



HIDROMAS



OPERATION AND MAINTENANCE MANUAL

Manual No : ZI1102206A-23





Dear Professional Driver,

Welcome to the comprehensive guide designed specifically for you, providing essential insights into the enduring and reliable FE (C Type) and FC (H Type) Cylinder Kits crafted by "HIDROMAS GLOBAL." Our commitment to delivering hydraulic solutions that epitomize trustworthiness, sustainability, and durability remains unwavering under our new global identity.

In the competitive landscape where names like Hyva and Binotto prevail, HIDROMAS GLOBAL stands out by not only meeting but exceeding your expectations. Trust in our products is paramount, and we assure you that our FE (C Type) and FC (H Type) equipment are engineered for robust performance and longevity.

Sustainability is at the core of our philosophy. We understand the importance of minimizing environmental impact while maximizing efficiency. Our cylinder kits are designed with sustainability in mind, contributing to a greener and more responsible operation.

Durability is a hallmark of HIDROMAS GLOBAL products. We recognize the demands of your profession and have meticulously crafted our equipment to withstand the rigors of daily use. Expect a long and dependable service life from our FE (C Type) and FC (H Type) Cylinder Kits.

As you navigate through this manual, you'll find recommendations not just for selecting, verifying, and maintaining your equipment but also for ensuring its enduring performance. Our emphasis on service and maintenance tasks at specified intervals is a testament to our commitment to your equipment's long life.

The fault diagnosis section in this manual serves as your reliable companion in identifying and resolving issues systematically, reinforcing our dedication to minimizing downtime and maximizing your operational efficiency.

Thank you for choosing HIDROMAS GLOBAL as your hydraulic solutions partner. We are confident that our FE (C Type) and FC (H Type) Cylinder Kits will not only guide you through the intricacies of your equipment but also contribute to enhancing your overall experience as a tipper driver.

Drive on with confidence,

HIDROMAS GLOBAL

"HIDROMAS GLOBAL". All right reserved.
This document can not be reproduced in part or in Whole
Without implicit permission from "HIDROMAS GLOBAL"



Disclaimer:

This manual serves as a comprehensive guide for the routine maintenance of telescopic cylinders, pumps, valves, and filters manufactured by "Hidromas GLOBAL." The illustrations and photographs included in this manual are intended strictly for reference purposes during the processes of disassembly and reassembly.

"Hidromas GLOBAL" disclaims any liability and holds no responsibility for damages resulting from the use of inadequate tools or any other form of damage incurred due to the installation of incorrect or non-recommended replacement parts. Users are strongly advised to seek guidance from their local "Hidromas GLOBAL" dealer for any clarification or interpretation of the content within this manual.

Please be aware that all information provided is subject to change, and users are encouraged to stay updated with any modifications or amendments communicated by "Hidromas GLOBAL."



CYLINDER

2. CHOOSING THE CYLINDER	08
3. SAFETY	
3.1 General principle of Tipper Operation	09
3.2 General Safety Measures	10
3.3 Vehicle Keepers Responsibilities	10
3.4 Visual Inspection	11
3.5 Handling	11
3.6 Hydraulic Oil	11
3.7 Pressure in the Cylinder	11
4. INSTALLATION OF CYLINDER - SUGGESTIONS & RECOMMENDATION	
4.1 General Remarks	13
4.2 Precautions	14
4.3 Storage	14
4.4 Oil Tank	14
4.5 Pump	14
4.6 Filtering Device	14
5. MAINTENANCE OF CYLINDER	
5.1 Cylinders	16
5.2 Recycling of Cylinders	16
5.3 Reuse of Components	17
6. FE (C TYPE) CYLINDER PARTS	18
7. DISMANTLING THE CYLINDER	
7.1 Removing Rod Eye from Stage Tube	19
7.2 Opening the Base	20
7.3 Removing the Stage Tube	21
8. ASSEMBLY OF CYLINDER	
8.1 Replacing Pack set	24
8.2 Replacing Stages	26
8.3 Fitting rod eye / head	27
8.4 Closing The Cylinder	28



9. CONNECTION OF THE HYDRAULICS SYSTEM

9.1 Connection of Hydraulic System	31
9.2 Final Checks	31

10. CYLINDER TROUBLESHOOTING 32

GEAR PUMP

11. GEAR PUMP PARTS 36

12. INLET & OUTLET OF PUMPS 37

13. GEAR PUMP SAFETY

13.1 Explanation of Guidance	38
13.2 Storage	38
13.3 Non- Metallic Parts	38
13.4 Metallic Parts	38
13.5 Prior to use	38

14. RECYCLING OF PUMP

14.1 General	38
14.2 Reuse of Components	39

15. DISMANTLING THE PUMP 39

16. ASSEMBLY OF PUMP

16.1 Installation Of Seals	41
16.2 Installation of Thrust Plate	42
16.3 Installation of Gears & Thrust plate	42
16.4 Installation of Bolt & Torque	43
16.5 Shaft Rotation Inspection with Special Tool	43

17. TROUBLE SHOOTING OF GEAR PUMP 44



DIRECTIONAL CONTROL VALVE

18.DCV PARTS	46
19.GENERAL MOUNTING INFORMATION OF DCV	47
20.DISMANTLING OF DCV	
20.1 Dismantling of Pneumatic Base & Base Cover	48
20.2 Dismantling of Circlip & Metal cover	49
20.3 Dismantling of Spool with Piston	50
20.4 Dismantling of Pressure Cartridge	52
20.5 Dismantling Tips	53
20.6 Valve Check points	53
21.TROUBLE SHOOTING OF DCV	54

AIR CONTROL VALVE

22.GENERAL INFORMATION OF ACV	
22.1 Activation and Controlling the Hydraulic System	56
22.2 PTO(Power Take Off)	57
22.3 To Engage the PTO	57
22.4 Disengage the PTO	57
22.5 Tipper (air) Control	57
23.TROUBLESHOOTING OF ACV	58

RETURN LINE FILTER

24.RETURN LINE FILTER 150L BUILT IN TYPE	60
25.RETURN LINE FILTER ASSEMBLY WITH AL PLATE -TAMPERED	61

BREATHER ASSEMBLY

26.BREATHER FILTER ASSEMBLY	63
-----------------------------	----

BODY LOCK KIT

27.BODY LOCK KIT	
27.1 General	65
27.2 Welding of Body Lock Kit	65
27.3 Dismantling of Body Lock Kit	65



HOSES & ADAPTERS

28.SUCTION & HIGH PRESSURE HOSES	67
29.HOSE ORIENTATION	67
30.RECOMMENDED REPLACEMENTS	70
31.AFTER INSTALLATION CHECKS	71
32.MAINTENANCE SCHEDULE	72
33.WARRANT GUIDELINES	73
34.TIPPER HYDRAULIC CIRCUIT DRAWING	75

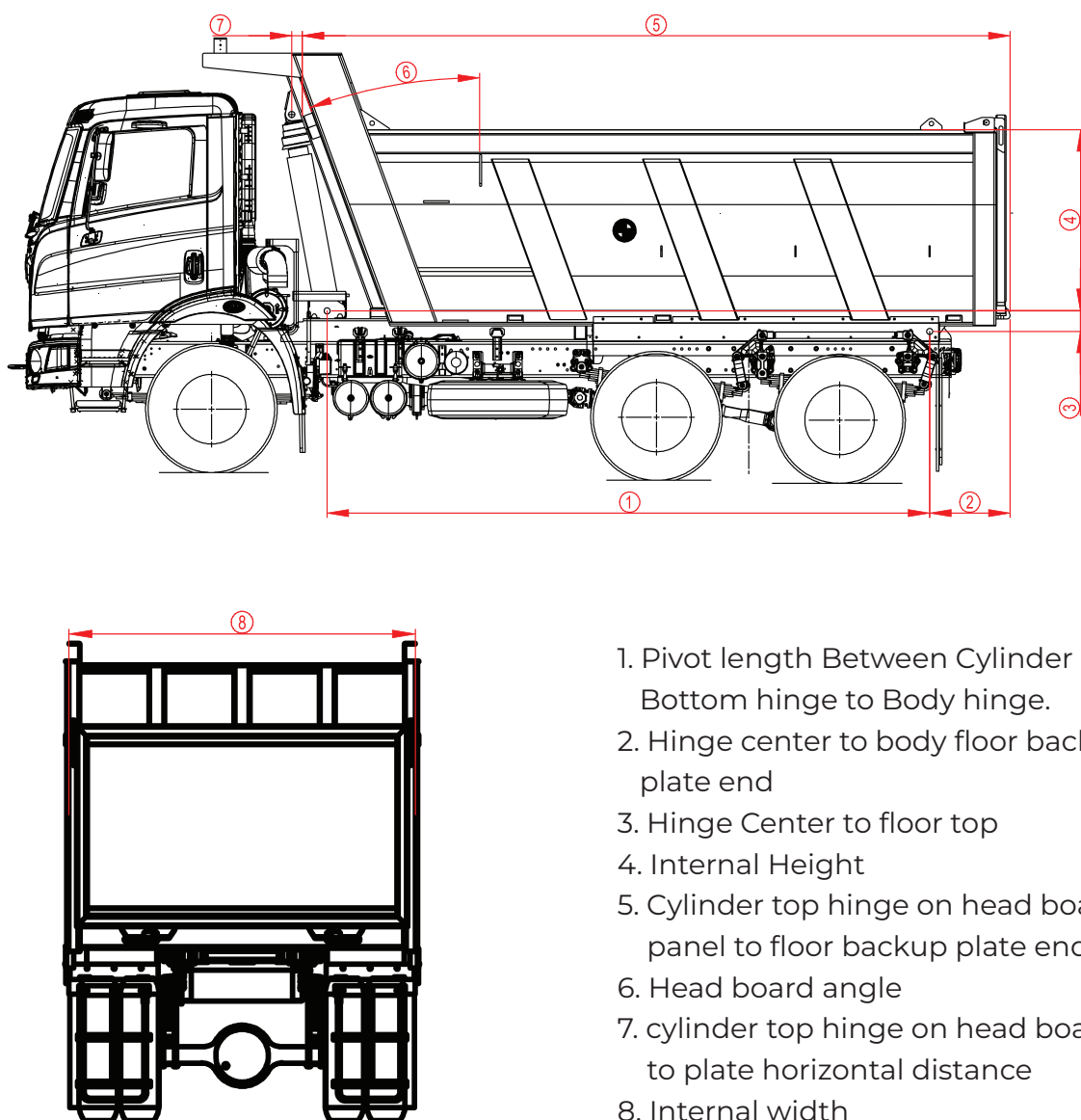
CHOOSING THE CYLINDER



HIDROMAS

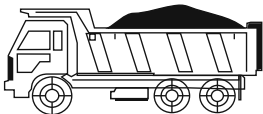
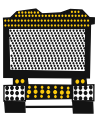
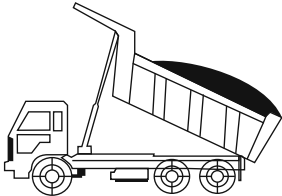
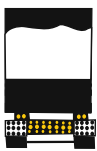
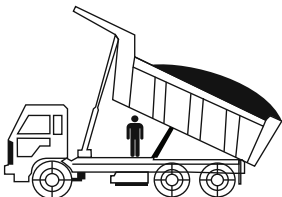
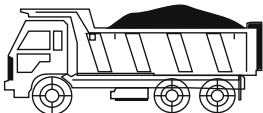
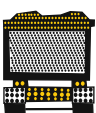
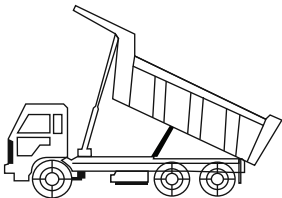
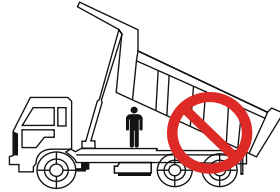
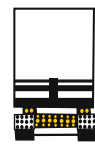
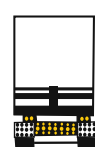
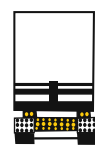
At HMS GLOBAL BV. we manufacture different cylinder types and models for all kinds of applications. Since our expertise has been growing steadily to ensure you a well adapted cylinder to your needs. Also with some data we can determine with our evaluation and application software, all the parameters needed to supply you with the best cylinder that will be adapted to your application.

