add flushing solvent directly into motor. If using liquid solvent pour in 1 to 2 ounces of recommended oil into the motor.
3. Rotate the shaft by hand in both directions for a few minutes.
4. You must wear eye protection for this step. Cover exhaust with a cloth and reconnect the air line.
5. DO NOT use kerosene or ANY other combustible solvents to flush this product.
6. Restart the motor at a low pressure of approximately 10 PSI/0.7 bar until there is no trace of solvent in the exhaust air.
7. Listen for changes in the sound of the motor. If motor sounds smooth, you are finished. If motor does not sound like it running smoothly, installing a service kit will be required.

### Air Supply

The air should be clean and dry. Supply air pressure maximum 7kg/cm<sup>2</sup>(100 psi) for Lubricated and maximum 5.6 kg/cm<sup>2</sup>(80 psi) for Lube-free.

### Hoses

- Daily before operation check the hoses, especially the high pressure hoses for damage or leaks
- Use genuine Teryair spares and if possible mention the serial number of the piston motor when ordering spares.

### Mounting

This product can be installed in any orientation. Mount the motor to a solid metal base plate that is mounted to a stable, rigid operating surface. Use shock mounts to reduce noise and vibration. Install a pressure regulator or simple shut-off valve to control motor.

- Lubricate motor with a small amount of oil into the intake port. Rotate shaft by hand several times to distribute oil.
- Plug or cap each port.
- Coat output shaft with oil or grease.
- Store motor in a dry environment.

### Storage

- It is your responsibility to follow proper shutdown procedures before storage.
- Turn off air intake supply.
- Disconnect air supply and vent all air lines.
- Remove Piston motor from connecting machinery.
- Remove the muffler.
- Wear eye protection. Keep away from air stream. Use clean, dry air to remove condensation from the inlet port of the motor.

### Lubrication Requirements

Lubricated Piston motor: Always install a line lubricator on the air line as close to the Piston motor as possible. A Filter Regulator Lubricator unit (FRL) is strongly recommended. Keep the lubricator bowl topped up with recommended grade of oil and check that the oil is reaching the Piston motor. Running the Lubricated Piston motor without lubrication is likely to cause damage to the components causing premature replacement.

