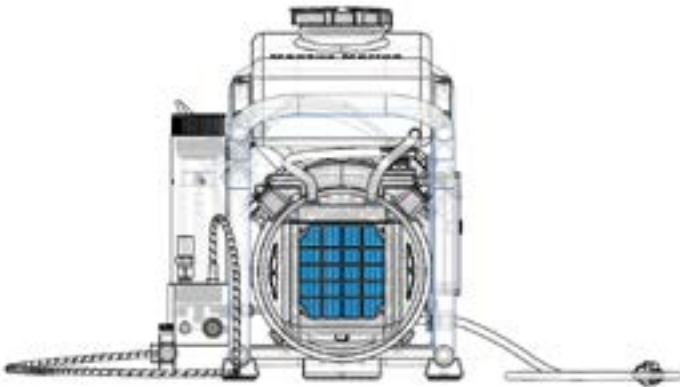




User Manual

by Mantus Marine

Mantus High Pressure Air Compressor



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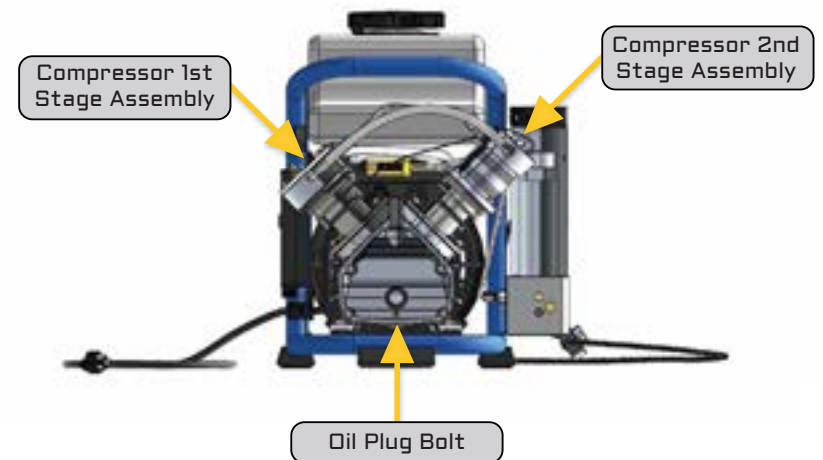
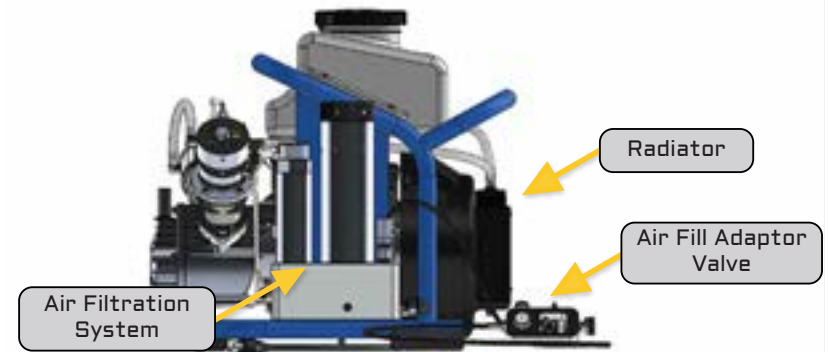
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Chapter 1 – Warnings

-  Always wear eye protection when operating the compressor.
-  Scuba diving is an activity that requires training and certification. Even though you are now able to fill your own bottles, we strongly urge you to be scuba certified, and to be up to date on your training before diving and breathing compressed air.
-  To avoid any personal injury, death, and/or damage to the compressor, please make sure to read this manual in its entirety prior to operating the compressor. Please make sure to save the manual for reference for the life of the compressor.
-  The compressor should be used to fill scuba diving cylinders to a maximum pressure of 3000 psi. Please do not over-pressurize the cylinders.
-  Change the air filter regularly.
-  Remember to drain the water condensate every 10-15 minutes during run time
-  Do not disconnect the filling valve from the tank while under pressure. Always stop the compressor first, close the tank valve, and then bleed the filling valve prior to removing it from the tank.
-  Ensure the flexible hose connected to your fill valve is in good condition. If there is any sign of wear, please replace immediately. Try not to bend the flex hose excessively.
-  Maintenance and repair must be done using spare parts provided by Mantus Marine.
-  Install the "oil breather nozzle" above the oil sight glass to allow operation and prevent damage.

Chapter 2 – General Principles

Diagram of Main Components



Purpose

The Mantus High Pressure Air Compressor was designed to fill small scuba diving cylinders, ideally < 30 cubic feet, while being small, lightweight, portable and having a low power requirement. The compressor is also marinated with all external parts resistant to corrosion.

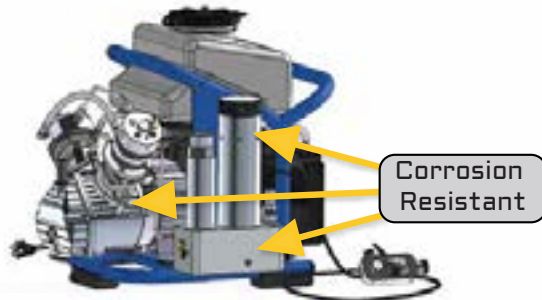


Fig 1.

Mechanics

This compressor is a two-stage electric piston type, designed to take ambient atmospheric air at 14.7 psi (pounds per square inch) and compress it 187-fold to 2750 psi. This type of compressor uses an electric motor to drive a constant piston motion. Pistons draw air into the chamber and compress it with the aid of one-way valves.

The first stage compresses the air to about 330 psi and the second stage compresses the air to 2750 psi.

