BINKS

Instruction Manual

Ram Unit Outfits

- **SR20 – Ø80mm Single Post**
- **DR20/30/60 – Ø80mm Dual Post**
- **DR205 – Ø80mm Dual Post**
- **DRX205 – Ø160mm Dual Post**

Finishing Brands

DeVILBISS Ransburg BGK BINKS

Product Description Ram - 107096, 104094, 104102, 104110, 104112,

This Product is designed for use with: Solvent and Water based Materials

Manufacturer:

Finishing Brands UK Ltd,
Ringwood Road,
Bournemouth, BH11 9LH. UK

EU Declaration of Conformity

CE ε_x

We: Binks declare that the above product conforms with the Provisions of:

Machinery Directive 2006/42/EC

by complying with the following statutory documents and harmonized standards:

EN ISO 12100: Safety of Machinery - General Principles for Design

EN ISO 4414: Pneumatic Fluid Power - General Rules and safety requirements

EN 12621: Machinery for the supply and circulation of coating materials under pressure - Safety requirements

Providing all conditions of safe use stated within the product manuals have been complied with and that the final equipment into which this product is installed has been re-assessed as required, in accordance with essential health and safety requirements of the above standards, directives and statutory instruments and also installed in accordance with any applicable local codes of practice.

D Smith (General Manager)
29/04/2014

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WARNING

Directions for Working Safety

This Product has been constructed according to advanced technological standards and is operationally reliable. Damage may, however, result if it is used incorrectly by untrained persons or used for purposes other than those for which it was constructed.

The locally current regulations for safety and prevention of accidents are valid for the operation of this product under all circumstances.

International, national and company safety regulations are to be observed for the installation and operation of this product, as well as the procedures involved in maintenance, repairs and cleaning.

These instructions are intended to be read, understood and observed in all points by those responsible for this product. These operating and maintenance instructions are intended to ensure trouble free operation. Therefore, it is recommended to read these instructions carefully before start-up. Binks PCE cannot be held responsible for damage or malfunctions resulting from the non-observance of the operating instructions. These instructions including regulations and technical drawings may not be copied, distributed, used for commercial purposes or given to others either in full or in part without the consent of Binks PCE.
We reserve the right to alter drawings and specifications necessary for the technical improvement of this product without notice.



Equipment Misuse Hazard

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

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose.
- Do not alter or modify this equipment. Use only genuine Binks PCE parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure stated on the equipment or in the Technical Data for your equipment. Do not exceed the maximum working pressure of the lowest rated component in your system.
- Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the Technical Data section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose hoses to temperatures above 82°C (180°F) or below —40°C (—40°F).
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.



Fire, Explosion and Electric Shock Hazard

Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire, explosion, or electric shock.

When installed and operated in accordance with its instructions, the pump is approved for operation in Zone 1 (Europe) & Division 1 (North America), hazardous locations. (ATEX Cat 2)

- Electrical equipment must be installed, operated, and serviced only by trained, qualified personnel who fully understand the requirements stated in this instruction manual.
- Ground the equipment and all other electrically conductive objects in the spray area. After grounding test with ohmmeter to ensure earth continuity is 1 ohm or less.
- Keep all covers tight while the motor is energized.
- If there is any static sparking or you feel an electric shock while using this equipment, stop spraying/dispensing immediately. Do not use the equipment until you identify and correct the problem.
- Provide fresh air ventilation to avoid the build up of flammable fumes from solvents or the fluid being pumped.
- Keep the pumping area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the pumping area.
- Extinguish all open flames or pilot lights in the spray/dispense area.
- Do not smoke in the spray/dispense area.
- Do not turn on or off any light switch in the spray/dispense area while operating or if fumes are present.

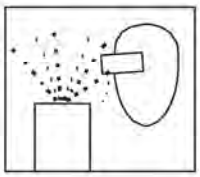
WARNING

READ THE MANUAL
Before operating equipment, read and understand all safety, operation and maintenance information provided in the operation manual.

DE-ENERGIZE, DEPRESSURIZE, DISCONNECT AND LOCK OUT ALL POWER SOURCES DURING MAINTENANCE
Failure to De-energize, disconnect and lock out all power supplies before performing equipment maintenance could cause serious injury or death.

OPERATOR TRAINING
All personnel must be trained before operating equipment.

KEEP EQUIPMENT GUARDS IN PLACE
Do not operate the equipment if the safety devices have been removed.



PROJECTILE HAZARD
You may be injured by venting liquids or gases that are released under pressure, or flying debris.

PINCH POINT HAZARD
Moving parts can crush and cut. Pinch points are basically any areas where there are moving parts.

MAGNETIC FIELD PRESENT
You may be subjected to magnetic fields which may interfere with the operation of certain pacemakers.

WEAR SAFETY GLASSES
Failure to wear safety glasses with side shields could result in serious eye injury or blindness

NOISE HAZARD
You may be injured by loud noise. Hearing protection may be required when using this equipment.

KNOW WHERE AND HOW TO SHUT OFF THE EQUIPMENT IN CASE OF AN EMERGENCY

HIGH PRESSURE CONSIDERATION
High pressure can cause serious injury. Relieve all pressure before servicing. Hose leaks, or ruptured components can inject fluid into your body and cause extremely serious injury.

AUTOMATIC EQUIPMENT
Automatic equipment may start suddenly without warning.

PROP 65 WARNING
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

MAGNET HAZARD
Take care when handling magnets.
Avoid getting magnets in close proximity of each other. Injury or damage to magnets may results.

Specification			
Feature			**Remarks**
Down thrust at 6 bar air pressure	SR20	2.5 KN / 562 lbf	
	DR20/30/60	5 KN / 1124 lbf	
	DR205	5 KN / 1124 lbf	
	DRX205 #	22.6 KN / 5080 lbf	Extreme Duty
Maximum Working Air Pressure		7 Bar / 101 psi	
Air Inlet		1/2" BSP F	
Air Quality		ISO 8573-1 Class 5/5/4	Dirt 40 Microns Water +7°C @ 7 Bar Oil 25mg/m³
Ram Stroke	SR20	410 mm / 16"	
	DR20/30/60	688 mm / 27"	
	DR205	960 mm / 37.8"	
	DRX205		
Unit Height - Fully Extended	SR20	1242 mm / 49"	
	DR20/30/60	1750 mm / 69"	
	DR205	2550 mm / 100"	
	DRX205		
Wiper Ring Material	SR20	EPDM / PU	
	DR20/30/60		
	DR205	EDPM	
	DRX205		
Weight without Pump	SR20	55 Kg / 121 lbs	
	DR20/30/60	130 Kg / 286 lbs	
	DR205	212 kg / 466 lbs	
	DRX205		
# = Denotes call for availability			

General Description

Ram Unit Outfits are designed to ensure correct 'priming' of the pump fluid section inlet and to prevent 'cavitation' when high viscosity materials are pumped. The Ram units will accommodate industry standard barrels from 20-205L.

The outfits comprise of Ram Unit, Pump and Follower plate assembly.
The Follower plate is designed to accept both chop check or ball check pumps

The Ram plate has two seals, which accurately fit the inside of the barrel, as material is used the ram plate descends, cleaning the sides of the barrel, reducing wastage to a minimum.

A pneumatic control box (see page 31) with necessary Ram control features

- Raise and lower the ram plate
- A 'release valve to separate the ram from the empty container.
- Air pressure regulator to control Downforce pressure
- Pump Stop / Start

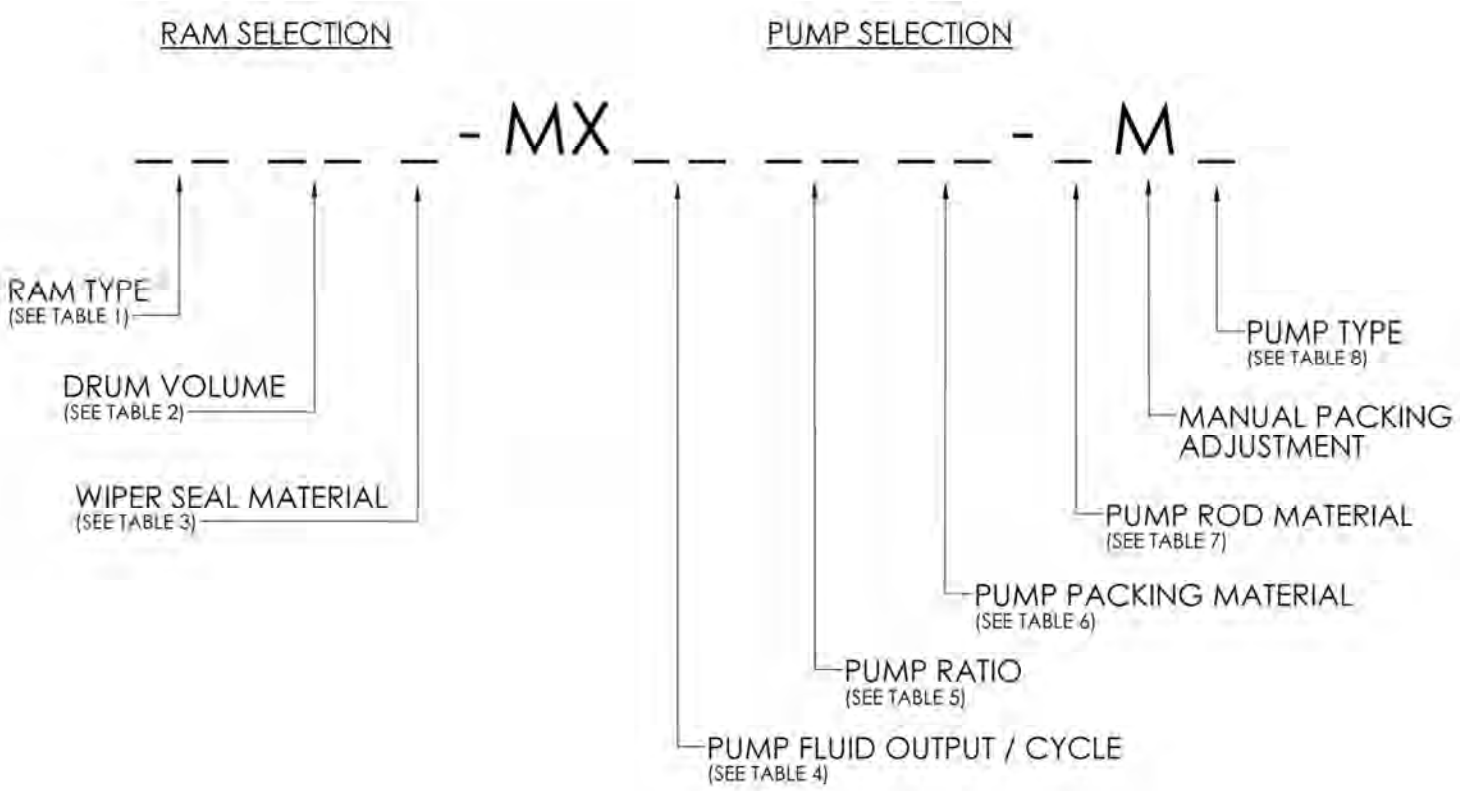
A height adjustable trip valve assembly (see page 32) is also included as standard to stop the pump when the bottom of the container is reached.

The pump air regulator unit (see page 33) is supplied with hose connection to the air motor.

An option is available to provide automatic 'changeover' when using two Ram Units in Duty / Standby mode.

