



KEEP FOR REFERENCE

This manual contains
important safety information

GUIDANCE NOTES



CoverCat E-Mix

Part Number 99-0550

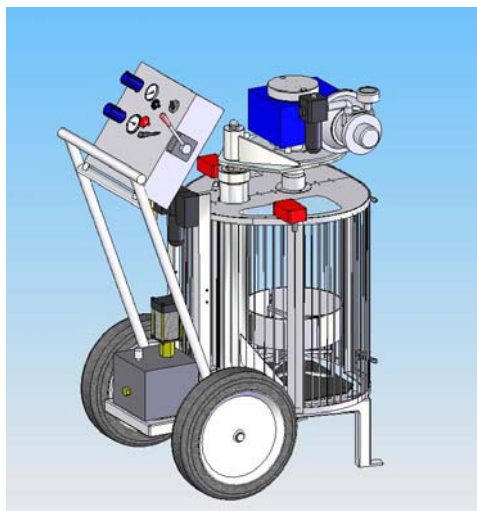
7.5 bar (110 psi) Maximum Air Pressure

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This **Guidance Notes and Manual document** is issued by CoverCat for additional information and assistance. They are not instructions and should not be considered as such. The guidance is offered to assist trained, competent professionals in the use and maintenance of the equipment identified.

If the reader or user is not suitably qualified to work with the equipment they should not proceed with any actions.

CAUTION

Wear suitable protective clothing, eg. gloves, eye protection etc. as recommended in your material data sheet and local codes.

RECOMMENDATION

Consider the suggestions made.

CAUTION

Only fully trained personnel should be allowed to use this machine. Training **MUST** be undertaken before use.



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1.0 Covercat Spray Systems

CoverCat Spray Systems Limited is based in Middlesbrough, Cleveland, England (UK).

CoverCat Inc. is based in Ossining, New York, USA.

The company was founded in 1984. CoverCat is a designer and manufacturer of specialist coating application equipment and ancillary products.

The products are branded under the name CoverCat which is the registered trademark.

The logo CoverCat is a copyrighted design.

CoverCat Equipment is manufactured from a range of standard CoverCat and other components in modular forms and are assembled into complete systems to individual specifications based around a standard design format.

CoverCat Metering Systems are most commonly manufactured for the application of Plural Component Industrial Coatings. This type of equipment uses a specially designed fixed ratio metering pump which provides improved accuracy and reliability over variable ratio and manual mixing methods.

CoverCat also manufactures adjustable ratio metering equipment but retains the concept of fixed ratios by utilising a pin location cantilever arm system for the metering pump unit.

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Due to the wide choice and various nature of many types of coatings, a standard system design is impractical, though a regular format is used where only certain components are changed.

CoverCat Spray Equipment may be used to spray or dispense product with relatively normal pot life times of 30 to 60 minutes and then change a minimum number of components to apply fast cure or instant mix products.

It is simple to change ratios to suit alternative products of similar types but this requires mechanical changes to be made to a system.

CoverCat Industrial Equipment is manufactured to the same high standards for use in other applications used the Pumping Paint and Coatings, Mixing, Pressure Cleaning and many other applications

CoverCat Pipeline Engineering provides a range of specialist systems for unique and custom built equipment used in a variety of Pipe Coating applications. This is for both internal and external coating and may be used in-situ for repair and renovation and also in new build pipe coating plants

Spare parts and Technical Support for any system may be obtained either direct from the factory in Middlesbrough, or from nominated distributors world-wide.

This system is designed to provide the user with many years of service and to be both reliable, user and maintenance friendly.

All CoverCat products are subject to rigorous design criteria and follow a strict evaluation and approval process before approved under CE regulations

If you have any technical or other questions about this or any CoverCat product, please do not hesitate to contact a technical service representative.



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2.0 Warnings

2.1 Warning Symbol

WARNING

This symbol alerts you to the possibility of serious injury or death if you do not follow the Guidance Notes

2.1 Caution Symbol

CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the Guidance Notes

2.3 Warning + Information

WARNING



EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to fail or malfunction and may result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, guidance notes, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain about usage, contact CoverCat.
- Do not alter or modify this equipment. Use only genuine CoverCat parts and accessories.
- Check equipment regularly, at least daily. Repair or replace worn or damaged parts immediately.
- Allow only trained personnel to carry out servicing and maintenance.
- Do not exceed the maximum working pressure of the lowest rated system component. Refer to the system manual and specifications.
- Recommended ambient conditions +10°C to +35°C, max RH 90%.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not expose CoverCat hoses to temperatures above 80°C (180 °F) or below -10°C (-14°F).
- Do not bend or kink hoses.
- Do not use the hoses to pull the equipment.
- Use only CoverCat approved hoses. Do not remove hose spring guards, where fitted, which help protect the hose from rupture caused by kinks or bends near the couplings.
- Do not lift or move pressurised equipment.
- Do not move or attempt to move equipment where ground conditions are uneven or inclined.
- Obtain assistance when moving equipment.
- Chock or prevent equipment from moving accidentally and when required to be stationary.
- Use only recommended lifting equipment and only allow trained personnel to move and transport equipment.
- Use materials, fluids and solvents which are compatible with the equipment wetted parts.
- Refer to the **Technical Data** section of all equipment manuals.
- Read the material and solvent manufacturer's warnings.
- Always refer to the material manufacturers technical data for guidance.
- Wear **Eye** and **Hearing** protection and other protection as required when operating this equipment.
- Comply with all applicable local, state, national, fire, electrical, and safety regulations.
- **Safety is a very important issue and must never be ignored at any time**
- **If in doubt, ask**



MOVING PARTS HAZARD

- Moving parts can pinch or amputate your fingers and body parts.
- Moving parts may snag loose items of clothing.
- Do not operate the equipment without guards secured in position.
- Do not operate the equipment without any parts which have been removed or may be missing
- Keep clear of all moving parts when starting or operating the pump.
- Before checking or servicing the equipment, follow the **Safety** and **Pressure Relief Procedure** to prevent the equipment from starting unexpectedly operating or causing other accident or damage.
- **If in doubt, ask**

Safety is a very important issue and must never be ignored at any time.

This equipment is designed to be safe in the hands of trained operators and must never be used by untrained and inexperienced persons without professional, qualified supervision.



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2.1 Warnings and Information

WARNING



INJECTION HAZARD

High Pressure Spray or fluid release from the gun, the hoses, ruptured or damaged components can inject fluid into the body and may cause extremely serious injury, including the possibility of amputation or death. Splashing fluids into the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin may look just like a cut, but can easily be a serious injury. Seek immediate medical attention.
- Do not point the spray gun or any fluid release at anyone or at any part of the body.
- Do not put your hand or fingers over the spray tip or any other outlet or fluid release.
- Do not stop, attempt to stop or deflect leaks with your hand, body, a glove or a rag or other items.
- Do not attempt to clear any blockage by back pressurising the gun, tip or any part of the system with another source.
- Tighten all fluid connections before operating the equipment.
- Check all hoses and couplings daily. Replace worn, damaged, or loose parts immediately.
- Permanently coupled hoses cannot be repaired; replace the entire hose.
- Be sure the gun safety trigger operates properly before use (if applicable).
- Lock the gun trigger safety when you stop spraying (if applicable).
- Follow the Pressure Relief Procedure whenever you are instructed to relieve pressure, stop spraying, clean, check, or service the equipment; and install or clean the spray tip (if applicable).
- **If in doubt ask.**



FIRE AND EXPLOSION HAZARD



The spray or working area around this equipment is usually classified as a hazardous area and guidance should be obtained concerning operation in such conditions.



Improper grounding, poor ventilation, open flames, or sparks can cause a hazardous condition and Result in fire or explosion and serious injury.

- Ground the equipment and the object being sprayed. See **Grounding**.
- Provide fresh air ventilation to avoid the build up of flammable fumes from solvents or the fluid being sprayed.
- Keep the spray area free of debris, including solvent, rags, and gasoline and other flammable materials.
- Before operating this equipment, electrically disconnect all equipment in the spray area.
- Before operating this equipment, extinguish all open flames or pilot lights in the spray area.
- Do not smoke in the spray area.
- Do not turn on or off any light switch in the spray area while operating or if fumes are present.
- Do not operate a gasoline engine in the spray area.
- If there is any static sparking while using the equipment, **stop spraying immediately**. Identify and correct the problem.
- **Seek professional assistance**
- **If in doubt ask.**



TOXIC FLUID HAZARD

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container.
- Dispose of hazardous fluid according to all local, state and national guidelines.
- Always wear protective eye wear, gloves, clothing and respirator as recommended by the fluid, coating or solvent manufacturer.

CoverCat does not manufacture or supply any of the reactive chemical components that may be used in this equipment and is not responsible for their effects.

CoverCat assumes no responsibility for loss, damage, expense or claims for personal injury or property damage, direct or consequential, arising from the use of such chemical components.

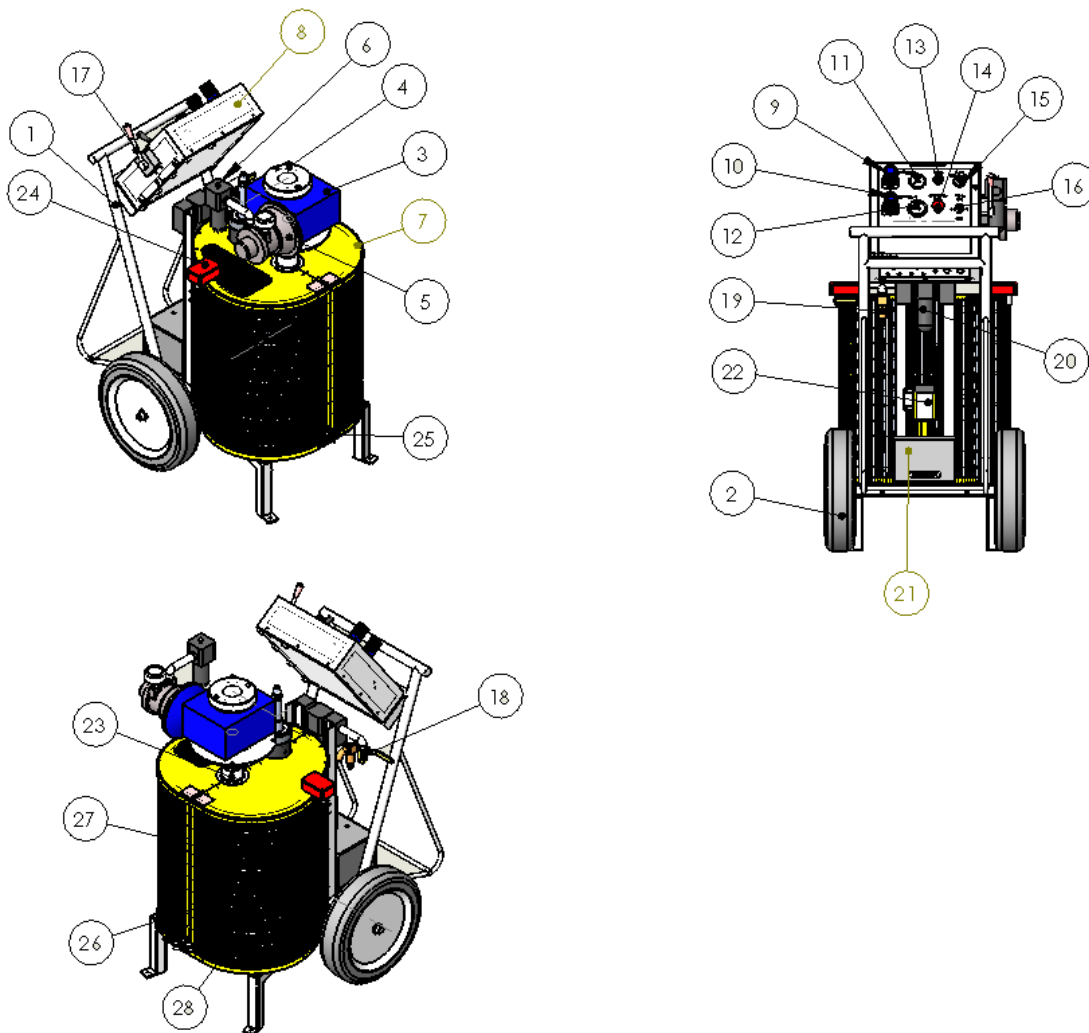


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3.0 CoverCat E-Mix Overview



Item	Description	Item	Description
1	E-Mix Cart	15	Hydraulic Pump On/Off Switch
2	Wheel and Tyre	16	Mix Motor On/Off Lever Valve
3	Mixer Gearbox	17	Ram Up/Down Lever
4	Gearbox Cover	18	Isolation Valve
5	Mixer Air Motor	19	7.5 Bar Relief Valve
6	Lubricator	20	Air Supply Filter
7	Guard Assembly	21	Hydraulic Oil Tank
8	Control Panel	22	Hydraulic Oil Pump
9	Hydraulic Pump Regulator	23	Mixer Shaft Guard
10	Mix Motor Regulator	24	Interlock hinge switch
11	Hydraulic Pump Pressure Gauge	25	Guard Toggle Clamp
12	Mix Motor Pressure Gauge	26	Bucket Securing Clamp
13	Reset Button	27	Mixer Paddle
14	Emergency Stop	28	Bucket Securing Strap

