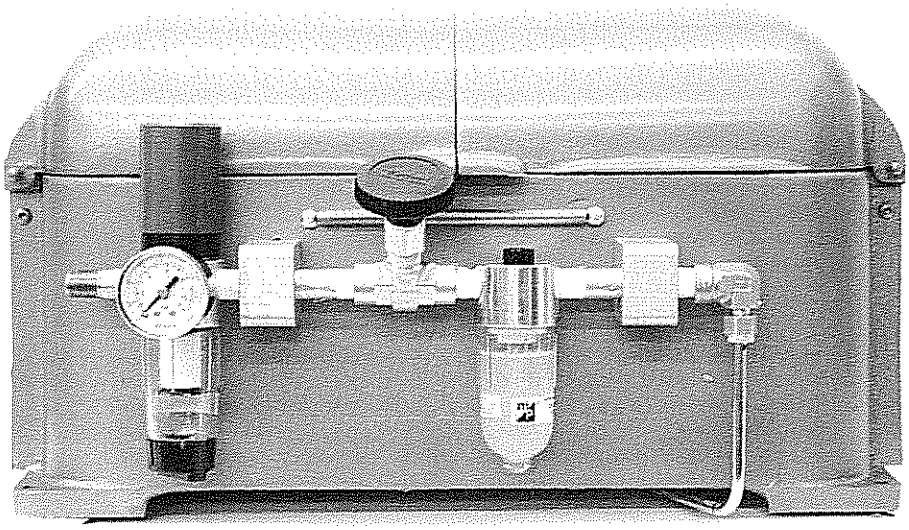
Manual for 18400 Series Air Driven Centrifuges

This manual covers the Short Cone and Pear Shaped version machines.

-18411—2 Place Pear Shaped
-18416—4 Place Pear Shaped
-18421—2 Place Short Cone
-18426—4 Place Short Cone

October 1, 2009



Front view of typical Air Driven Centrifuge

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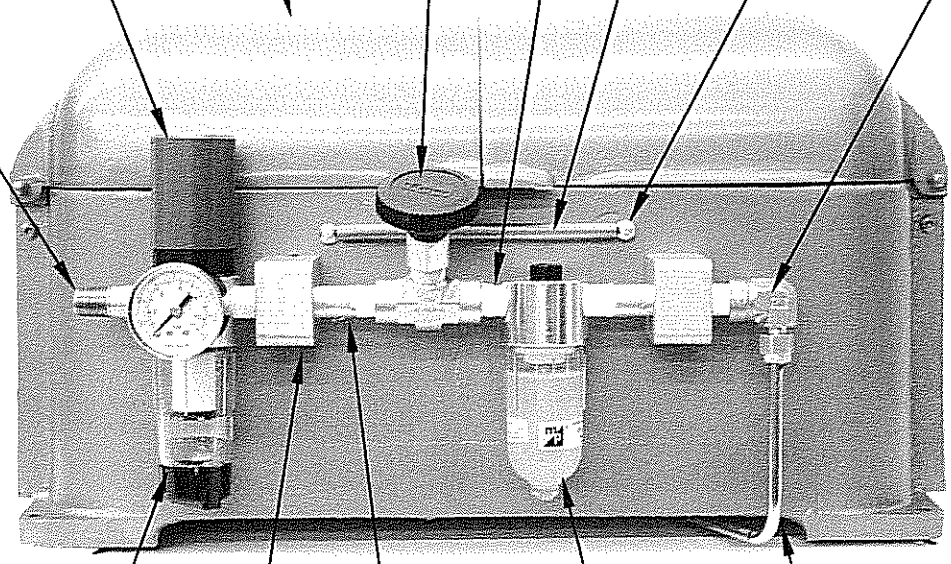
Key Features



#18457
Valve

#1846203
1/4" x Close Nipple

#1805901
Lid for 100 ML Centrifuge
(A) (2 pcs)

#18061
Latch Spring

#18062
Alum Rivet

#18458
Regulator Cap

#18462
Elbow

#1846202
1/4 x 1 1/2 Nipple

#18454
Filter / Regulator

#18463
Mounting Bracket
(2 pcs)