Model Selection

Ram Unit Outfit Selection Guide



TYPICAL EXAMPLE:

- ***DR205E – MX86023PU – SMX***

TABLE 1	
CODE	**DESCRIPTION**
SR	Single Post Ram (Ø80mm)
DR	Dual Post Ram (Ø80mm)
DRX	Dual Post Ram Extreme Duty (Ø160mm)

TABLE 2				
CODE	**DESCRIPTION**	**Table 1 Ref.**		
		SR	**DR**	**DRX**
20	20L / 5 Gallon Drum	✓	✓	✓
30	30L / 7.5 Gallon Drum		✓	✓
60	60L / 15 Gallon Drum		✓	✓
205	205L / 55 Gallon Drum		✓	✓

TABLE 3					
CODE	**DESCRIPTION**	**Table 2 Ref.**			
		20	**30**	**60**	**205**
E	EPDM	✓	✓	✓	✓
P	Polyurethane	✓	✓	✓	

TABLE 4 - Chop Check Pumps						
CODE	DESCRIPTION	SR Ram	DR / DRX Rams			
		20	20	30	60	205
68	68 cc/cycle	✓	✓	✓	✓	✓
115	115 cc/cycle	✓	✓	✓	✓	✓
200	200 cc/cycle		✓	✓	✓	✓
420	420 cc/cycle					✓
860	860 cc/cycle					✓

TABLE 4 – Ball Check Pumps						
CODE	DESCRIPTION	SR Ram	DR / DRX Rams			
		20	20	30	60	205
122	122 cc/cycle	✓	✓	✓	✓	✓
190	190 cc/cycle		✓	✓	✓	✓
220	220 cc/cycle		✓	✓	✓	✓
440	440 cc/cycle					✓
880	880 cc/cycle					✓

TABLE 5 - Chop Check Pumps						
CODE	DESCRIPTION	Table 4 Ref.				
		68	115	200	420	860
05	5:1 Pump Ratio	✓				
12	12:1 Pump Ratio	✓				
15	15:1 Pump Ratio					✓
18	18:1 Pump Ratio				✓	
23	23:1 Pump Ratio					✓
24	24:1 Pump Ratio			✓		
30	30:1 Pump Ratio				✓	
33	33:1 Pump Ratio	✓				
39	39:1 Pump Ratio			✓		
43	43:1 Pump Ratio		✓			
46	46:1 Pump Ratio				✓	
66	66:1 Pump Ratio			✓		
68	68:1 Pump Ratio		✓			

TABLE 5 – Ball Check Pumps						
CODE	DESCRIPTION	Table 4 Ref.				
		112	190	220	440	880
15	15:1 Pump Ratio					✓
18	18:1 Pump Ratio				✓	
22	22:1 Pump Ratio			✓		
23	23:1 Pump Ratio					✓
30	30:1 Pump Ratio				✓	
35	35:1 Pump Ratio			✓		
41	41:1 Pump Ratio	✓	✓			
46	46:1 Pump Ratio				✓	
60	60:1 Pump Ratio			✓		

TABLE 6	
CODE	DESCRIPTION
PU	PTFE & UHMWPE

TABLE 7											
CODE	DESCRIPTION	Table 4 Ref.									
		Chop Check Pumps					Ball Check Pumps				
		68	115	200	420	860	122	190	220	440	880
C	Nitrided Carbon Steel			✓	✓	✓		✓	✓	✓	✓
S	Ceramic Coated Stainless Steel	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

TABLE 8											
CODE	DESCRIPTION	Table 4 Ref.									
		Chop Check Pumps					2 Ball Pumps				
		68	115	200	420	860	112	190	220	440	880
B	Ram Mount Ball Pump						✓	✓	✓	✓	✓
X	Ram Mount Chop Check Pump	✓	✓	✓	✓	✓					

SR20 - Models

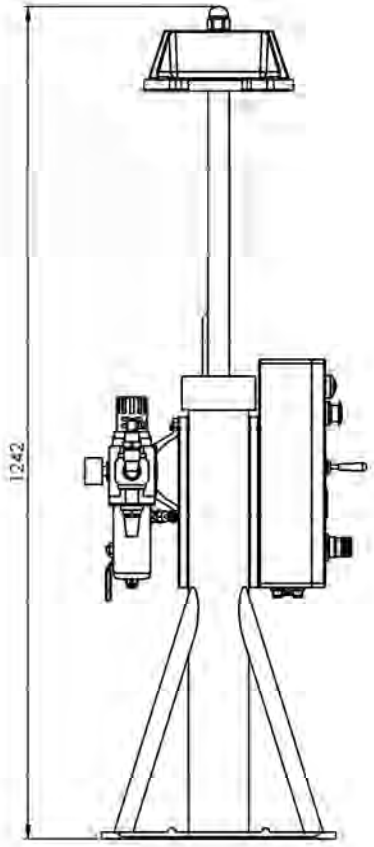
104110 - Installation

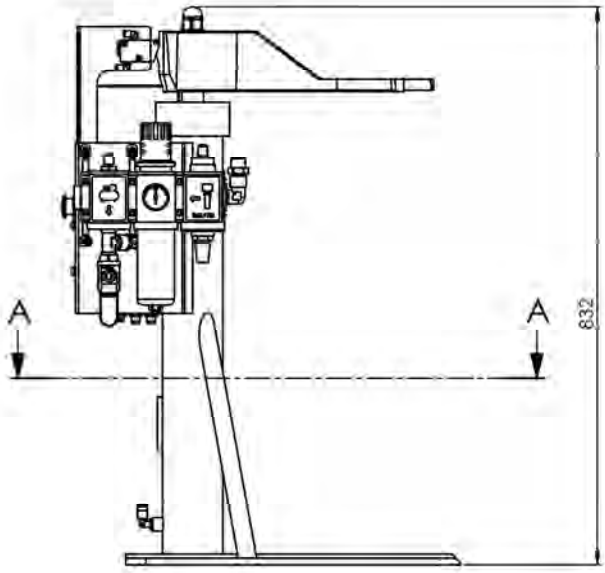
The ram plate base should be mounted on a stable and level floor.

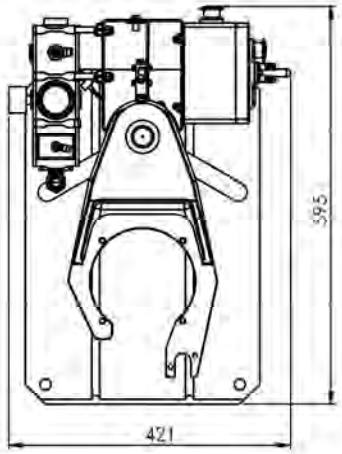
The standard ram plate has 4off - holes Ø 16 mm to enable the base to be securely fixed to the floor. Suitable floor fixing ‘rawbolts’ should be used which are designed to suit the floor material.

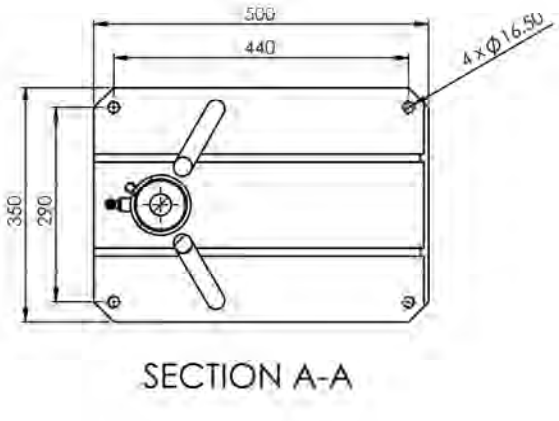
Base plate = 500mm x 350mm. Mounting holes = 440mm x 290mm

A compressed air supply is connected to the 1/2” BSP F connection to control the lift and lowering of the air cylinders and supply the pump.









Operation Instructions

Setting up ram trip valve

1. Make sure that the air to the pump is turned off by fully unwinding the regulator on 104098.
2. Press the on (green) button on 104098. This indicator should now be green.
3. Place an empty drum under the ram plate. With the ram pressure set at 2 Bar lower the ram into the drum until it has made contact with the bottom of the drum. When the valve is tripped the indicator will switch to red (meaning pump off).
4. Set the trip valve so that it has just tripped, by between 5 – 10mm. Test this a number of times to make sure that the valve trips before the ram plate contacts the bottom of the drum.
5. If different drums are to be used then checks should be made to make sure that the valve is operated.

Setting up ram force for different materials

1. Place a fresh drum of material underneath the ram plate.
2. Open the primer screw assembly (193754).
3. Set the ram force to 2 Bar.
4. Select the Up / Stop / Down controller to **Down**.
5. A slight delay will occur before the ram starts to move. This is to allow air to exhaust from the 'up' side of the cylinder.
6. Check that the ram is going down squarely into the drum.
7. As the ram plate goes into the drum, air will be pushed out of the vent.
8. When material starts to come out of the vent, close the primer screw assembly.
9. Operate pump and system under normal operating conditions. At all times checking the pump for cavitation. On very thick, non-flowing materials pressures up to 5 Bar may be required, in order to prime the pump correctly. However high ram pressures must not be used on light free-flowing materials as leaks around the ram seals could develop.
10. When the air pressure is set use the "Raising the ram from a drum" procedure, and remove drum from the unit.
11. It is now time to set the speed of the "Up and Down" motion of the ram unit.
12. To adjust the speed of the "Up" motion screw in restrictor 194232 all the way then back out while testing up speed until desired speed is achieved.
13. Remove the cover from the 104097 control box mounted on the ram unit leaving the hoses connected. Operate the "up / down" valve and at the same time screw in or out the control valve (silencer / speed controller).
14. Do not use the pressure regulator to control the speed of the unit, as it will give an uneven movement.

Operation

Lowering the ram onto material

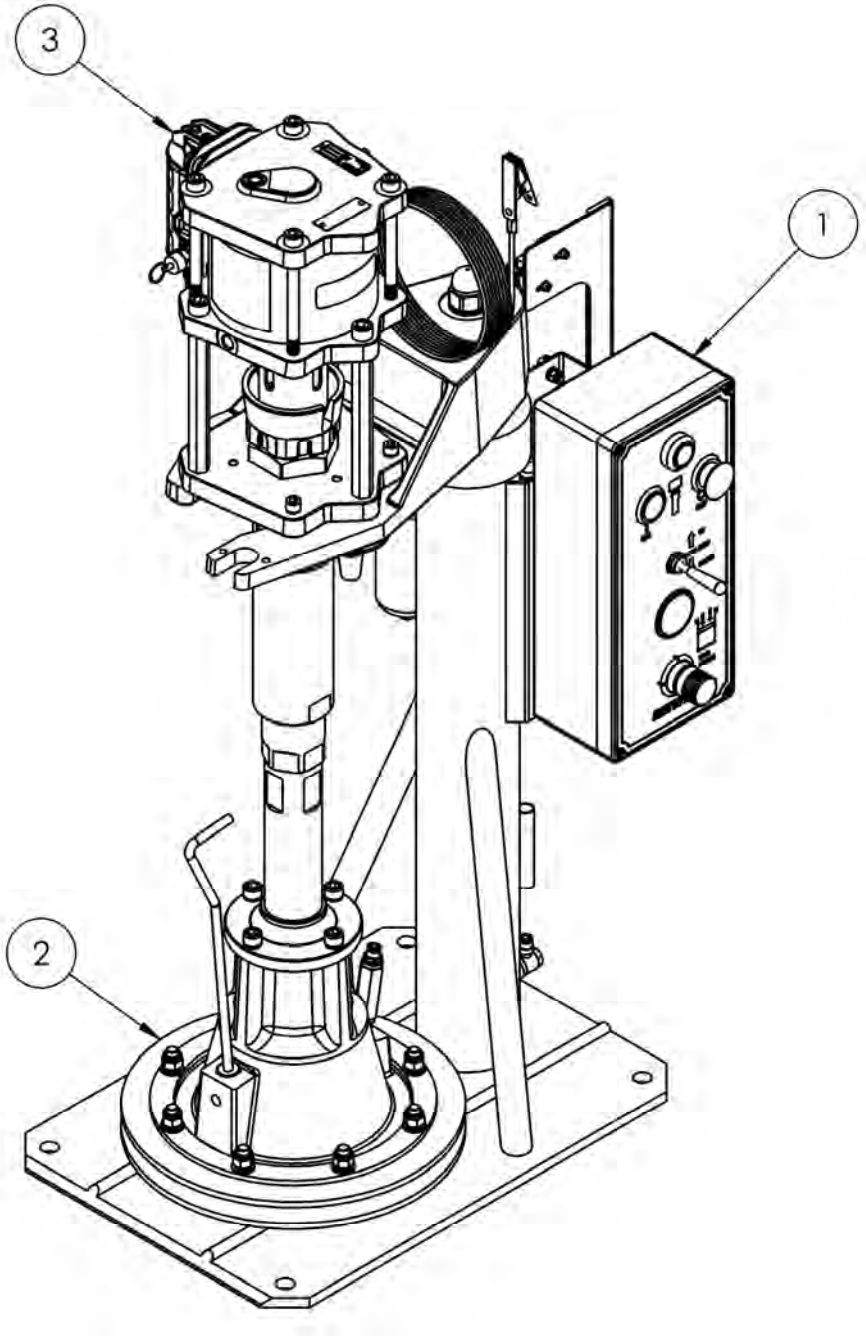
1. Place a fresh drum of material underneath the ram plate.
2. Open the primer screw assembly.
3. Select the Up / Stop / Down controller to **down**.
4. Make sure that the ram force is to the correct pressure. (see Setting up ram pressure)
5. A slight delay will occur before the ram starts to move. This is to allow air to exhaust from the 'up' side of the cylinder.
6. Check that the ram is going down squarely into the drum.
7. As the ram plate goes into the drum, air will be pushed out of the vent.
8. When material starts to come out of the vent, close the primer screw assembly.
9. The ram is now ready to use.