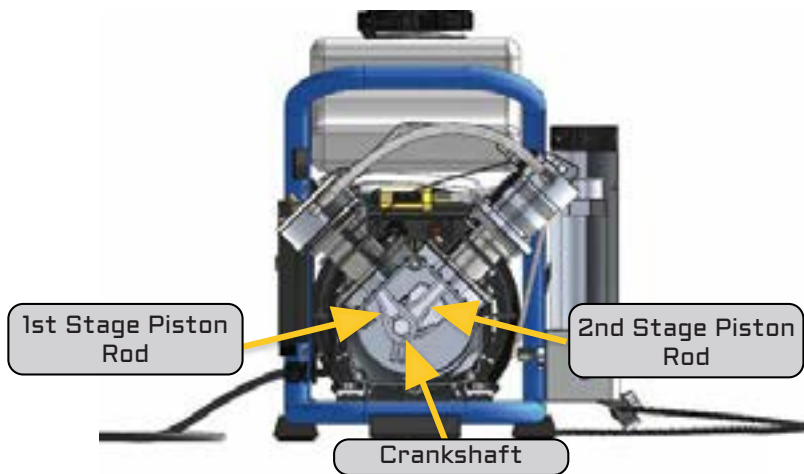


Fig 2.

Five main things are necessary to make a high-pressure air compressor

- **Power Drive** — the energy that is used to power the compressor (electric or a fuel combustion motor) This machine uses an electric motor to power the air compression .
- **Air Compression Mechanism** — 2 to 4 piston/stage compression system.
- **Cooling System** — a way to dissipate the heat generated from compression.
- **Air Filtration** — a way to make the output air breathable: free from oil, carbon dioxide, carbon monoxide, and water.
- **Safety Mechanisms** — Ensures that the compressor does not run hot or over-pressurize.

Power Drive

The motor is 1.3 kw AC; the 110V version draws 13 amps. This low power requirement allows you to use the compressor anywhere there is an outlet, which makes the unit very versatile.

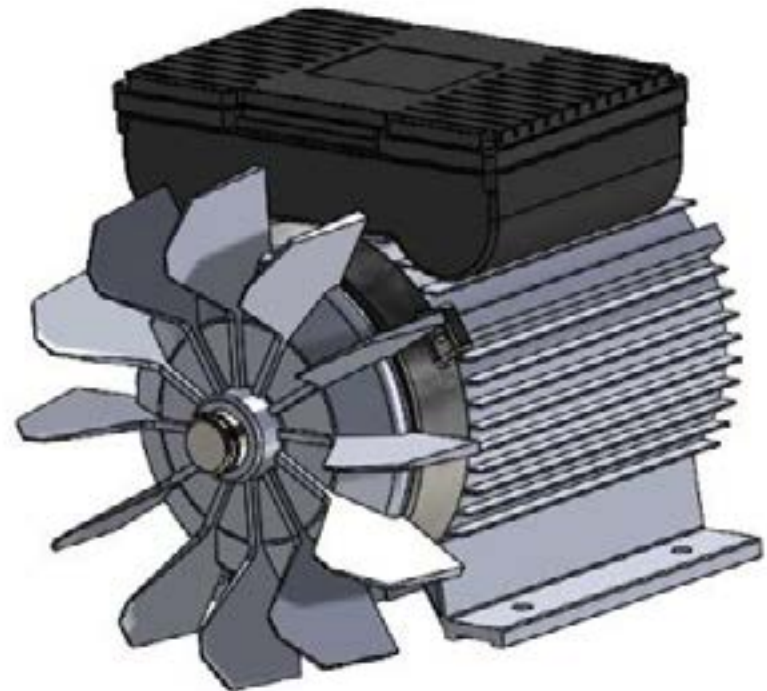


Fig3. Electric Motor and Fan



Air Compression Mechanism

Air is drawn into the first stage cylinder, gets compressed, and with the help of the one-way valves it is forced into the second stage cylinder, where it undergoes further compression.

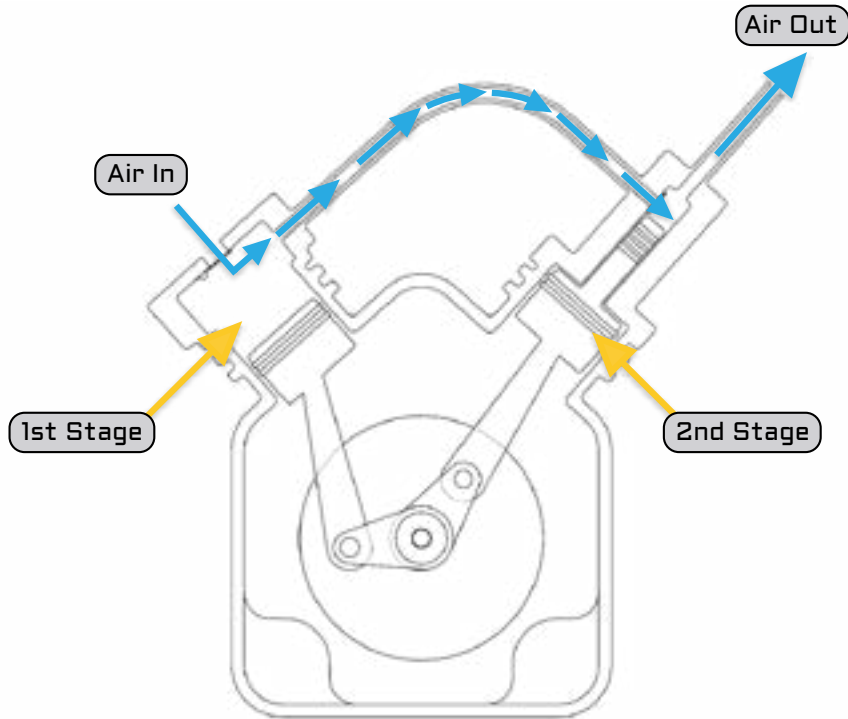


Fig 4. Compressor Mechanism Diagram

Cooling System

Compressing air generates heat. The more work is done on air, the more heat is generated. For this reason, all compressors have a cooling system. This compressor is water cooled using distilled or reverse-osmosis water.

A freshwater reservoir stores the water, which is pumped into the second stage first and then to the first stage. The water absorbs the heat generated in the compression. A radiator located next to the fan then dissipates that heat.