#18464 (B)
1/4" Dia SS Tubing

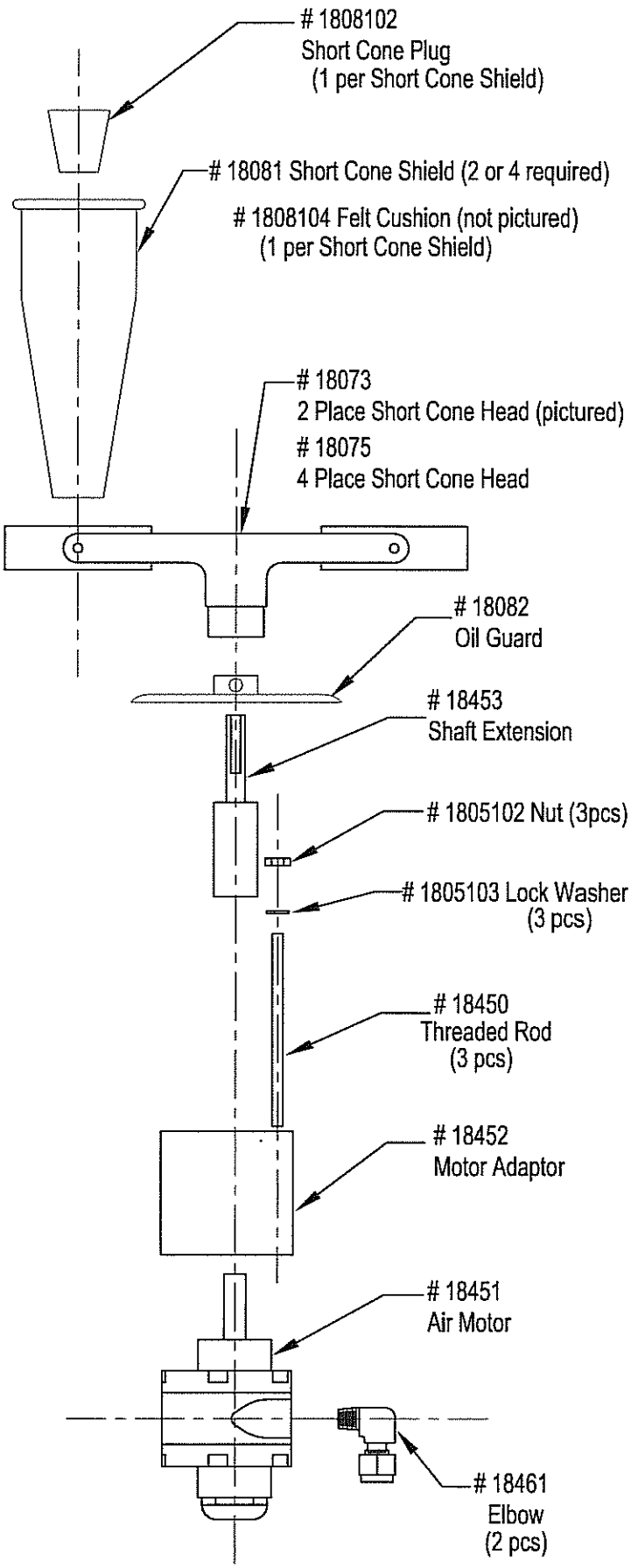
#18455
Lubricator

#1846201
1/4 x 3 Galv. Nipple
(2 pcs)

