

Mincon Manual Control Oiler



Operation and Service Manual



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1 Introduction

Thank you for purchasing the Mincon Oiler. This document covers operation and maintenance of the unit. This equipment is used to deliver a mix of compressed air and rock drill oil to a drill machine for the proper operation of a pneumatic Down the Hole (DTH) hammer.

2 Operation

2.1 Safety

Be sure to work safely at all times. Wear protective clothing and safety equipment and observe all safety regulations as prescribed by your employer, Government, or the site on which you work. Do not wear loose clothing that may get caught in rotating parts and cause serious personal injury. Remember that a "Down-the-Hole" percussive hammer emits noise and you should therefore take every precaution to safeguard your hearing against damage by using proper ear protectors.

Use eye protection at all times. Rock chips and dust which may be discharged from the face of the bit or bore hole at high velocities and can cause severe injury. Hammers can be heavy – Always use proper and approved lifting equipment and take every precaution to safeguard yourself against injury. Keep hands clear at all times – Beware of getting fingers trapped between the chuck and bit and do not use hands or feet to clear the top of the borehole at any time. Ensure all hose connections are tight in accordance with this document.

2.2 Setup and Operation of Oiler

Prior to operation, the Mincon Manual Control Oiler must be setup to ensure that correct and safe operation of the equipment is carried out. **CAUTION** – For safe working conditions during operation of the equipment it is essential to have received the appropriate training prior to starting up the equipment.

Contents of Oiler Crate:

Item	Part Number	Qty	Description
	M103 072 00	1	Mincon Manual Control Oiler Crate
1	M103 072 02	1	Mincon Manual Control Oiler
2	M103 038 43	1	20 Foot x 2" 1000 PSI High Pressure Hose with Hammer Lock Couplings
3	M103 038 44	1	30 Foot x 2" 1000 PSI High Pressure Hose with Hammer Lock Couplings
4	M103 020 72	2	Adaptor (connected to Air Hoses)
5	M103 020 71	4	Safety Whip Check



- Step 1:** Unpack Oiler crate and check to make sure all components are present.
- Step 2:** Enlarge loops on the whip checks and place over the air intake and air outlet fittings of the oilers as shown above.
- Step 3:** Connect air hose to Oiler air intake. Tighten using a hammer.
- Step 4:** Connect air hose to Oiler air outlet. Tighten using a hammer.
- Step 5:** When completed pull whip checks back so that they are as shown above.
- Step 6:** Connect air hose to the compressor in the same manner.
- Step 7:** Connect other air hose to Support Station discharge line and to Drill also using the same procedure.
- Step 8:** Before Operation, check level of oil in the oil tank.



2.3 Equipment Inspection Prior to Compressor Ignition

CAUTION: The following walk around check should be carried out prior to starting the compressor.

Step	Specific Equipment	Required State	Complaint (✓)
1	Hose connecting Drill to Oiler.	RED Air flow arrow goes to Drill. Hose connected to outlet on right of Oiler.	
2	Hose connecting compressor to Oiler.	Connected at inlet on left of Oiler.	
3	Inlet and Outlet Valve Connections.	Wing nuts tightened using hammer turning clockwise.	
4	Inlet and outlet valves on Oiler Whip Checks.	Connected correctly as described in above sections.	
5	Hose to compressor connection.	Wing nuts tightened using hammer turning clockwise.	
6	Hose to compressor connection Whip Check.	Connected correctly as described in above sections.	
7	Hose to Drill connection.	Wing nuts tightened using hammer turning clockwise.	
8	Hose to Drill connection Whip Check.	Connected correctly as described in above sections.	
9	Oil Tank.	Oil tank filled.	
10	Oil Pump Valve.	Turned off in the upright position.	



2.4 Pressure Regulator Adjustment

On a new oiler, the pressure regulator needs to be set at 90 PSI. To adjust the pressure after the walk around inspection, make sure the Oiler main discharge valve and Oil Pump valve is off and the compressor air discharge valve is closed. Once the compressor has been started and is operational, open the compressor discharge valve to pressurize the Oiler.

Adjust the regulator clockwise to turn air pressure up and counter clockwise to turn pressure down. Set pressure gauge to 90 PSI. **CAUTION;** Operating at higher pressures can cause damage to oil pump.