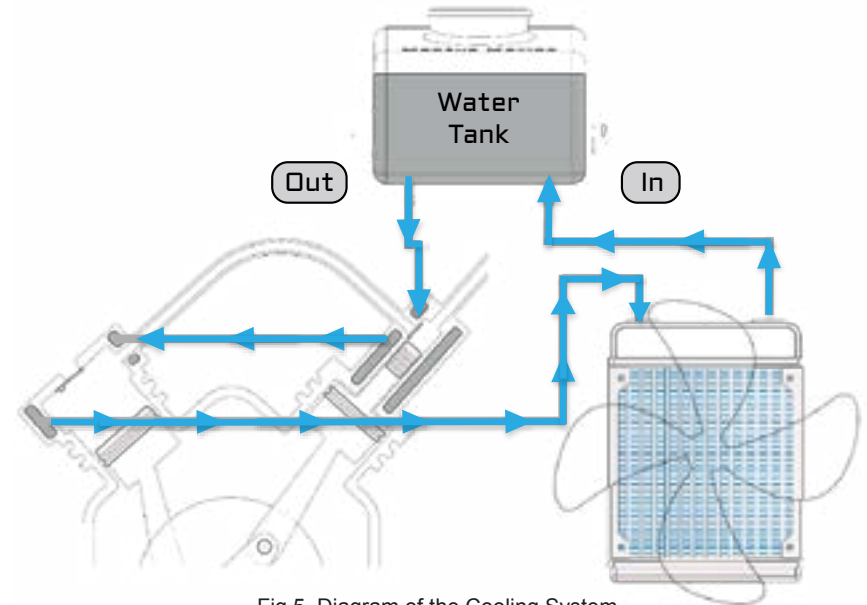
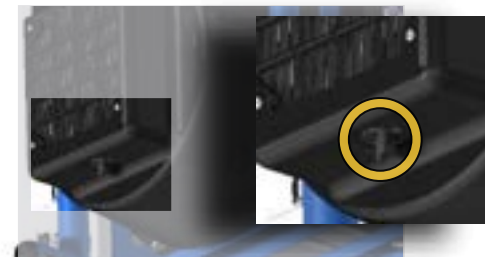


Fig 5. Diagram of the Cooling System.



To drain the water from the cooling system, unscrew the plug located on the bottom of the radiator.

Fig 6. Radiator Drain Plug

Air Filtration System

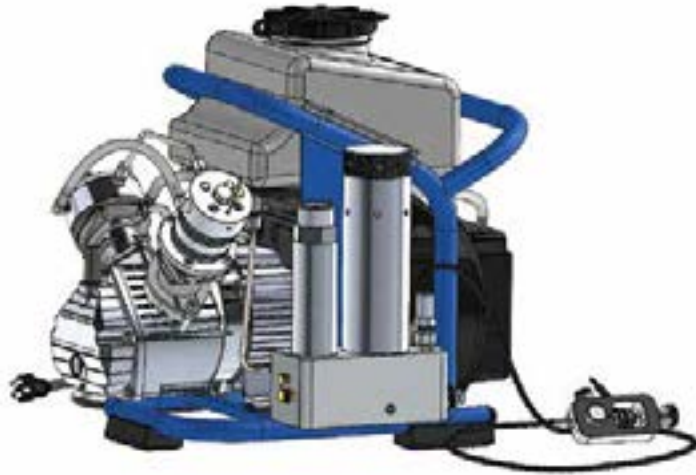


Fig 7. Air Filtration System

Safety Mechanisms (Avoiding Excess Pressure and Heat)

Pressure

Compressing air to 2750 psi must be done with care, to avoid exceeding the designed pressure. Several safety mechanisms help avoid accidental over-pressurization:

- Mechanical Pressure Relief Valve — burps air if the pressure in the compressor exceeds 3300 psi or 227 bar.
- Emergency Disc Burst Valve — This valve bursts when the compressor pressure exceeds 4000 psi or 275 bar.
- Finally, not a feature of the compressor itself, but tank valves usually also have a safety blow valve to protect against over-pressurization of the cylinder and blows at 4000 psi.

Heat

Compressing air generates a lot of heat, and the compressor temperature should never exceed 80 °C. The compressor has a temperature gauge on the second stage and temperature readout on the control panel.

If the compressor reaches 75 °C it will shut down automatically and will not be able to be restarted until the temperature drops to below 65 °C.



Fig 7. Temperature Probe



Fig 8. Temperature Read Out

WARNING: It is important to make sure that the heat sensing probe is properly positioned whenever operating the compressor.

The compressor also cannot be turned on unless the water pump is on and there is water flow in the cooling circuit.

WARNING: Even though the compressor has an automatic temperature-triggered shut off function, it is your responsibility to be aware of the compressor temperature and avoid running the compressor above 75° Celsius.

Chapter 3 – Specifications

Electrical Motor	1.3 kw 110V — 13 amps (running draw)
Fill rate	35 liters/min
Compressor operating temp	10°C — 75°C
Air temperature limitations	≤ 30 °C/86 °F Continuous operation no time limit ≥ 30 °C/86 °F Temperature monitoring required (Auto shutoff when compressor temp reaches 75 °C)
Fill time 3.5 liter tank (0 – 2750 psi)	19 min
Water reservoir	Max 1.3 Gallons or 5 liters of distilled or reverse-osmosis water
Oil reservoir	14 oz full synthetic compressor oil, found anywhere air compressors are sold
Air filter	We recommend changing every year, or every 20 hours, whichever comes first.
Air filter composition	Activated Charcoal Molecular Sieve Hopcalite
Noise level	75 dB
Dry weight	69lbs / 31.3 kgs
Weight with full water tank	84 lbs/ 38.1 kgs
Dimensions	Width 15 inches / 38 cm Height 19 inches / 48 cm Length 20 inches / 50 cm

Chapter 4 – Air Filter Chamber Design

The filter chamber assembly consists of two chambers

- Water separation chamber
- Filtration chamber

Air flows from the second stage of the compressor into the water separation chamber. We recommend draining the water separation chamber after every cylinder fill, and for every 10-15 minutes of compressor runtime.