Raising the ram from a drum

1. Make sure that the pump is turned **off,** air pressure relieved and pump pressure also relieved.
2. Select the Up / Stop / Down controller to **up**.
3. As the ram starts to move inject small busts of compressed air by pressing the Drum Release button mounted on the side of the unit. This will slowly push the drum off the ram.
4. Be very carefully not to inject too much air, as air can escape between the ram plate seal and the drum. This is not dangerous but can make an unnecessary mess that requires cleaning.

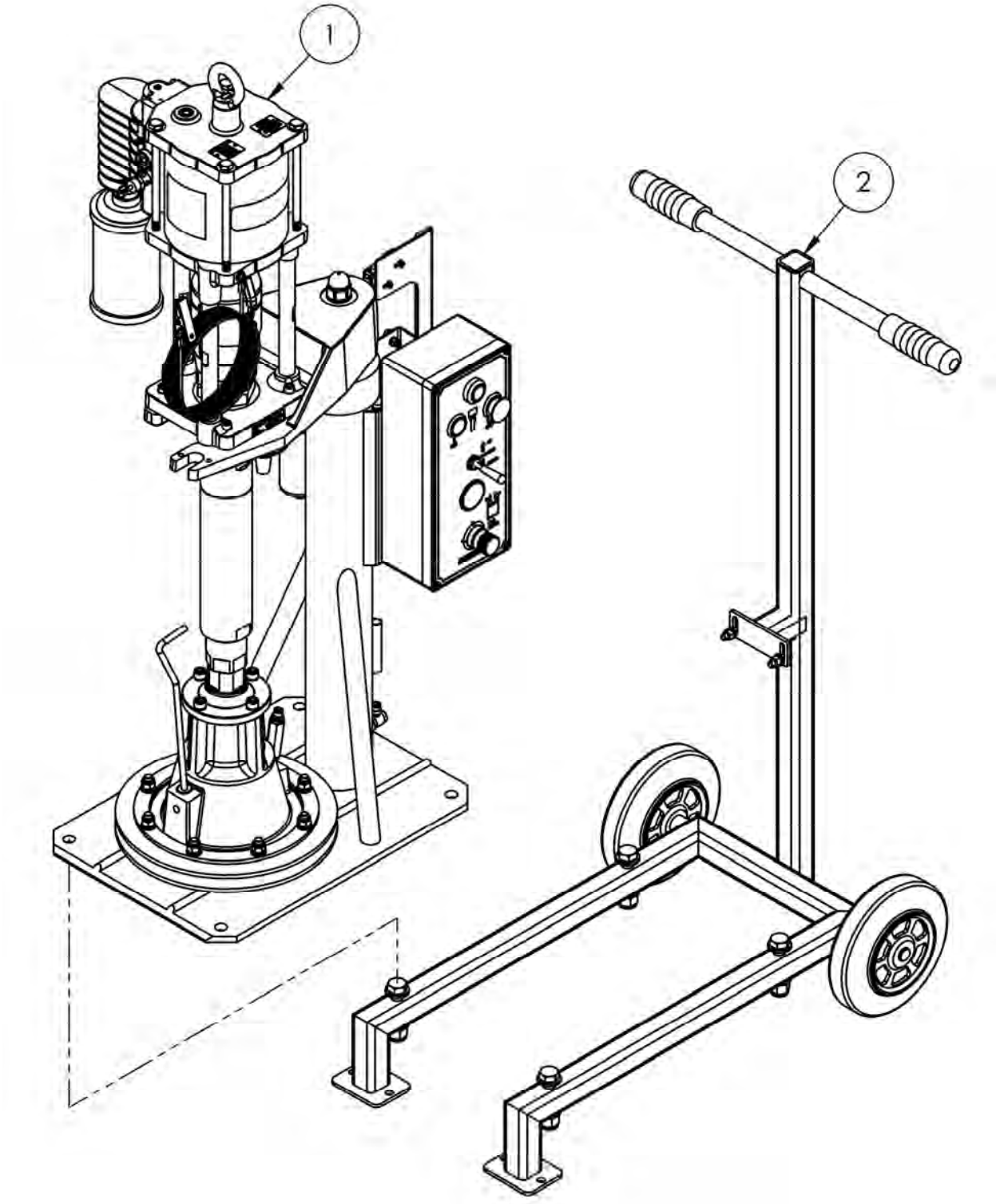
SR20 Outfit Assemblies

Parts List - SR20 Ram Unit Outfits				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	104110	20L RAM ASSEMBLY	1	
2	193916	20L RAM PLATE ASSEMBLY – PU	1	
2	193994	20L RAM PLATE ASSEMBLY - EPDM	1	
3	MX……	PUMP ASSEMBLY – SEE SELECTION TABLE	1	
4	193997	CONNECTION KIT – NOT SHOWN	1	MX68 PUMPS
5	194258	CONNECTION KIT – NOT SHOWN	1	MX11543, MX12241
6	194259	CONNECTION KIT – NOT SHOWN	1	MX11568



Cart Mounted Ram Assembly Drawing

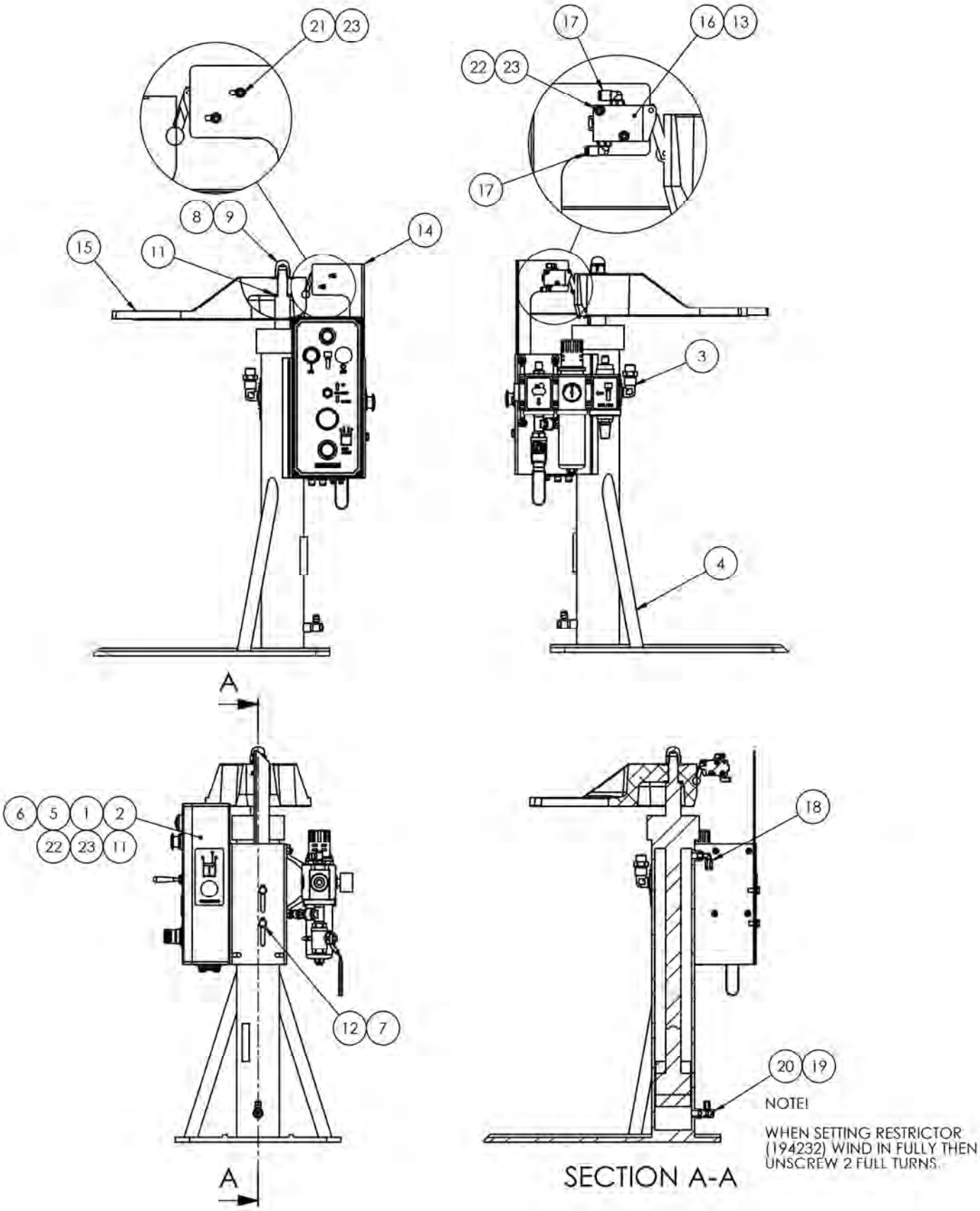
Parts List - Cart Mounted SR20 Ram Unit Outfits				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	SR20x-MX…	20L RAM UNIT OUTFIT	1	
2	104128	CART KIT	1	



Ram Unit Parts List

Parts List - 104110 Ram Unit				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	0115-010211	M6 NYLOCK NUT	2	
2	104097	RAM CONTROL BOX	1	
3	104098	RAM AIR REG SETUP	1	
4	104107	20L RAM ASSEMBLY	1	
5	163952	M6 x 20 SOCKET HD CAP SCREW	2	
6	165129	M6 WASHER	4	
7	165134	M8 WASHER	2	
8	165139	M20 SPRING WASHER	1	
9	177040	M20 DOME NUT	1	
10	177041	M4 x 45 SOCKET HD CAP SCREW	2	
11	177054	M20 PLAIN WASHER	1	
12	177056	M8 x 16 HEX HEAD SCREW	2	
13	192799	VENT PLUG	1	
14	193790	TRIP VALVE BRACKET	1	
15	193863	BRACKET MACHINING	1	
16	193907	TRIP ROD 3/2 VALVE	1	.
17	193908	1/8" Ø4 PUSH IN ELBOW	2	
18	193943	1/4" Ø6 PUSH IN ELBOW	1	
19	193966	Ø6 1/4" SINGLE BANJO RING	1	
20	194232	1/4" FLOW RESTRICTOR	1	
21	DVX-27	M4 x 25 CAP HEAD SCREW	2	
22	DVX-30	M4 NYLOC NUT	4	
23	DVX-31	M4 WASHER	6	
24	170244	Ø6 x 4 PU HOSE - BLACK	2m	NOT SHOWN
25	170245	Ø4 x 2.5 PU HOSE - BLACK	2m	NOT SHOWN