With this data in hand, your representative will be able to exactly determine the cylinder type you need for your intended use.



1. Pivot length Between Cylinder Bottom hinge to Body hinge.
2. Hinge center to body floor backup plate end
3. Hinge Center to floor top
4. Internal Height
5. Cylinder top hinge on head board panel to floor backup plate end
6. Head board angle
7. cylinder top hinge on head board to plate horizontal distance
8. Internal width

3.1 General Principles Of The Tipper Operation

RIGHT	WRONG
         	IT IS PROHIBITED TO:   Do not overload and always load evenly   Always Dump on Even Ground   Never be under an unsupported body   Never drive with a raised dump box   Stay out of the working area of an operation dump body



Failure to follow these instructions may cause the cylinder's malfunction which may result in death, injuries and/or property damage. please read carefully Hidromas Maintenance manual before usage.

This Cylinder is not designed to be used as a structural member or to be subject to side loads or used under abnormal conditions.



3.2 General Safety Measures

The operator of heavy equipment must be aware of the potential hazards associated with servicing this type of machinery. Adhering to the guidelines outlined in this manual is crucial to enhance the safety of work and the operation of the tipper. Hidromas Company assumes no responsibility for damages resulting from improper operation, inadequate maintenance, or unauthorized use of the equipment.

1. Do not elevate the load body if there is a risk of the vehicle overturning.
2. Ensure even distribution of the load in the load body to prevent overloading of hydraulic system components and minimize the risk of vehicle overturning.
3. Personnel are prohibited from standing on the load body or its vicinity during loading and unloading.
4. Prior to unloading, confirm that the vehicle is positioned on a level and stable surface. Unloading is not permitted on uneven or unstable terrain, or during adverse weather conditions (e.g., storms, strong winds).
5. Before commencing unloading, remove the pin supporting the tipper tailgate.
6. Unloading is not allowed with the tailgate closed (for backward unloading) or with the side gate closed (for sideward unloading).
7. Prior to unloading, ensure that the load body does not come into contact with external structures while being lifted, such as electrical lines.
8. Do not engage power take-offs while the vehicle is in gear. Before attaching power take-offs, engage the parking brake. After completing unloading, turn off the power take-off.
9. Standing beneath the lifted load body is strictly prohibited. If necessary, secure the load body with a suitable support before performing any tasks underneath.
10. Adhere to proper technical servicing schedules for the tipper, ensuring regular performance of scheduled servicing activities and inspections. Failure to perform planned inspections may result in the loss of warranty coverage.
11. Protect the piston rods of hydraulic cylinders from adverse atmospheric conditions (e.g., rain, snow) to prevent corrosion and damage to the piston rod surface.

3.3 Vehicle Owner Responsibility

1. Never work on Vehicle with lifted tipper bed without corresponding support. All Safety standards related to stability when tipping valid for drivers are equally valid for service man and Mechanics.
2. Always check and grease all hinges and pistons during regular inspections. Make sure all hose connections are in good condition and proper connections and the liquid does not leak. Hydraulic liquid can cause health problem and endanger environment, it must not leak from closed from closed system.
3. Always check if hydraulic hoses are not swollen and if they do not rub against body work.



3.4 Visual Inspection

When doing your inspection routine, a visual verification is necessary to ensure the good working state of the cylinder and the hydraulic installation to avoid any breakage or leakage that could damage the cylinder or the truck.

1. Inspect leaks at the pump, cylinder and hoses.
2. Verify tightening to all gland nuts (partial unscrewing, visual damage)
3. Inspect the cover attachment at the top of the cylinder, the Hex nut has to be in place
4. Inspect leaks at the oil tank.

3.5 Handling

When its time to move the cylinder for either installation, removal or to store it away, it is important to handle it with great care. Hard knocking on the outer wall should be considered as a serious damage or should be treated as such. It is necessary to inspect cylinder to find any scoring, scoring in depth of the metal, leaks to different stages or any other parts that are damaged. If leaks are visible and the cylinder is rendered unusable, please bring to the closest service center for evaluation by one of the qualified technician. A damaged cylinder installed on a vehicle could likely cause important injuries or even death to the equipment operators.

3.6 Hydraulic Oil

For optimal performance of your hydraulic installation, we recommend using hydraulic oil specifically designed for hydraulic systems, with a viscosity grade ranging between 5 to 68 cSt. Given the diverse applications and potential exposure to various climatic conditions, it is imperative to consult with our Hydraulic Oil representative to determine the most suitable viscosity grade for the prevailing weather conditions. This consultation plays a crucial role in ensuring and maximizing the longevity of our hydraulic system.

3.7 Pressure in the cylinder

When the cylinder is under pressure, a simple leak could let oil escape at more than 250 bar and could lead to serious injuries to the skin because such pressure can puncture it. Loose clothing, safety goggles and working gloves are always suggested when working around a pressured system needing to be serviced.

Also, when disassembling a cylinder, great care must be taken because there is always residual pressure in it. This means that pressure can be trapped in the cylinder, even after it has unmounted. Most likely, when stages are moving, even unmounted, pressure can build up between stages, especially if an oil port is clogged with contaminants from the bottom of the oil tank. A sudden unclogging of the port is clogged with contaminants from the bottom of the oil tank. A sudden unclogging of the oil port or a leak in a seal could generate enough pressure to cause a serious injury.

IT IS NOT ALLOWED TO:

- * Overload the tipper,
- * Drive the tipper with unevenly distributed load,
- * Unload the tipper on uneven or unstable base,
- * Stay under the unsupported load bed,
- * Drive the tipper with the bed lifted,
- * Changes the pressure valves set in the factory,
- * Adjust the tipping angle on your own,
- * Unload the tipper with the gates closed,
- * Unload the tipper with the ladders unfolded.

WARNINGS :

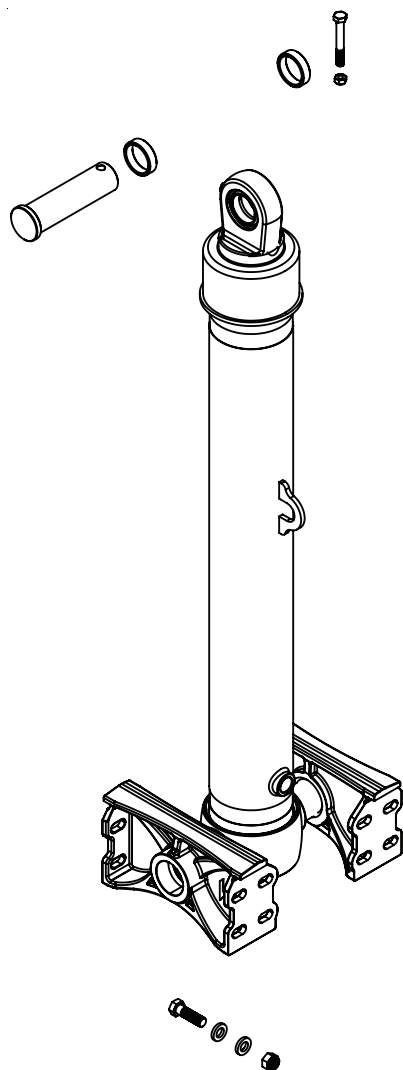
- * A Cylinder is a Lifting Device not a Structural Member.
- * A Cylinder Should Be allowed to do its Stoke without any Obstacles.
- * A Cylinder Should be installed by Qualified Peoples otherwise this could leads to Serious damage.
- * A cylinder operated in Leveled Ground condition, Trailers Should never unloaded in Jack knife position.
- * Never Over load the Trailer. Load should be evenly distributed in trailer at both longitudinal and transversal manner.
- * Never Jerk the trailer to release the Load stuck. this will increase the Constraints to truck and Cylinder as well.
- * Over pressurization of the cylinder Must be Avoid. This Could Cause important damage to the cylinder or evan cause death or Injuries. Do not operate the Cylinder pressure above 150 Bar without a written notice and approval From Galipoglu Hidromas.
- * Maintenance of the equipment is the key to have it working to prescribed Standard. An inspection round should be a part of the Safety rules and helps to detect problem before it damage cylinder or truck.
- * Hydraulic oil changes are important. This procedure will avoid Contaminants accumulation in the oil tank, leading to obstruct or damage the Cylinder.

INSTALLATION OF CYLINDER SUGGESTIONS & RECOMMENDATION

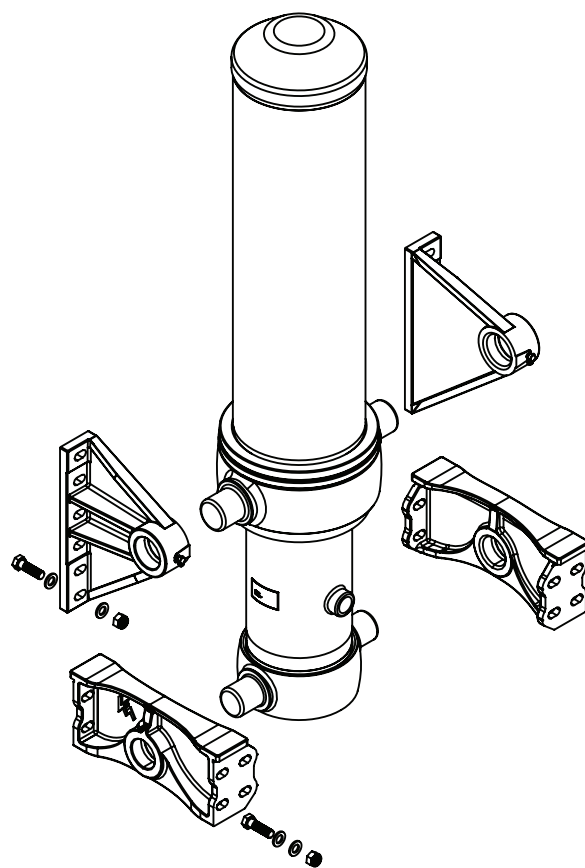


HIDROMAS

To ensure an efficient installation of all the Hydraulic Circuit Components (Hidromas pump, tank and Hoses) it is necessary to do following recommendations.



FE (C TYPE) CYLINDER



FC (H TYPE) CYLINDER

4.1 General Remarks

Applying Side load and dynamic force on cylinder is dangerous. The cylinder should be Mounted with minimum pull out of 15mm and maximum pull out of 50mm (the close length of cylinder on the Hidromas specification sheet already included with 30mm Pull out)

INSTALLATION OF CYLINDER SUGGESTIONS & RECOMMENDATION



HIDROMAS

4.2 Precautions

Ensure there is enough free working space for Mounting the cylinder. If the tipper Nbody is raised to create work space, support the body using body props before mounting the cylinder.

While lifting a cylinder the stages can extend, to avoid this use a sling around the cover or piston and base tube. Extend the cylinder until the sling is locked and transport the cylinder using a suitable lifting device.