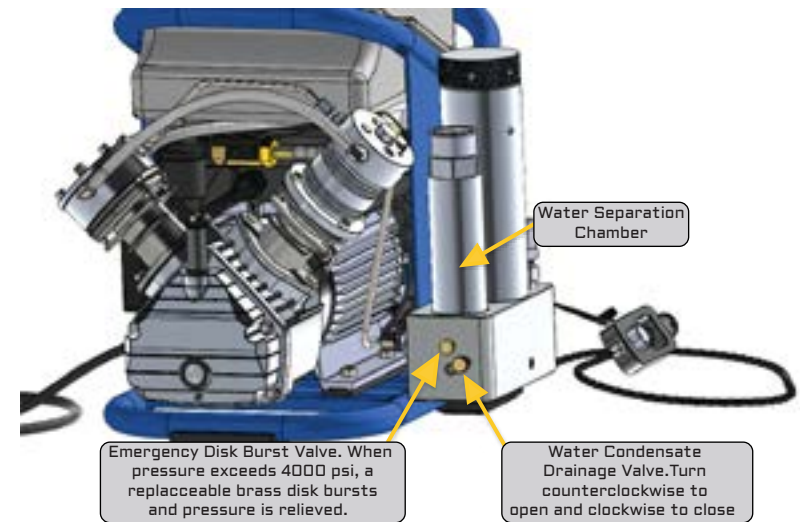


Fig 9. Water Condensate Drainage Valve and Emergency Disc Burst Valve

This side of the chamber houses the emergency disk burst valve. This valve bursts if the compressor pressure reaches 4000 psi / 275 bar. Two spare disks are included with the spare parts provided at the time of sale.

Air then enters the air filtration chamber and the Triplex Filter. On this side of the chamber, there are three valves:

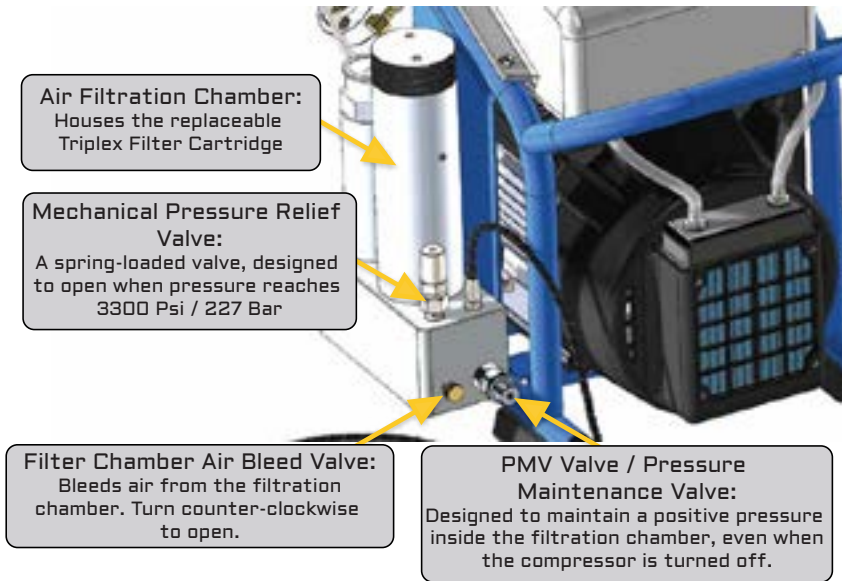


Fig 10. Air Filtration System Front View

Mechanical Pressure Relief Valve

The mechanical pressure relief valve is designed to open when the pressure reaches 3300 psi / 227 bar.

The valve should be preset to 227 bar; should you need to adjust the valve, turn clockwise to increase the relief pressure and counterclockwise to decrease the relief pressure.

Filter Chamber Air Bleed Valve

The filter chamber air bleed valve is a screw valve that allows air to bleed from the filtration chamber. To open, turn counterclockwise; to close, turn clockwise.

PMV Valve (Pressure Maintenance Valve)

The pressure maintenance valve maintains a minimum positive pressure of 500psi/35bar in the filtration chamber. Compression of the air itself precipitates most of the moisture from the atmospheric air; that water is then discarded from the water separation chamber. The resulting air is not sufficiently dry,

though, and additional dehumidification is necessary. If all the water is not removed from the compressed air, it can corrode the scuba tank and predispose it to failure. The remaining moisture is absorbed by the Triplex Air Filter. If moist ambient air were to enter the filter chamber, that moisture would saturate the filter. For this reason, the PMV valve maintains a pressure in the chamber and ensures that only the compressed dry air resides in the filter chamber, extending the filters life.

The valve should be preset to 50 bar; this means that once the pressure of 50 bar is exceeded the valve opens and lets the air flow to fill the gas cylinder. To adjust, loosen the circular lock nut then turn clockwise with a 6mm Allen wrench to increase the opening pressure and counterclockwise to decrease the opening pressure.

Tank Fill Adapter Valve and Hose

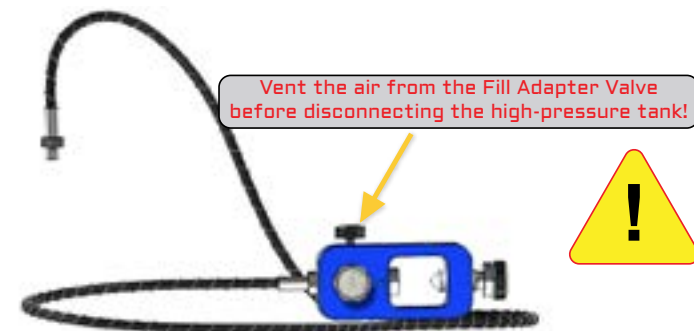


Fig 11. Air Fill Adaptor Valve

WARNING: Do not disconnect the filling adapter valve from the tank when under pressure. First stop the compressor, close the tank valve, and bleed the tank fill adapter valve prior to removing the fill adapter from the tank.