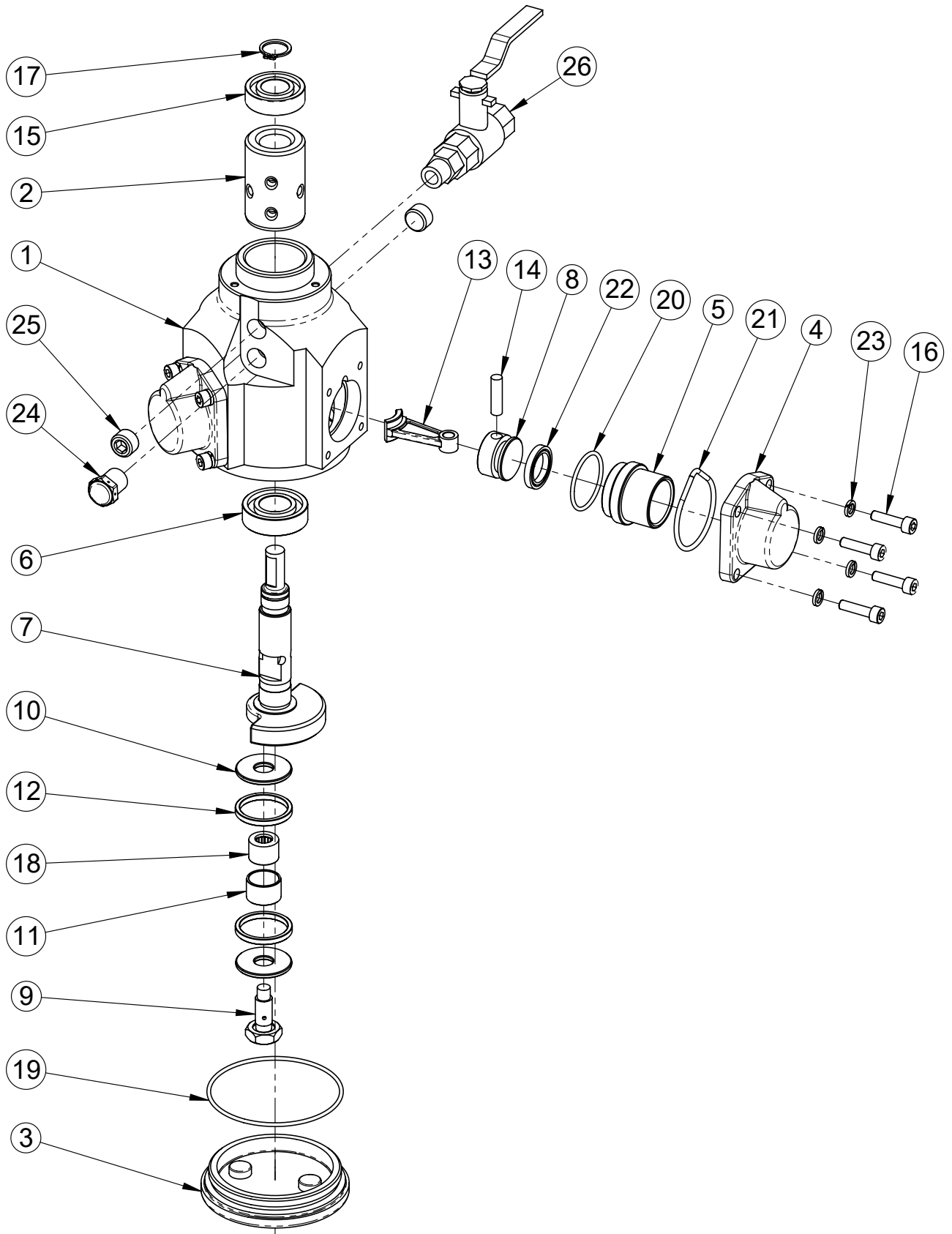
### Suggested Lubricants

Brand	Above 27 Deg C (	From 5 Deg C to 27 Deg C	Below 5 Deg C
Shell	Toona R 72	Toona R 41	Toona R 27
Mobil	Almo 529	Almo 527	Almo 525
Esso	--	Arox EP.65	Arox EP.45
Caltex	Rando Oil 100	Rando Oil 100	Rando Oil 46
Texaco	--	--	Airolene Tool Oil
Daltron	Regal Oil F (R&O)	Regal Oil PE(P&E)	Regal Oil PE(R&O)
Burmah Castrol	Silkolene 881	Silkolene 548/T	Silkolene 733
BP	Castrol RD Oil 3	Castrol RD Oil Light	Megna SPX
Duckham	Garnet 7	Garnet 6	Zero Fio 5
Sternol	Merlin 87	Merlin 71	Merlin 54

### Troubleshooting

Low Torque	Low Speed	Won't run	Runs well but slows down	Reason & Remedy for problem
√	√	√		Dirt or foreign material present. Inspect and flush.
√	√	√		Internal rust. Inspect and flush.
√	√			Low air pressure. Increase pressure.
	√			Air line too small. Install larger line(s).
	√		√	Restricted exhaust. Inspect and repair.
√	√	√	√	Motor is jammed. Have motor serviced.
	√		√	Air source inadequate. Inspect and repair.
	√		√	Air source too far from motor. Reconfigure setup.