Not using the appropriate equipment when lifting parts (such as the proper sling for cylinder) is a danger to life.

Some parts in the cylinder are mounted under tension (snap rings). They may spring out when removed. They should be secured when removed to prevent injury.

4.3 Storages

unless otherwise stated, Hidromas spares are delivered suitable for storage as described in this sections.

1. Internal-protected from extreme temperatures, rain and corrosive atmospheres.
2. Clean-free from excessive dust and dirt.
3. Dry Minimal humidity and sheltered from water vapor and steam.
4. Spares parts not be stored externally under any conditions.
5. For a Month Storage or Less No Special precaution is required.
6. For storage between 6 to less than 12Month, Cylinder should be stored Vertically.
7. If Storage period is More than 12Months and less than 24Months, Pressure test must be done to ensure good state of Seals.
8. After a Storage period of more than 24Months, all seals Must be replaced.

4.4 Oil Tank & Pump

Oil tank should be installed higher then the pump to ensure a positive flow to the oil port. It is important to fill the tank with new and clean hydraulic oil. Oil should also be choose according to temperature and application uses and specifications mentioned in this manual.

4.5 Pump

When Pump and oil tank are installed, pump must be primed by hand before connecting it to the P.T.O. Rotate the Shaft manually untill the pump is filled with hydraulic oil. **WARNING** - Never engage an empty pump.

4.6 Filtering Device

It is highly recommended to install a filtering device on the oil return line of the hydraulic circuit. This will protect all the components against the contaminants and impurities that could be present in the circuit ideal dimension of the filtering element should be 25 microns. we have design a tank-filter assembly that permits easy servicing of replaceable parts. we also recommend to change hydraulic oil at least once a year.



HIDROMAS

MAINTENANCE OF CYLINDER



LIST OF NECESSARY TOOLS TO SERVICE & SUGGESTIONS & RECOMMENDATION



HIDROMAS

5.1 Cylinders

Supplied suitable for 18 months storage on above conditions. These parts should be stored flat condition on pallets. Damage to the inside & outside- diameter grooves will make parts unusable and must be avoided.

Non metallic parts (seals, wipers and wire rings) should be kept in Packed condition (bags or boxes) until required for use. Items suitable for storage for up to 2 years.

Metallic Parts (Sliders, snap rings, spacers and pumps) supplied with light duty protective layer. should be kept in Packed condition (bags or boxes) until required for use. Items suitable for storage for up to 2 years.

5.2 Recycling Of Cylinder

When the Cylinder is unmounted from the truck, it is suggested to use the following tools to disassemble and reassemble it. To do an adequate maintenance of the cylinder, its recommended to adapt the tools:

1. Screw driver with Flat rounded tip
2. Allen Key 5mm
3. Box Spanner 17 & 19mm
4. External Circlip Plier
5. Plastic Hammer
6. Stage dismantling tools



LIST OF NECESSARY TOOLS TO SERVICE & SUGGESTIONS & RECOMMENDATION



HIDROMAS

5.3 Reuse of Components

When the Hidromas cylinder is stripped (for example after decommissioning a cylinder) some parts may be reused.

Warning: Never use parts from a cylinder that has been subject to over-pressure, mismatching or side-load.

Assuming the following parts are in good working order (i.e. no visible damage such as scratches, imprints or deformation, no corrosion and dimensionally correct) then they may be reused.

- ☐ Stages, pistons and covers,
- ☐ Locking plates, bottom plate
- ☐ Eyes, eye bushes, eye bearings, lift rings when not deformed during dismantling
- ☐ Cradle, chassis brackets and body brackets.

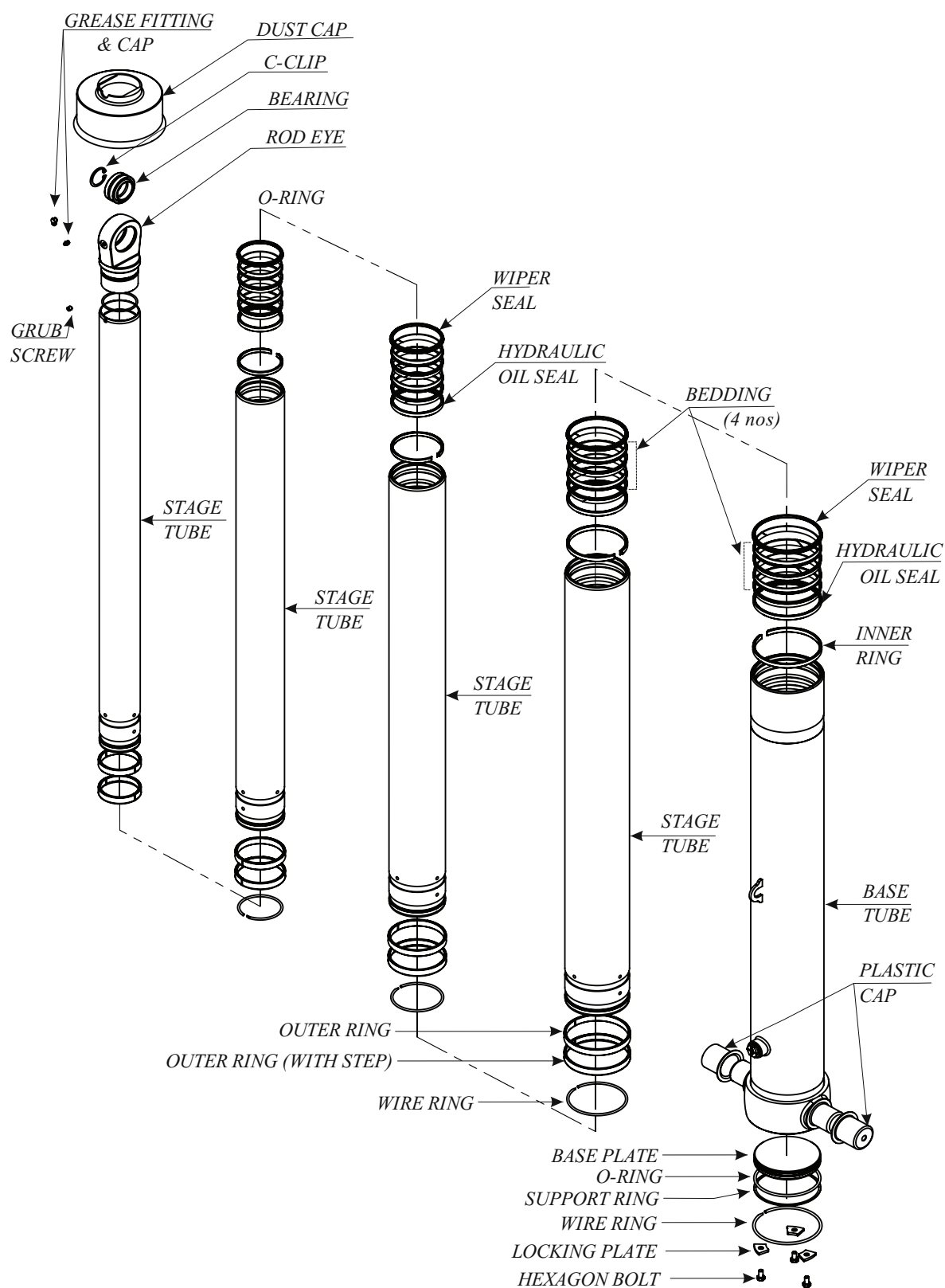
The following parts must never be reused:

- ☐ Packset (Seals, wear-rings, wipers)
- ☐ O-rings
- ☐ Inner stop-rings
- ☐ Locking pin for threaded piston eye/head.

FE (C TYPE) CYLINDER PARTS



HIDROMAS



DISMANTLING THE CYLINDER



HIDROMAS

WARNING

It is strongly recommended to take all preventive actions to avoid any accident during the disassembling and reassembling of the cylinder. A passive support is also recommended to hold the truck box in open position at all time during the maintenance operation.

Before starting to remove the cylinder from the truck or trailer, take all safety measures like installing a blocking device on the box to prevent it from coming down.

Stop the box in open position. Unscrew bolt at top of the cylinder and then, retract the cylinder. Take off the blocking pins at the base of the cylinder and take the cylinder off the truck.

Secure the cylinder using rope or sling and a suitable lifting device, to prevent the cylinder from falling over. Remove the pivot pin from the piston eye, the actual method will depend on eye and top bracket. In general remove the split-pin and tap-out the pivot pin..

7.1 Removing Rod Eye From Stage Tube:

The FE (C type) is standart equipped with a threaded Rod eye head. To lock the threading an Grub Screw with round head is Threaded in a round hole. This Grub Screw must be removed by using Allen Key as shown in Picture 1. Then remove the Rod eye by Rotating Counter Clock wise.



Picture 1

After Removing the Grub Screw make sure that burs from the unlocking Grub screw operation are removed properly to prevent damage of the Seals.

Remove the O-RING from the threaded Rod eye.

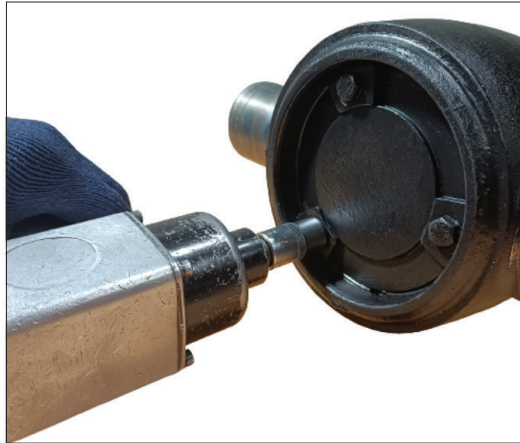
DISMANTLING THE CYLINDER



HIDROMAS

7.2 Opening the Base :

Use a ring spanner remove the bolts from the bottom plate (3 depending on cylinder type) and remove the locking plates (Picture 2).



Picture 2

The bottom plate can now be removed by either :

Using three bolts in the bottom plate to lever it out of the base tube.

Strike the head of the piston with soft-headed mallet or similar. If the piston RodEye is unscrewed, be carefull not to damage the tube. This will push to bottom plate from the base tube.(Picture 3)



Picture 3

DISMANTLING THE CYLINDER



HIDROMAS

Remove the O-ring from the bottom plate. (Picture 4)



Picture 4

7.3 Removing the Stage Tubes:

Push the Stage Tube forward until the lift ring is visible at the inside diameter of next stage.(Picture 5)



Picture 5

DISMANTLING THE CYLINDER



HIDROMAS

WARNING

The lift ring is mounted under tension, it may spring out and hit you in the face.

Remove the lift ring by pushing the tip of a screwdriver under the ring at one end and levering the ring out.

The Stage tube can now be removed through the bottom of the cylinder.
(Picture 6)



Picture 6

WARNING

The stages must be placed on a clean surface to prevent scratches and other damage.

Never remove a stop ring, if it shows signs of damage the hole stage must be replaced.

The seals and wipers must not be re-used

Before a stage can be removed through the bottom of the cylinder, the lift ring of the next stage must be removed. Remove the lift ring in the same way as for the Stages. The stage can then be removed through the bottom of the cylinder.

Subsequent stages can be removed in the same way.

Remove the seal, wiper and wear rings from the internal grooves at the top of each stage.(Picture 7-8)

DISMANTLING THE CYLINDER



HIDROMAS



Picture 7

Tip

(Don't remove the seals and wipers with a screwdriver or other sharp instrument as this may irreparably damage the grooves and cause leaks. Only the wear rings can be removed with a screwdriver.)

Clean each stage carefully and check each groove and the tube surface for any irregularities. Check also the sliders on each tube; if these are damaged, they should be replaced. If the slider is damaged, check the stop ring in the subsequent tube for signs of damage or twisting.