Ram Assembly Drawing



DR20/30/60 – Models

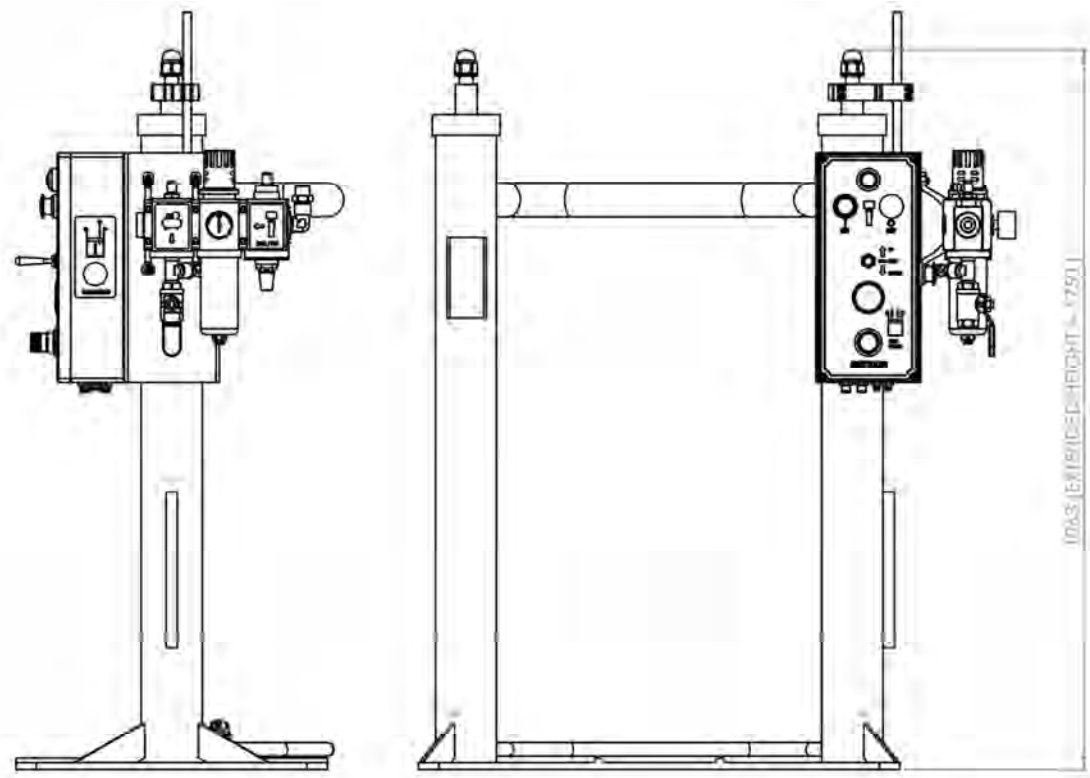
104102 - Installation

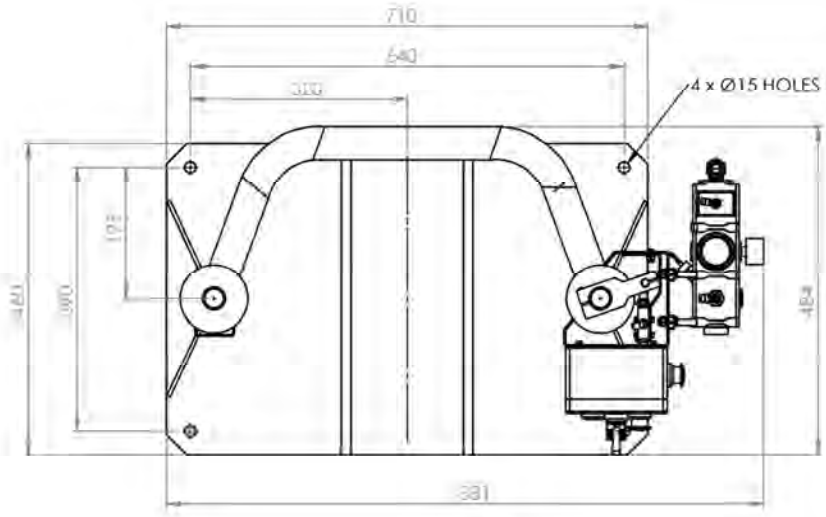
The ram plate base should be mounted on a stable and level floor.

The standard ram plate has 4off - holes Ø 15 mm to enable the base to be securely fixed to the floor. Suitable floor fixing 'rawbolts' should be used which are designed to suit the floor material.

Base plate = 710mm x 460mm. Mounting holes = 640mm x 390mm

A compressed air supply is connected to the 1/2" BSP F connection to control the lift and lowering of the air cylinders and supply the pump.





Operation Instructions

Setting up ram trip valve

1. Make sure that the air to the pump is turned off by fully unwinding the regulator on 104098.
2. Press the on (green) button on 104098. This indicator should now be green.
3. Place an empty drum under the ram plate. With the ram pressure set at 2 Bar lower the ram into the drum until it has made contact with the bottom of the drum. When the valve is tripped the indicator will switch to red (meaning pump off).
4. Set the trip valve so that it has just tripped, by between 5 – 10mm. Test this a number of times to make sure that the valve trips before the ram plate contacts the bottom of the drum.
5. If different drums are to be used then checks should be made to make sure that the valve is operated.

Setting up ram force for different materials

1. Place a fresh drum of material underneath the ram plate.
2. Open the ram plate priming screw assembly (193754).
3. Set the ram force to 2 Bar.
4. Select the Up / Stop / Down controller to **Down**.
5. A slight delay will occur before the ram starts to move. This is to allow air to exhaust from the ‘up’ side of the cylinder.
6. Check that the ram is going down squarely into the drum.
7. As the ram plate goes into the drum, air will be pushed out of the vent.
8. When material starts to come out of the vent, close the primer screw assembly.
9. Operate pump and system under normal operating conditions. At all times checking the pump for cavitation. On very thick, non-flowing materials pressures up to 5 Bar may be required, in order to prime the pump correctly. However high ram pressures must not be used on light free-flowing materials as leaks around the ram seals could develop.
10. When the air pressure is set use the “Raising the ram from a drum” procedure, and remove drum from the unit.
11. It is now time to set the speed of the “Up and Down” motion of the ram unit.
12. Remove the cover from the 104097 control box mounted on the ram unit leaving the hoses connected. Operate the “up / down” valve and at the same time screw in or out he control valve (silencer / speed controller). The motion needs to slow enough so that removing an empty drum can be one smooth operation, about 1 full stroke in 30 seconds.
13. Do not use the pressure regulator to control the speed of the unit, as it will give an uneven movement.

Operation

Lowering the ram onto material

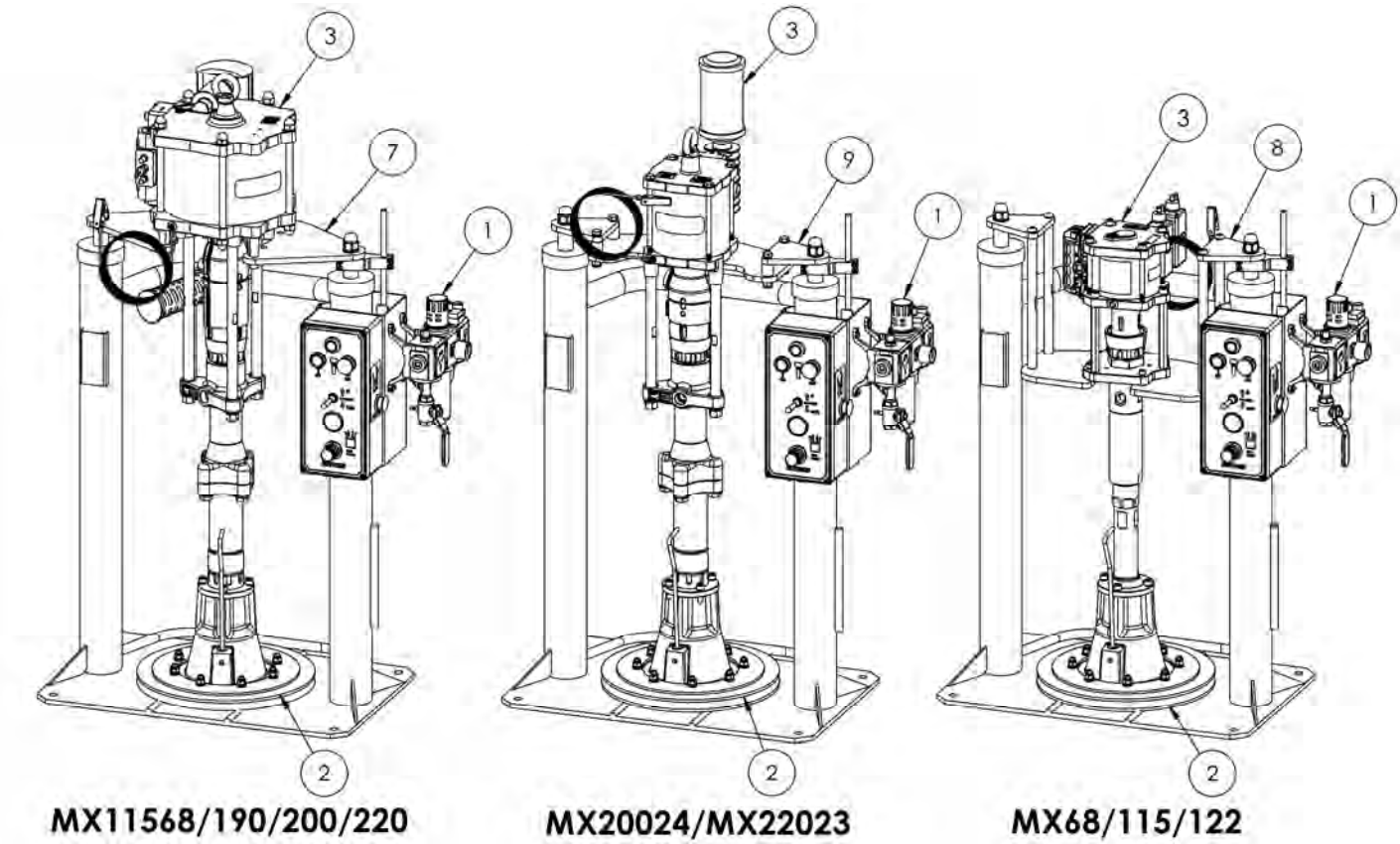
1. Place a fresh drum of material underneath the ram plate.
2. Open the ram primer screw assembly.
3. Select the Up / Stop / Down controller to **down**.
4. Make sure that the ram force is to the correct pressure. (see Setting up ram pressure)
5. A slight delay will occur before the ram starts to move. This is to allow air to exhaust from the 'up' side of the cylinders.
6. Check that the ram is going down squarely into the drum.
7. As the ram plate goes into the drum, air will be pushed out of the vent.
8. When material starts to come out of the vent, close the primer screw assembly.
9. The ram is now ready to use.

Raising the ram from a drum

1. Make sure that the pump is turned **off,** air pressure relieved and pump pressure also relieved.
2. Select the Up / Stop / Down controller to **up**.
3. As the ram starts to move inject small busts of compressed air by pressing the Drum Release button mounted on the side of the unit. This will slowly push the drum off the ram.
4. Be very carefully not to inject too much air, as air can escape between the ram plate seal and the drum. This is not dangerous but can make an unnecessary mess that requires cleaning.

DR20/30/60 Outfit Assemblies

Parts List - DR20/30/60 Ram Unit Outfits				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	104102	60L RAM ASSEMBLY	1	
2	193916	20L RAM PLATE ASSEMBLY – PU	1	
2	193994	20L RAM PLATE ASSEMBLY - EPDM	1	
2	193917	30L RAM PLATE ASSEMBLY – PU	1	
2	193995	30L RAM PLATE ASSEMBLY - EPDM	1	
2	193918	60L RAM PLATE ASSEMBLY – PU	1	
2	193996	60L RAM PLATE ASSEMBLY - EPDM	1	
3	MX……	PUMP ASSEMBLY – SEE SELECTION TABLE	1	
4	193998	CONNECTION KIT – NOT SHOWN	1	MX68 PUMPS
5	193999	CONNECTION KIT – NOT SHOWN	1	MX11568, 190/200/220 MODELS
6	194268	CONNECTION KIT – NOT SHOWN	1	MX11543, MX12241
7	193737	MOUNTING PLATE	1	MX11568, 190/200/220 MODELS
8	194005	MOUNTING PLATE ASSEMBLY	1	68/115/122 MODELS
9	194265	MOUNTING PLATE ASSEMBLY	1	MX20024, MX22023