### Exploded View for 20 PM Air Motor



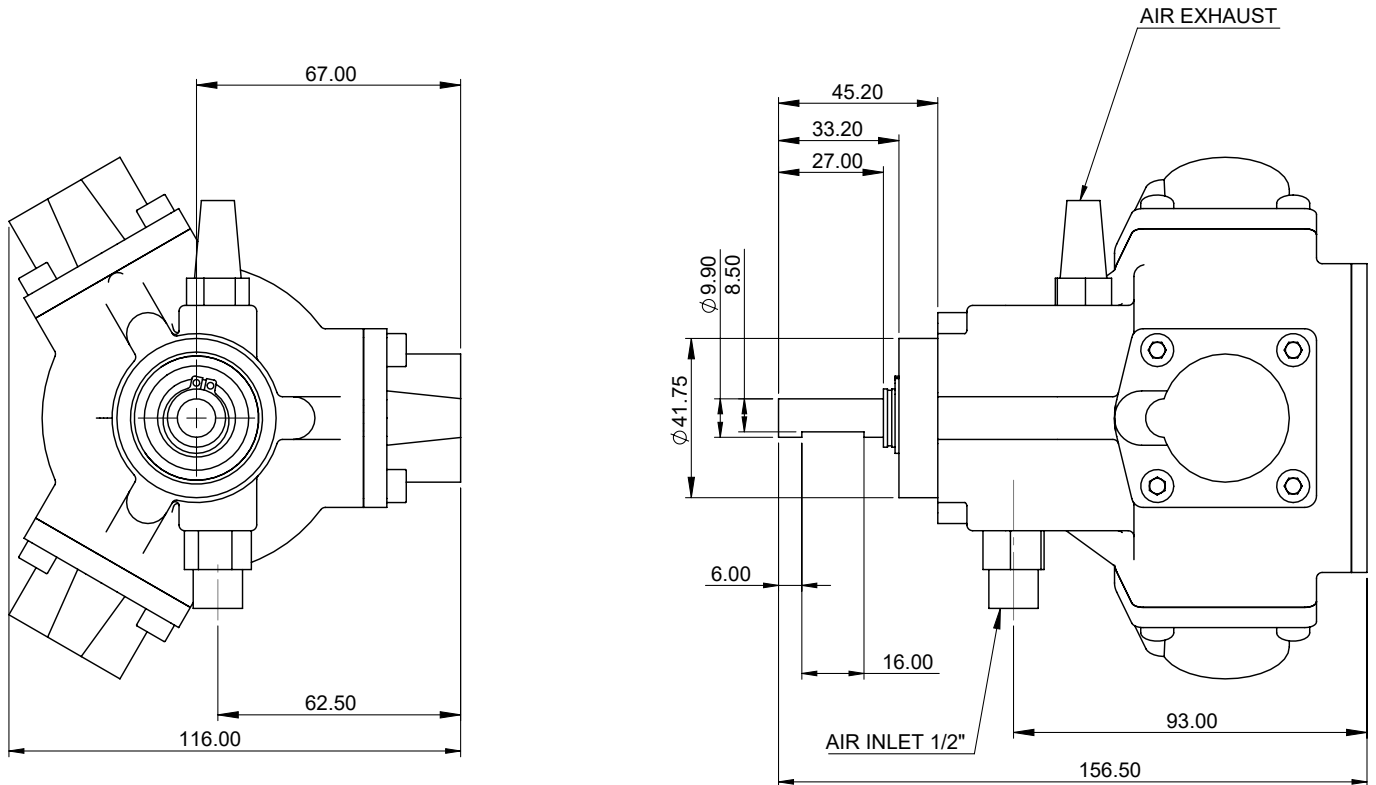
## Bill of Materials for 20 PM

Illustration Number	Description	Part Number	20 PM
1	HOUSING	812 10 01	1
2	SLEEVE	812 21 02	1
3	BOTTOM CAP	812 10 03	1
4	SIDE COVER	812 10 02	3
5	PISTON BUSH	812 20 01	3
6	BALL BEARING	803 50 01	1
7	SHAFT	812 21 01	1
8	PISTON	812 25 01	3
9	HEX STUD	812 21 03	1
10	SPACER	812 21 04	2
11	PLASTIC BUSH	812 08 01	1
12	RING	812 24 01	2
13	CONNECTING LEVER	812 05 01	3
14	DOWEL PIN	812 21 06	3
15	BALL BEARING	804 50 01	1
16	ALLEN BOLT	812 90 01S	12
17	EXTERNAL CIRCLIP	812 90 02	1
18	NEEDLE ROLLER BEARING	812 50 02	1
19	O-RING	812 40 01	1
20	O-RING	812 40 02	3
21	O-RING	812 40 03	3
22	PISTON SEAL	812 40 04	3
23	SPRING WASHER	805 90 01	12
24	MUFFLER	812 04 01	1
25	PLUG	812 90 03	2
26	BALL VALVE SET	812 21 07	1