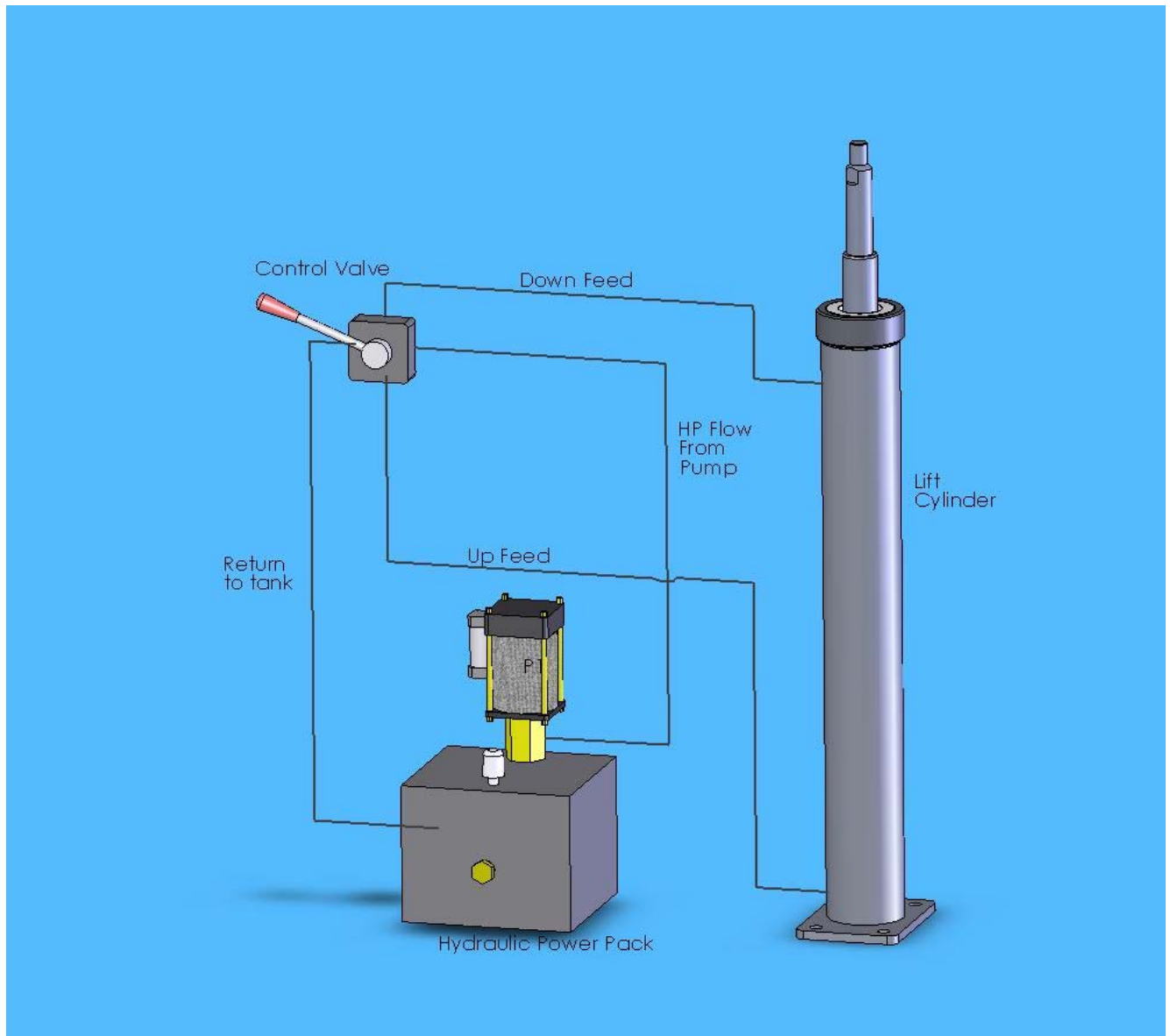


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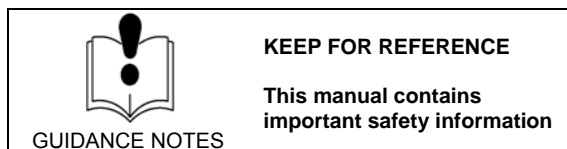
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3.1 CoverCat E-Mix Hydraulic Schematic

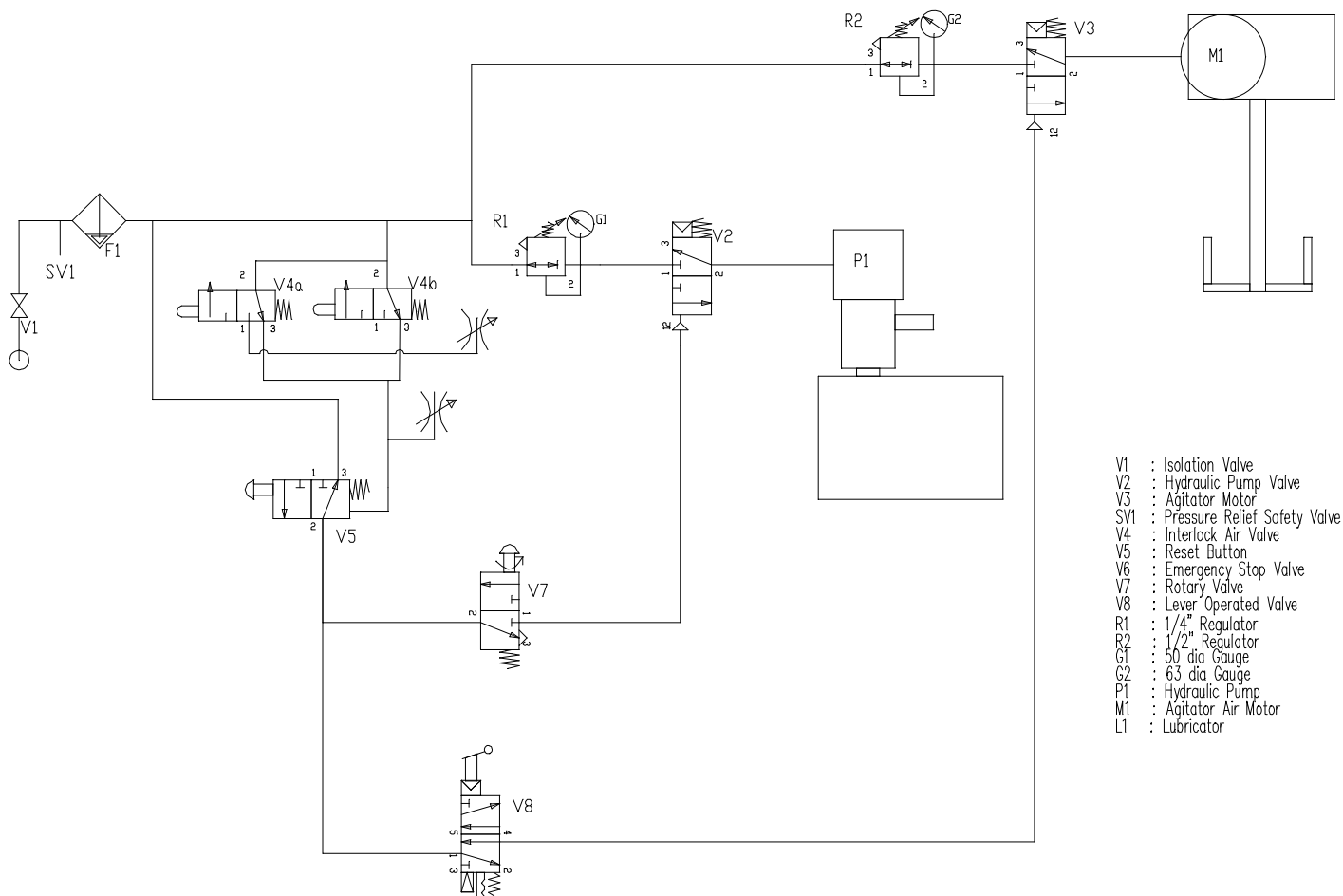


WARNING

High Pressure Fluid Circuit



3.2 CoverCat E-Mix Pneumatic Schematic



Item	Part No	Description	Qty
V1	21 8559	Isolation Valve	1
V2	59 4806	Hydraulic Pump Valve	1
V3	59 4800	Agitator Motor	1
SV1	59 4770	Pressure Relief Safety Valve	1
V4	59 3032	Interlock Air Valve	2
V5	59 4809	Reset Button	1
V6	59 4807	Emergency Stop Valve	1
V7	59 4873	Rotary Valve	1

Item	Part No	Description	Qty
V8	59 4772	Lever Operated Valve	1
R1	15 8015	1/4" Regulator	1
R2	15 8017	1/2" Regulator	1
G1	18 8581	50 Dia Gauge	1
G2	18 8591	63 Dia Gauge	1
P1	73 0000	Hydraulic Pump	1
M1	14 7529	Agitator Air Motor	1
L1	15 8022	Lubricator	1



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4.0 Installation Information

4.1 Grounding

WARNING



FIRE AND EXPLOSION HAZARD

Before operating the pump, ground the system as explained below. Also read the section **FIRE AND EXPLOSION HAZARD**



1. **E-Mix** : Use a ground wire and clamp
2. **Air or Paint Hoses** : Use only electrically conductive hoses
3. **Air Compressor**: Follow the manufacturers recommendations
4. **Fluid Supply Container** : Follow your local code

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4.2 Pneumatic Equipment

The following pneumatic components should only be fitted in this order starting from the pump.

1. **Lubricator**: To lubricate the air motor and to help prevent freezing when the pump is working.
2. **Regulator**: This controls the pressure of air entering the pump, and therefore controls both the speed of the pump and the fluid pressure.
3. **Filter** : This remove any particles of dirt from the air supply, and also acts as a water separator, removing some moisture from the air supply.
4. **Air Relief Valve**: Set to 7.5 bar.g
5. **Relieving Ball Valve**: For the system.

4.3 Fluid Equipment

Ensure that you only fit correctly sized and rated air and fluid hoses to this pump. Ensure that fluid hoses are electrically conductive.

WARNING

Only fully trained personnel should be allowed to use this machine. Training **MUST** be undertaken before use.