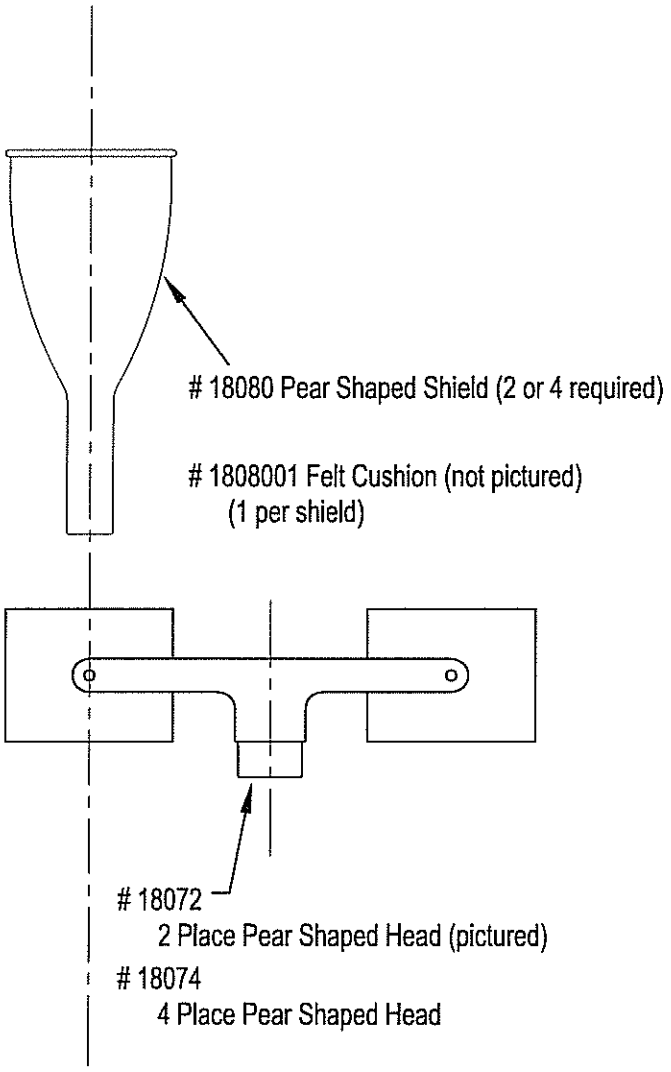
A) please consult with supplier before ordering any lids

B) please consult with supplier before ordering tubing

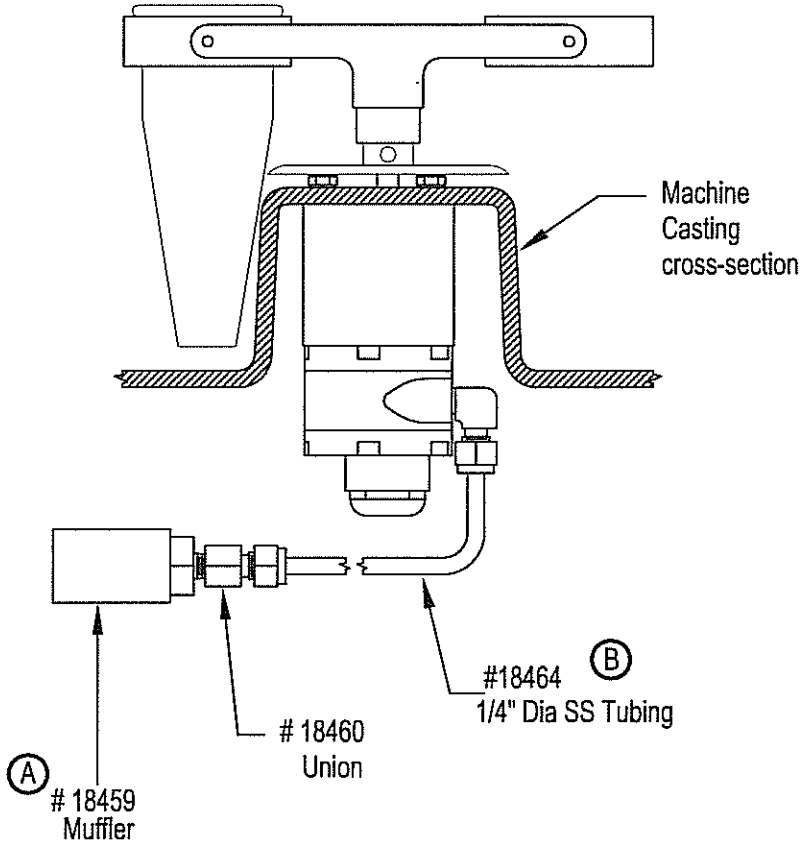
Motor / Shaft / Head Assembly (exploded view)



Optional Head Information



Motor / Shaft / Head Assembly (assembled view)



A) Muffler and Union mounted on back of machine

B) Please consult with supplier before ordering tubing

Specifications

Notice: All specifications, drawing details and misc information are subject to change without notice.