2.5 Oiler Adjustment

The Mincon Manual Control Oiler’s oil pump delivers 16cc per pulse or cycle every time it injects oil into the air manifold. You can adjust this by opening or closing the OIL VOLU. needle valve on the front panel of the oiler.

The oil injection circuit works by building to the maximum pressure of 600 PSI when the air regulator is set at 90PSI. You can then control the rate of injection by adjusting the needle valve that allows the oil into the air manifold. Counting the pulse of the oil injection pump will give you an estimated rate of oil usage. For example the pump delivers close to 16cc’s per pulse or cycle. There are 3,785cc’s in a gallon of oil and we would like to see an average of 3-4 pints per hour of operation when using water with the air hammers. A pulse rate of one pulse every 13-16 seconds will give you an estimated 4 pints per hour of oil consumption.

Turn the Oil Pump Valve to the open position and adjust the needle valve until you can count 13-16 seconds between pump pulses.

3 Maintenance

The following sections will describe regular maintenance and troubleshooting of the main operating components in the Mincon Manual Control Oiler.

3.1 Regulator

The Regulator installed on the Mincon Manual Control Oiler is a high capacity regulator that provides a uniform output pressure independent of supply pressure variation. The Regulator does not require field adjustments. Refer to the exploded view following the procedure when working on the Regulator.

3.1.1 Troubleshooting

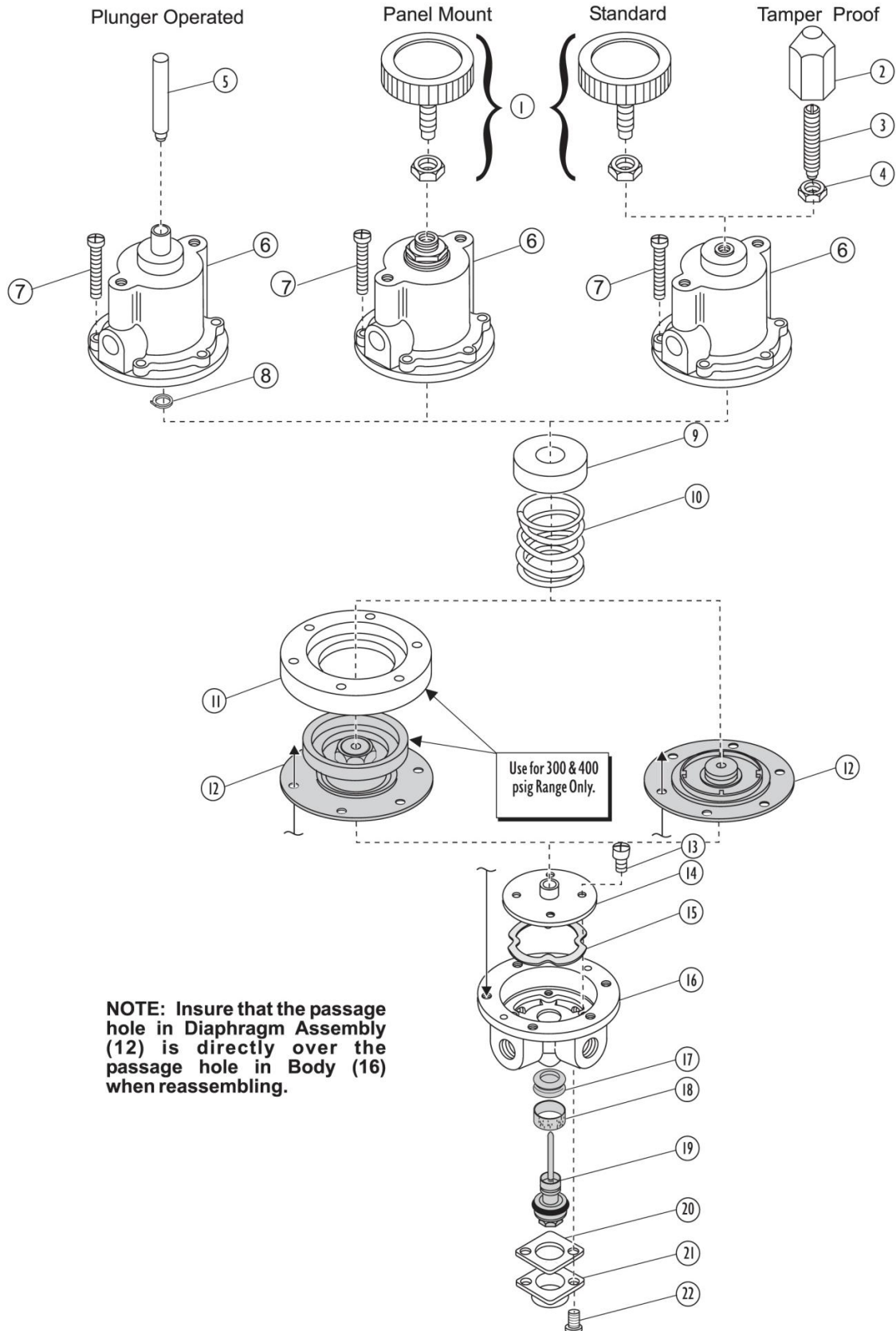
SYMPTOM	PROBABLE CAUSE(S)	CORRECTIVE ACTION
Regulator Leaking	a) Cracked Body. b) Diaphragm leak.	a) Check to see if body is cracked from over tightening. b) Check diaphragm assembly for damage or wear.
High Bleed	Damage or contamination of Relief Pintle and Relief Seat.	Check Relief Pintle and Relief Seat for damage or contamination.
Valve Chatter	Lack of lubrication of Seal Ring	Lubricate Seal Ring