CAUTION

Do Not Move In Raised Position. The unit may become unstable.



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5.0 Operation

5.1 Pre Start and Daily Checklist for Guidance.

Before the system can be used, the following procedure should be carried out to ensure correct and safe start up.

WARNING

Use in a well ventilated area. Route the hoses in a manner so as to minimise the risk of fouling when operating the machine.

MACHINE MUST BE ONLY USED ON FLAT LEVEL GROUND.

CAUTION

Wear PPE at all time when operating this equipment to include:- Eye protection, Hearing protection Gloves, Overalls, Boots and any other stated in the material data sheet and site regulations.

1. **Ensure** that any **maintenance procedures** have been **completed** to specifications within the manuals
2. **Carry out** a thorough **visual inspection** of the **entire unit** to ensure that all valves, hoses, fittings etc. are in place and secure.
3. **Any loose, damaged or worn items should be reported, replaced and repaired before any further use of the system.**
4. **Check** that all **lubricators** are filled with correct lubricant.
5. **All pressure gauges** should read **zero** at needle stop. Replace any defective items.
6. **Check oil level in tank unit.**
7. **Ensure that the mixer blade** is clean and in serviceable condition,
8. **Check operation** of all **control valves** and **interlocks.**
9. **Check all hose/pipe assemblies** for damage and that they are connected correctly, clean and replaced as required.

5.2 Functional Test Guidance.

After completing the pre start checks the following should be done for guidance.

Connect the supplies to the machine and carry out the following checklist and procedures in accordance with these guidance notes.

1. Air Supply connected, all air valves closed/off, whip check couplings in place and secure.

2. Air Inlet Filter drain valve working (Manual drain types)
3. Safety interlock system operating correctly.

RECOMMENDATION

Copy this page, and fix it to the machine as a reminder

CAUTION

Do Not Move In Raised Position. The unit may become unstable.

5.3 Interlock check procedure

NOTE: If when testing the interlocks the statements in bold are not true the testing must stop and the fault must be rectified.

Connect air supply to machine and turn on the isolation valve.

Open the guard doors.

Operate the agitator lever valve, **AGITATOR WILL NOT START.**

Operate the hydraulic pump, **PUMP WILL NOT START.**

Close both guard doors.

Release the emergency stop if pressed and press the reset button.

Operate the agitator lever valve, **AGITATOR STARTS.**

Operate hydraulic pump, **PUMP STARTS.**

Press the emergency stop button on the machine.

Operate the agitator lever valve, **AGITATOR WILL NOT START.**

Operate the hydraulic pump, **PUMP WILL NOT START.**

Release the emergency stop button and press the reset button.

Operate the agitator lever valve, **AGITATOR STARTS.**

Operate hydraulic pump, **PUMP STARTS.**

Open the guard doors.

Operate the agitator lever valve, **AGITATOR WILL NOT START.**

Operate the hydraulic pump, **PUMP WILL NOT START.**

If the interlock system is tested and functions correctly the machine is ready to use.



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5.4 Preparations (Guidance Notes)

WARNING

Only fully trained personnel should be allowed to use this machine., Training **MUST** be undertaken before use.

1. Having carried out all routine maintenance and Pre-Start Checks and inspections, the equipment should be ready for use.
2. All functions and controls should start from the OFF or CLOSED positions.
3. Prepare component material in accordance with manufacturers supplied information.
4. Close both guard doors and secure with the top and bottom clamps.
5. Open main air supply valve, release the emergency stop and press the reset button. Turn on the hydraulic pump and set hydraulic pump to run at a steady even rate by adjusting air pressure regulator (Recommended setting 2 – 4 bar, depending on material temperature / viscosity) .
6. Select lever valve to UP position to raise mixer unit clear of base frame to a suitable height.
7. When agitator is at the top of its travel the hydraulic pump is stopped. The guards are opened and the material container is placed onto the base frame and securely clamped in position with the latch clamp.

NOTE: Ensure that the clamp to a suitably tight and holding the material container firmly in position.

8. Both guard doors are closed and secured with the top and bottom latch clamps.
9. Press the reset button to reset the safety system.
10. Start agitator air motor by holding the agitator control valve handle upward and adjusting the agitator regulator until the required speed is achieved.

CAUTION

Moving Parts Hazard.

11. Select lever valve to DOWN position with the agitator running slowly. This will allow mixing to commence as the mixer blade is lowered into the material.
12. Allow agitator to operate at levels as required in the material container to ensure a full mix in accordance with material manufacturers recommendations.

13. When mixing is complete select Lever Valve to UP position to raise mixer unit clear of base frame to a suitable height clear of material container.
14. Release the agitator control valve handle to stop the agitator.
15. Turn off the hydraulic motor and centre the control valve.
16. Open the guard doors, unclip the bucket clamp and remove material container for use.
17. Isolate the air supply to the machine and clean off residual material and equipment as required.
18. For continuous operation repeat steps 4 – 17.

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CAUTION

Never leave the system with fluid or air in the hoses. To avoid corrosion, always flush the equipment with mineral based oil.

CAUTION

Do Not Move In Raised Position. The unit may become unstable.



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6.0 Accessories

These must be ordered separately

Spare Parts

Seal kits are available for both air gear motor and hydraulic pump unit along with all other parts of the systems.

Suggested Toolkit list:

Slotted Screwdriver
Phillips Screwdriver
Allen Keys = 4mm, 8mm
Spanners = 10mm, 13mm, 14mm, 17mm, 18mm, 19mm
22mm, 24mm, 27mm, 30mm, 32mm
10" / 12" Adjustable Spanners

Pliers
T20 (Torx drive)

7.0 Maintenance

CAUTION

Isolate Air Supply before carrying out any maintenance or cleaning.

Seal / Service Kits

Hydraulic Pump Service Kit :	73-0021
Hydraulic Pump Seal Kit:	73-0022
E-mix Seal Kit:	36-3600

Hydraulic Oil:	ISO VG32
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Air lubrication Oil:	24-7002
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Wheel / Tyre Assembly:	56-3000
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7.1 General Notes on Maintenance

CAUTION

Isolate Air Supply before carrying out any maintenance or cleaning.

Always place E-Mix unit in a secure stable position when carrying out any maintenance procedures.

Always replace any drained oil with new oil of the correct grade.

Visually check all hydraulic pipes on air hoses and replace if necessary.

Only use recommended CoverCat seals and spare parts.

Replace all DBS seals if removed.

Always check interlock operation if interlock control pipework is removed and replaced.

Any waste oil must be disposed of in accordance with local regulations.

- All pipe threads are BSP. (British Standard Pipe) unless otherwise stated.
- All fasteners are metric threads unless otherwise stated.
- Spanner sizes are metric unless otherwise stated.



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CAUTION

Isolate Air Supply before carrying out any maintenance or cleaning.

7.2 Wheels and tyres

The wheels on the CoverCat E-Mix unit have pneumatic tubeless tyres. To ensure the stability of the machine tyre pressure must be monitored and kept inflated to the correct pressure at all times (36-40 psi).

If the tyres are become damaged or punctured they must be replaced.

The wheel assembly has an integral grease nipple that must be greased weekly.

7.2.1 Removal of wheel / tyre arrangement

Lift the rear of the cart assembly and support under the hydraulic tank on the chassis.

CAUTION

Heavy

Remove the split pin and washer.

The wheel assembly can now be removed.

The fitting of the new wheel assembly is the reverse of the removal, the split pin must be replaced whenever the wheel is removed.

7.3 Cart Fabrication

A regular inspection of the cart fabrication must take place (more in continuous use or severe conditions).

The framework of the cart must be inspected for any visual damage i.e. bent steelwork, cracked welds.

If any damage is found it must be rectified before being used.

7.4 Hydraulic System

Hydraulic oil: Shell Tellus 32 or equivalent

7.4.1 Hydraulic Tank

The tank must be visually inspected for leaks or severe corrosion and any defects must be repaired before use.

7.4.2 Hydraulic Pipework

The hydraulic pipework on the system is stainless steel seamless 8mm tube.

The tubes must be visually inspected daily for damage or leaks. If the tubes are damaged then they must be replaced before use.

7.4.3 Oil draining / replacing

If the oil needs to drained due to contamination or maintenance the hydraulic tank then hydraulic ram unit must be removed as per *section 7.8*.

The top ring nut on the cylinder is removed and the ram inverted to pour out the oil.

The ram may be serviced as per *section 7.8*.

Replacement is opposite to the removal.

7.4.4 Oil level check

To check the oil level in the tank first remove breather filter, then insert a dip rod through the breather hole, the tank should be kept $\frac{3}{4}$ full at all times.

7.4.4 Tank removal / Refitting

To remove the tank the hydraulic pump and connections are removed.

The oil contained in the hydraulic pump and connections must be drained into a suitable container and disposed of in accordance with site regulations and procedures.

Four bolts are removed from the rear of the tank and the tank is lifted from the cart.

The side drain plug is removed and the oil poured out into a suitable container and disposed of in accordance with site regulations and procedures.

Refitting is the reversal of removal. All DBS seals must be replaced during assembly.

7.4.5 Replacing Oil

Once fully assembled the breather filter is removed and the tank is filled $\frac{3}{4}$ full with clean oil through the top breather hole.

The return pipe is disconnected from the diverter valve and replaced with a length of flexible oil resistant hose. The hose is directed into a suitable container.

An air supply is connected to the system, the guards shut and the system is reset.

The hydraulic pump regulator is wound fully out (off) and the pump control switch is turned on.

With the hose securely held in the container and the ram direction control lever in the up position the hydraulic pump regulator is slowly wound in until the pump starts to cycle slowly. The hydraulic pump will start pumping oil into the bottom of the cylinder, moving the ram up, this will displace the old oil on top of the piston and out of the flexible hose.

During the upward movement the oil level in the tank must be maintained.



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Once in the fully up position the pump is stopped, air supply isolated, flexible hose removed and the hydraulic piping reconnected.

The ram must be cycled two or three times to ensure all air is displaced in the system. The oil level must finally be checked and the breather filter replaced.

CAUTION

Isolate Air Supply before carrying out any maintenance or cleaning.

7.5 Hydraulic pump

Disconnect pump from system and remove to a clean, well lit work bench with access to a vice, tools, seal kits and spares. All parts removed for inspection should be washed in a suitable de-greasing agent. Inspect all moving parts for wear or scratches. Damaged parts should be replaced.

7.5.1 Air Drive Section

The air piston has a spring return. Care should be taken when dismantling to prevent the spring from causing the top cap to fly off. The most common cause of air drive malfunction is the O-ring (item 37 *page 14*) on the end of the spool (item 34 *page 14*). Inspect this first and replace if necessary prior to resetting before further disassembly of the air drive. Spool (item 34 *page 14*) is most easily removed by removing the muffler upper cap and carefully opening the air drive valve to push the spool and sleeve assembly out with compressed air. The spool and sleeve can be contained by holding a cloth over the exhaust port. The air piston, air barrel, cycling valve and sleeve could be re lubricated on assembly with silicon grease. Torque the tie rods evenly to 50 in.lbs.

7.5.2 Hydraulic Section

If dismantled for inspection and parts replacement use the following torque values on re-assembly.

Inlet check valve: 95 ft.lbs.
Outlet check valve: 50 ft.lbs.

7.5.3 Trouble Shooting Guide

Pump will not cycle, pump bypasses air.

- Inadequate air
 - The air drive requires a minimum pressure of 25 psi
 - See 'Air Drive Section' above
- Contaminated air system
 - Remove sleeve and cycling spool (under upper cap of muffler). Clean, inspect and lubricate.

False cycle, leak from pilot exhaust (top centre of cap).

- Leakage of pilot system
 - Install new air section seal kit

Pump cycles without pumping or does not stall.

- Check valve(s) not seating or leak in system.
 - Inspect check valve(s). first inlet check then outlet check.