Changing the Air Filter

- Make sure the compressor is off and disconnected from the tank
- Decompress the air filter chamber
- Unscrew the cap from the air filter cartridge chamber
- Remove the old filter
- Place the new filter and make sure it is seated well
- Replace and tighten the cap



Fig 12. Changing the Triplex Air Filter

Chapter 5 – Spare Parts Included

Part Name	Quantity	Part Number
ZIP LOCK BAG - "FIRST STAGE"		
Water Sealing O-ring Outer - 67mm OD, 63mm ID	1	42
Water Sealing O-ring Inner - 22mm OD, 18mm ID	1	41
First Stage Valve Gasket - PTFE	1	24
Cylinder Housing Top Gasket - PTFE	1	20
Cylinder Housing Base Gasket - Fiber	1	14
ZIP LOCK BAG - "SECOND STAGE"		
Second Stage Top Bolt O-Ring - 8mm OD, 5mm ID	4	40
Second Stage Water Sleeve O-Rings - 58mm OD, 2.2mm thick	2	30
Second Stage Piston Rings - 10mm OD, 7.4mm ID, 3mm H - PTFE	4	28
Second Stage Cylinder O-rings - 22mm OD, 18mm ID	2	34
Cylinder Housing Base Gasket - Fiber	1	14
10mm Bonded Washer	2	61
14mm Bonded Washer	1	52
ZIP LOCK BAG - "AIR FILTER CHAMBER"		
<i>Bag labelled "Hose O Rings and Fuse"</i>		
Air Hose Coupler O-rings - 9mm OD, 2.5mm thick	4	89
Tank Connector Mouth O-rings - 10mm OD, 2mm thick	2	135
Electrical Control Box Fuse	1	112
<i>Bag labelled "Valve Plunger and O Ring"</i>		
Valve Plunger with Polyurethane Face Seal	1	44
PMV Plunger O-Ring - 7mm OD, 1.9mm thick	2	45
<i>Bag labelled "Check Valve and Burst Discs"</i>		
Filter Chamber Check Valve O-Ring - 6mm OD, 2mm ID	1	133
Burst Discs	2	43
Nylon Sealing washers	1	54
ZIP LOCK BAG - "TOOLS"		
Small Funnel for Oil	1	49
Wrenches to Open the Filters Set	1 set	46
Pressure Maintenance Valve Inner Nut Removal Tool	1	99
Silicon Tube (5ml)	1	50
Oil Breather Nozzle	1	96

Go to <https://www.mantusmarine.com/product-category/mantus-scuba/> to order parts.

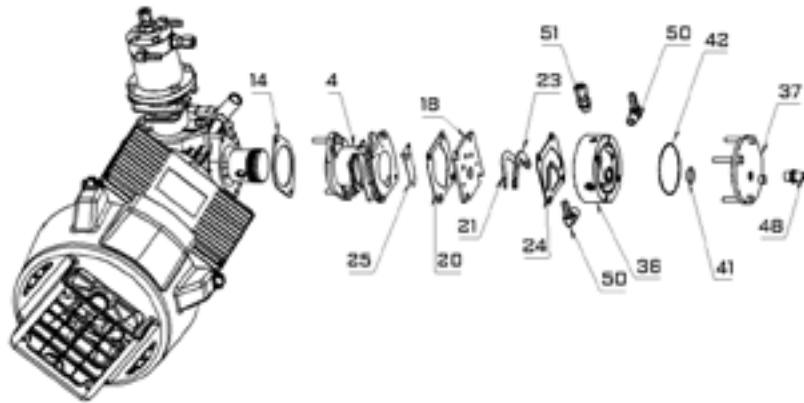


Fig 13. Compressor First Stage Exploded View Diagram

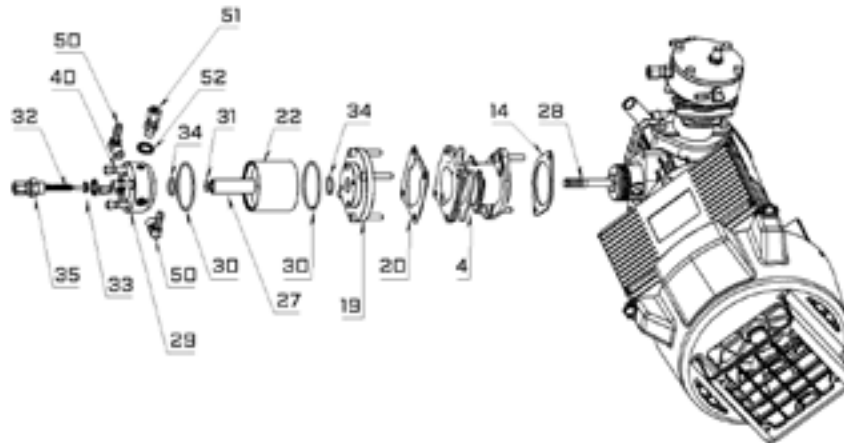


Fig 14. Compressor Second Stage Exploded View Diagram

Chapter 6 – Filling Procedures

WARNING: Before operation, fill compressor with 14 oz of full synthetic compressor oil, found anywhere air compressors are sold. (see the glass sight window on the side of the compressor) **Oil must be added before first use!**

WARNING: Install the "oil breather nozzle" above the oil sight glass to allow operation and prevent damage.

WARNING: Make sure the air filtration cartridge is inside the air filtration chamber. (use the provided wrench to open and close the chamber)

WARNING: Make sure the compressor is aspirating clean air, free of dirt or exhaust fumes. (operating an internal combustion engine is the most common cause of exhaust fumes)

- Fill the water tank with roughly 1.3 gallons of distilled or reverse-osmosis water
- Plug the compressor in to the power outlet
- Connect the fill valve to the tank
- Open the tank

WARNING: Use only distilled/reverse-osmosis water. Do not use tap water or seawater.

WARNING: Use only tested and certified high-pressure cylinders.

- Turn on the water pump
- NOTE: Floor mat (included) reduces movement on hard surfaces

WARNING: There is a safety feature that will stop the compressor if it doesn't sense the water flow in the cooling circuit.

- Turn on the compressor
- Ensure there are no air leaks

WARNING: Ensure that the temperature probe is in its proper position. (Probe is the black wire on the compression head. See fig. 7 on page 11)

- Monitor the temperature
- Monitor the pressure in the cylinder

WARNING: Always be present during filling and always monitor the filling pressure.