3.1.2 Cleaning Regulator

To clean the Regulator, use the following procedure:

1. Before disassembly, shut off the valve that is supplying air to the regulator. This is to prevent air from escaping. It is not necessary to remove the regulator from the air line.
2. Remove the two Screws (22) from bottom of the unit.
3. Pull out the Inner Valve Assembly (19). Wash the Seat on the Inner Valve Assembly carefully.
4. Wipe off any particles that may be attached to rubber Seat Ring (17) in Body.
5. Replace the assembly carefully.
6. Keep the vent hole in the Bonnet clear for proper Regulator operation. Lubricate the adjusting screw with Molycote “G”. For more information, see exploded view.

Notes: Avoid such solvents as acetone, carbon tetrachloride and trichloroethylene. If the standard maintenance procedure does not correct the problem install a service kit.



NOTE: Insure that the passage hole in Diaphragm Assembly (12) is directly over the passage hole in Body (16) when reassembling.

3.2 Oil Pump

3.2.1 General

The oil pump operates quite simply, using a known pressure intensification principle. A piston with a large surface area is actuated by compressed air. Attached to it is a piston with a smaller surface area, which is driven in a hydraulic chamber generating a high level of hydraulic pressure. The continuous pumping action is produced by compressed air being switched alternately to the top and



bottom of the air piston by a valve. By regulating the compressed air supply pressure from 20 psi to 100 psi, the maximum hydraulic pressure can be adjusted using the ratio of the pump. The pump being used is a 6:1 ratio, so with the regulator set at 90 psi, the output pressure of the oil should be 540 psi which is sufficient to be able to enter the air stream and lubricate the hammer.

3.2.2 Priming Pump

Should the pump be removed for servicing, air may become trapped and the pump may need to be primed. After the pump suction is connected to the oil tank, connect the compressed air supply at a low pressure (20 PSI recommended). Allow the pump to operate slowly until it is primed and oil comes through to the output port. Now shut off the air supply to the pump and securely connect the outlet hardline. Switch on the air supply again and allow the pump to run in order to bleed all the air from the oil circuit. With the circuit fully primed, the air supply pressure can be increased to the level required for the intended operating pressure.

Remember to ensure the safety of all persons in the vicinity when this procedure is undertaken and allow for any high-pressure leakage there may be during the testing phase.