Pump fluid appears at muffler.

- High pressure seal leakage
 - Install new liquid section seal kit

7.6 Mixer / Gear Motor Assembly

The gearbox and air motor are generally not serviceable items but can be easily replaced.

7.6.1 Air motor Removal

Remove the lubricator from the top of the air motor. The lubricator contains oil and must be stored in an upright position.

The four mounting bolts are removed allowing the air motor to be pulled out of the gearbox.

The replacement air motor can be slid into the gearbox and secured in place with the original bolts. Ensure the key is fitted in the air motor shaft before securing in position.

7.6.2 Gear Box Removal

First remove the air motor as described above.

Remove the top cover of the gearbox by removing the two socket head cap screws.

Remove the M10 bolt and mixer shaft collar from the top of the mixer shaft. The shaft must be held in position whilst removing the bolt, once removed the shaft is lowered and is laid to rest on the base plate.

Four bolts under the top assembly hold the gearbox in position. These bolts are removed and the gearbox is lifted off the machine.

To replace the gearbox the above procedure is reversed.

7.6.3 Mixer Paddle Removal

First remove the air motor and gearbox as described above.

Remove the gear motor plate and mixer shaft guard.

Remove the left interlock top cover.

Remove pipe work from the left interlock taking note of pipework positions.

Remove the left interlock holding down bolts and swing interlock away from top of guard.

Remove top guard securing bolts from left hand side and remove guard.



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The mixer paddle shaft can now be removed.

To replace mixer paddle shaft is the reverse of removal. Pipework to the interlock **MUST** be correctly connected and the operation checked prior to use.

CAUTION

Isolate Air Supply before carrying out any maintenance or cleaning.

7.7 Guard Assembly

Remove the four securing bolts on the top of the guard, which hold the bottom flange of the shaft guard in place.

Remove the interlock covers and disconnect the pipework (noting the position of pipework removed). Unscrew the two securing bolts in the base of the interlocks and swing the interlock away from the guard assembly.

Remove the three top plates from the guard. The shaft guard will slide down the shaft once top plates are removed.

Disconnect the top hydraulic pipe from the cylinder, oil may drip from the pipework so a suitable container or rag is to be placed near pipe to catch any residual oil. Carefully bend pipe away from the ram taking care not to damage.

Remove the four securing bolts for the guard (two at the top rear of the guard and two on the bottom centre).

The guard may now be slid out from behind the ram and removed.

The replacement of the guard is the reverse of the removal. Care must be taken to replace the interlock pipework in the correct position. Once the machine is fully assembled the interlock system **MUST** be fully checked for correct operation.

7.8 Ram Assembly

7.8.1 Piston Shaft Removal

Remove air motor and gearbox as described above.

Remove the two M8 bolts holding the anti-rotation bar in place.

Remove M20 dome nut from top of piston shaft and lift gearbox mounting plate from piston shaft.

Remove guard assembly as described above.

Remove the hydraulic cylinder, and unscrew the top ring nut, pour the oil into a suitable container.

Pull the shaft completely out of the cylinder, oil may still be present.

7.8.2 Ram Cylinder Assembly Removal

Ram cylinder assembly is held onto the chassis with four M12 bolts, the bolts are removed and the ram cylinder can be lifted from the chassis.

The hydraulic cylinder is an integral part of the cylinder assembly and if a replacement is necessary the whole unit needs to be replaced.

7.8.3 Ram Service

Part number 363540 contains the seals for the top gland arrangement and the piston.

The gland seals consist of a wiper seal, pressure seal and two wear strips. The seals are inspected and replaced if necessary, care must be taken when replacing the seals to avoid damage to the seals and the housing.

The piston can be removed from the shaft by removing the M20 nyloc which is situated in a recess in the bottom of the piston.

There are two seals and a wear strip on the piston, the seals are inspected for wear or damage and replaced if necessary, care must be taken when replacing seals to avoid damage to the seals and the housing.

To aid re-assembly the seals are oiled with hydraulic oil prior to installation.

The bore of the cylinder is inspected for corrosion or damage, if the corrosion is excessive or there is any damage to the cylinder tube or the thread is found then the ram cylinder must be replaced.

Assembly of the ram unit is the opposite of the removal, to aid assembly, the seals are oiled before the piston is fitted back into the cylinder. The piston / shaft assembly should run smoothly up and down the cylinder, if not the cylinder must be inspected for damage.

Once the machine is fully assembled the interlock system **MUST** be fully checked for correct operation.



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7.9 Pneumatic system

7.9.1 Control panel

To access the internals of the control panel the back is removed, this can be done by removing the eight M6 bolts on the back panel.

The regulators, gauges and valves are not serviceable items and can only be replaced. These must be replaced with CoverCat parts only (*part numbers are listed on the relevant pages in section 8*)

When replacing any component, the location of the hosing must be noted and replaced correctly.

Gauges on the control panel must be readable and must read zero when there is no pressure, if not then the gauge must be replaced.

Regulators must be adjustable and relieve the air when decreasing the pressure and must be easy to turn, if it is not functioning correctly then it must be replaced.

The lever valve, rotary switch, reset and emergency stop must function correctly otherwise they must be replaced.

When carrying out any maintenance in the rear of the panel all hoses must be visually inspected and replaced if necessary.

After carrying out any work in the control panel the system must be fully tested prior to being used.

7.10 Trouble shooting guide

Mixer air motor will not start.

- No air supply to machine.
 - Check air supply.
 - Check isolation valve operation.
- Emergency stop engaged.
 - Turn emergency stop button anti-clockwise to release.
- Reset button not pressed.
 - Press reset button on control panel.
- Interlock not working correctly.
 - Check interlock plumbing.
 - Check air supply to interlock.
 - Check roll pin in hinge shaft.
 - Replace if necessary.
- Air motor seized.
 - Check air supply to air motor.
 - If air supply is ok then remove air motor and try with motor disconnected from gearbox.
 - If air supply ok and air motor fails to operate outside of gearbox then replace air motor.

- Gearbox seized.
 - If the air motor runs out of gearbox but not when engaged into the gearbox, then replace gearbox.

Hydraulic pump not operating.

- No air supply to machine.
 - Check air supply.
 - Check isolation valve operation.
- Emergency stop engaged
 - Turn emergency stop button anti-clockwise to release.
- Reset button not pressed.
 - Press reset button on control panel.
- Interlock not working correctly.
 - Check interlock plumbing.
 - Check air supply to interlock.
 - Check roll pin in hinge shaft.
 - Replace if necessary.
- Air supply to pump but not operating.
 - Follow trouble shooting guide in *section 7.53*.

Hydraulic pump runs but ram does not operate.

- Leaking hydraulic pipe / fitting.
 - Check hydraulic circuit replace leaking pipes.
 - Re-tighten hydraulic fittings, replace if damaged.
 - Replace any leaking DBS seals.
- Diverter valve inoperative.
 - Replace valve.
- Seals in ram unit worn or damaged
 - See *section 7.8* to replace seals.



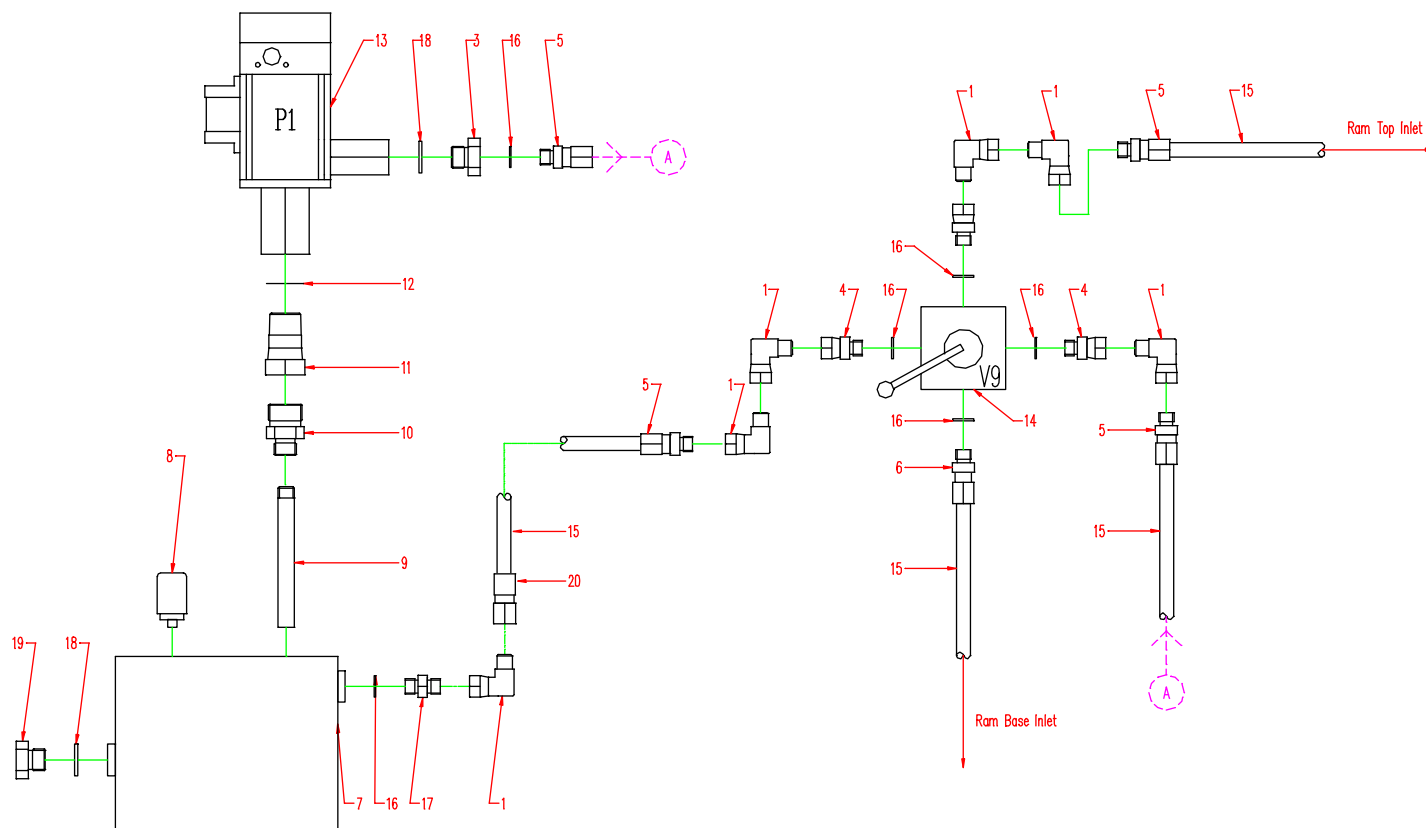
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8.0 Parts and assembly drawings

99 0551 Hydraulic Pump / Tank Assembly



Item	Part No	Description	Qty
	99-0551	Hydraulic Pump / Tank Assembly	
1	20 9568	¼" NCB 90	6
2	20 9617	Dowty Seal ⅜"	4
3	20 9629	Gauge Adaptor	1
4	20 9558	M/FM Swivel Adaptor ⅜" x ¼"	3
5	21 8595	8LT M.S.C ¼"	3
6	21 8597	8LT M.S.C ⅜"	1
7	99 0507	Hydraulic Tank	1
8	80 6009	Tank Breather	1
9	46025NBP	¼" nominal bore pipe	1
10	20 9522	MM Adaptor ¾" x ⅝"	1

Item	Part No	Description	Qty
11	20 9587	¾ NPT male – ¼ BSP female	1
12	73 0001	Hydraulic pump filter	1
13	73 0000	Hydraulic Pump (P1)	1
14	59 4855	Hydraulic Diverter Valve (V9)	1
15	21 8594	8 mm Hydraulic tube SS 6m	2
16	20 9616	¼" DBS	2
17	20 9552	¼" M/FM Swivel	1
18	20 9618	½" DBS	2
19	20 9607	½" Plug	1
20	21 8596	8LT M.S.C ¼"	1