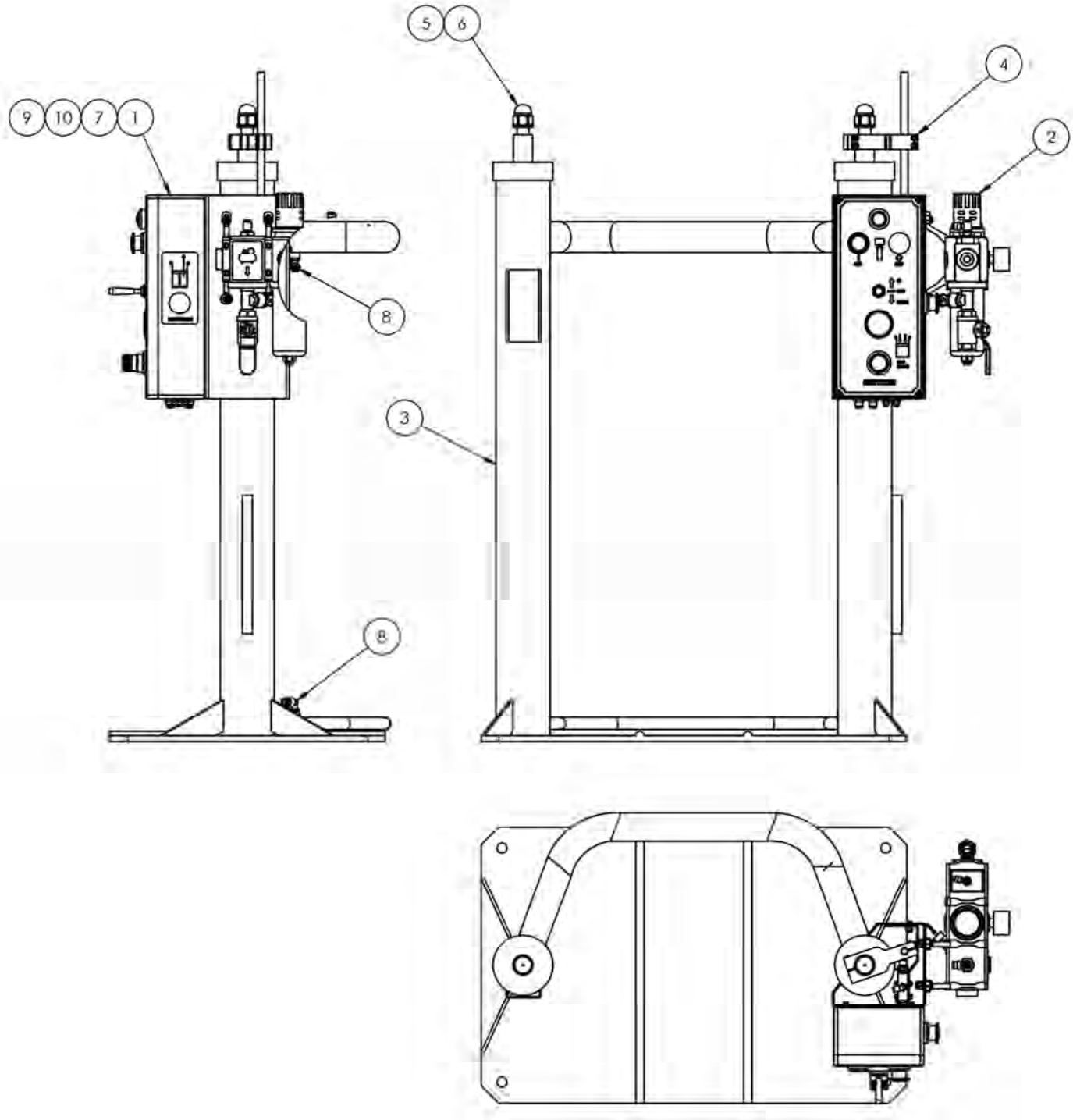


MX11568/190/200/220 MX20024/MX22023 MX68/115/122

Ram Unit Parts Lists

Parts List - 104102 Ram Unit				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	104097	RAM CONTROL BOX	1	
2	104098	RAM AIR REG SETUP	1	
3	104104	60L BARE RAM	1	
4	104105	TRIP ROD ASSEMBLY	1	
5	165139	M20 SPRING WASHER	2	
6	177040	M20 DOME NUT	2	
7	177041	M4 x 45 SOCKET HD CAP SCREW	4	
8	193943	¼" Ø6 PUSH IN ELBOW	2	
9	DVX-30	M4 NYLOC NUT	4	
10	DVX-31	M4 WASHER	4	
11	170244	Ø6 x 4 PU HOSE – BLACK	2m	
12	170245	Ø4 x 2.5 PU HOSE - BLACK	2m	

Assembly Drawing



DR205 & DRX205 – Models

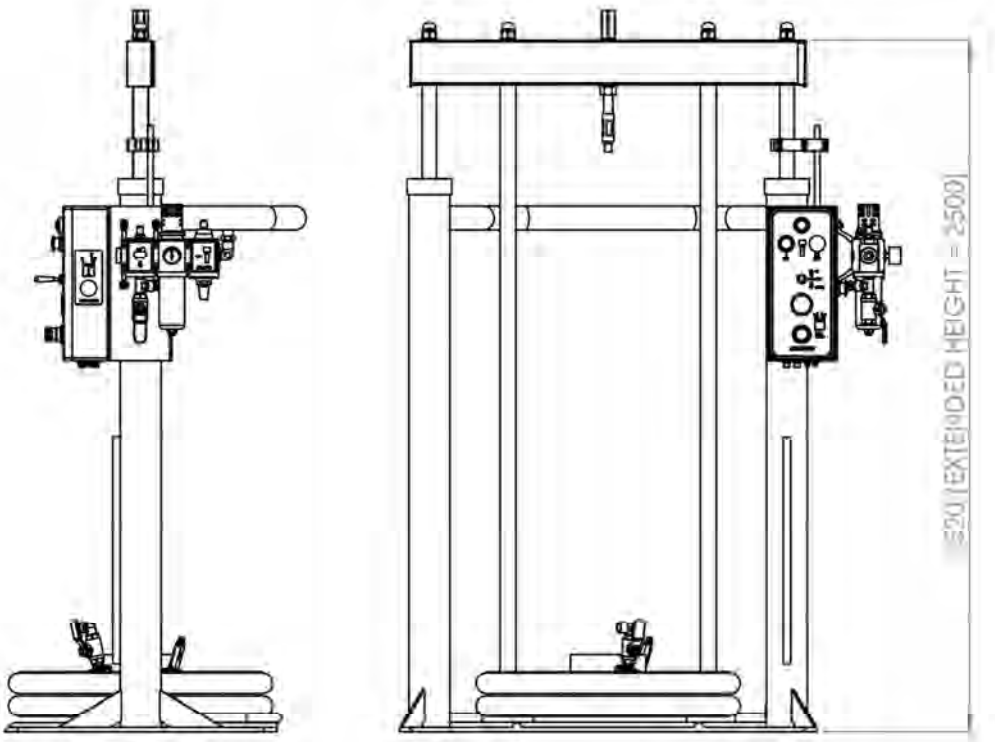
104094 - Installation

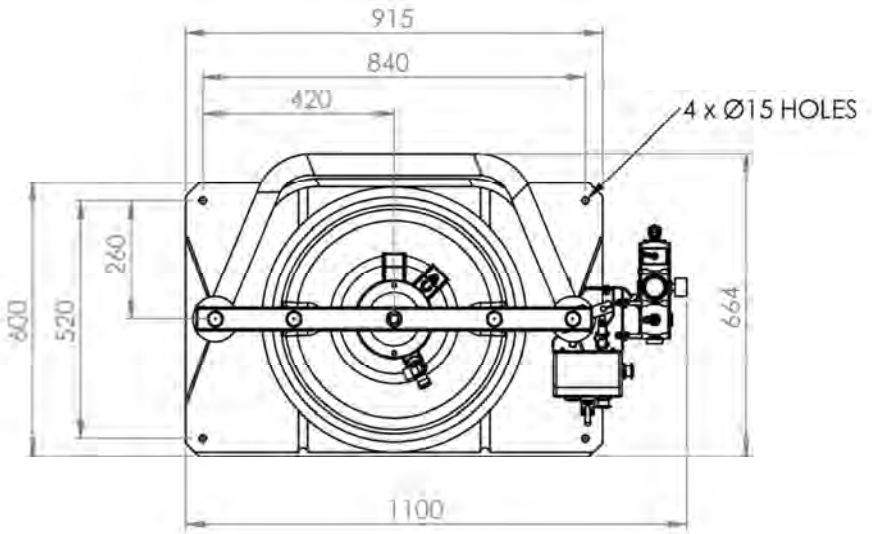
The ram plate base should be mounted on a stable and level floor.

The standard ram plate has 4off - holes Ø 15 mm to enable the base to be securely fixed to the floor. Suitable floor fixing 'rawbolts' should be used which are designed to suit the floor material.

Base plate = 915mm x 600mm. Mounting holes = 840mm x 520mm

A compressed air supply is connected to the 1/2" BSP F connection to control the lift and lowering of the air cylinders and supply the pump.





Operation Instructions

Setting up ram trip valve

1. Make sure that the air to the pump is turned off by fully unwinding the regulator on 104098.
2. Press the on (green) button on 104098. This indicator should now be green.
3. Place an empty drum under the ram plate. With the ram pressure set at 2 Bar lower the ram into the drum until it has made contact with the bottom of the drum. When the valve is tripped the indicator will switch to red (meaning pump off).
4. Set the trip valve so that it has just tripped, by between 5 – 10mm. Test this a number of times to make sure that the valve trips before the ram plate contacts the bottom of the drum.
5. If different drums are to be used then checks should be made to make sure that the valve is operated.

Setting up ram force for different materials

1. Place a fresh drum of material underneath the ram plate.
2. Open the ram plate venting ball valve.
3. Set the ram force to 2 Bar.
4. Select the Up / Stop / Down controller to **Down**.
5. A slight delay will occur before the ram starts to move. This is to allow air to exhaust from the 'up' side of the cylinders.
6. Check that the ram is going down squarely into the drum.
7. As the ram plate goes into the drum, air will be pushed out of the ball valve vent.
8. When material starts to come out of the vent, close the ball valve.
9. Operate pump and system under normal operating conditions. At all times checking the pump for cavitation. On very thick, non-flowing materials pressures up to 5 Bar may be required, in order to prime the pump correctly. However high ram pressures must not be used on light free-flowing materials as leaks around the ram seals could develop.
10. When the air pressure is set use the "Raising the ram from a drum" procedure, and remove drum from the unit.
11. It is now time to set the speed of the "Up and Down" motion of the ram unit.
12. Remove the cover from the 104097 control box mounted on the ram unit leaving the hoses connected. Operate the "up / down" valve and at the same time screw in or out he control valve (silencer / speed controller). The motion needs to slow enough so that removing an empty drum can be one smooth operation, about 1 full stroke in 30 seconds.
13. Do not use the pressure regulator to control the speed of the unit, as it will give an uneven movement.

Operation

Lowering the ram onto material

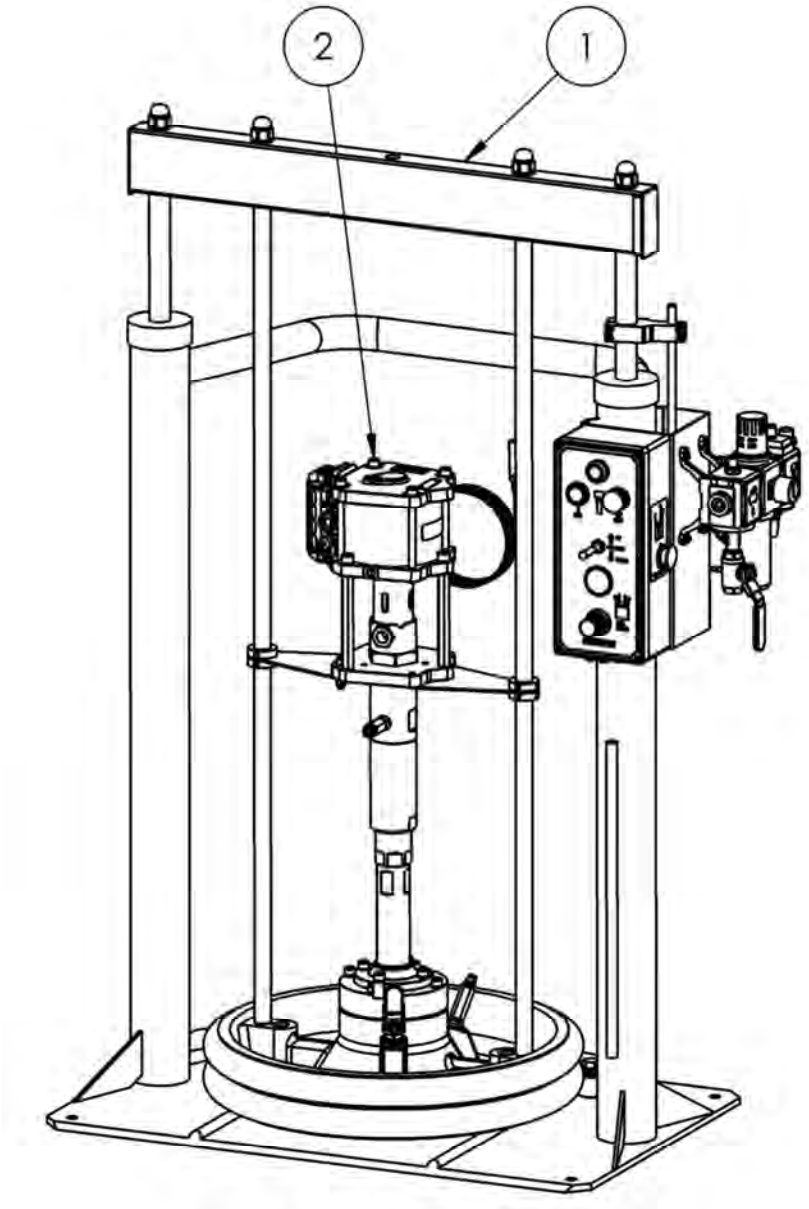
1. Place a fresh drum of material underneath the ram plate.
2. Open the ram plate venting ball valve.
3. Select the Up / Stop / Down controller to **down**.
4. Make sure that the ram force is to the correct pressure. (see Setting up ram pressure)
5. A slight delay will occur before the ram starts to move. This is to allow air to exhaust from the 'up' side of the cylinders.
6. Check that the ram is going down squarely into the drum.
7. As the ram plate goes into the drum, air will be pushed out of the vent ball valve.
8. When material starts to come out of the vent, close the ball valve.
9. The ram is now ready to use.