3.2.3 Troubleshooting

SYMPTOM	PROBABLE CAUSE(S)	CORRECTIVE ACTION
Pump does not cycle or only runs slowly	a) Air valve spool stuck in its mid position. b) Formation of ice on the exhaust side.	a) Clear blockage or replace valve assembly. b) Shut off the pump for a short time and drain water from air filter. c) Remove the muffler/breather, clean or replace. d) Shut off air supply, dismantle and clean air filter.
Air escaping from muffler or breather	Worn air valve or air piston seal	Replace valve or seal
Excess oil leakage from Muffler/breather	Worn hydraulic seal.	Replace seal.
Pump cycles without pumping oil.	a) Blocked suction line. b) Bad connection on suction line. c) Check valves blocked or worn.	a) Clean out filter. b) Check for bad connections or air leaks on suction line. c) Clean or replace valves.
Pump functions but only generates low pressure and does not stall at maximum pressure.	a) Internal leakage in the circuit downstream. b) Suction valve seats damaged and leaking. c) Output valve seats damaged and leaking. d) Worn air seal	a) Find leak source and repair or change component. b) Replace suction valve parts. c) Replace output valve parts. d) Replace seal.



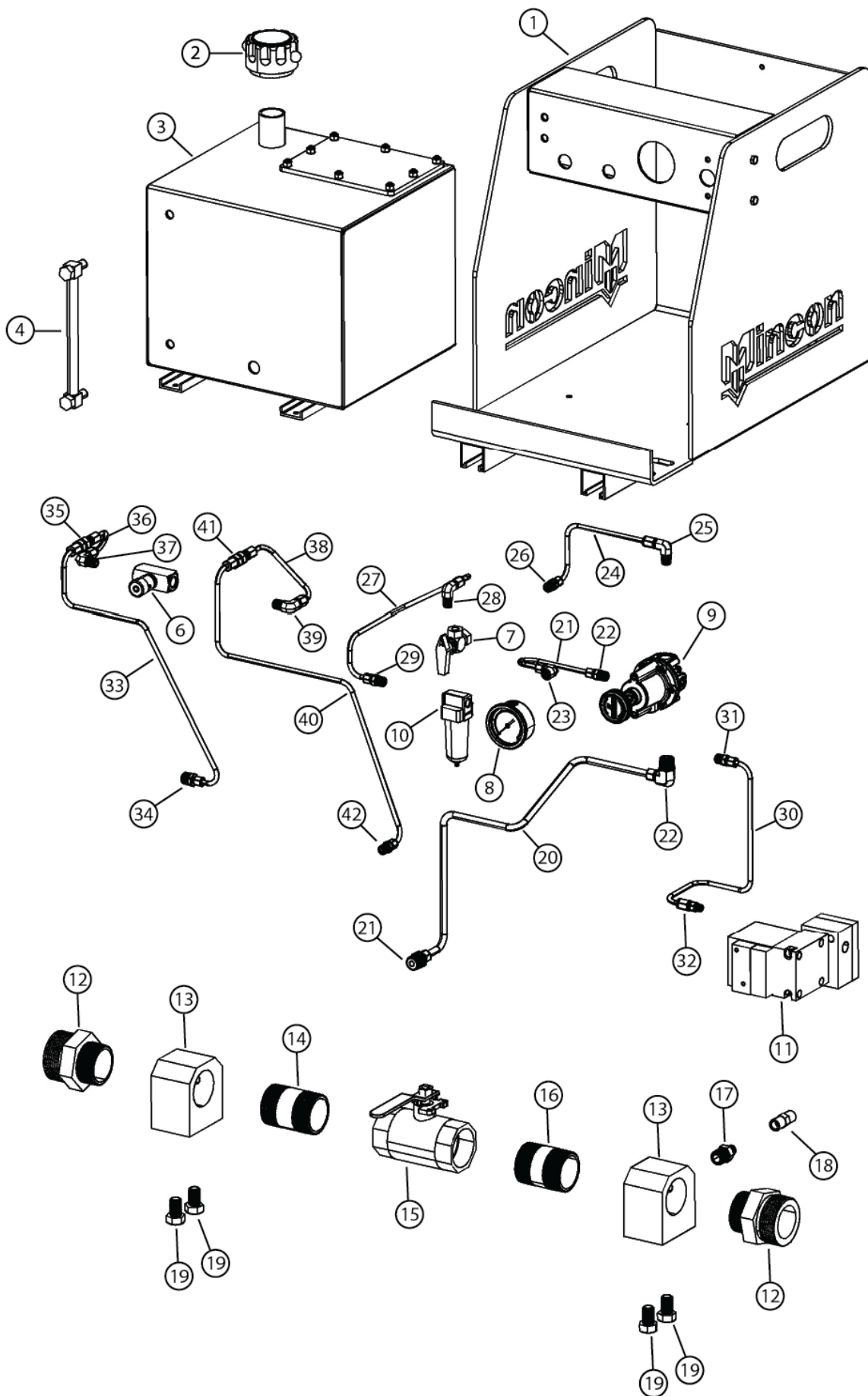
4 Parts Breakdown

4.1 Oiler

ITEM	PART NO.	QTY	DESCRIPTION
	M103 072 02	1	Mincon Manual Control Oiler
1	M113 800 02	1	Frame
2	M103 038 42	1	Oil Cap
3	M113 800 03	1	Oil Tank
4	M113 006 04	1	Sight Glass
6	M103 038 34	1	Needle Valve
7	M103 038 66	1	Panel Valve
8	M103 020 67	1	Pressure Gauge
9	M103 020 40	1	Regulator
10	M103 038 92	1	Air Filter
11	M103 036 60	1	Oil Pump
12	M103 020 10	2	Adaptor
13	M103 072 05	1	Manifold Block
14	M103 036 11	1	Check Valve
15	M113 800 04	1	Ball Valve
16	M103 038 04	1	Pipe Nipple
17	M103 036 39	1	Fitting - 1/2" Male NPT x 1/4" Male NPT Straight
18	M103 036 71	1	Check Valve
19	M103 072 07	4	Manifold Block Bolts (5/8"-11 x 1")
20	M103 072 08	1	Hard Line - Manifold Block to Regulator
21	M103 038 35	1	Fitting - 1/2" Male NPT x -6 JIC Male Striaight
22	M103 038 37	1	Fitting - 1/2" Male NPT x -6 JIC Male 90 Degree