Picture 8

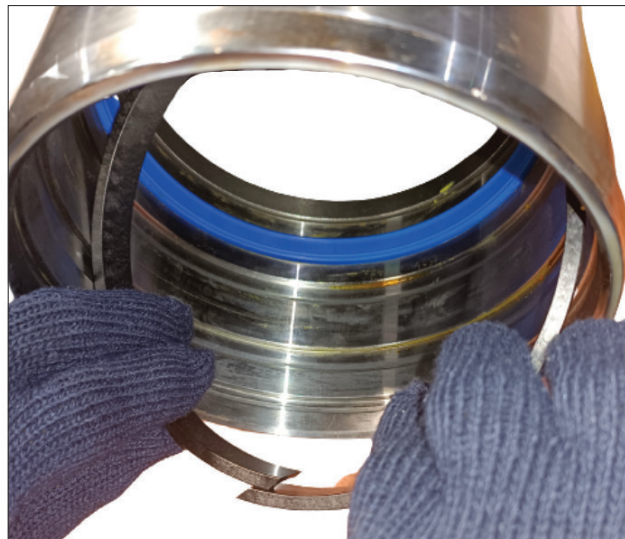
Assembly

(Step by step guide on how to replace the packset in each stage, replace the stages and rings, refitting of the Rod eye(where applicable).Finally refitting bottom plate to close the cylinder ready for reuse.

8.1 Replacing Packset:

Clean each stage thoroughly and apply sufficient grease to the packset and the grooves.

Starting with wear rings(Picture 9),followed by the seal (Picture 10) and the wiper (Picture 11) see also (Picture 12).



Picture 9



Picture 10

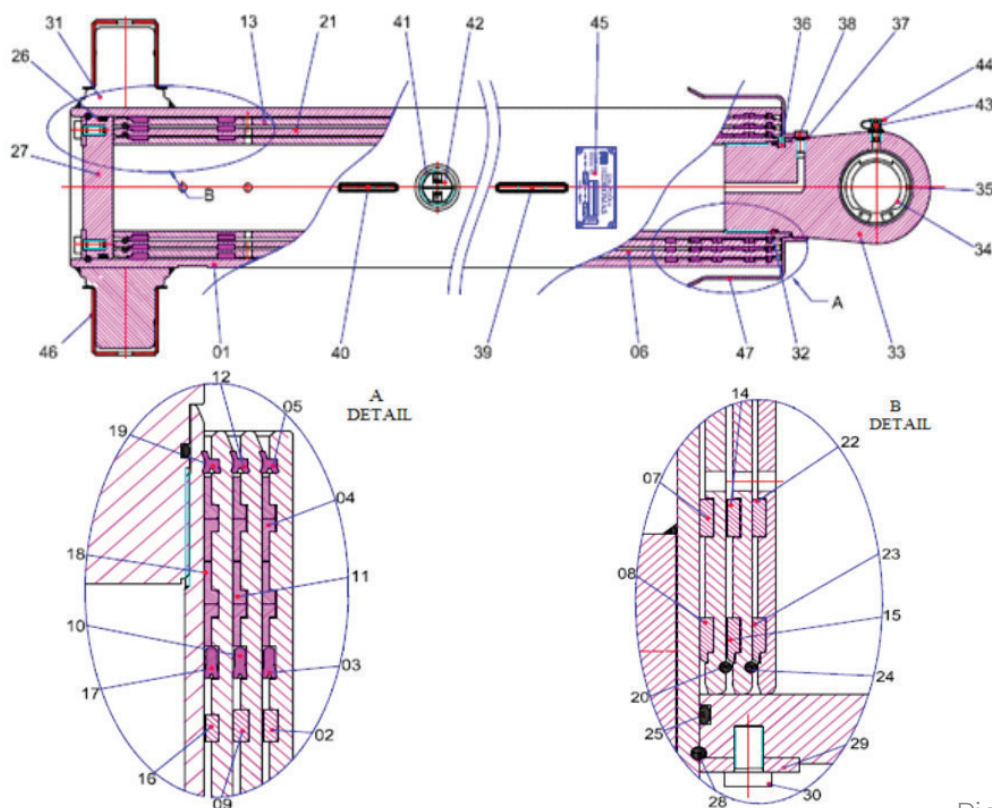
ASSEMBLY OF CYLINDER



HIDROMAS



Picture 11



Picture 12

1. BASE TUBE 2. INNER RING 3. OIL SEAL 4. BEDDING 5. WIPER SEAL 7. OUTER RING 8. OUTER RING(WITH STEP) 9.INNER RING 10.OIL SEAL 11.BEDDING 12.WIPER SEAL 14.OUTER RING 15.OUTER RING(WITH STEP) 16.INNER RING 17.OIL SEAL 18.BEDDING 19.WIPER SEAL 20.WIRE RING 22.OUTER RING 23.OUTER RING(WITH STEP) 24.WIRE RING 25.O-RING 28.WIRE RING 29.LOCK PLATE 30.HEXAGON BOLT

Caution

Ensure that each of the rings are seated correctly in the grooves; incorrect fitting can cause seizure, leaks or damage.

8.2 Replacing Stages:

Slide the stages almost fully into the base tube, ensuring that the tube is not scratched when passing stop ring (Picture 13)



Picture 13

Some resistance will occur when the tube enters the packset. Place the sliders and/or outer stop rings at the end of the stage (Picture 14) use enough grease at bottom inside of the tube to prevent scratches. Slide the tube further in to the base until the sliders are in the base tube.



Picture 14

Subsequent stages can be mounted in the same way.

ASSEMBLY OF CYLINDER



HIDROMAS

After mounting a stage, fit the lift ring (Picture 15) in the previous inner(except cylinder base) See (Picture 12).



Picture 15

The piston is mounted in the reverse sequence to dismantling. Make sure that sharp edges are at the topside that can damage the packset. For further assembly see point removing the stages) for dismantling the cylinder.

Make sure that the surface of the top end of the piston is smooth, especially around the old locking pin hole.

8.3 Fitting rod eye/head:

Fit a new "O" ring to the piston eye. Apply plenty grease and screw the eye onto the piston.(Picture 16)



Picture 16

Warning: Not fitting the locking pin is danger to life.

(Fitting the eye onto the piston can be eased by applying copper grease to the screw thread.)

Make sure that the Rod eye/head is firmly screwed into the piston tube. Use a hammer to be sure and check if there is absolutely no gap between Rod eye/head and top end of the piston tube. Drill a new hole 10 mm diameter, 14 mm deep, at least 60 degree rotated from the previous hole for the grooved locking pin

Firmly hammer the locking pin in the new hole, apply locking agent (i.e. Loctite or equivalent) before mounting. If during hammering the grooved pin is not causing substantial resistance, the diameter of the drilled hole is too big.

Warning

- *Make sure eye/head is fully threaded into the piston.
- *Make sure that diameter of the hole for the locking pin is not bigger than 10 mm.
- *Don't reuse the old hole for locking pin.

8.4 Closing The Cylinder

Fit a new seal to the bottom plate into the base (Picture 17) use plenty of grease to avoid damage to the seal.



Picture 17

ASSEMBLY OF CYLINDER



HIDROMAS

Wire ring is installed after that bottom plate is mounted.(Picture 18)



Picture 18

Secure the bottom plate with the 3 locking plate (Picture 19) using 3 new bolts and for each. See (Table 1) for bolt torques)



Picture 19



TORQUE VALUES FOR BOLTS						
NOMINAL DIAMETER Ø	8.8		10.9		12.9	
	Kgm	Nm	Kgm	Nm	Kgm	Nm
M4 X 0.7	0,3	3	0,43	4,2	0,5	5
M5 X 0.8	0,61	6	0,87	8,5	1,03	10,1
M6 X 1	1,42	13	1,63	16	1,73	17
M8 X 1.25	3,36	33	4,07	40	4,48	44
M10 X 1.5	6,72	66	8,25	81	9,17	90
M12 X 1.75	8,66	85	12,13	119	14,57	143
M14 X 2	13,76	135	19,36	194	23,24	228
M16 X 2	20,89	205	29,35	288	35,27	346
M18 X 2.5	20,84	283	40,57	398	48,72	478
M20 X 2.5	40,77	400	57,28	562	68,7	674
M22 X 2.5	54,23	532	76,24	748	91,43	897
M24 X 3	70,43	691	98,98	971	119,26	1170
M27 X 3	105,95	1010	144,75	1420	173,29	1700
M30 X 3.5	139,65	1370	196,73	1930	235,47	2310

Table 1

Warning

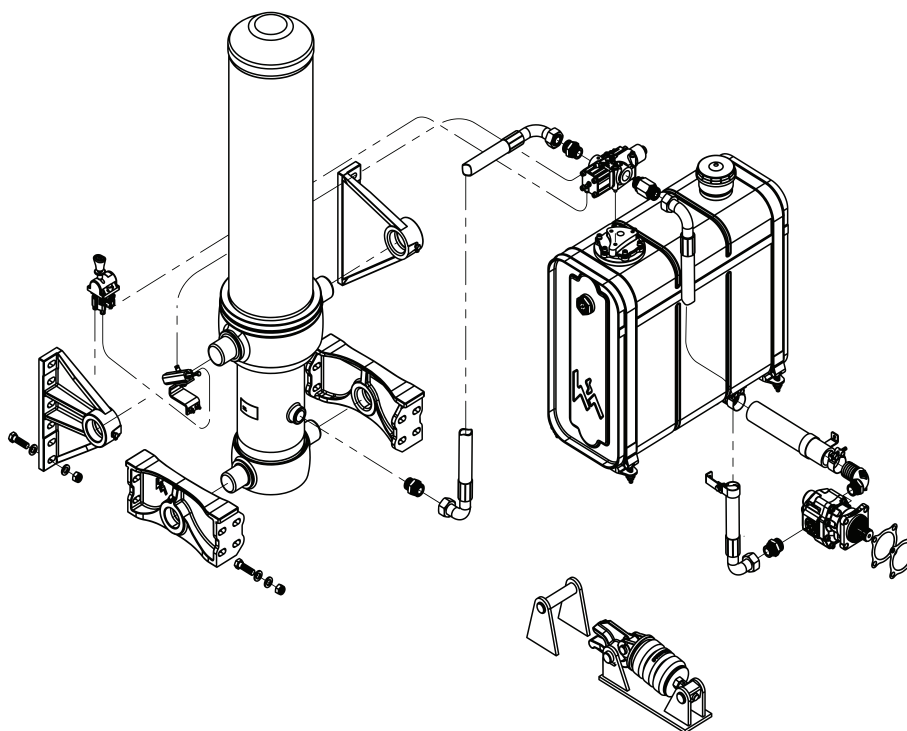
In FC (H Type) the top nut on the outer cover must not be re-used.

9.1 Connection of the Hydraulic System

Connect the hydraulic system as specified by the hydraulic kit. Remove the plug from the oil-inlet and connect the cylinder to the hydraulic system(Picture 20).

Ensure there is sufficient hose so it does not obstruct the movement of the cylinder while tipping.

Before the cylinder is worked,the air of the system must be taken from vent hole of cylinder.



Picture 20

9.2 Final Checks

The first tip should be slow and all movements are to be closely observed to check:

Cylinder movement is smooth and hoses do not interfere with any parts.

Cylinder extends in a straight line, while tipping there is no contact between the rear end of the body and other parts of the truck(such as towing hooks,tail lamps etc.)