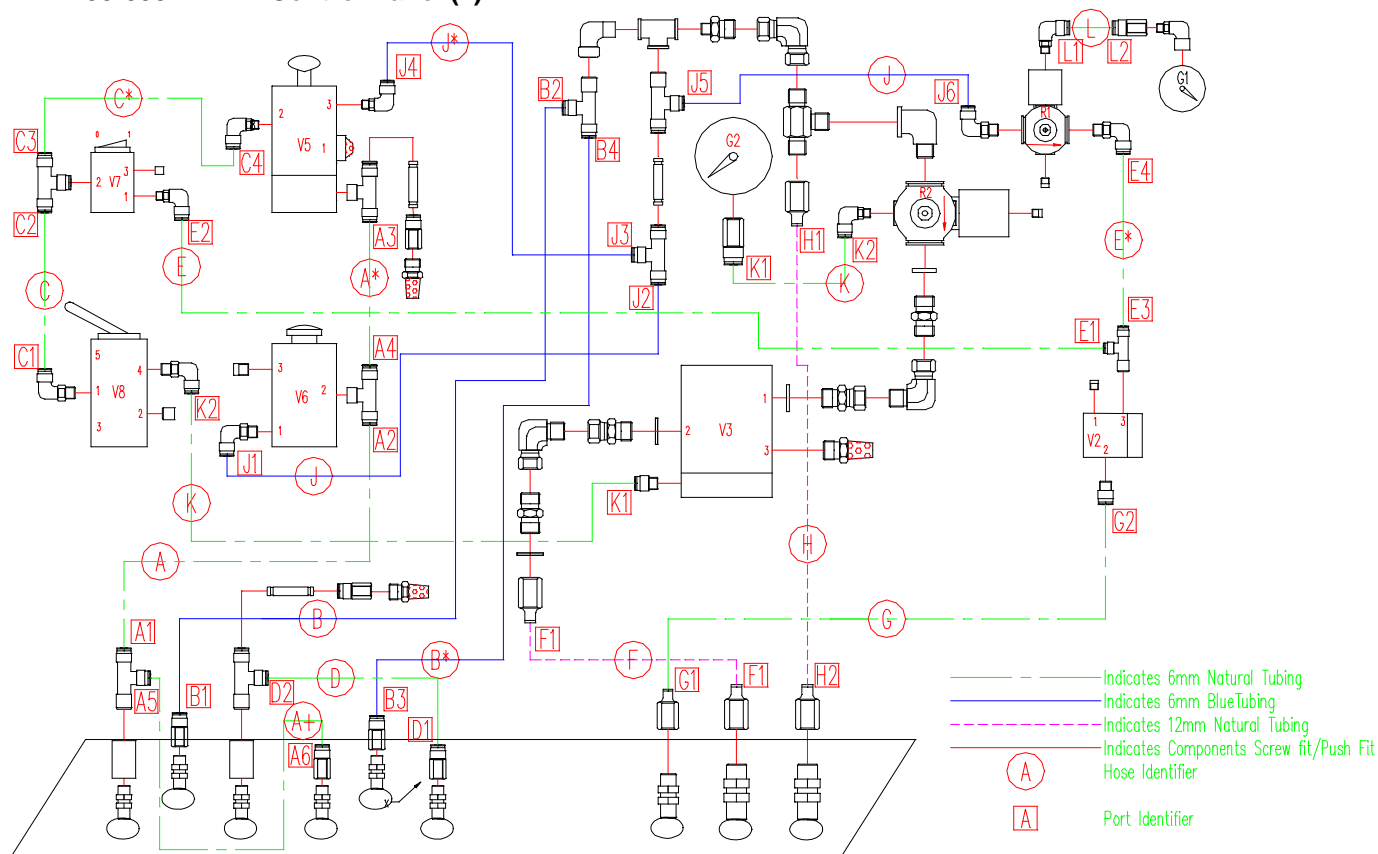


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99-0552 E-Mix Control Panel (1)



Tube	Ports	Tube Type and Port Size
A, A+, A*	A1, A2, A3, A4, A5, A6	6mm Natural
B, B*	B1, B2, B3, B4	6mm Blue
C, C*	C1, C2, C3, C4	6mm Natural
D	D1, D2	6mm Natural
E, E*	E1, E2, E3, E4	6mm Natural
F	F1, F2	6mm Natural
G	G1, G2	6mm Natural
H	H1, H2	12mm Natural
J	J1, J2, J3, J4, J5, J6	6mm Blue
K	K1, K2	6mm Natural
L	L1, L2	6mm Natural

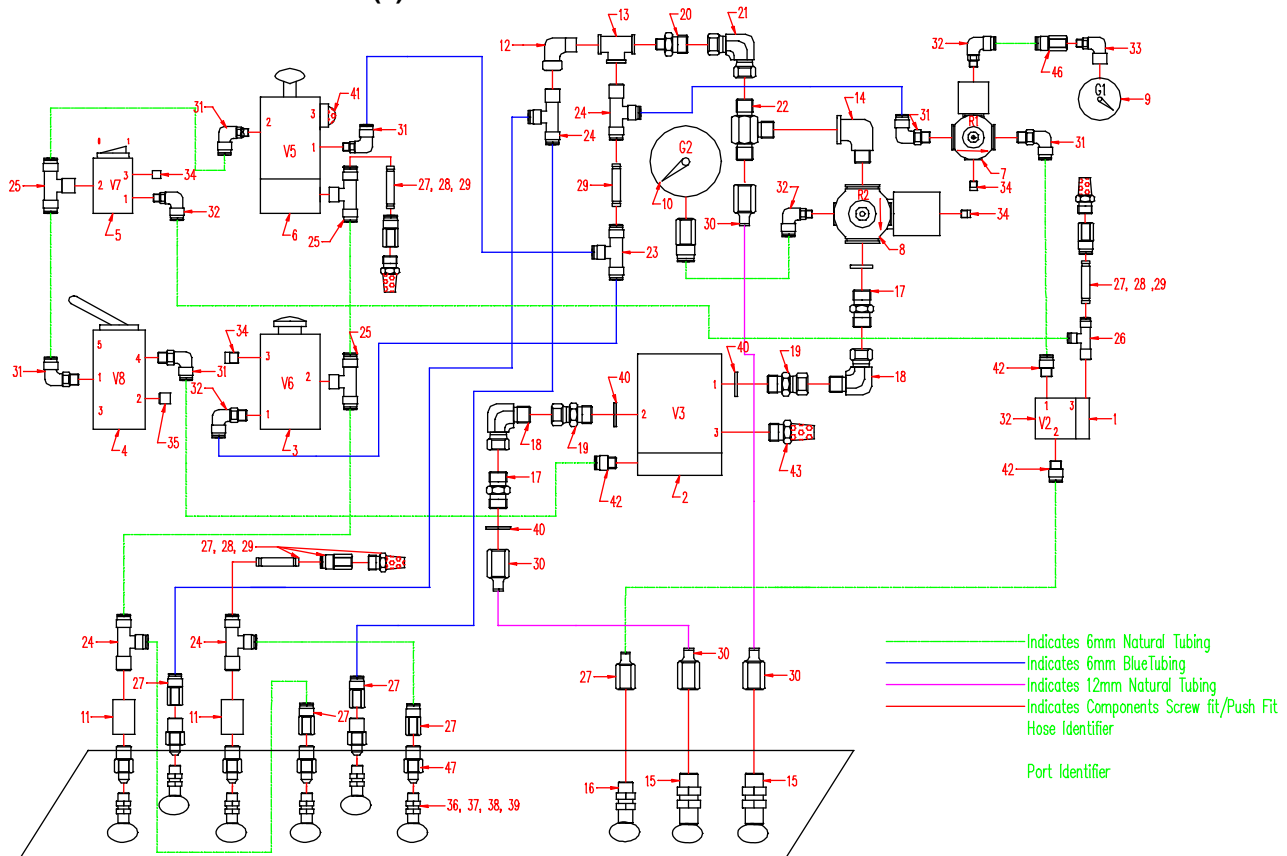


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99-0552 E-Mix Control Panel (2)



Item	Part No	Description	Qty
1	59 4806	1/8" Pilot Spring Valve (V2)	1
2	59 4800	1/2" Pilot Spring Valve (V3)	1
3	59 4807	Emergency Stop (V6)	1
4	59 4772	5/2 lever spring valve (V8)	1
5	59 4873	Rotary Switch (V7)	1
6	59 4809	1/4" Reset Valve (V5)	1
7	15 8015	1/4" Regulator (R1)	1
8	15 8017	1/2" Regulator (R2)	1
9	18 8591	1/4" Gauge (G1)	1
10	18 8590	1/4" Gauge (G2)	1
11	19 9010	1/4" WI Socket	2
12	19 9080	1/4" M.I Elbow M/Fm	1
13	19 9090	1/4" M.I Tee	1
14	19 9082	1/2" M.I Elbow	1
15	20 9672	1/2" Bulkhead With Nut	2
16	20 9670	1/4" Bulkhead With Nut	1
17	20 9503	1/2" mm Adaptor	2
18	20 9570	1/2" M/F Swivel Elbow	2
19	20 9554	1/2" M/Fm Swivel	2
20	20 9836	1/4 x 1/2" MM PT Adaptor	1
21	20 9845	1/2" Fm Elbow	1
22	20 9525	1/2" M Tee	1
23	16 8725	6mm Push Fit Tee	1
24	16 8837	6mm Swivel Side 1/4" Tee	4

Item	Part No	Description	Qty
25	16 8709	6mm Swivel 1/8" Tee	3
26	16 8840	6mm Swivel Side 1/8" Tee	1
27	16 8704	1/4 - 6MM Push Fit FM	9
28	59 4789	1/4" Regulated Silencer	3
29	16 8729	6mm Stem	4
30	16 8706	12mm Push fit x 1/2" Fm	4
31	16 8711	1/4" - 6MM Swivel Elbow	6
32	16 8710	1/8" - 6MM Swivel Elbow	4
33	19 9086	1/8" Elbow	1
34	19 9049	1/8" M.I Plug	2
35	19 9050	1/4" M.I Plug	2
36	16 8902	4mm Bulkhead	6
37	16 8903	M12 Lock Nut	6
38	16 8904	4mm Nut	6
39	16 8905	4mm Olive	6
40	20 9618	1/2" Dowty Seal	5
41	59 4876	1/4" Silencer	1
42	16 8701	1/8" 6mm Push Fit	3
43	59 4786	1/2" Silencer	1
44	15 8000	1/2" Reg. Lock Ring	1
45	15 7999	1/4" Reg. Lock Ring	1
46	16 8748	1/8" fm 6mm push fit	1
47	16 8901	Nipple Adaptor 4mm	6
	16 8784	6mm Nylon Tube - Natural	5m
	16 8796	12mm Nylon Tube - Natural	1m