21	M103 072 09	1	Hard Line - Regulator to Pressure Gauge
22	M103 020 19	1	Fitting - 1/4" Male NPT x -4 Male JIC Straight
23	M113 015 02	1	Fitting - 1/4" Female NPT x -4 Male JIC 90 Degree
24	M103 072 10	1	Hard Line - Regulator to Panel Valve
25	M103 020 19	1	Fitting - 1/4" Male NPT x -4 Male JIC Straight
26	M103 020 06	1	Fitting - 1/4" Male NPT x - 4 Male JIC 90 Degree
27	M103 072 11	1	Hard Line - Panel Valve to Air Filter
28	M103 020 06	1	Fitting - 1/4" Male NPT x - 4 Male JIC 90 Degree
29	M103 020 19	1	Fitting - 1/4" Male NPT x -4 Male JIC Straight
30	M103 072 12	1	Hard Line - Air Filter to Oil Pump
31	M103 020 19	1	Fitting - 1/4" Male NPT x -4 Male JIC Straight
32	M113 015 03	1	Fitting - 1/4" Male NPT x -4 Male JIC 90 Degree Long
33	M103 072 13	1	Hard Line - Pump to Control Panel
34	M113 015 01	1	Fitting - -6 Male SAE x -4 Male JIC Straight
35	M103 019 33	1	Fitting - -4 Male JIC x -4 Male JIC Straight Bulkhead
36	M103 072 14	1	Hard Line - Control Pane to Needle Valve In
37	M103 020 06	1	Fitting - 1/4" Male NPT x - 4 Male JIC 90 Degree-Zinc Coated
38	M103 072 15	1	Hard Line - Needle Valve Out to Control Panel
39	M103 020 06	1	Fitting - 1/4" Male NPT x - 4 Male JIC 90 Degree-Zinc Coated
40	M103 072 16	1	Hard Line - Control Panel to Check Valve
41	M103 019 33	1	Fitting - -4 Male JIC x -4 Male JIC Straight Bulkhead
42	M103 020 06	1	Fitting - 1/4" Male NPT x - 4 Male JIC 90 Degree-Zinc Coated
Not Shown on Exploded View			
	M103 038 43	1	2" x 20' x 1000psi High Pressure Air Hose
	M103 038 44	1	2" x 30' x 1000psi High Pressure Air Hose
	M103 020 71	4	Safety Whip Check
	M103 036 30	1	Battery Cable
	M113 015 05	2	1/4" Male NPT Muffler (Oil Pump)
Fasteners			
Receiver			
	M103 038 36	2	¼-20x1 ½" Hex Head Bolt
	M113 009 61	2	¼-20 Nut
	M103 020 42	2	¼-Lock Washer
	M103 020 43	2	¼-Flat Washer
Regulator			
	M113 018 02	2	¼-20x 3/4" Hex Head Bolt
	M103 020 43	2	¼-Flat Washer
Attaching Control Panel to Frame			
	M113 018 02	4	¼-20x 3/4" Hex Head Bolt
	M103 020 43	4	¼-Flat Washer
Attaching Manifold Blocks to Frame			