CYLINDER TROUBLESHOOTING



HIDROMAS

10 CYLINDER TROUBLESHOOTING

Symptom's	Cause	Solution
Out of sequence during Tipping / Lowering	Bent tube.	Look for scored/bent tubes and replace.
	Brackets seized.	Dismantle and lubricate.
	Misaligned Cylinder.	Check geometry.
Movement in Jerky / Slow lift off	Low oil level.	Oil level should be maintained up-to middle of the Bull's eye (Red point) after one cycle of tipping.
	Air in system.	Do two- or three-time tipping to resolve and relief the air in the system.
Will not tip / Stop at between stages	Overloaded.	Check load and PTO engaged.
	Pressure too low.	Cab control may be leaking air. Check the pressure in the system.
	Loaded to the front	Reposition load evenly in the body.
	Run out of oil.	Check the oil level as above.
	DCV	Check weather Working or Not.
	T-Valve Not Open	Open the valve T-Valve
Seal Leakage	Worn-out.	Replace seals.
	Scored Tubes.	Replace Tubes.
	Dirty oil.	Check the oil condition and it should be as per the recommended grade.
	Infrequent use of cylinder.	Extend cylinder to full stroke and hold on full pressure for a few seconds. Repeat again if it does not resolve oil Leaks, if no improvement then replace the seals.

CYLINDER TROUBLESHOOTING



HIDROMAS

Symptom's	Cause	Solution
Cylinder Bent	Tipping happened uneven Road condition.	Tipping should be always carried on even ground.
	Body not resting on the sub frame while running time.	Body should be resting completely.
	Toppling on accident.	Check the body condition with respect to sub frame and chassis.
Cylinder Scoring Mark	Cylinder Internal component broken.	Replace the damaged component and cylinder.
	Scoring due to external damages stage surface.	Replace the cylinder stages and cover the cylinder while doing any work on the body near to the cylinder surface.
	Slider broken inside the cylinder due to side load.	Replace the damaged components and tipping should be carried on even surface.
	Dirty Particles from first installation or filter not installed during First Filling of oil.	Oil and filters want to be replaced clean all the components and stage tube want to be changed
	Scoring in the axis of trunnion due to side load.	Cylinder should be mounted in the centre of the top pin board to subframe centre.
		Check the maximum play between the trunnion pin and bracket should be 1mm each side.
		Check the spacer are fitted on both side of rod eye max play 2mm.
		Check the standard operating procedure. Avoid unauthorised body extension.
		Check the body for misalignment / deformation and realign / repair if necessary.

CYLINDER TROUBLESHOOTING



HIDROMAS

Symptom's	Cause	Solution
Cylinder Bulge	Pressure relief valve tampered with Pressure.	Replace the pressure relief valve.
	Pressure relief valve not working.	Replace the pressure relief valve.
	Cylinder stage bulged near stop ring and getting jerked while working.	Replace the damaged parts. Check the standard operating procedure.
Oil Leak from Bottom Plate	Bottom seal failure and poor Quality.	Replace the bottom seals.
	Cylinder subjected to continuous load.	Replace the bottom plate seal.
Cylinder base Tube Crack	Crack on Trunnion side due to side load.	Replace base tube. Check cylinder mounting dimensions. Cylinder to be mounted in the centre of body head board on top side and centre of the sub frame on bottom side.
Cylinder will not come down while lever in lowering mode	The ball of the pressure setting is broken because of dust materials.	Return line filter must be changed.
	Cylinder Bent	Replace the bent tubes
Cylinder is knocked while tipping	Air mixed in the oil. Check the tank oil level and other suction connection.	Check the oil condition and that connection intake the air. Oil level in tank must be maintained the required level and check the suction line restriction.

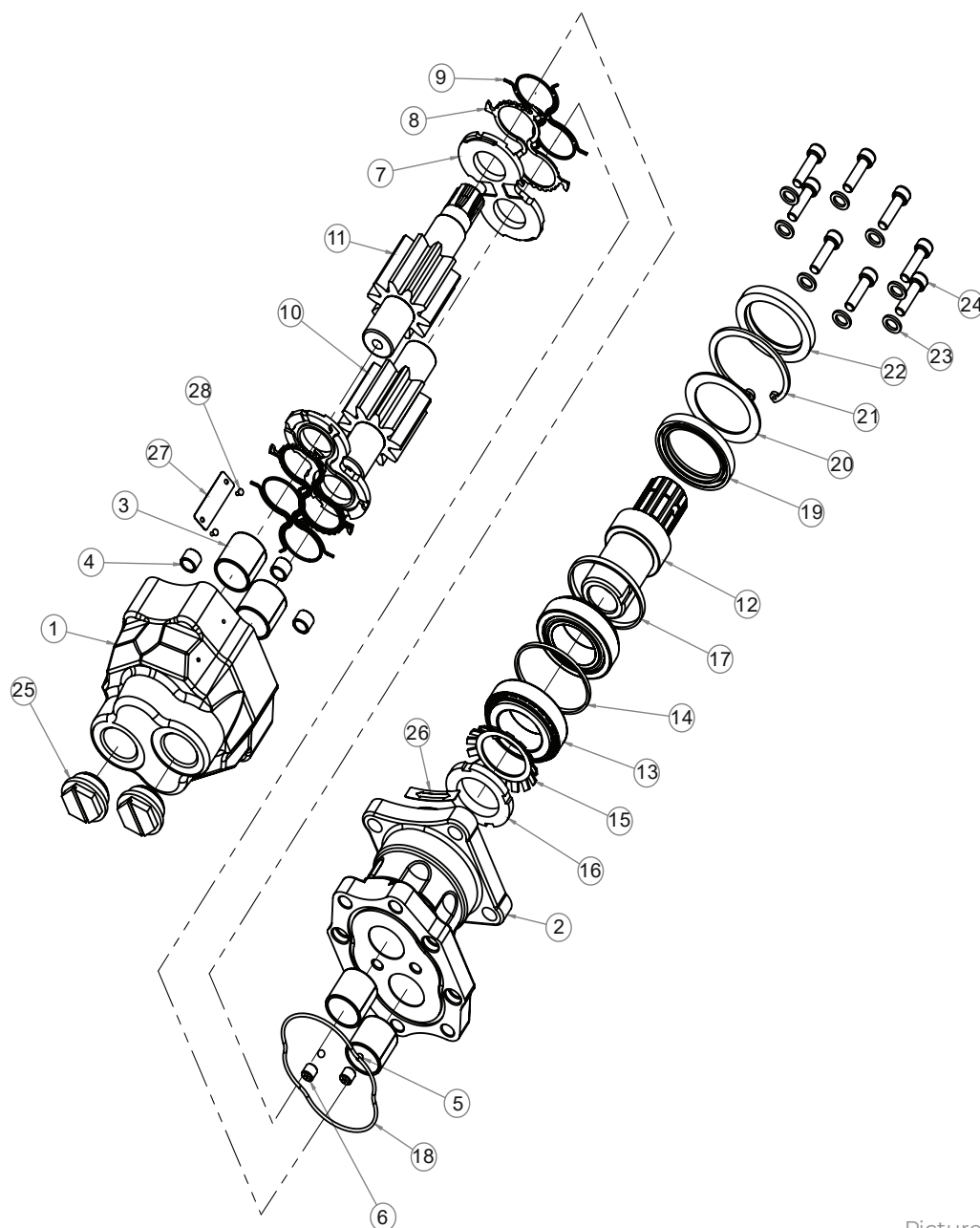


HIDROMAS



GEAR PUMP

11 GEAR PUMP PARTS



Picture 21

- 1.** Body **2.** Cover **3.** Copper Bush **4.** Steel Centering Bush **5.** Steel Ball **6.** Set Screw
7. Thrust plate **8.** Thrust Plate Seal **9.** Thrust Plate Back up Ring **10.** Driven Gear
11. Drive Gear **12.** Spline Shaft **13.** Taper Roller Bearing **14.** Spacer **15.** Lock Washer
16. Lock Nut **17.** Spacer **18.** O-Ring **19.** Radial Shaft seal **20.** Washer **21.** Circlip
22. Radial Shaft Seal **23.** Flat Washer **24.** Allen Bolt **25.** Plastic Plug
26. Bi Direction Label **27.** Name Plate **28.** Rivet of Label

12 INLET AND OUTLET CONNECTIONS AND THEIR WORKING

PUMP TYPE	FLOW (cm ³ /rev)	MAX.PRESSURE (bar)	MAX.RATE (rpm)	MIN.RATE (rpm)	OIL INLET (BSPP)	OIL OUTLET (BSPP)
30-65	65	220	1800	300	1"	1"
30-82	81.1	210	1800	300	1"	1"
35-105	105.21	210	1500	300	1"	1"

WORKING TEMPERATURE

- * The Oil Temperature Should be between 35 - 55°C.
- * Minimum Oil Temperature is -25°C.
- * Maximum Oil Temperature is 110°C

HYDRAULIC OIL

- A. Hydraulic Oil in the system Should be mineral Based.
- B. The viscosity of the oil in the system should be between 12-100 cSt.
- C. You Should use Low viscosity oils in Cold Environment Conditions and
- D. High Viscosity oils in hot Environment Conditions.

Torque Specification for Hydraulic Fittings :

Sr. No.	Description	Fastener Size	Torque Specification
1	Adaptor Fitting (Steel)	3/4" BSP	50Nm
2	Adaptor Fitting (Steel)	1" BSP	70Nm
3	Adaptor Fitting (Steel)	1*1/4" BSP	115Nm
4	Hose Swivel Nut	3/4" BSP	115Nm
5	Hose Swivel Nut	1" BSP	140Nm
6	Hose Swivel Nut	1*1/4" BSP	190Nm
7	Hose Swivel Nut	1*1/2" BSP	260Nm
8	Hose Swivel Nut	1*3/16" UNF ORFS	120Nm
9	Hose Swivel Nut	1*7/16" UNF ORFS	150Nm
10	Seamless Tube Swivel Nut	M30x2	125Nm
11	Air Connector	1/8" BSP	5Nm



13 Gear Pump Safety

13.1 Explanation of Guidance :

Firstly when you remove the pump,you must stop the engine.Valve of oil tank must be closed.As fitting remove,you should put hydraulic oil in the clean case.And then remove the pump and you should put transmission oil in the another clean case.After finished the service,you should check hydraulic oil and transmission oil.

13.2 Storage:

Unless other wise stated, Hidromas spare parts are delivered suitable for storage as described in this section. Provided the following basic conditions are met

- Internal-protected from extreme temperatures, rain and corrosive atmospheres.
- Clean-free from excessive dust and dirt.
- Dry minimal humidity and sheltered from water vapour and steam.
- Spare parts must not be stored externally under any conditions.

13.3 Non-metalic parts Seals, moring (NBR) and teflon (support ring):

Should be kept in packaging(bags or boxes) until required for use. Items suitable for storage for up to 2 years.

13.5 Prior to use:

Clean all parts to remove any dust, dirt or protective coatings.

If any reason the above conditions can not be met contact your nearest Hidromas service point for further guidance

14 Recycling of Pump

14.1 General :

Remove and dismantle the components as described in this manual. Clean all parts throughly(using degreaser and compressed air).All oil products must be disposed of in an environmentally friendly manner (usually by a licenced disposal agent).The components can then be recycled in the normal way. For example; non metal components such as seals and m-oring(NBR),clean steel parts with other scrap metals.

14.2 Reuse of Components :

When the Hidromas pump is removed some parts may be reused.

Warning - Never use parts from a pump that has been seals.

Using second hand parts in pump repairs can change the function or operating conditions of the pump and may affect the terms of warranty.

Assuming the following parts are in good working order(i.e. no visible damage such as scratches, imprints or deformation. no corrosion and dimensionally correct) then they may be reused.