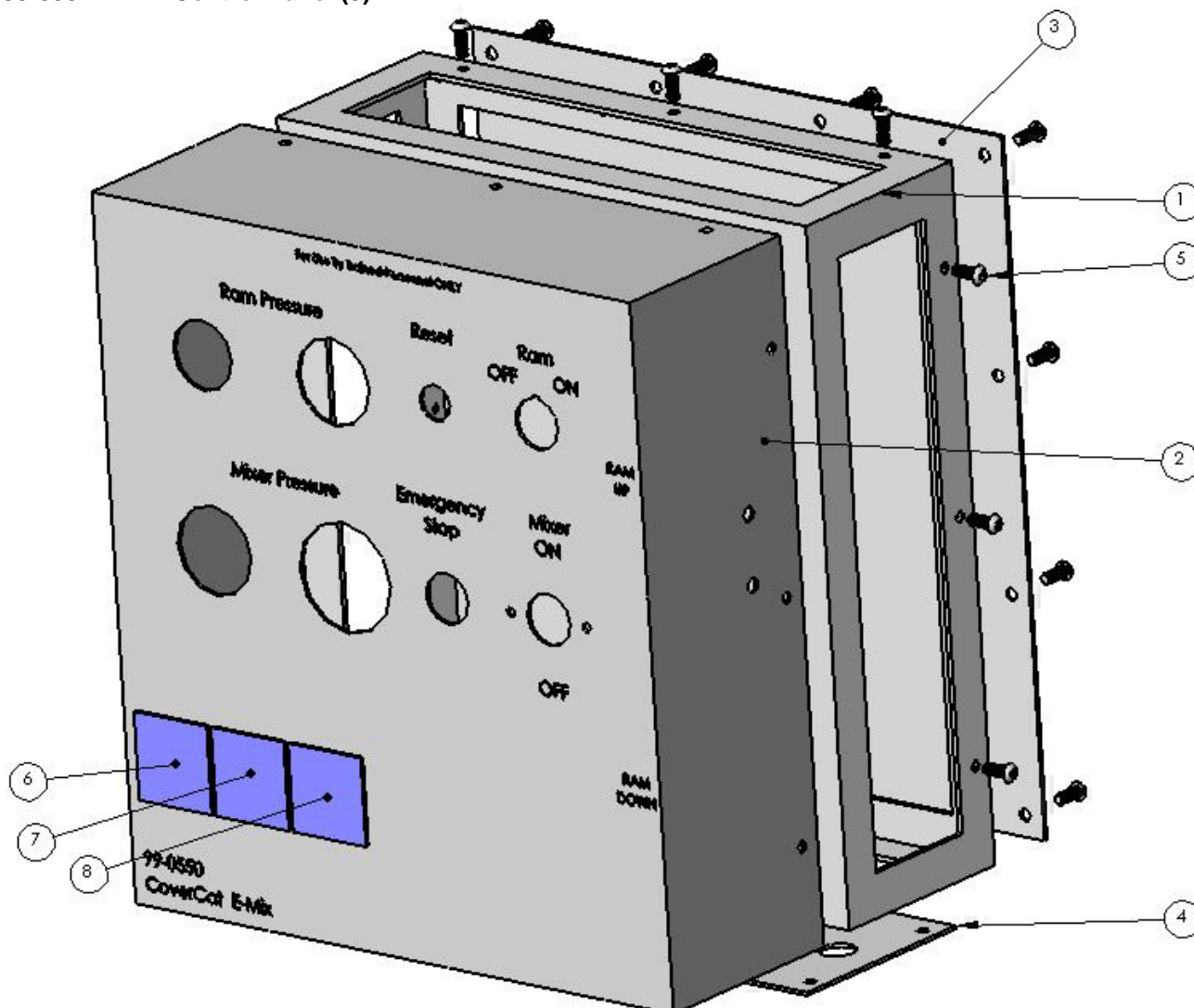


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99-0552 E-Mix Control Panel (3)



Item	Part No	Description	Qty
	99-0552	E-Mix Panel (2)	1
1	36-1237	Panel Frame	1
2	36 4250	Panel Front	1
3	36 4251	Panel Rear	1
4	36 4252	Panel Base Plate	1
5	55 2481	M6 x 16 Button Head Socket Screws	21
6	26 5193	Hand Protection Sticker	1
7	26 5191	Eye Protection Sticker	1
8	26 5192	Ear Protection Sticker	1

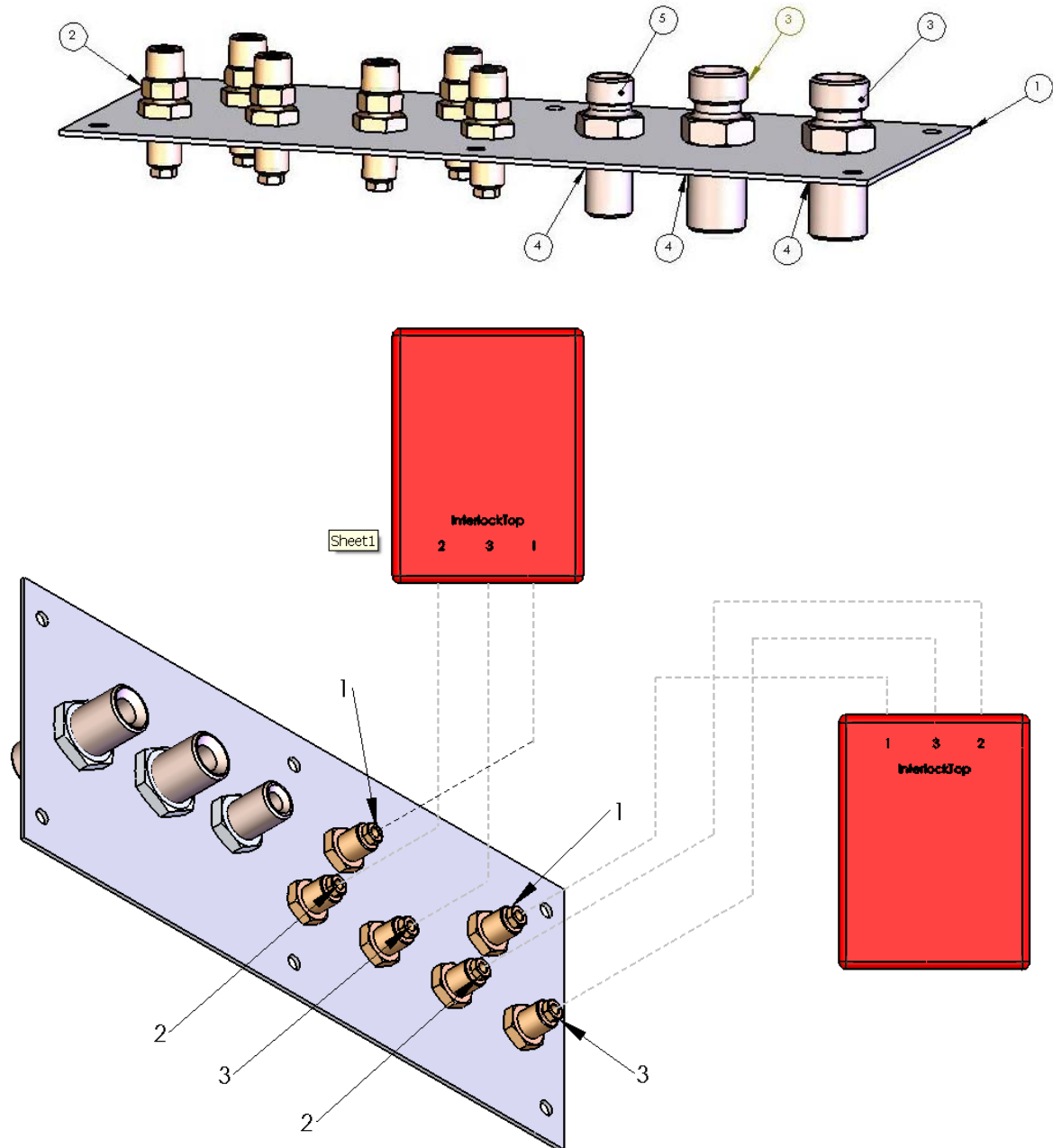


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99-0552 E-Mix Control Panel (4)





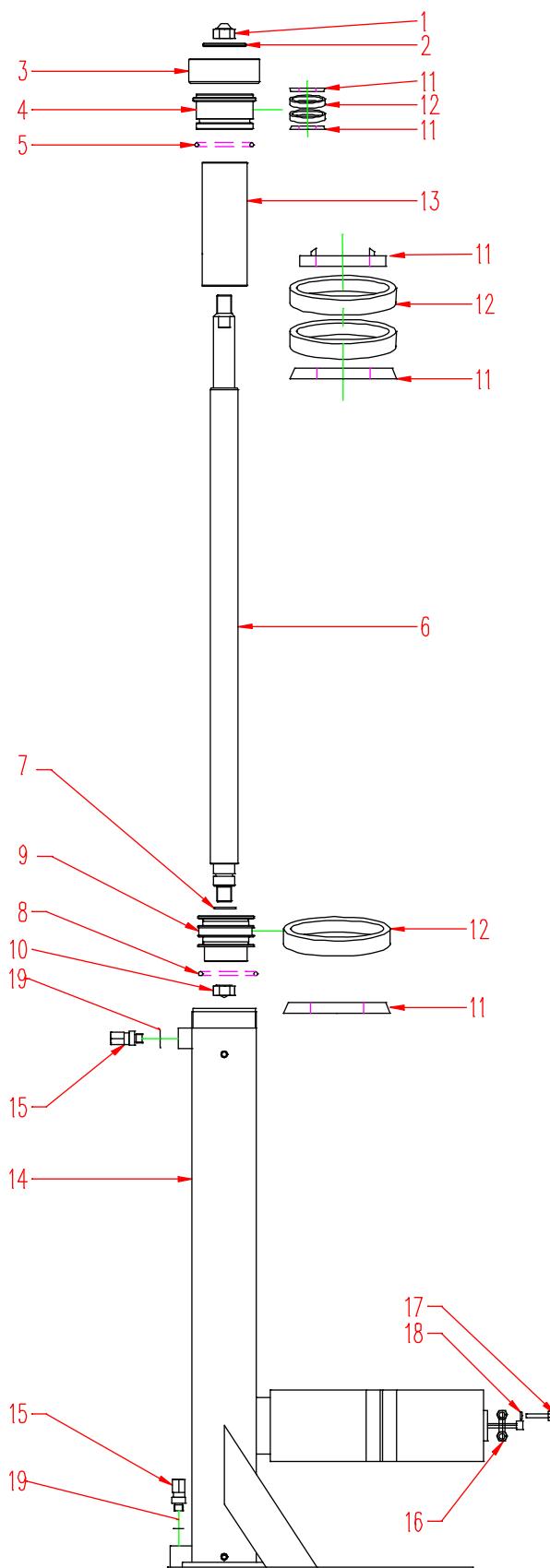
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99-0553 E-Mix Ram Assembly

Item	Part No	Description	Qty
	99-0553	E-Mix Ram Assembly	
1	55 2277	M20 Dome Nut	1
2	35 5038	Piston Washer	1
3	36 4203	CoverRam 80 & 1200 Ring Nut	1
4	36 4204	CoverRam 80 & 1200 Throat	1
5	39 2335	Nitrile O Ring	1
6	36 4205	CoverRam 80 Rod (Short)	1
7	39 2213	Nitrile O Ring	1
8	55 2259	M20 Plain Washer BZP	1
9	36 4206	CoverRam 80 & 1200 Piston	1
10	55 2288	M20 Nyloc	1
11	36 3540	Cover Ram 80 Seal Kit	1
12	36 3441	Wear Strip	3
13	36 4209	Cover Ram Stop 177mm	1
14	36 4214	Main Ram Base Assembly	1
15	21 8595	8LT M.S.C SS	2
16	55 2267	M8 Nut	6
17	55 2612	Latch Clamp	1
18	55 2302	M8 x 25 Hex screws	6
19	20 9616	Dowty Seal 1/4"	2