Power Requirements:	Clean dry compressed air supply up to 10 CFM @ 90 PSI Note that typical machine requirements are 3.5 to 7.5 CFM @ 60 to 90 PSI
Preheater:	Both Short Cone and Pear Shaped versions of machines provide 4 preheater pockets for samples. The preheater pockets are located in each corner inside the machine body.
Weight:	58 lb (approx)
RPM:	1725 (actual RPM may vary depending on factors such as air supply, lubrication and load balance of head)
Relative Centrifugal Force (RCF):	592 @ 1725 RPM
Dimensions:	With lids closed: 21" deep, 18" wide and 10" high. With lids open: 21" deep, up to 26" wide and 15 1/2" high. Note: Dimensions may vary due to normal variations of component parts and assembly.
Oil for Lubricator:	SAE 10 non-detergent
Heating:	Heat is supplied by a source of hot water circulated through the water jacket and is connected by means of the two 3/8 NPT tapped ports on the back of the machine. Heating with a mixture of water and standard automotive antifreeze should be used if possible.
API Specification:	The Short Cone (18421 and 18426) machines are recommended to meet the API Chapter 10 Section 4 revisions.

Maintenance

The following general maintenance procedures are recommended for the 18400 series centrifuges:

Controls:

-The clear bowl / reservoir of the # 18454 Filter / Regulator and # 18455 Lubricator should be inspected on a regular basis for any signs of damage such as cracks, crazing, or other deterioration and replace if such conditions are present.

-The reservoir of the Filter / Regulator should be drained of any accumulated liquid by pressing up on the spring loaded valve located on the bottom of reservoir.

-The Lubricator should always have a supply of oil to provide proper lubrication to the air motor. (SAE 10 non-detergent)
NOTE: shut off air supply before filling the reservoir of the Lubricator.

-The bowl / reservoir should be cleaned only with a clean dry soft cloth using no cleaning agents.

-The bowl / reservoir should be protected from direct sun rays.

Body:

-The machine should be kept clean inside and out by wiping down with a clean soft cloth.

-The lid hinges may need a small amount of oil applied to prevent binding.

Notes on trapped air in water jacket:

Air that become trapped in the water jacket of the machine should be removed by using the 'bleeder screws' located on the top of each preheater pocket.
Air trapped in the machine and around the preheater pockets may cause problems with heating.
The 'bleeder screws' need only to be loosened enough (1 or 2 turns) to allow the tapped air to escape and a small amount of liquid to become visible under the screw. Do not allow screw to come out completely. Tighten each screw after venting air.
Each preheater pocket should be vented of trapped air on a regular basis.

Repair Parts:

For units that are expected to run on multiple shifts or are in a critical need situation, there are a few spare parts that should be ordered in advance to avoid as much downtime as possible. The following items should be on hand for possible repairs over the course of one year.

Quan.	Inv. #	Description
4	18097	bleeder screws (vent screws)
4	1809701	gasket for bleeder screws
1	18451	motor
1	18453	shaft extension
1	18454	filter / regulator
1	18455	lubricator

Check the shields in the centrifuge head to make sure that all the plastic plugs (for Short Cone units) are in place at the bottom of each shield and that any felt liners are in place.

Fill glassware evenly and place samples into the preheater pockets located inside the machine.
Allow samples to heat to the desired temperature in preheater pockets then remove and place them into the shields of the centrifuge head. If running more than one set of samples at a time, note should be made of the number on the arm of the head by each shield.

Close and latch the lids for safety purposes and to retain heat.
The closed and latched lids will also allow the motor to operate more efficiently.
Turn the motor on by slowly turning to needle valve counterclockwise until fully open and allow to run for the necessary length of time.
Shut the motor off by turning the valve clockwise until fully closed and allow the head to come to a complete stop.
Unlatch the lids and remove samples for inspection.

For complete details as to proper methods of testing, we suggest the use of the following "American Petroleum Institute" publications.

- API MPMS Ch. 10.3
- API MPMS Ch. 10.4
- API MPMS Ch. 10.6