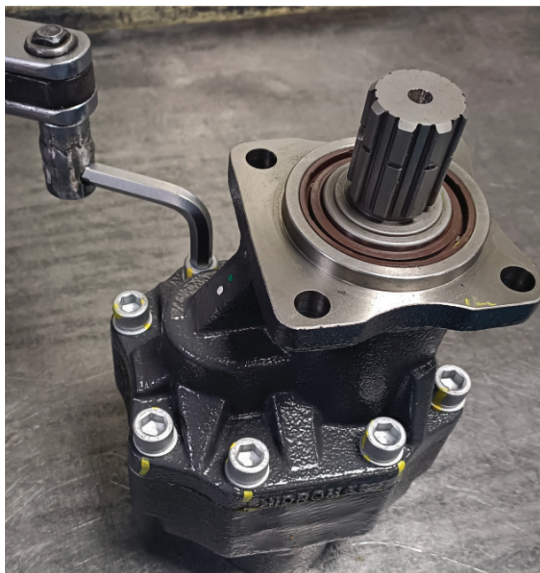
- *Cover, splined driver, bearing, clip ring when not deformed during dismantling.
- *Thrust plate, body when not deformed during dismantling.

The following parts must never be reused:

- *Seals(Viton seals, black seals)
- *O-rings

15 Dismantling the Pump

If the pump has leakage from warning oil hole, the seals should be changed on the shaft driver. Firstly,bolts are removed.(Picture 22)



Picture 22

Our pump has two seals(brown seal(viton) and black seal).When removing the brown seal, apply compressed air through the warning hole. Disassemble the circlip to facilitate the removal of the black seal.(Picture 23)



Picture 23

After removing the circlip, use a steel pipe to hammer the spline shaft. Subsequently, the black seal will dislodge from the spline shaft.

In the event of damage to the thrust plate, both the upper and lower thrust plates can be removed. Simultaneously, inspect the long and short gears for potential damage. If any damage is detected in the gears, they must be replaced, and a thorough check of the body for burning and wear is necessary. Following the inspection of the thrust plate, gears, and body, replace any faulty components.

16 Assembly Of Pump

When assembly the seals, is used special device(Picture 24).Thrust plate and gear must be installed according to direction of the image (Picture 25-26).The cover and body assembly with bolts(Picture 27).And then splined driver should be checked with special device.(Picture 28).When bolts are tighten, please following torque values As per below Table.

TORQUE VALUES FOR BOLTS						
NOMINAL DIAMETER Ø	8,8		10,9		12,9	
	Kgm	Nm	Kgm	Nm	Kgm	Nm
M4 X 0.7	0,3	3	0,43	4,2	0,5	5
M5 X 0.8	0,61	6	0,87	8,5	1,03	10,1
M6 X 1	1,42	13	1,63	16	1,73	17
M8 X 1.25	3,36	33	4,07	40	4,48	44
M10 X 1.5	6,72	66	8,25	81	9,17	90
M12 X 1.75	8,66	85	12,13	119	14,57	143
M14 X 2	13,76	135	19,36	194	23,24	228
M16 X 2	20,89	205	29,35	288	35,27	346
M18 X 2.5	20,84	283	40,57	398	48,72	478
M20 X 2.5	40,77	400	57,28	562	68,7	674
M22 X 2.5	54,23	532	76,24	748	91,43	897
M24 X 3	70,43	691	98,98	971	119,26	1170
M27 X 3	105,95	1010	144,75	1420	173,29	1700
M30 X 3.5	139,65	1370	196,73	1930	235,47	2310

16.1 Installing Of Seals :



Picture 24

16.2 Installing Of Thrust Plate



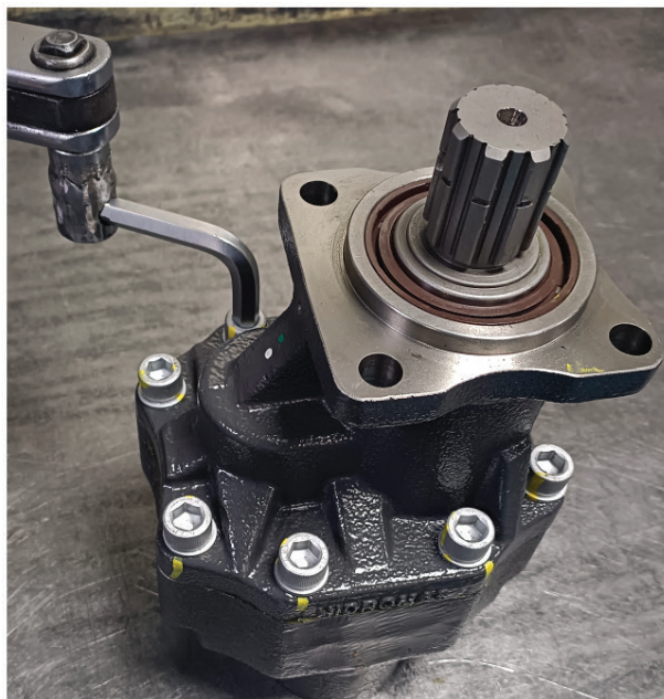
Picture 25

16.3 Installing Of Gears & Thrust Plate



Picture 26

16.4 Installing Of Bolts & Torque :



Picture 27

16.5 Shaft Rotation Inspection With Special Tool :



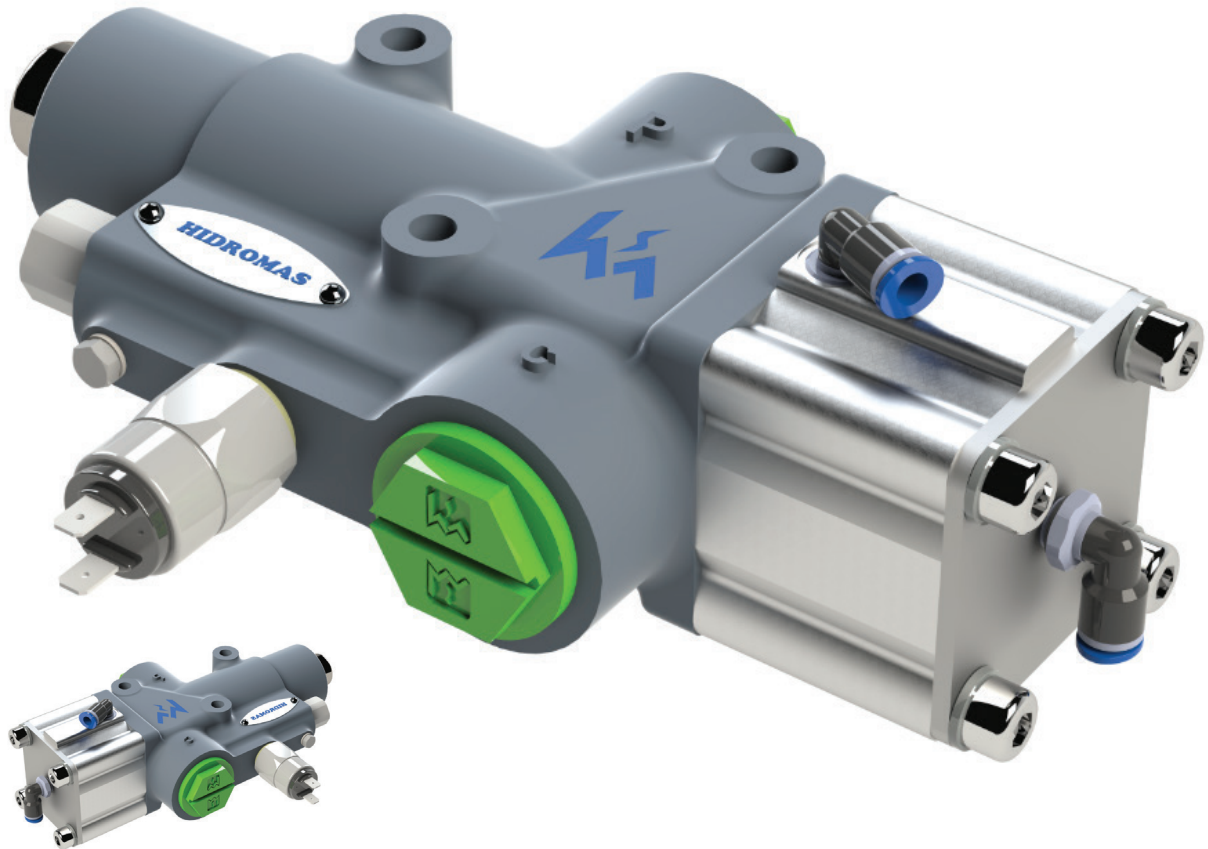
Picture 28

17 TroubleShooting Of Gear Pump

Symptom's	Cause	Solution
Not working / Insufficient flow	Thrust plate / pump housing worn out.	Replace the damaged parts and pump should be operate max 1500 rpm
		Check the oil grade and sufficient oil level in the tank and check the suction restriction. Check the PTO engagement.
	Seal kit damaged.	Replaced damaged parts. Check the oil grade and temperature. Ensure the continues RPM.
Oil leak from Pump	Shaft seal damaged.	Replace the shaft seal.
	Over speed.	Do not exceed maximum speed of 1500 RPM.
	Poor oil supply and low oil level.	Check the suction valve fully opened and check the hose size id sufficient for the pump size. Refill the oil level.
Hydraulic oil in gear box	Shaft seal damaged.	Replace the shaft seal.
Pump Crack	High Operating Pressure.	Replace the pump. Check the maximum working pressure of the system.
		Check the mounting connections.
Pump Shaft and gear damaged	High pressure in the system.	Replace the pressure relief valve.
	Internal components seized particles.	Check the oil quality and use the correct grade of the oil.
		Ensure the suction line valve connection.