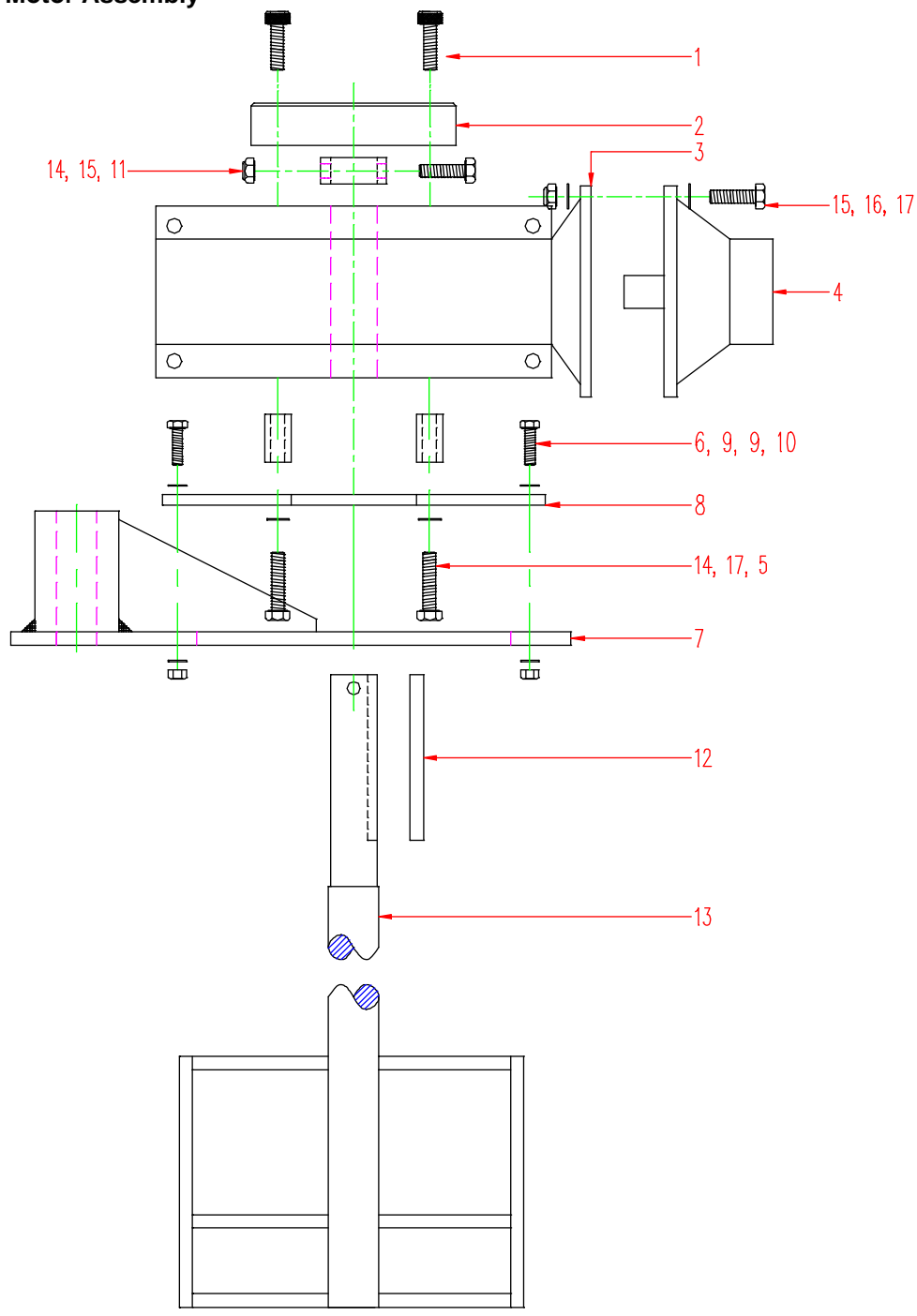


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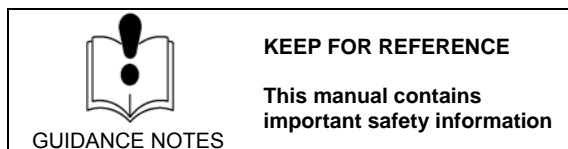
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99-0554 Mixer / Gear Motor Assembly

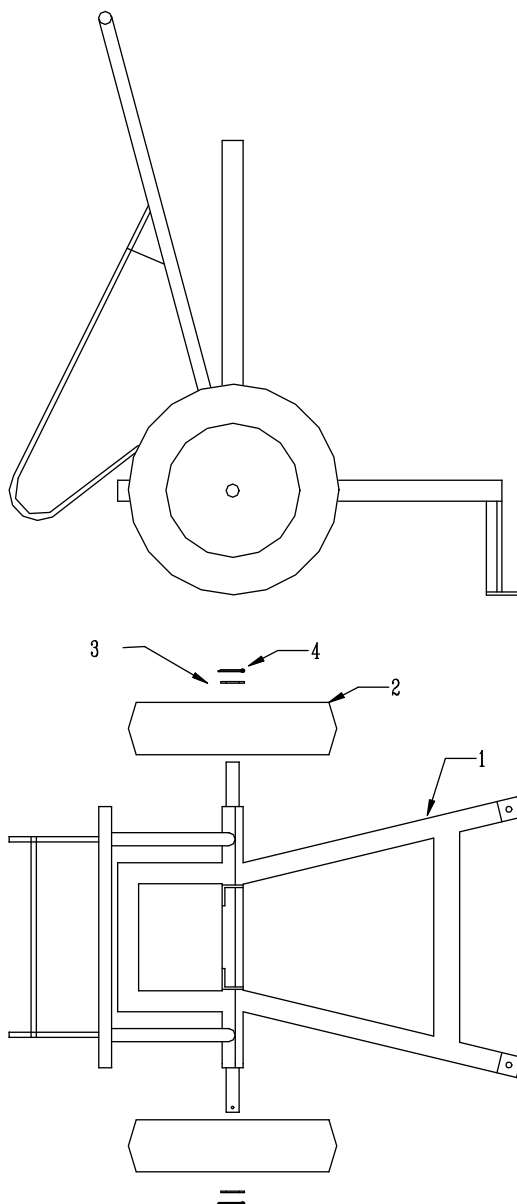


Item	Part No	Description	Qty
	99-0554	Mixer / Gear Motor Assy	
1	55 2345	M10 x 40 Cap Screws	6
2	36 4210	Gear Motor Cover	1
3	14 7491	Gearbox	1
4	14 7529	Air Motor	1
5	14 7480	Spacers	4
6	55 1215	M8 x 30 Bolt	4
7	36 4201	E-Mix 80 Top Assembly	1
8	80 7055	Gear Motor Plate	1

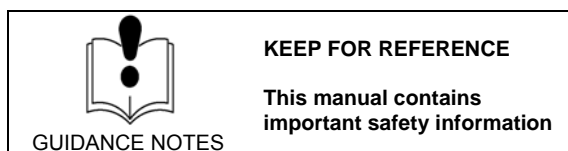
9	55 2254	M8 Plain Washer	8
10	55 2283	M8 Nyloc Nut	4
11	36 4212	Mixer Shaft Collar	1
12	57 3233	10mm Key x 100mm Long	1
13	99 0508	E-Mix 80 Mixer Shaft	1
14	55 2498	M10 x 60 Hex Bolt	5
15	55 2284	M10 Nyloc	5
16	55 2237	M10 X 40 Set Screw	4
17	55 2255	M10 Washer	8



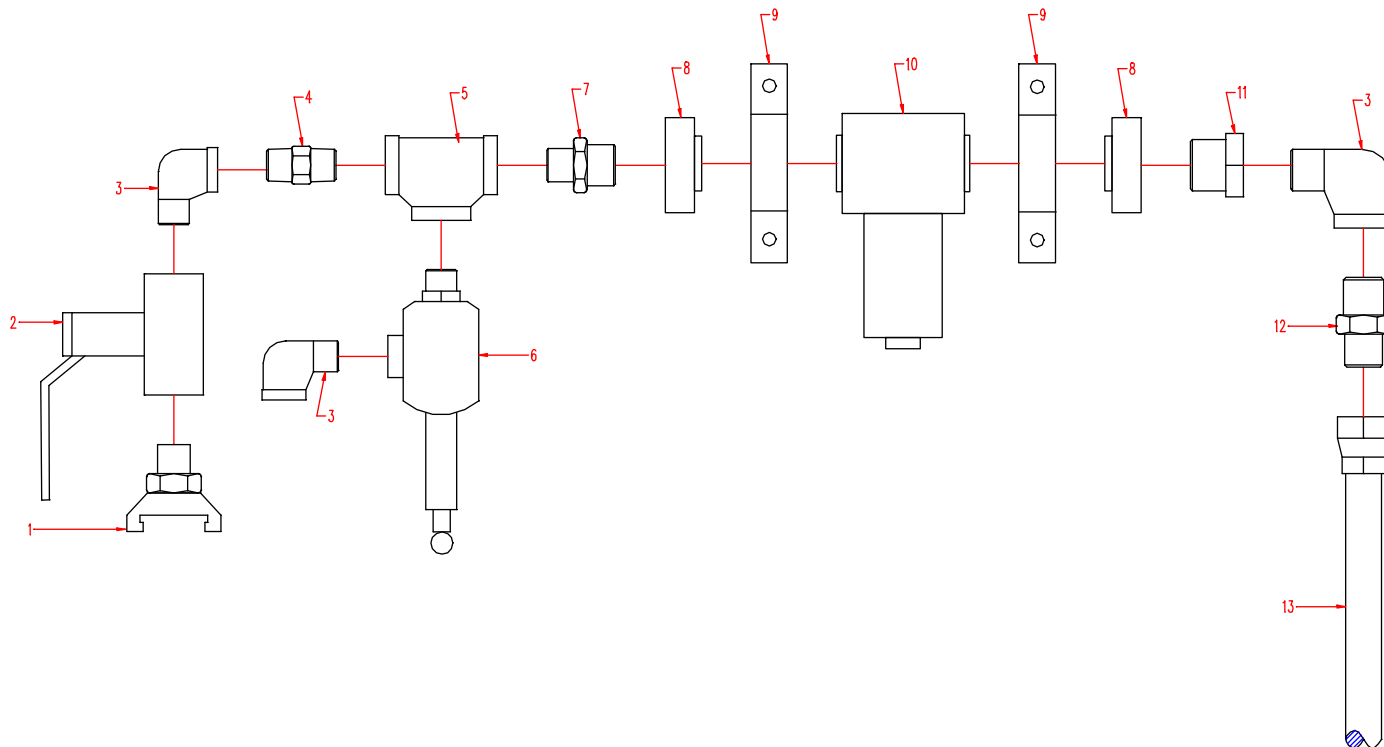
99-0555 E-Mix Cart



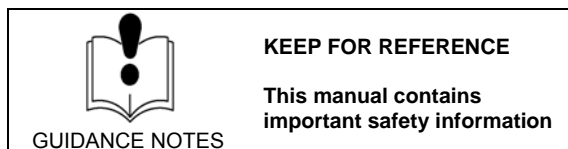
Item	Part No	Description	Qty
	99-0555	E-Mix Cart	
1	80 7080	E-Mix Cart	1
2	56 3100	Wheel & Tyre	2
3	55 2262	M24 Washer	2
4	55 2420	1/8" x 1 1/2" Split Pin	2