Raising the ram from a drum

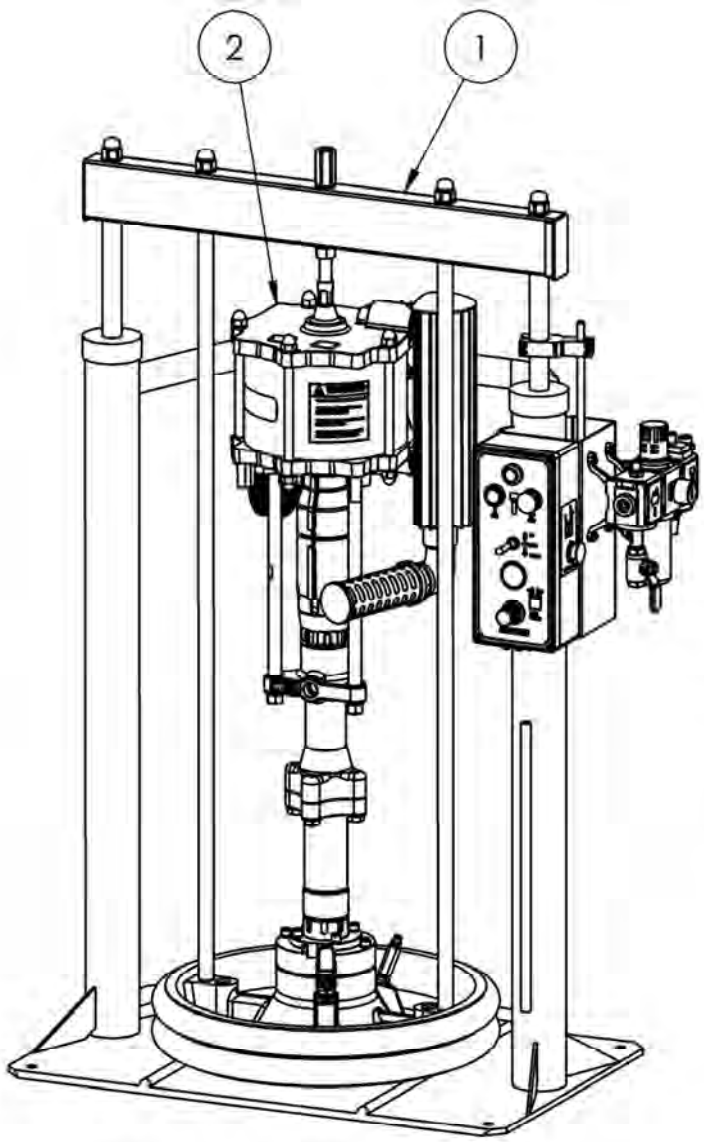
1. Make sure that the pump is turned **off,** air pressure relieved and pump pressure also relieved.
2. Select the Up / Stop / Down controller to **up**.
3. As the ram starts to move inject small busts of compressed air by pressing the Drum Release button mounted on the side of the unit. This will slowly push the drum off the ram.
4. Be very carefully not to inject too much air, as air can escape between the ram plate seal and the drum. This is not dangerous but can make an unnecessary mess that requires cleaning.

DR205 Outfit Assemblies

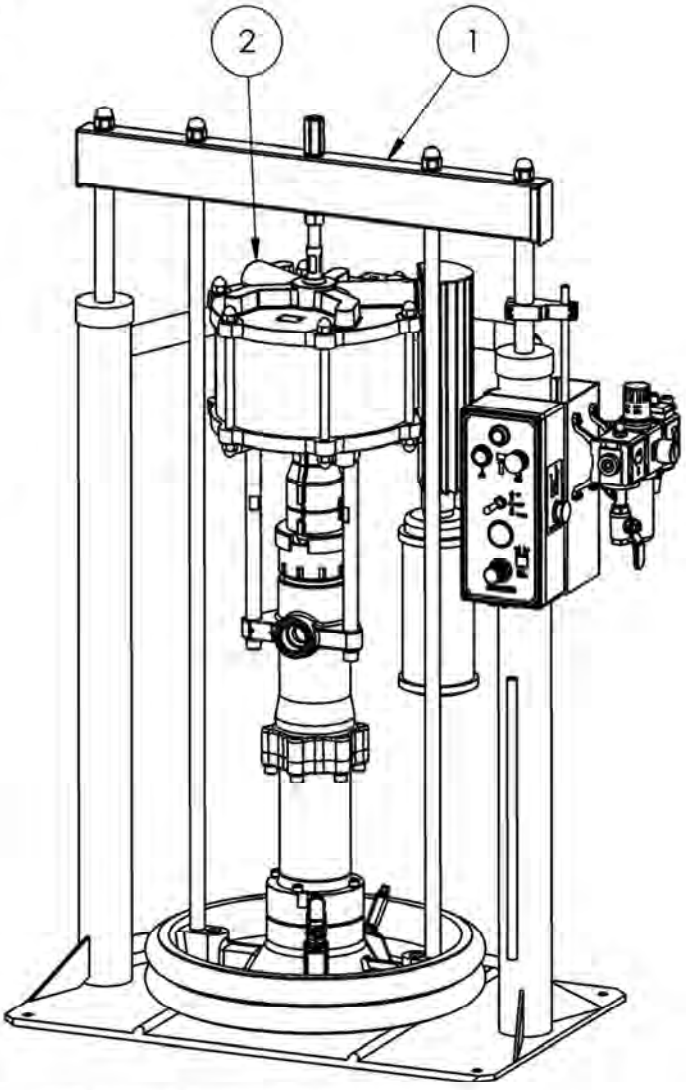
Parts List - DR205 Ram Unit Outfits				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	104094	205L RAM ASSEMBLY	1	
2	MX……	PUMP ASSEMBLY – SEE SELECTION TABLE	1	
3	194264	CONNECTION KIT – NOT SHOWN	1	68/115/122 MODELS
4	194000	CONNECTION KIT – NOT SHOWN	1	190/200/220 MODELS
5	194001	CONNECTION KIT – NOT SHOWN	1	420/440/860/880
6	194263	CONNECTION KIT – NOT SHOWN	1	MX11543 / MX12241
7	194253	CONNECTION KIT – NOT SHOWN	1	MX11568
8	194257	CONNECTION KIT – NOT SHOWN	1	MX20024 / MX22023