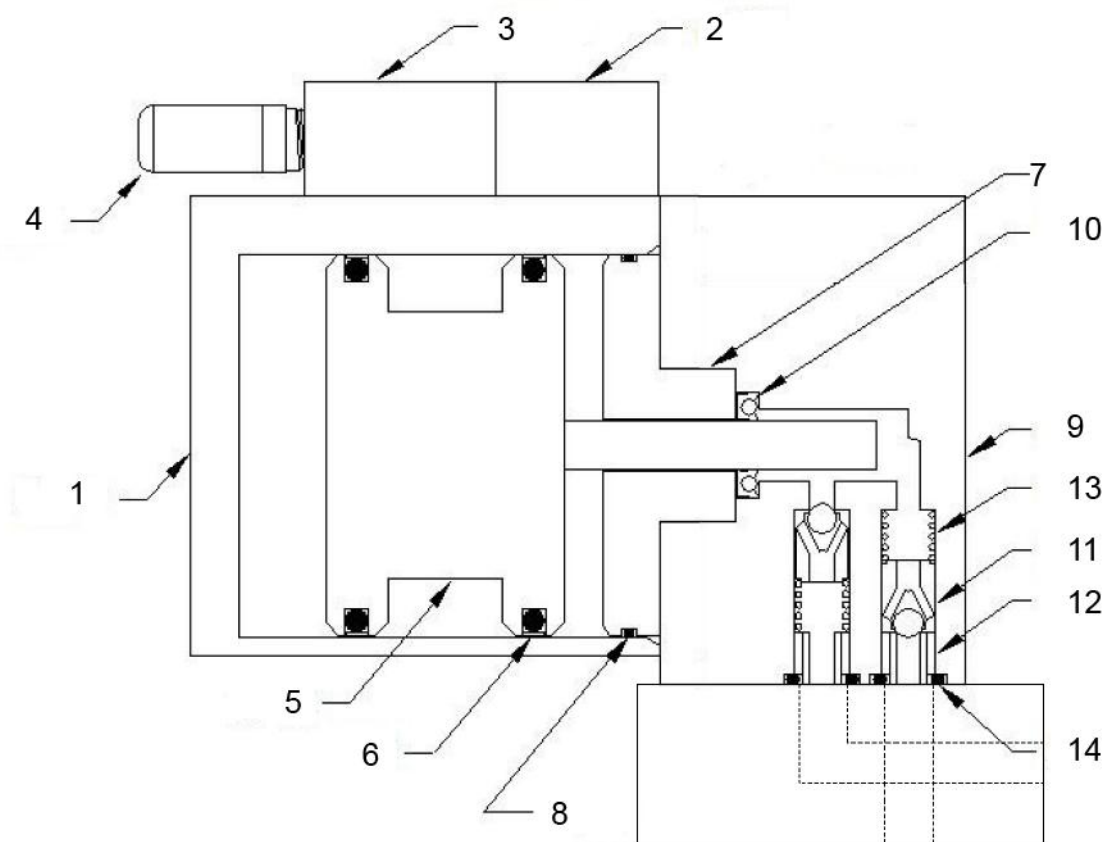


19	M103 072 07	4	5/8"-11 x 1" Bolts
	M113 016 54	4	5/8" Flat Washers
	M103 005 24	4	5/8" Lock Washers
	Oil Tank Access Panel		
	M103 039 07	8	¼-20 x ¾" Pem Stud
	M113 009 61	8	¼-20 Nut
	M103 020 42	8	¼-Lock Washer
	M103 020 43	8	¼-Flat Washer
	Sight Glass		
	M103 039 09	2	½-20 nut
	M103 022 15	2	½-20 Flat Washer
	Hydronic Pump		
	M103 039 08	2	3/8"-24x1.5" Socket Head Cap Screw
	Frame		
	M103 039 12	6	¼-20 x ¾" Pem Stud
	M113 009 61	6	¼-20 Nut
	M103 020 42	6	¼-Lock Washer
	M103 020 43	6	¼-Flat Washer