- Every 10 – 15 minutes drain the water drainage valve (open just enough for the water to spray out as a mist and close when the mist stops)
- When the desire pressure is reached, turn off the compressor
- Close the tank valve
- Bleed the fill adapter valve

WARNING: Never try to remove the tank fill adapter from the tank before closing the tank valve and venting the fill adapter valve to depressurize the hose. Failing to do so may cause injury.

- Disconnect the cylinder
- Run the compressor without the cylinder connected and bleed the water drainage valve until dry
- Drain the water tank

Chapter 7 – Vibration Meter Instructions

Vibration Meter Instructions

The Vibration Meter records time when the compressor vibrates.

Default Screen Total Time: It records total time of operation on the default screen.

Job Timers: Two additional timers are available Job1 and Job2, you can use these to record individual Jobs times, these timers are resettable.

Service Timers: Service Timers SVC1 and SVC2, are count down timers that can be used to monitor maintenance intervals. You can set these timers to the necessary service intervals and the timer will alert you when maintenance is necessary.

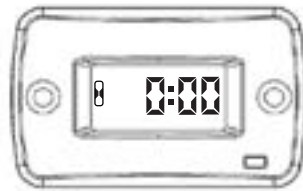
Sensitivity Level Adjustment: There are 3 sensitivity levels: SEN-1, SEN-2, SEN-3. The meter is preset to the SEN-2 setting. Do not adjust this setting.

Locking the Timer: You can lock the timer to turn it off to save battery life on the meter.

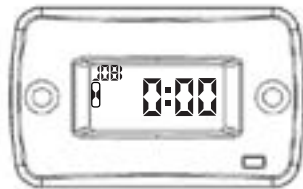
OPERATIONAL INSTRUCTIONS

Press the Hour Button Once to Cycle between Displays:

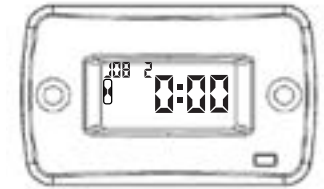
Default Display - Total Hours (cannot be reset) will record total compressor run time. Cannot reset this timer.



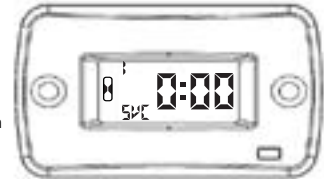
Press 1 Time – Job 1 You can track time of compressor job and can reset the timer. To reset press again and hold until the timer resets.



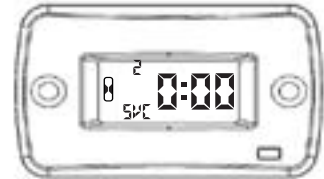
Press 2 Times – Job 2 You can track time of another compressor job and reset the timer. To reset press again and hold until the timer resets.



Press 3 Times – SVC 1 You can set the time to the next Maintenance Task. Once on the SV1 screen Press and hold the button until "Time Display Flashes" Release the button and press button until you get desired hours. LCD will flash for 5 seconds and return to the default screen showing total Hours. (When the set maintenance interval time is reached, the icon "SVC" will flash continuously on the display screen for 1 min. Press the Button ONCE to close the reminder and the next maintenance interval starts timing)



Press 4 Times – SVC 2 You can set the time to the next Maintenance Task. Once on the SV2 screen Press and hold the button until "Time Display Flashes" Release the button and press button until you get desired hours. LCD will flash for 5 seconds and return to the default screen showing total Hours. (When the set maintenance interval time is reached, the icon "SVC" will flash continuously on the display screen for 1 min. Press the Button ONCE to close the reminder and the next maintenance interval starts timing)



Press 5 Times – Meter Sensitivity Adjustment: Sensitivity is preset to Sen - 2, please do not adjust.



Battery Life about 5 years. You can prolong the battery life by turning off the meter when storing the unit.

Turning OFF the meter:

- Press the button until the default display is on and showing the total time.
- Press and hold the button until you see "LOC" Displayed, release the button and the display will shut down.





Chapter 8 – Environment

We recommend you keep the compressor in a well ventilated, dry environment in the shade.

Continuous operation is possible in temperatures 0°C /23°F – 30°C/ 86°F.

Temperatures 0 °C /23 °F – 30 °C/ 86 °F	Continuous operation > 60 min
Temperatures ≥ 30 °C/ 86 °F	Limited time operation (Temperature monitoring required)
Rain	Do not operate
Hail	Do not operate
Max Tilt	6°

Cylinder Size	Time to Fill to: 2750 psi	Operation Time to reach 75 °C auto shut off if outside air temp ≤ 30°C/ 86 °F
19 Cu Ft (2.7 Liters)	15 min	Compressor can operate indefinitely
24 Cu Ft (3.5 Liters) Mantus Cylinder	19 min	
30 Cu Ft (4.3 Liters)	24 min	
40 Cu Ft (5.8 Liters)	32 min	
53 Cu Ft (7.6 Liters)	42 min	
63 Cu Ft (9 Liters)	49 min	
80 Cu Ft (11.1 Liters)	63 min	

Cylinder Size	Time to Fill	Operation Time to reach 75°C auto shut off if outside temp 33 °C / 91.4 °F	Operation Time to reach 75°C auto shut off if outside temp 35 °C / 95 °F
19 Cu Ft (2.7 Liters)	15 min	<ul style="list-style-type: none"> • 30 min • Add ice to the water tank to extend run time 	<ul style="list-style-type: none"> • 25 min • Add ice to the water tank to extend run time
24 Cu Ft (3.5 Liters) Mantus Cylinder	19 min		
30 Cu Ft (4.3 Liters)	24 min		
40 Cu Ft (5.8 Liters)	32 min		
53 Cu Ft (7.6 Liters)	42 min		
63 Cu Ft (9 Liters)	49 min		
80 Cu Ft (11.1 Liters)	63 min		