## Dimensional Data

### Piston Air Motor 20 PM

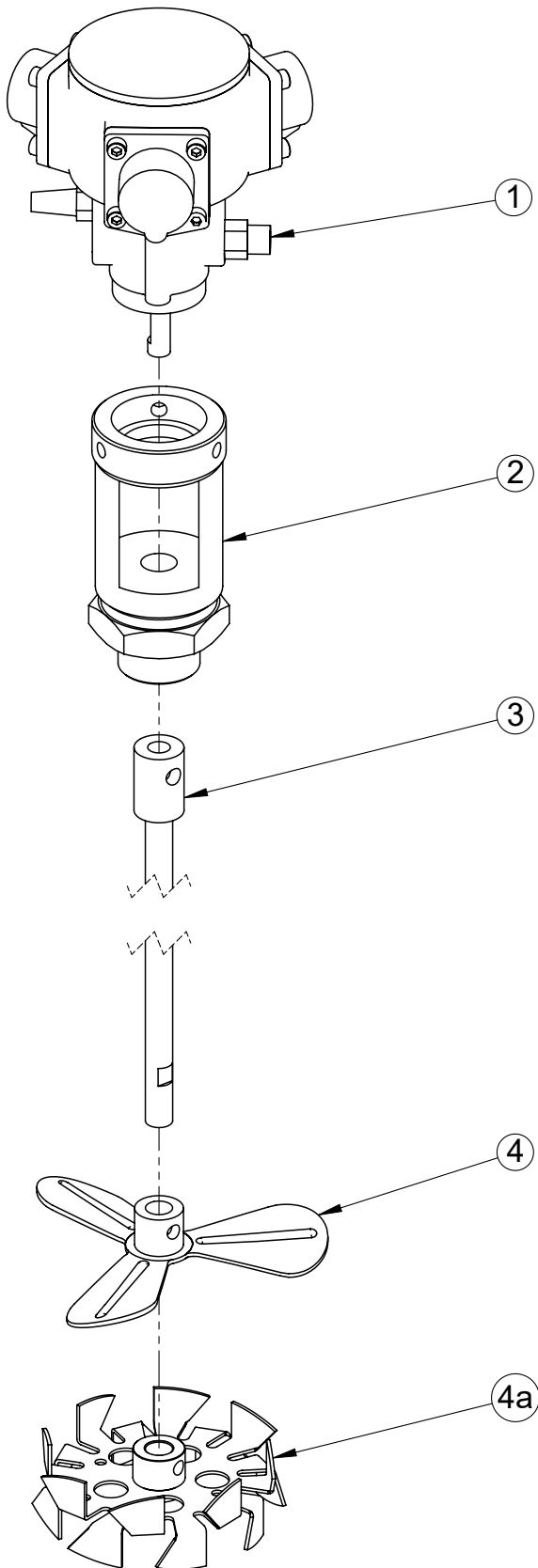


### Repair Kits for 20 PM

Repair KIT Ordering No	Suitable for
2129701	<i>Suitable for 20PM all variants</i>

Note - Note - Repair Kit includes Bearings, Dowels, Piston, Piston chamber, Connecting Arm and O rings

## Paint Stirrer Accessories



## Bill of Materials Paint Stirrer Accessories

Illustration Number	Description	Part Number
1	RADIAL PISTON AIR MOTOR	20PMTAAP
2	SHAFT HOUSING	270582PS1
3	STIRRING ROD ASSEMBLY	270582PS2
4	3 BLADED IMPELLER	270582PS5
4a	HOLLOW IMPELLER	270582PS6



# Warranty Certificate

Every product manufactured by Teryair is built to meet the highest standards of quality.

Teryair warrants that the Products, accessories and parts manufactured or supplied by the company be free from defects in material and workmanship for a period of six months from date of Teryair authorized dealer invoice to customer, or one year from date of Teryair invoice to dealer, whichever is earlier. Failure due to normal wear, misapplication, or abuse is, of course, excluded from this warranty.

Since the use of Teryair products and parts is beyond our control, Teryair cannot guarantee the suitability of any product or part for a particular application and Teryair shall not be liable for any consequential damage or expense arising from the use or misuse of its products on any application. Teryair does not warranty bought out products or components such as electric motors and hardware but will assist in directing warranty queries to the dealer/manufacturer responsible. Teryair responsibility is limited solely to replacement or repair of defective Teryair products or components.

Dealer/End User shall have no right or remedy and Teryair shall have no liability or obligation under the warranty, if: (i) a Product is altered, changed, modified or tampered with in any way, (ii) a Product is damaged after deposit with the transporter for shipment; (iii) a Product is not properly preserved, packaged, stored, processed or handled after receipt; (iv) a Product is not used and maintained in accordance with Teryair's recommended operating and maintenance manuals, instructions and procedures, if any; (v) a Product is not properly incorporated or installed in, or not properly combined with, an Other Product; (vi) the issue with a Product is directly or indirectly attributable to, or directly or indirectly results from or arises out of, a failure, substandard performance or other issue with another product, material, component or part not supplied by Teryair; (vii) the issue with a Product is directly or indirectly attributable to, or directly or indirectly results from or arises out of, compliance with any design, specification or other specific requirement of Dealer/End User; (viii) a Product is used in a manner, with a substance or for a purpose other than the normal manner, substance and purpose for which it is intended or is otherwise subjected to abnormal use or service; (ix) a Product is subjected to a power surge, brown out or other similar occurrence; (x) the issue with a Product is directly or indirectly attributable to, or directly or indirectly results from or arises out of, normal wear and tear of such Product (including, without limitation, things such as worn seals, diaphragms, balls, O rings, gaskets, chisels, cutters, hoses and other such wearing components; (xi) the issue with a Product is directly or indirectly.

Dated :  
 Product Model Number :  
 Product Serial Number :

Ajay Bhagat, Q.A. Manager  
 (Company Seal)

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