HIDROMAS



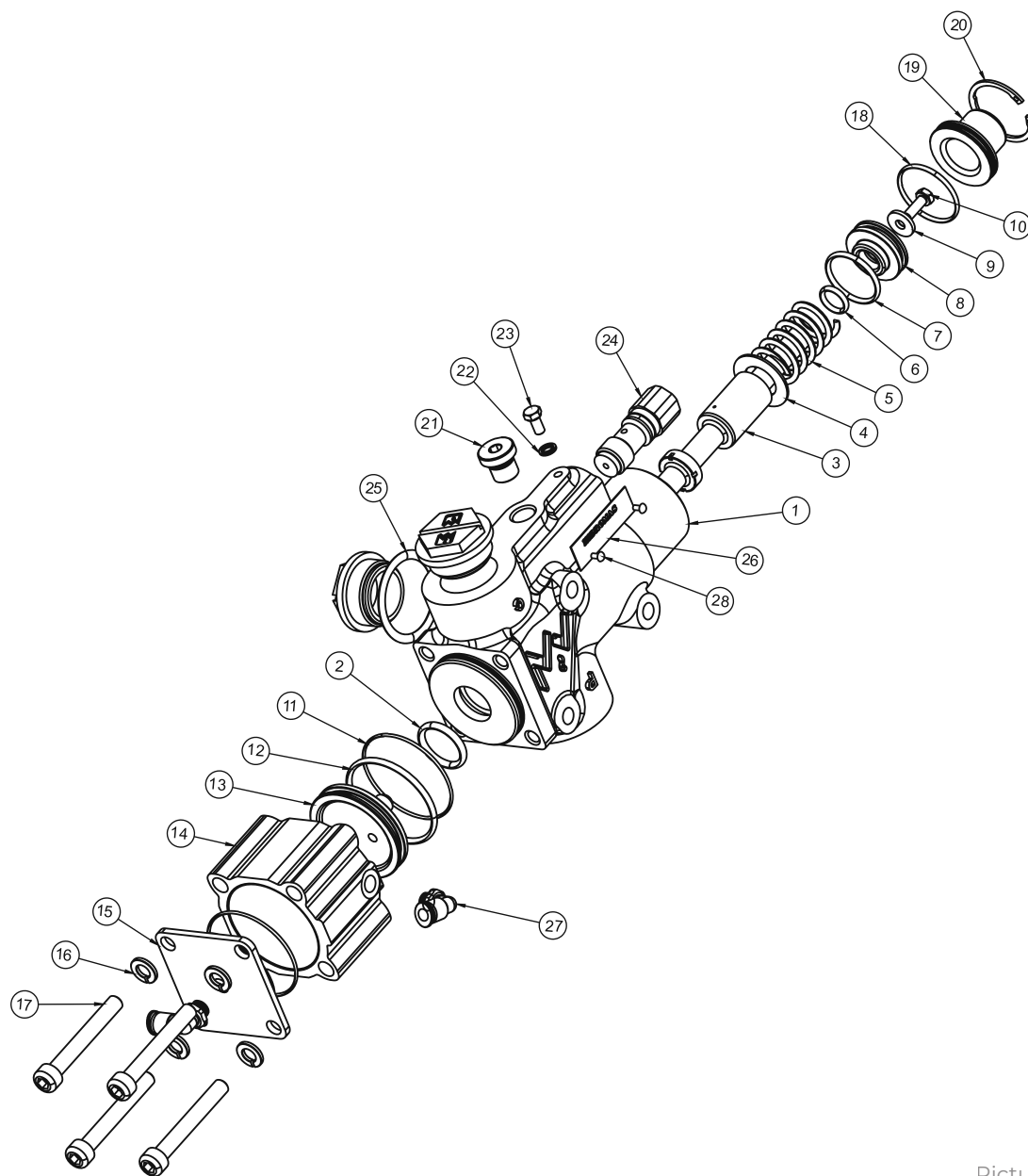
DIRECTIONAL CONTROL VALVE

DIRECTIONAL CONTROL VALVE



HIDROMAS

18 DCV PARTS



Picture 29

- 1.** Body **2.** O-Ring **3.** Spool **4.** Washer **5.** Spring **6.** O-Ring **7.** O-Ring
8. Hydraulic Piston **9.** Washer **10.** Hexagonal Bolt **11.** O-Ring **12.** O-Ring
13. Pneumatic Piston **14.** Pneumatic Base **15.** Pneumatic Base Cover
16. Spring Washer **17.** Allen Bolt **19.** Metal Cover **20.** Circlip **21.** Metal Plug
22. Bonded Seal **23.** Hexagonal Bolt **24.** Pressure Catridge **25.** O-Ring
26. Name Plate **27.** Air Coupling Elbow **28.** Rivet for Name Plate

19 General Mounting Information of DCV

* The tipping valve is mounted on oil tank through valve Mounting block. To prevent the valve housing deformation the mounting plate surface or block must be completely Flat.

* Before Mounting the valve, remove the plug underneath the valve and use the O-ring between valve return line opening and valve block.

* Recommended torque for tipping valve mounting allen bolts is 45Nm.

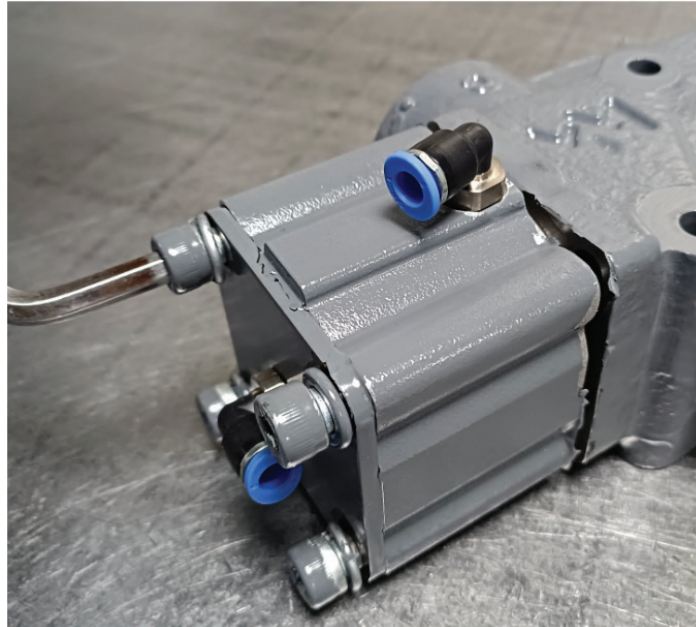
VALVE MOUNTING FACE WITH O-RING



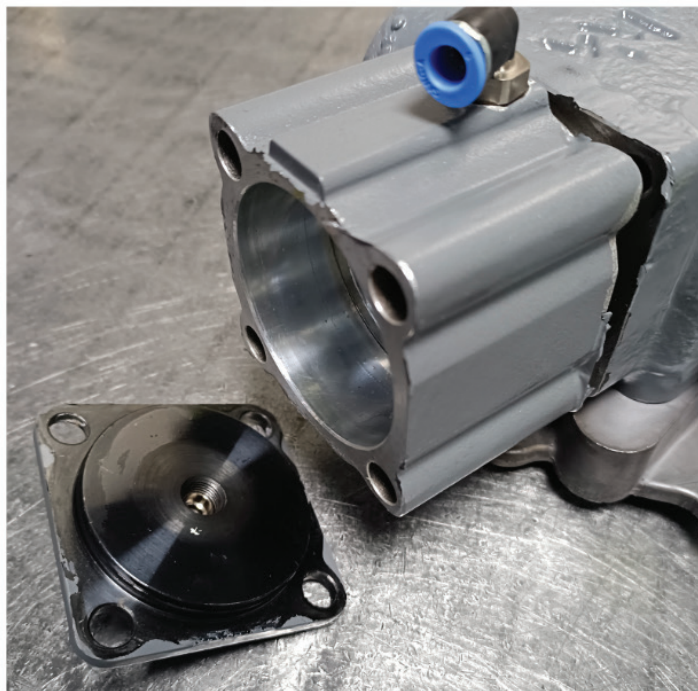
Picture 30

20 Dismantling of DCV

20.1 Dismantling of Pneumatic Base & Base Cover as per Picture 31,32 & 33



Picture 31



Picture 32



Picture 33

20.2 Dismantling of Circlip & Metal Cover as per Picture 34 & 35



Picture 34





Picture 35



20.3 Dismantling of Spool with Pneumatic Piston as per Picture 36,37 & 38



Picture 36

DIRECTIONAL CONTROL VALVE



HIDROMAS



Picture 37



Picture 38

20.4 Dismantling of Pressure Cartridge as per Picture 39 & 40



Picture 39



Picture 40

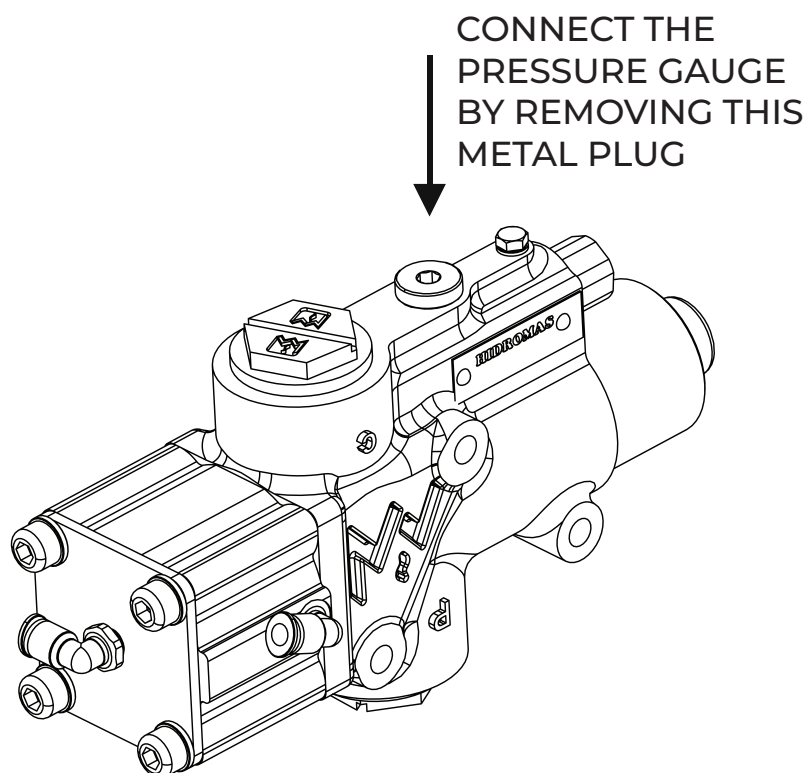


20.5 Dismantling Tips

- * The valve must be dismantled in a Clean area with proper Tools.
- * If a fault has been developed which can be traced to the valve it is possible to replace the internal seals and O-Rings.
- * All parts should be thoroughly cleaned before reassembly.
- * Clean each parts thoroughly and assemble back in reverse sequence of dismantling valve.

20.6 Valve Check Points

- * Make sure the body is fully lowered and the PTO is disengaged and connect a pressure gauge to a point shown in picture with 1/4 BSP Connector.
- * Engage the PTO and tip the body fully. Hold the lever at tipping condition until the oil get relieves to tank.
- * Check for leaks in the system and read the pressure gauge.



Picture 41

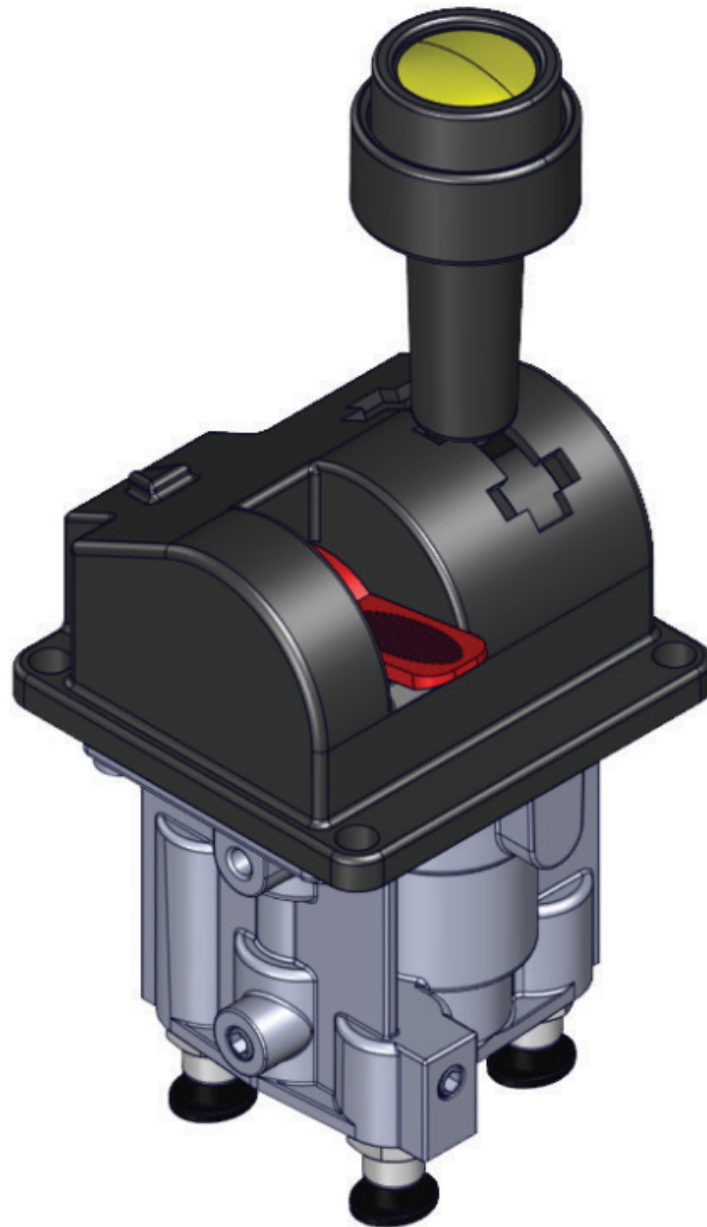


21 TroubleShooting of DCV

Symptom's	Cause	Solution
Oil leakage While tipping	Worn out seal kit.	Replace the seal kit.
	Scoring Mark inside the valve.	Replace the scored component in the valve.
	Oil leakage in the valve mounting area.	Replace the O-ring the between the valve and tank AL plate.
	Oil Leakage from Mounting bolt.	Check the casting body porosity and replace if required.
DCV malfunctioning	Sticky spool.	Check the oil quality and replace the oil if necessary. Replace the seal kit.
	Low pressure air supply.	Check the air pressure supply 6-8 bar in ideal.
Low operation in the valve	Pressure relief valve defect.	Replace the pressure relief valve. Check the maintenance schedule.
Body automatic coming down while neutral mode	NRV defected.	Check the NRV function and replace it if necessary.
	Internal Leakage in the dcv.	Replace the seal kit. Replace the valve if spool or body have scored / deformed. Check the pressure relief valve assembly fitment.