Chapter 9

The water pump does not start	
	Check power at the outlet. Check fuse on underside of electrical box.
The compressor does not start	
No button LEDs lit when pressed	Check power at the outlet. Check fuse on underside of electrical box.
Water pump button LED is not lit when pressed	Replace water pump button (call customer support)
Compressor LED is not lit when pressed	Replace Compressor Button (call customer support)
Both button LEDs lit when pressed	<ul style="list-style-type: none"> Confirm the unit has water and oil Confirm the breather nozzle has been installed on the crankcase Confirm the temperature readout is lit (temperature control board) Check the water pump is running (See "The water pump does not start") Check the capacitor box breaker button Check the water flow sensor: <ul style="list-style-type: none"> - For any scale buildup, shock the water system with vinegar. Use distilled or reverse osmosis water only to prevent scale. - Remove and clean the water filter in the water tank, replace if older disk style. - Check the temperature is under 75°C. The unit will need to cool below 65°C before restarting.
The compressor overheats	
	<ul style="list-style-type: none"> Confirm the breather nozzle has been installed on the crankcase Check the oil and change if used for over 30 hours Check the water flow. Shock the water system with vinegar. Use distilled or reverse osmosis water only to prevent scale. Remove and clean the water filter in the water tank, replace if older disk style. Add ice or ice packs, exchange some or all hot water for cool water Try to operate the unit when air is less than 30°C (86°F)
The power outlet breaker trips	
On a generator or inverter (boat)	<ul style="list-style-type: none"> Check the inverter or generator has a surge capacity of 3000W for initial spin-up and a nominal capacity of 2000W+ Check the inverter or generator is not running other loads Test the compressor on another power supply or shore power
The compressor ran a short while before the trip	Confirm the breather nozzle has been installed on the crankcase
If still having issues	Check the outlet breaker is a standard 15 amp slow-blow breaker
The compressor is filling slowly (under 1.3 CFM)	
	<ul style="list-style-type: none"> Close the scuba tank's valve for testing. Filling just the unit from 0 psi to 3000 psi should take ~2 minutes. Check the 3 bleed valves are fully closed: Water Drain, Air Vent and the tank connector bleed valve Put soapy water on all the joints of the compression stages and stainless hoses. Run the unit and look for bubbles. Put soapy water on all joints, valves and valve holes (MPRV) of the filter chamber. Run the unit and look for bubbles. Tighten any connections where leaks were found. Check if the air filter has been used over 20 hours or opened for a year. Check if the teflon rings have been used ~200 hours or are worn. If the brass air intake on top of the 1st compression stage is dirty, remove and clean with soapy water and a brush
Oil is leaking	
	<ul style="list-style-type: none"> Check the breather nozzle for oil dripping. Check the drain bolt for oil leaking. It may not be sealing due to having a damaged or missing o-ring.
There are oil fumes around the machine	
	<ul style="list-style-type: none"> Check the breather nozzle is screwed in fully. Check the right oil type and weight is being used. Check the unit isn't overheating.
The compressed and filtered air smells like oil	
	<ul style="list-style-type: none"> Replace the air filter if it has been used over 20 hours or opened for a year. Drain the water condensate consistently every 15 minutes ran. If the water condensate was allowed to fill significantly then the air filter will need changing. Change second stage teflon rings if they have been used 200 hours.



Chapter 10 – Maintenance

It is your responsibility to ensure adherence to the maintenance schedule.

Scheduled maintenance is necessary to keep the compressor running smoothly and to ensure the quality of the air the compressor generates.

You can easily carry out some maintenance tasks, but some require the work be done by a trained technician.

Please review the maintenance schedule below.

Check water reservoir level	Every use; water tank capacity is 1.3 gallons of distilled water
Check flex hoses	Every use; check for wear
Discarding water condensate	Every 10-15 minutes of compressor use
Check lubricating oil	Every 5 hours
Triplex air filter	Every 20 hours, or every year, whichever comes first
Change lubricating oil	Every 30 hours (14 oz/ 0.40L) synthetic compressor oil
Inspect intake air filter	Every 50 hours
Change piston rings second stage	Every 200 hours or 450 Mantus scuba bottles filled
Change flex hoses	Every 2 years or every 200 hours or if there is sign of wear

Chapter 11 – Storage

The compressor is marinated. Most of the external parts of the compressor are made from anodized aluminum and stainless steel; the cylinder housing is steel but features a Dacromet zinc coating to protect it from rust. Nevertheless, salt air can be very corrosive to any machine over time so if possible, store your compressor in a dry place protected from exposure to saltwater spray or salt air breeze. Make sure to drain the water drainage valve prior to storage.

- Turn on the water pump.
- Turn on the compressor.
- Loosen the water condensate drainage valve counterclockwise and drain the water completely.
- Close the water drainage valve and turn off the compressor after the filtration chamber pressure reaches 500 psi.
- Turn off the water pump and disconnect from electricity.



Chapter 12 – Warranty

The compressor is covered by a 12-month manufacturer warranty. The validity of the warranty begins when the compressor is shipped for service.

It is your responsibility to adhere to the maintenance recommendations and operational instructions in this manual. Failing to do so voids the warranty.

Mantus Marine will replace and repair parts it acknowledges to be faulty during the warranty period.

In the event of a machine malfunction during the warranty period, the customer will be first guided through a troubleshooting session through a phone conference, and will be provided a link to the online reference videos of commonly seen problems and their fixes. All the parts necessary to make the repair will be provided and shipped by Mantus Marine.

If the Mantus Marine representative decides that the compressor requires a factory fix, a box will be sent out to the customer with a return label and the customer will be asked to package the compressor to be shipped for repairs.

Beyond 12 months, a 36-month warranty is available to be purchased separately but only at the time of the original purchase of the compressor.

The act of sending replacement parts or taking delivery of the defected part for repairs does not in itself imply acknowledgement that the defect is covered by the warranty.

Repairs carried out during the warranty period do not in any way prolong the warranty period.

Each compressor is stamped with a serial number found above the electrical box.