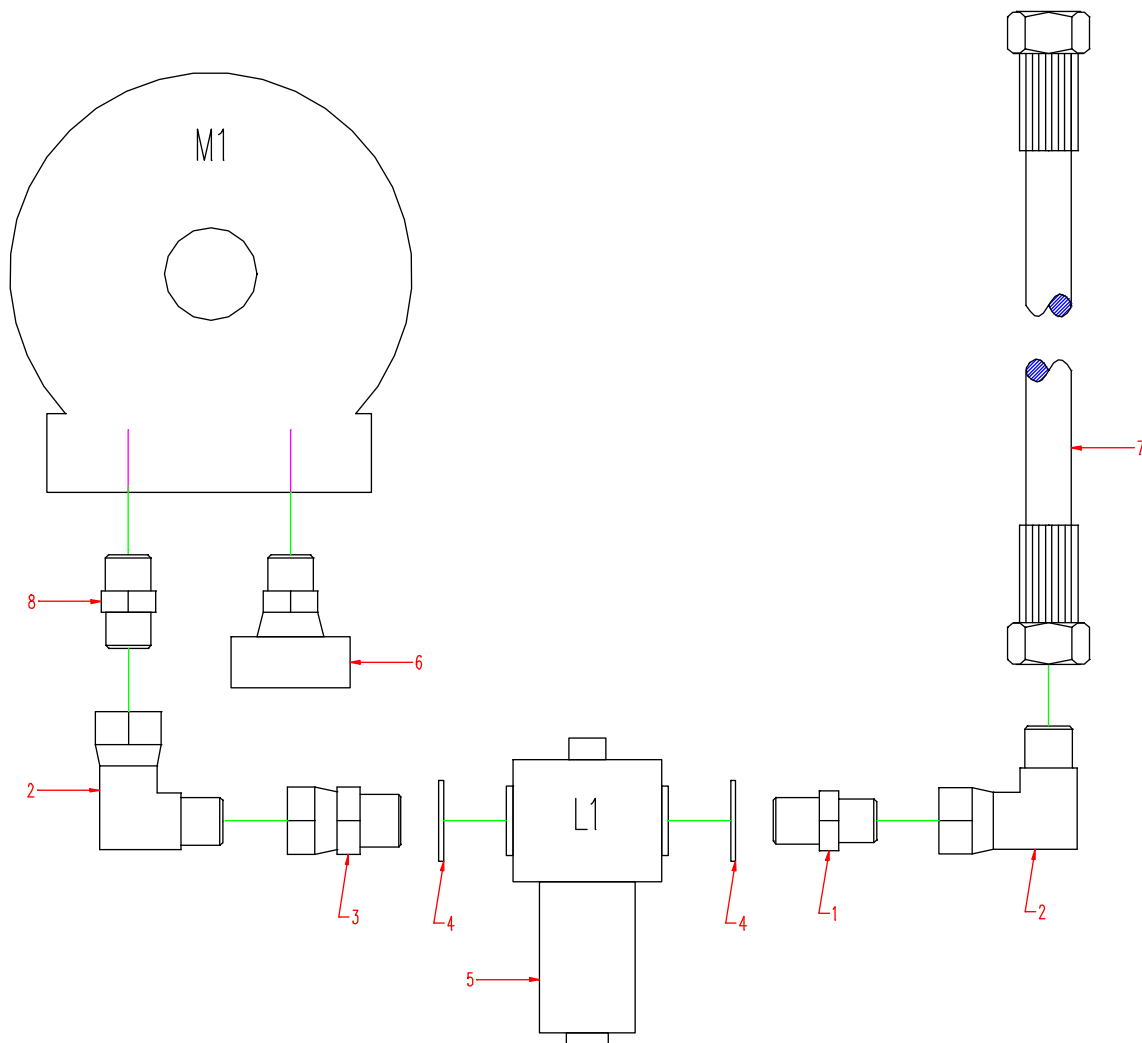
99-0556 Main Air Feed



Item	Part No	Description	Qty
	99-0556	Main Air Feed	
1	16 8661	1/2 " Male QR	1
2	21 8559	1/2" Relieving Ball Valve	1
3	19 9082	1/2" m/fm m.i elbow	3
4	19 9147	1/2" mm hex nipple	1
5	19 9092	1/2" m.i Tee	1
6	59 4770	1/2" Relieve Valve	1
7	19 9042	1/2" x 3/4" mm	1
8	15 8066	Threaded Adaptor	2
9	15 8061	Quick Clamp	2
10	15 8012	1/2" Filter	1
11	19 9023	3/4" X 1/2" Bush	1
12	20 9519	1/2" PT MM Adaptor	1
13	17 9029	1/2" Hose Assembly air 1.5m	1



99 0562 Air Motor Air Feed



Item	Part No	Description	Qty
	99-0562	Air Motor Air Feed	
1	20 9503	½" MM	1
2	20 9570	½" NCB Elbow	2
3	20 9554	½" M/FM Swivel	1
4	20 9618	½" DBS	2
5	15 8022	½" Lubricator	1
6	14 7297	Air Motor Muffler	*
7	17 9029	½" Hose Assembly air 1.5m	1
8	20 9519	½" PT	1

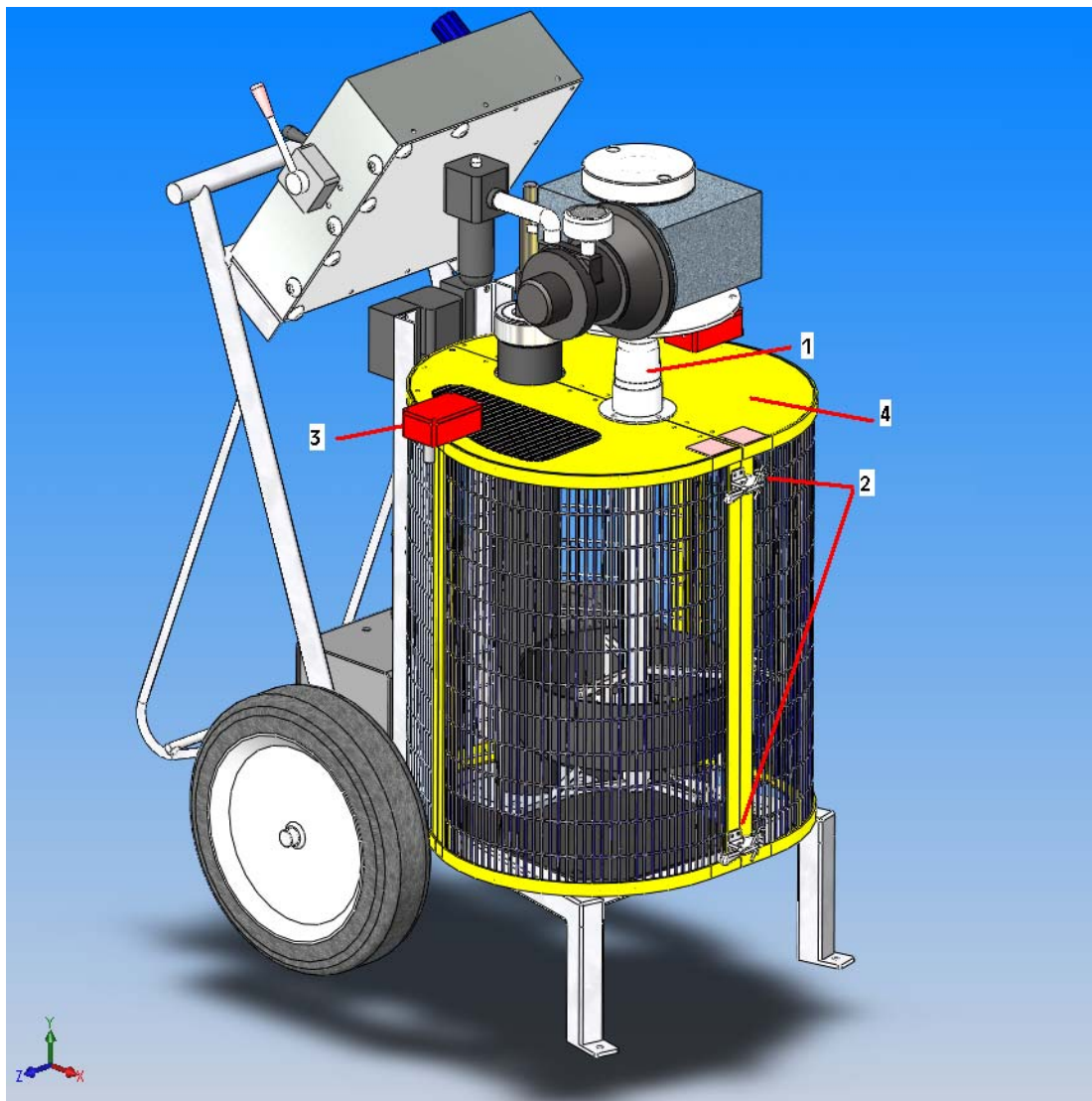


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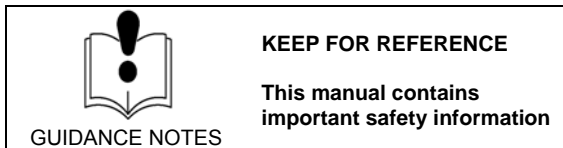
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99 0567 E-Mix Guard System



Item	Part No	Description	Qty
	99-0567	E- Mix Guard	
1	36 4241	Shaft Guard	1
2	55 2612	Latch Clamp	2
3	59 3032	Pneumatic Interlock	2
4	99 0513	Main Guarding	1



9.0 Specifications

CoverCat E-Mix:-

Power Supply: Compressed Air, mswp:	110psig / 7.5 bar.g / 7.7 kg/cm2/
Compressed air volume:	100scfm / 3.3m3/min / 55 l/sec
Dry Weight:	185 kgs
Max Hydraulic Pressure:	775psig / 53.5 bar.g / 54 kg/cm2
Max Mixer Paddle Speed:	170rpm @ max air pressure
Noise level at operating position:	>85 dBa @ operating position
Hydraulic oil:	ISO 32 or equivalent
Shipping Weight:	250 kgs
Packing Crate dims.	1270mm x 870mm x 1550mm (lwh)



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10.0 Warranty

CoverCat warrant all equipment manufactured by ourselves and bearing the name CoverCat, to be free from defects in material and workmanship on the date of sale by CoverCat or an authorised CoverCat Distributor and/or Agent to the customer/ user.

This product is warranted for a period of twelve months from the date of purchase against faulty materials or workmanship. During this period it will be repaired or have parts replaced free of charge provided that,

1. The product is returned, pre-paid, to CoverCat with evidence of purchase date, for verification.
2. The product has been purchased by the user and not used for hire purposes.
3. The product has not been misused or handled carelessly or otherwise operated contrary to the instruction manual supplied with the equipment.
4. Repairs have not been attempted other than by our service staff or authorised dealers / agents and factory trained technicians.
5. The product has not been used with incompatible components or replacement parts.

Note; Due to varying geographical locations of use, it is not possible to provide a labour service free of charge within this warranty for locations outside UK mainland.

This warranty does not confer any rights other than those expressly set out above and does not cover any claims for consequential loss or damage. This warranty does not apply in the cases of wear and tear, seal or packing replacement, use of non genuine components, negligence or faulty installation. This warranty is offered as an extra benefit and does not affect your statutory rights.

Limitation of Liability

In no event shall CoverCat be liable for indirect, incidental, special or consequential damages resulting from CoverCat supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of CoverCat or otherwise.

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Misuse

This equipment has been designed for pumping applications, any use other than that for which it was intended is not permitted. If in doubt, contact CoverCat or your nearest CoverCat agent or distributor.

Warranty Claims

In the event of a claim for warranty the following action must be taken:

1. Contact CoverCat Technical Services by telephone / fax / mail / e-mail.
2. Report detail in writing with pictures if possible, using CoverCat Warranty Claim Report.
3. CoverCat may
 - a) request return of items
 - b) issue parts within 10 working days from receipt of claim, to be fitted by customer / distributor when a claim is approved.
4. CoverCat may refuse a claim if it considers the claim to be invalid.
5. In the event that an urgent replacement of parts or equipment is required and the terms of the warranty do not cover this, CoverCat may supply parts to a separate purchase order or the parts may be used from customer or agents / distributor stocks. CoverCat will issue credit for these parts where the returned items are considered a valid warranty claim.
6. CoverCat will pay freight on requested return items.
7. CoverCat may charge freight to send warranty claim parts.
8. All parts renewed must be retained for return if requested. If return to CoverCat is not requested within 60 days the parts should be correctly disposed of.



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11.0 Notes

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