MX68/115/122 MODELS



MX190/200/220 MODELS

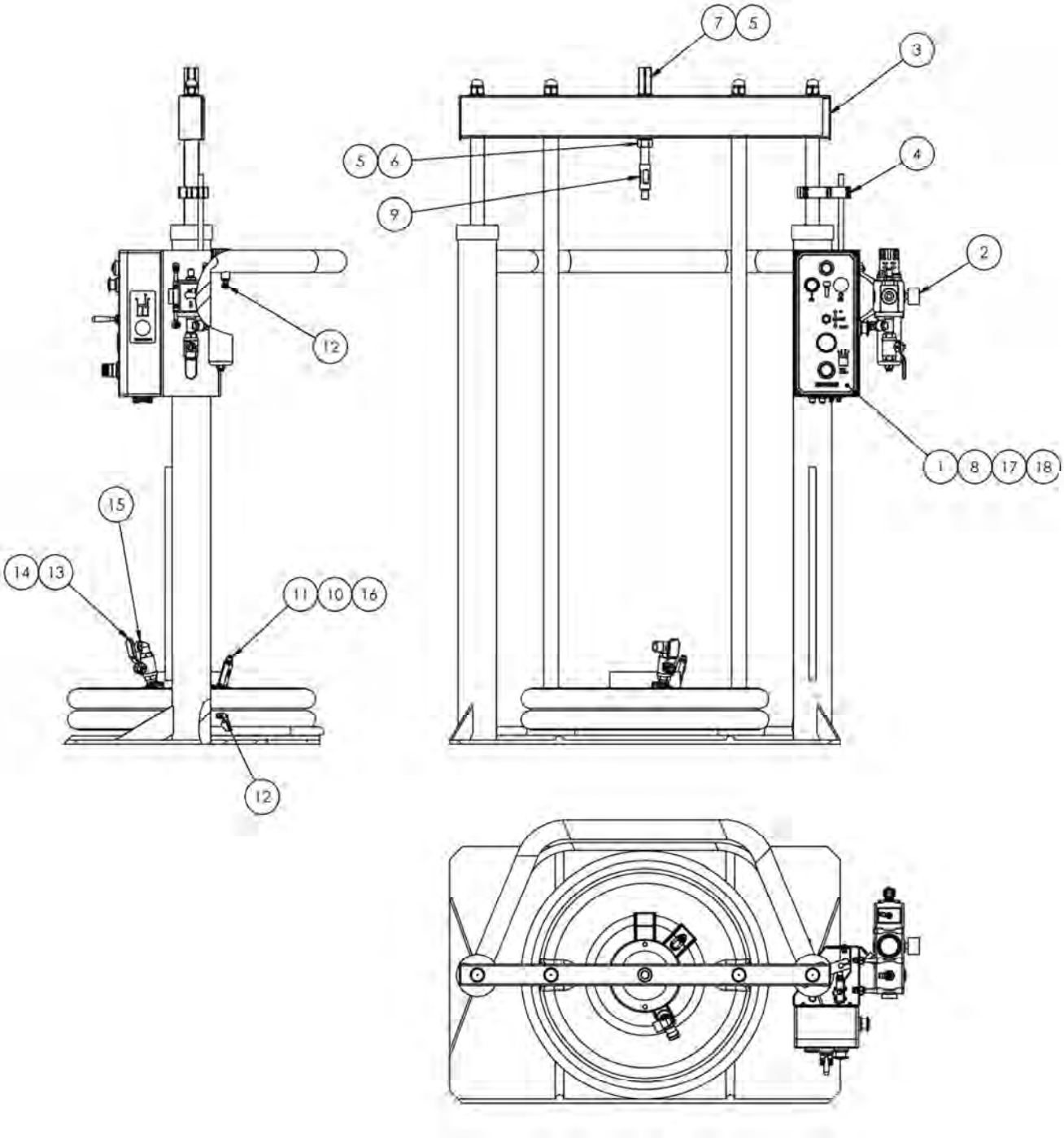


MX420/440/860/880 MODELS

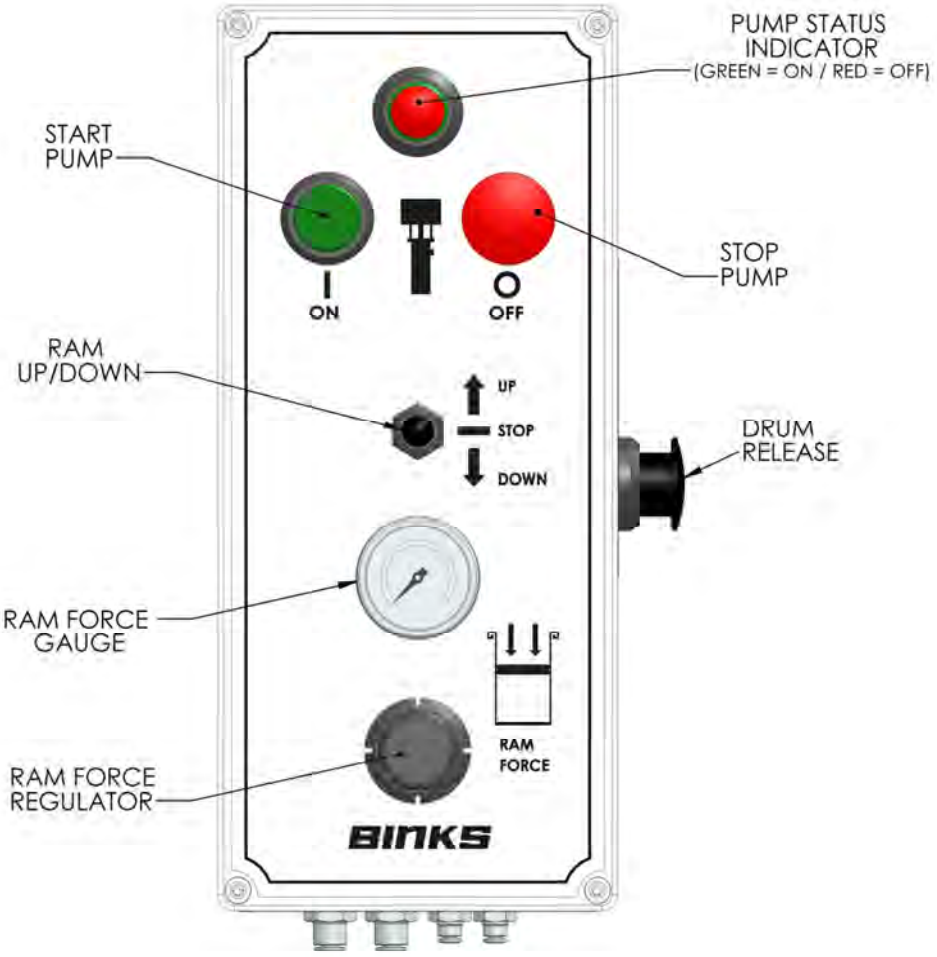
Ram Unit Parts Lists

Parts List - 104094 Ram Unit				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	104097	RAM CONTROL BOX	1	
2	104098	RAM AIR REG UNIT	1	
3	104103	205L BARE RAM UNIT	1	
4	104105	TRIP ROD ASSEMBLY	1	
5	165139	M20 SPRING WASHER - PLATED	2	
6	177034	M20 HEX NUT - PLATED	1	
7	177035	M20 STUD CONNECTOR - PLATED	1	
8	177041	M4 x 45 SOCKET HD CAP SCREW - PLATED	4	
9	193765	SUPPORT BAR	1	
10	193768	1/4" NON RETURN VALVE	1	
11	193769	1/4" - Ø6 PUSH IN STRAIGHT - PLATED BRASS	1	
12	193943	1/4" Ø6 PUSH IN ELBOW - PLATED BRASS	2	
13	193944	1/2" PLATED BRASS BALL VALVE	1	
14	193945	1/2" BSPT - 1/2" BSPT NIPPLE - PLATED BRASS	1	
15	193946	1/2" MALE - 1/2" FEMALE ELBOW	1	
16	0115-010682	3/8" MALE - 1/4" MALE NIPPLE	1	
17	DVX-30	M4 NYLOC NUT	4	
18	DVX-31	M4 WASHER	8	
19	170244	Ø6 x 4 PU HOSE - BLACK	3m	NOT SHOWN
20	170245	Ø4 x 2.5 PU HOSE - BLACK	2m	NOT SHOWN