4.2 Oil Pump



ITEM	PART NO.	QTY	DESCRIPTION
1	S901-6-N-6100	1	Air Cylinder
2	S901-6-N-6101M	1	Air Valve
3	S901-6-N-6103	1	Air Manifold
	S901-6-N-6103G	1	Gasket
	S901-6-N-6103S	2	Screws, M3 x 30, 6103 - 6101
	S901-6-N-6103G	1	Gasket, 6103 - 6101
	S901-6-N-6104	2	Screws, Air Manifold to Air Cylinder
	S901-6-N-6105	4	O' Rings, Air Manifold to Air Cylinder
4	S901-6-N-6107	2	Air Muffler
5	S901-6-N-6108	1	Air/Oil Piston Assembly
6	S901-6-N-6109	2	Seals, Teflon, Air/Oil Piston
7	S901-6-N-6110	1	End Cap, Air Cylinder
8	S901-6-N-6111	1	O' Ring, End Cap to Air Cylinder
	S901-6-N-6112	4	Screws, End Cap to Oil Chamber
	S901-6-N-6114	4	Screws, Connector Plate to Air Cylinder
9	S901-6-N-6115	1	Oil Chamber Assembly (with bearing)
10	S901-6-N-6116	1	Oil Seal
11	S901-6-N-6117	2	Check Valves
12	S901-6-N-6118	2	Seats, Check Valves
13	S901-6-N-6119	2	Springs, Check Valves
	S901-6-N-6120	2	O' Rings, Check Valves
14	S901-6-N-6121N	2	O' Rings, Oil Chamber Interface, Nitrile
	S901-6-N-6122	2	Screws, Pump to Manifold



5 Warranty

Mincon Hard Rock Directional Drilling Hammers Warranty, January 2011

Mincon warrants that the Mincon Manual Control Oiler and spare parts therefore, manufactured by Mincon and delivered to the initial user to be free of defects in materials or workmanship for a period of 3 months after initial operation or 6 months from the date of shipment to the initial user, whichever occurs first. Mincon may elect to repair the defective part or issue full or partial credit towards the purchase of a new part. The extent of credit issued will be determined on a pro-rata basis bearing in mind the service life of the defective part against the normal service life of that part. The part will be replaced or repaired without charge to the initial user at the place of business of an authorized Mincon distributor during normal working hours. The user must present proof of purchase at the time of exercising the warranty.

The warranty applies only to failures resulting from defects in the material or workmanship and does not apply to failures occurring as a result of abuse, misuse, corrosion, erosion, negligent repairs and normal wear and tear. Failure to follow recommended operating and maintenance procedures which result in component failure will not be considered for warranty.

This warranty is in lieu of all other warranties, other than title, expressed or implied.

Limitation of Liability.

Mincon will not accept any remedies to the user other than those set out under the provisions of warranty above. The total liability of Mincon or its distributors with respect to the sale of DTH Hammers or spare parts therefore, whether based on contract, negligence, warranty, indemnity or otherwise shall not exceed the purchase price of the product upon which such liability is based. Mincon and its distributors shall in no event be liable to any party relating to this sale for any consequential, indirect, special or punitive damages arising out of this sale or any breach thereof, or any defects in or failure of or malfunction of the Mincon DTH Hammer or spare parts.

Warranty will be voided where:

- There is evidence of damage resulting from insufficient or incorrect lubrication.
- There is evidence of misuse through the application of heat, welding or of being struck.
- There is evidence of distortion or bending however caused.
- There is damage caused as a result of using incorrect servicing tools or procedures.
- If it is evident that the hammer or its components have achieved a reasonable proportion of their anticipated life.