For Assistance

Please contact Mantus Marine with any questions or concerns by emailing to info@mantusmarine.com or calling 1-855-262-6887



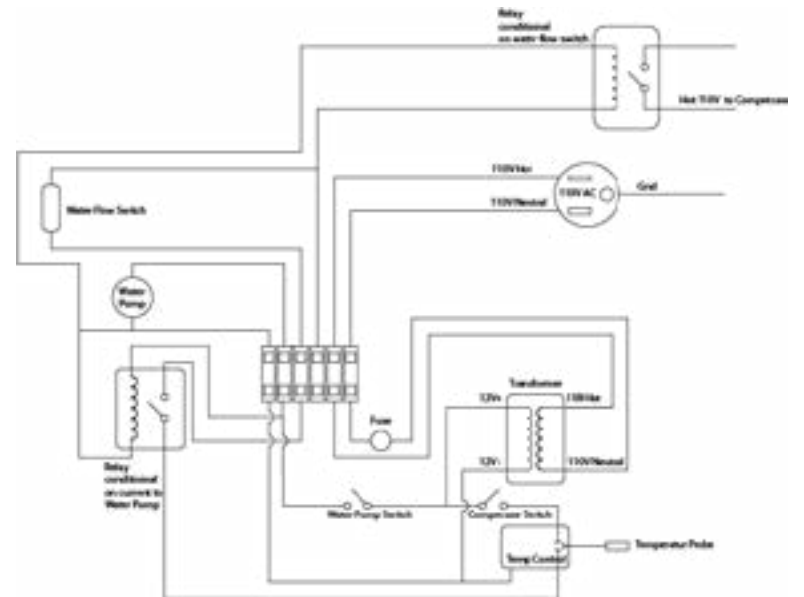
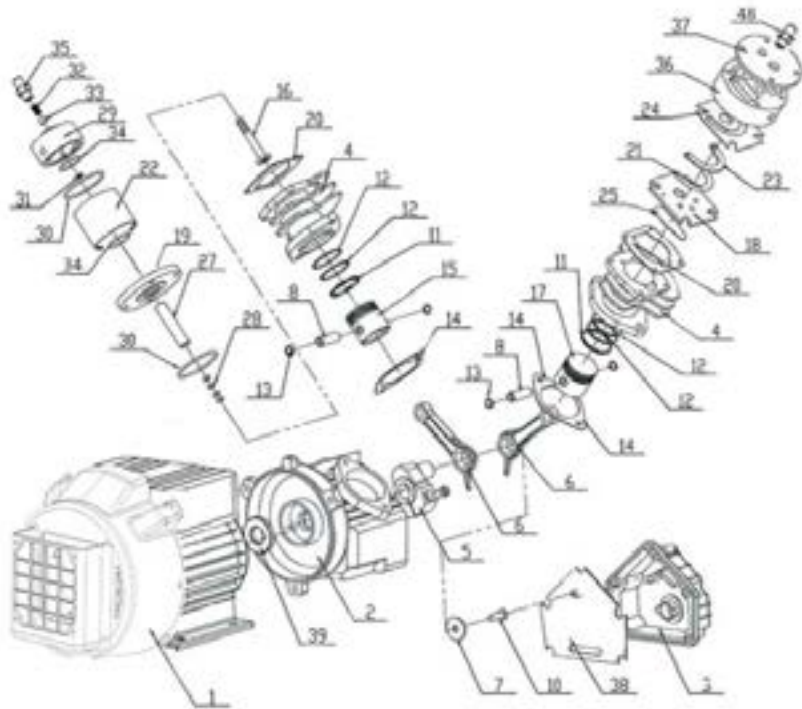
Appendix A – Compressor Exploded View

Part Number Reference List (see the diagrams on pages 18 and 26)

Part No.	Part Name	Quantity	Part No.	Part Name	Quantity
1	Electric motor	1	21	1 st Discharge valve	1
2	Crankcase	1	22	2 nd Stage water cylinder	1
3	Front cover	1	23	Valve constrainer	1
4	1 stage cylinder	2	24	1 st stage valve gasket	1
5	Crank	1	25	1 st stage intake one-way valve	1
6	Connecting rod	2	27	2 nd stage gas cylinder	1
7	Crank washer	1	28	2 nd stage piston rings	4
8	Piston pin	2	29	2 nd stage cylinder head	1
10	Crank pad bolt		30	2 nd stage O rings	2
11	Oil rings	2	31	2 nd stage intake/outflow one-way	1
12	Piston rings	4	32	2 nd stage discharge spring	1
13	Snap retention washer	4	33	2 nd stage discharge valve	1
14	Crankcase gasket	1	34	2 nd stage sealing O rings	2
15	Guide 2nd Stage Piston	1	35	2 nd stage outlet fitting	1
16	Second stage piston	1	36	1 st stage cylinder head	1
17	First stage piston	1	37	1 st stage cylinder cover	1
18	First stage valve plate	1	38	Oil resistant diaphragm	1
19	2 nd stage water chamber inside liner	1	39	Oil seal	1
20	1 stage cylinder gasket	2	48	Air intake filter	1

Note: Contact Mantus Marine customer service to order these parts.

Appendix B – Electrical Diagram





NOTES:

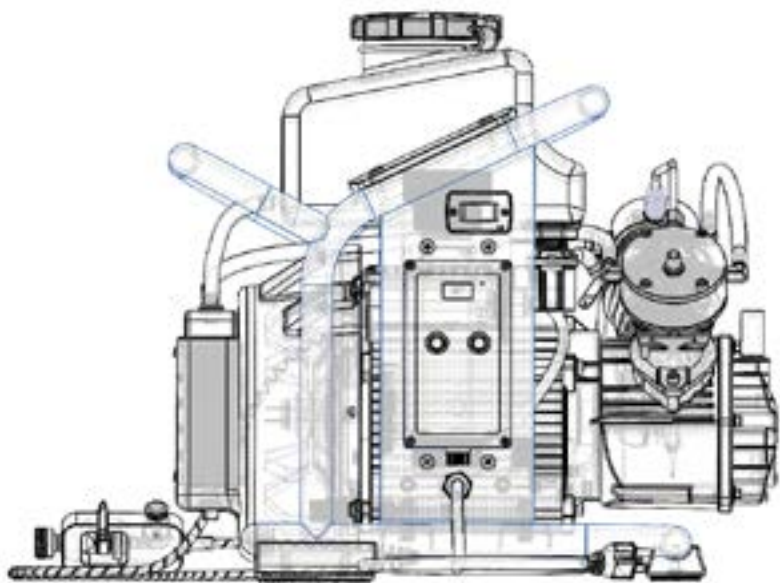
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