Assembly Drawing



104097 Ram Control Box Details



Ø6mm PUSH IN

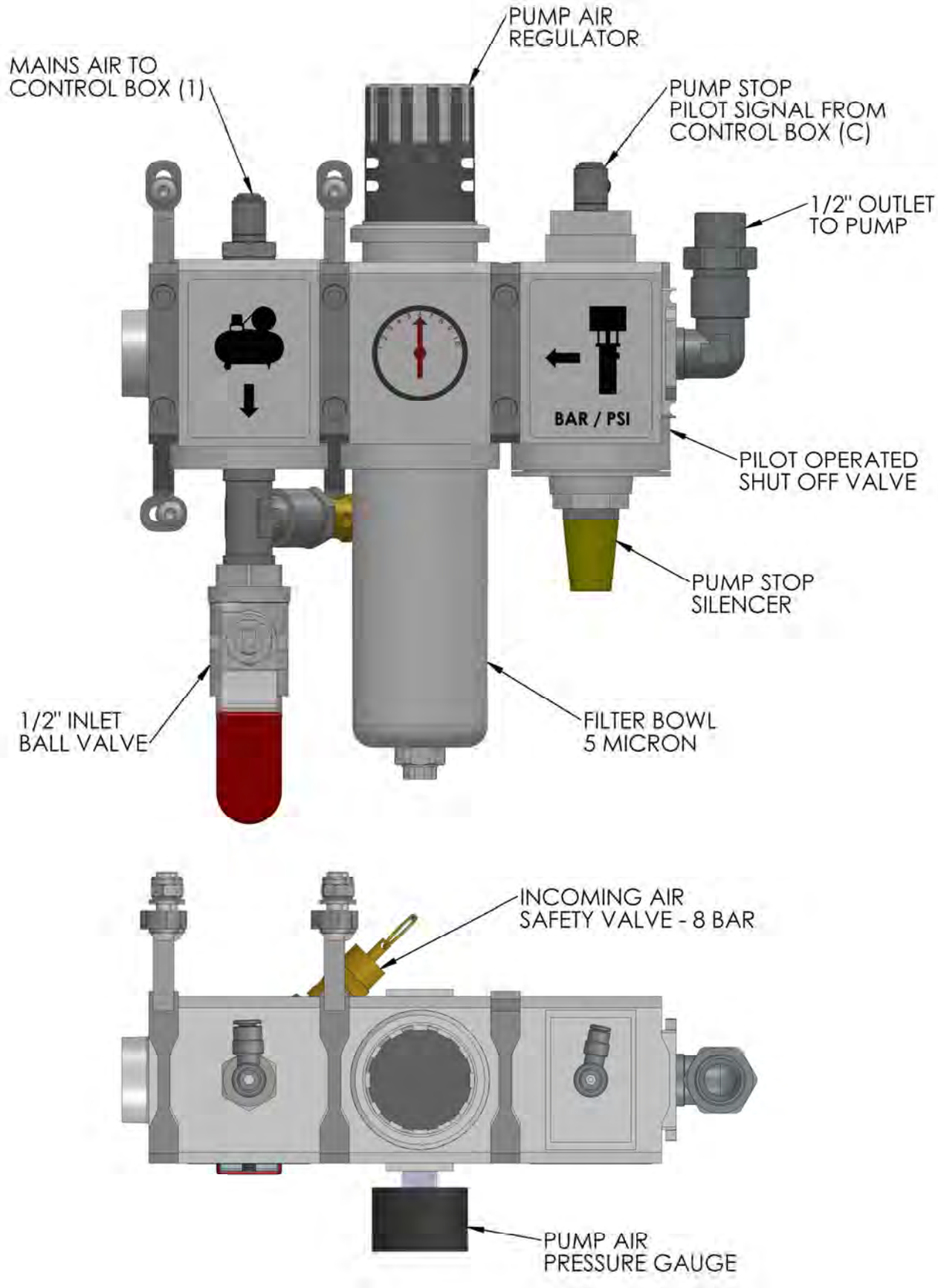
1 = MAINS AIR INLET
2 = RAM UP
3 = RAM DOWN
4 = DRUM RELEASE

Ø4mm PUSH IN

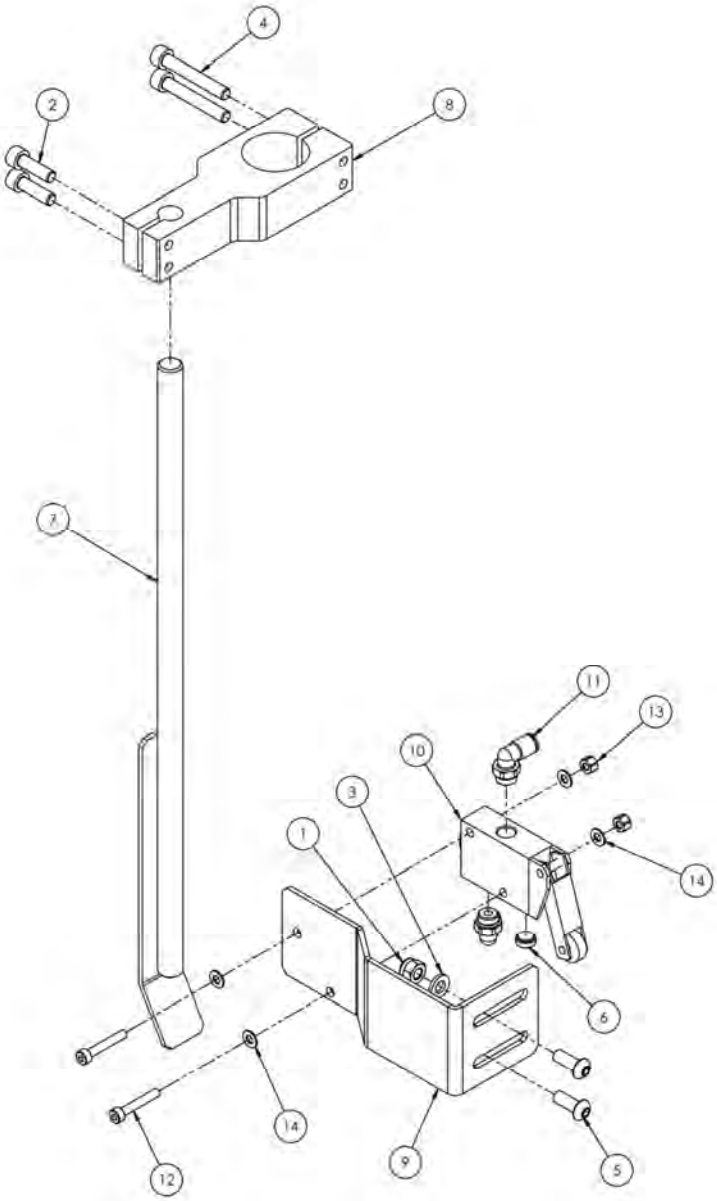
A = MAINS AIR TO TRIP ROD
B = TRIP ROD SIGNAL
C = PUMP SHUT OFF SIGNAL

WHEN LINKED TO AUTOCHANGEOVER
D = DRUM EMPTY SIGNAL
E = PUMP START SIGNAL

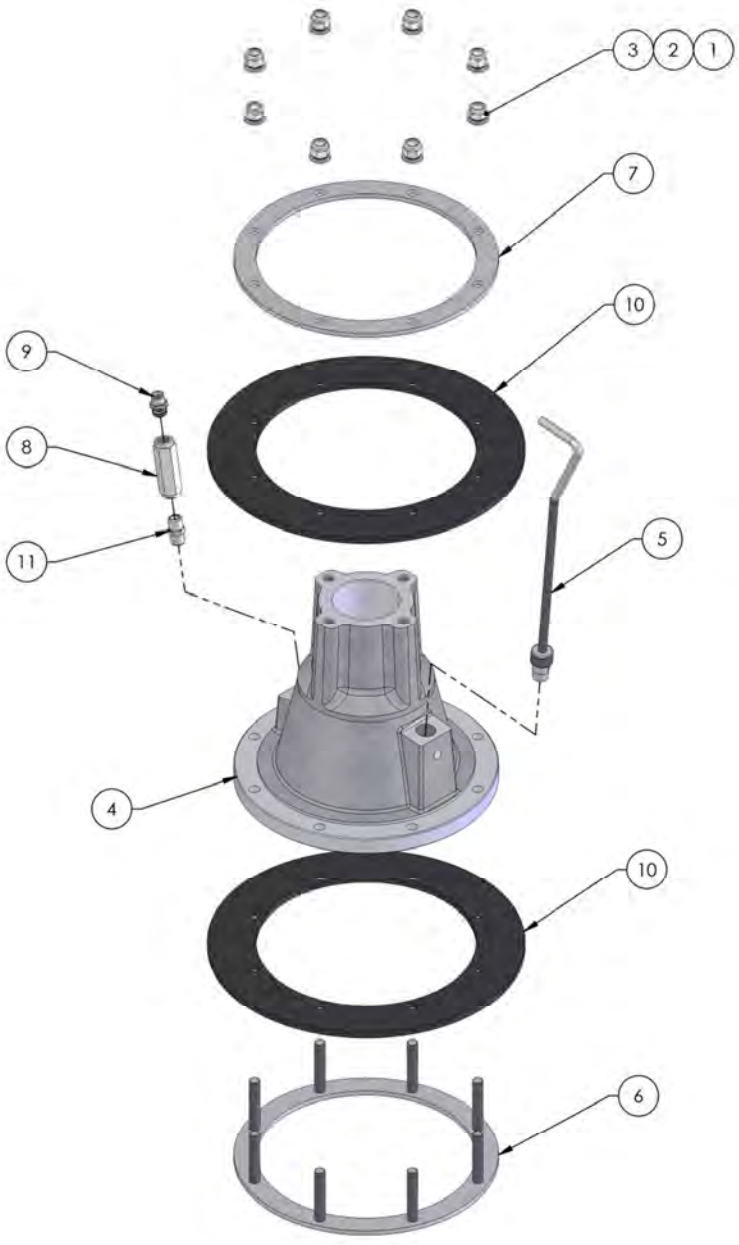
104098 Air Regulator Unit



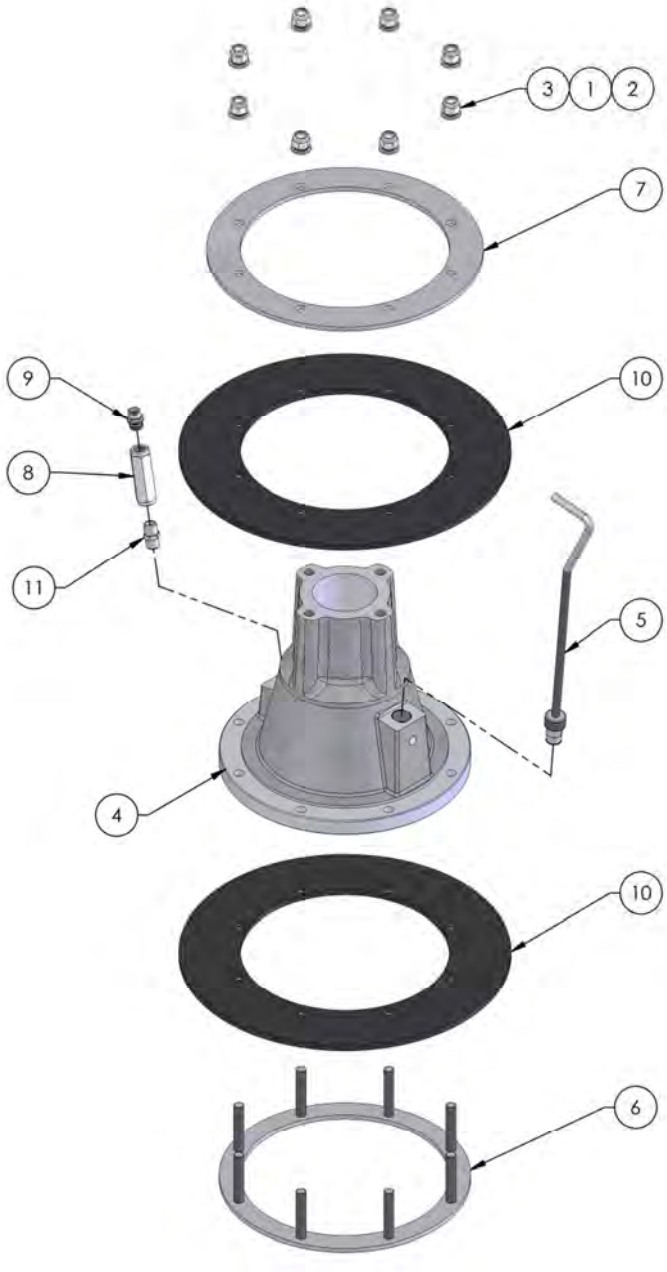
Parts List - 104105 Trip Rod Assembly				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	0115-010211	M6 NYLOC	2	
2	163952	M6 x 20 CAP HD SCREW	2	
3	165129	M6 WASHER	2	
4	165546	M6 x 40 CAP HD SCREW	2	
5	177031	M6 x 16 BUTTON HEAD SCREW	2	
6	192799	VENT PLUG	1	
7	193902	TRIP ROD ASSEMBLY	1	
8	193905	TRIP ROD CLAMP	1	
9	193906	VALVE BRACKET	1	
10	193907	TRIP ROD 3/2 VALVE	1	#
11	193908	1/8" Ø4 PUSH IN ELBOW	2	
12	DVX-27	M4x25 CAP HEAD SCREW	2	
13	DVX-30	M4 NYLOC NUT	2	
14	DVX-31	M4 WASHER	4	
# - Recommended spares for 104105				



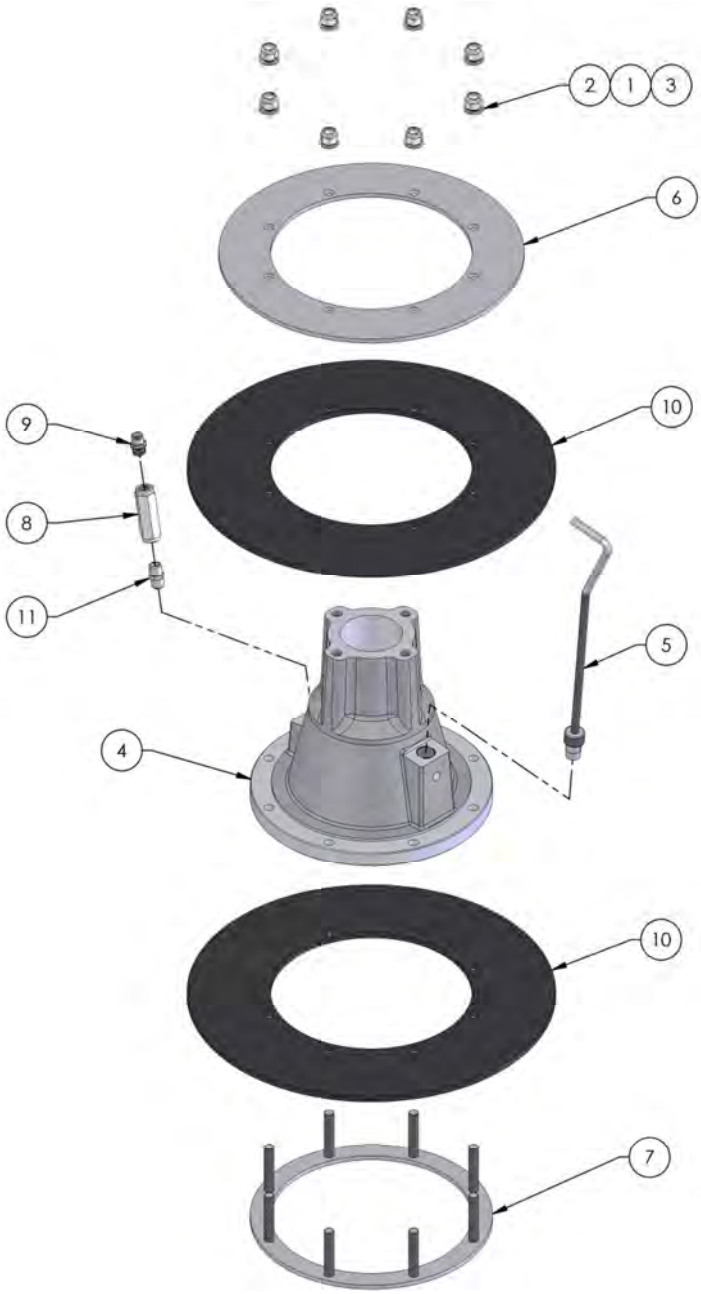
Parts List - 193994 / 193916 Ram Plate 20L / 5G				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	165123	Ø10 SPRING WASHER (STST)	8	
2	165135	M10 PLAIN WASHER (ST ST)	8	
3	177005	M10 HEX NUT	8	
4	193749	60L RAM PLATE MACHINING	1	
5	193754	PRIMER SCREW ASSEMBLY	1	
6	193758	LOWER CLAMP RING ASSEMBLY	1	
7	193761	20L SEAL CLAMP RING	1	
8	193768	1/4" NON RETURN VALVE	1	
9	193769	1/4" - Ø6 PUSH IN STRAIGHT - PLATED BRASS	1	
10	193991	Ø300 SEAL - EDPM	2	*193994*
10	193913	Ø300 SEAL - PU	2	*193916*
11	193948	1/4" MALE - 1/4" MALE NIPPLE - PLATED BRASS	1	



Parts List - 193917 / 193995 Ram Plate 30L / 7.5G				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	165123	Ø10 SPRING WASHER	8	
2	165135	M10 PLAIN WASHER	8	
3	177005	M10 HEX NUT	8	
4	193749	60L RAM PLATE MACHINING	1	
5	193754	PRIMER SCREW ASSEMBLY	1	
6	193758	LOWER CLAMP RING ASSEMBLY	1	
7	193760	30L SEAL CLAMP RING	1	
8	193768	1/4" NON RETURN VALVE	1	
9	193769	1/4" - Ø6 PUSH IN STRAIGHT	1	
10	193992	Ø330 SEAL - EDPM	2	*193995*
10	193914	Ø330 SEAL - PU	2	*193917*
11	193948	1/4" MALE - 1/4" MALE NIPPLE	1	



Parts List - 193918 / 193996 Ram Plate 60L / 15G				
Item	**Part No.**	**Description**	**Qty.**	**Remarks**
1	165123	Ø10 SPRING WASHER	8	
2	165135	M10 PLAIN WASHER	8	
3	177005	M10 HEX NUT	8	
4	193749	60L RAM PLATE MACHINING	1	
5	193754	PRIMER SCREW ASSEMBLY	1	
6	193758	LOWER CLAMP RING ASSEMBLY	1	
7	193757	60L SEAL CLAMP RING	1	
8	193768	1/4" NON RETURN VALVE	1	
9	193769	1/4" - Ø6 PUSH IN STRAIGHT	1	
10	193993	Ø380 SEAL - EDPM	2	*193996*
10	193915	Ø380 SEAL - PU	2	*193918*
11	193948	1/4" MALE - 1/4" MALE NIPPLE	1	



Accessories			
Item	**Part No.**	**Description**	**Remarks**
1	104099	Auto Change Over Panel	To Automatically change over to a Standby Ram Unit when the Duty Ram Unit is empty (Bottom Position)
2	0110-009130	High Pressure Filter (100 Mesh)	0110-009131 – 50 Mesh 0110-009133 – 150 Mesh 0110-009134 – 200 Mesh
3	0114-011760	High Pressure Filter (100 Mesh) (500 Bar Max.)	0114-014917 – 30 Mesh 0114-014886 – 50 Mesh 0114-014884 – 70 Mesh 0114-014883 – 100 Mesh 0114-014882 – 150 Mesh 0114-014881 – 200 Mesh
4	0115-010672	Dump Valve Kit	½" NPSM F Swivel – ¼" BSP/NPS M
5	0114-016099	Pump Lubrication	Water Based – 0.25L
6	0114-016100	Pump Lubrication	Solvent Based – 0.25L
7	0114-014871	Pump Lubrication	Water Based – 0.5L
8	0114-009433	Pump Lubrication	Solvent Based – 0.5L
9	107866	Filter Housing St St	191833 – 200 Micron Element St St 191834 – 400 Micron Element St St 192523 – 600 Micron Element St St 192524 – 1200 Micron Element St St
10	107867	Filter Housing Carbon St	
11	107876	Twin Filter Housing Assembly St St	Filter Element to be Specified Separately
12	107877	Twin Filter Housing Assembly Carbon St	Filter Element to be Specified Separately

# Spare Parts For - (SR20) 104110 Ram Unit				
Item	**Part No.**	**Description**	**Qty**	**Remarks**
1	193907	3/2 Trip Valve	1	
2	250700	Ram Cylinder Seal Kit	1	
4	193768	¼" Non Return Valve	1	
5	193769	¼" – Ø6 Push In Straight	1	
6	193943	¼" – Ø6 Push In Elbow	2	
7	193908	1/8" – Ø4 Push In Elbow	2	
8	170244	Ø6 x 4 PU Hose – Black	2m	
9	170245	Ø4 x 2.5 PU Hose - Black	2m	
10	193913	Ø300 Seal - PU	2	
11	193991	Ø300 Seal – EPDM	2	

# Spare Parts For – (DR20/30/60) 104102 Ram Unit				
Item	**Part No.**	**Description**	**Qty**	**Remarks**
1	250700	Ram Cylinder Seal Kit	2	
2	193768	¼" Non Return Valve	1	
3	193769	¼" – Ø6 Push In Straight	1	
4	193943	¼" – Ø6 Push In Elbow	2	
5	193908	1/8" – Ø4 Push In Elbow	2	
6	170244	Ø6 x 4 PU Hose – Black	2m	
7	170245	Ø4 x 2.5 PU Hose - Black	2m	
8	193913	Ø300 Seal – PU	2	20L
9	193991	Ø300 Seal – EPDM	2	20L
10	193914	Ø330 Seal – PU	2	30L
11	193992	Ø330 Seal – EPDM	2	30L
12	193915	Ø380 Seal – PU	2	60L
13	193993	Ø380 Seal – EPDM	2	60L

# Spare Parts For – (DR205) 104094 Ram Unit				
Item	**Part No.**	**Description**	**Qty**	**Remarks**
1	207064	Wiper ring	2	
2	202522	Strapping	2	
3	181672	Strap buckle	4	
4	193768	¼" Non Return Valve	1	
5	193769	¼" – Ø6 Push In Straight	1	
6	193943	¼" – Ø6 Push In Elbow	2	
7	193947	½" Male – ¼" Male Nipple	1	
8	170244	Ø6 x 4 PU Hose – Black	3m	
9	170245	Ø4 x 2.5 PU Hose - Black	2m	
10	250700	Ram Cylinder Seal Kit	2	
11	181422	Gasket	1	

# Spare Parts For - 104105 Trip Valve Kit				
Item	**Part No.**	**Description**	**Qty**	**Remarks**
1	193907	3/2 Trip Valve	1	

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