HIDROMAS

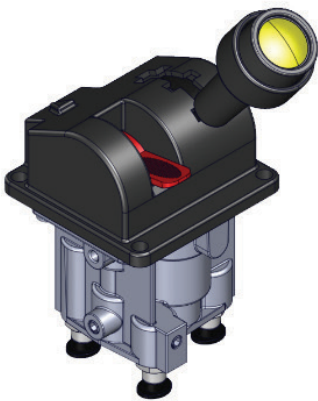


AIR CONTROL VALVE

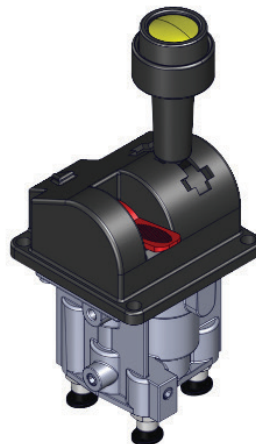
22 General Information of ACV

- * The air control valve with automatic PTO disengagement is a three way operated, variable air control (for PTO engagement, tipping and lowering operation).
- * When used with a compatible tipping valve with proportional lowering, the proportional movement of the air control lever can regulate the speed of descent of the body.
- * Air control are easy to mount in the cabin.
- * The function of air control valves are clearly indicated with symbols.

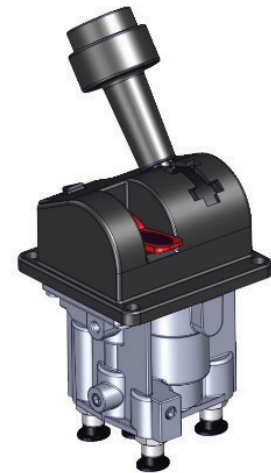
22.1 Activation and Controlling the Hydraulic system



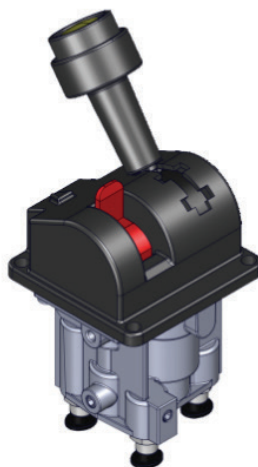
Lowering Position
Picture 42



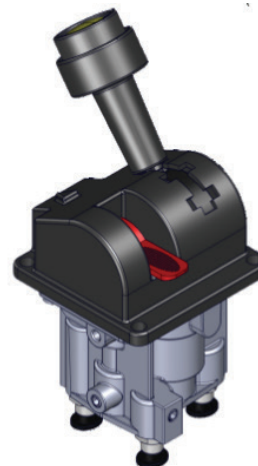
Neutral Position
Picture 43



Tipping Position
Picture 44



PTO On
Picture 45



PTO Off
Picture 46

22.2 PTO (Power Take Off)

The PTO (takes Power off) the engine via gear box to drive the pump, The hydraulic System it is pneumatically (air-pressure) Controlled and has two position below

- Picture 45 - PTO on
Picture 46 - PTO off

In the Engaged position the PTO and pump are activated. A lamp on the Dashboard indicates the PTO is engaged.

Warning The PTO Must be disengaged when the tipper is not in use.

22.3 To Engage the PTO

- * Stop the vehicle and apply the Hand(parking)brake.
- * Put the Gearbox in neutral.
- * Put the tipper Control valve in Neutral position.
- * Press the Clutch and wait for 2 seconds.
- * Engage the PTO by moving the selector to ON
- * Check the Dash board for indication lamp illuminates and slowly release the Clutch pedal
- * The PTO is now engaged.

Warning Do not drive the vehicle when PTO is engaged.

22.4 Disengage the PTO

- * When the tipper control in Neutral, press the Clutch.
- * Disengage PTO by switching the lever to the position OFF.
- * Check the indicator lamp is off and slowly release the clutch.
- * The PTO is now disengaged.

22.5 Tipper (air) Control

Lowering (Pic42)

- * When the ACV is in "Lower" Hydraulic oil from the cylinder to the oil tank, because of the tipper body weight Cylinder will be retracting automatically.

Neutral (Pic43)

- * In "neutral" the oil circulates (back to tank) and the cylinder is held in position.

Tipping (Pic44)

- * Moving the ACV to "Tipping", the hydraulic oil flow to the cylinder, extending the cylinder and raising the tipper body. Tipping can be interrupted at any time, by Placing the air control in to "Neutral".



23 Troubleshooting of ACV

Symptom's	Cause	Solution
Air Leakage	Improper sealing internally.	Check the sealing area and replace the required parts.
	Air control valve defective.	Replace the ACV.
Air Control valve lever broken.	Over force applied on the lever.	Check the lever and give the proper force on the lever.
Oil Leak in ACV	DCV seal kit defective.	Replace the DCV seal kit.
Less air supply to the system	Air pressure supply below the required level.	Check the air supply min 5 bar and max 12 bar.



HIDROMAS



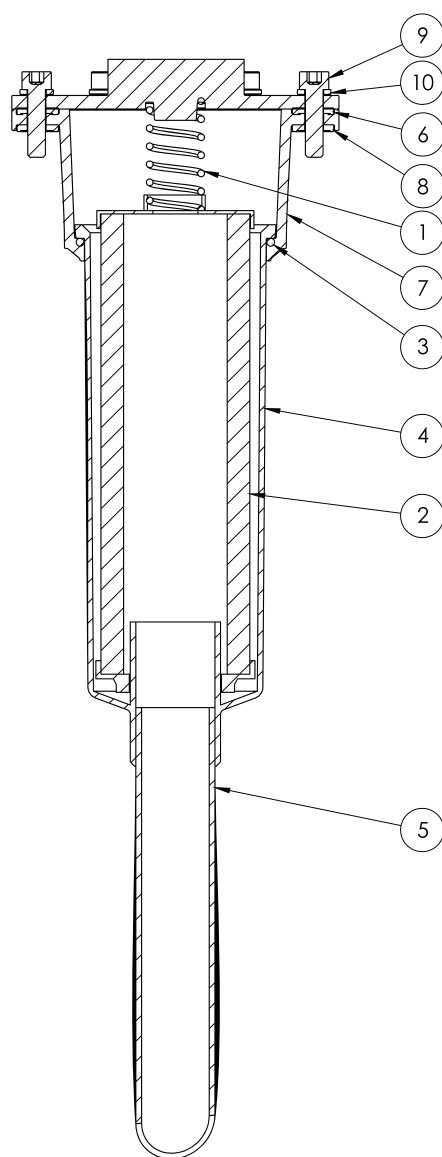
RETURN LINE FILTER

General

Return Line filter assembly is located on top of the hydraulic oil tank & adjacent to tipping valve. Oil from cylinder on its return path, to the directional control Valve flows to the tank through Return line filter.

The Function of RLF assembly is to remove Contamination from the hydraulic oil on its way back to the tank. (Rating 25 Microns)

24 Return Line Filter 150L Built In Type



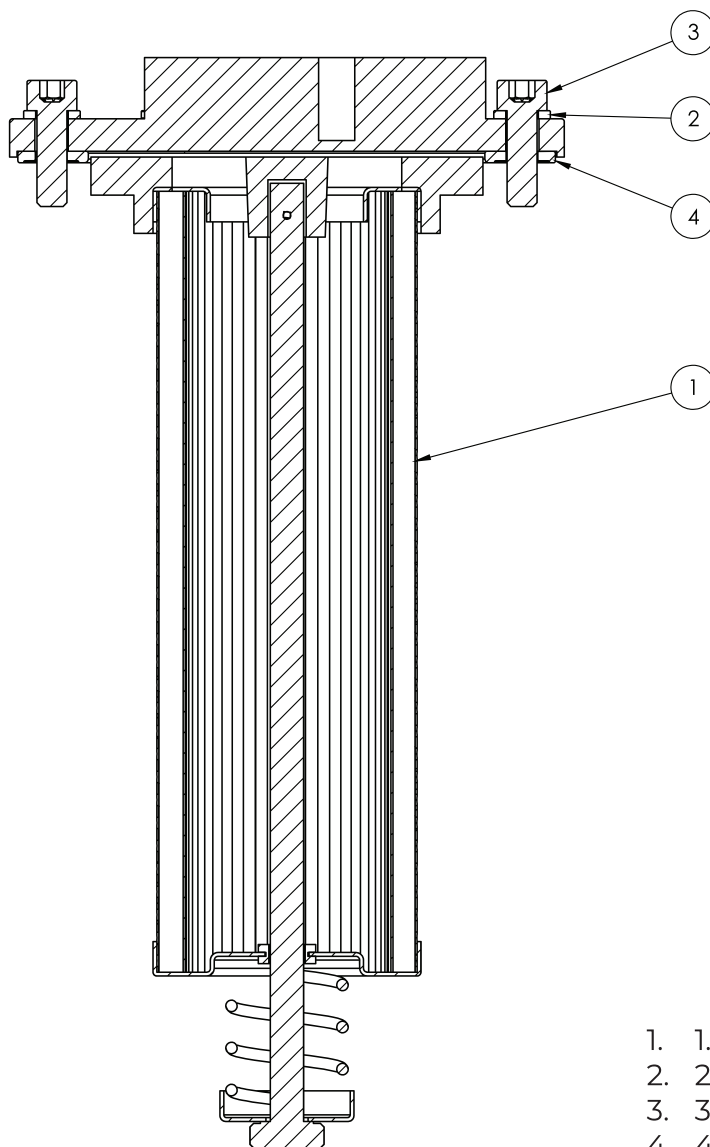
1. Return Line Filter Spring
2. Return Line Filter 150L
3. Filter Cover O-Ring
4. Filter Cover
5. Filter Cover Pipe
6. Return Line Filter Seal NBR 70
7. Return line Filter Base
8. Return Line Filter Seal NBR 70
9. Allen Bolt M8X25
10. Spring Washer M8

NOTE

Periodic replacement of filter element is strongly advised to prevent premature wear and failure of tipping system components.

Filter Element Must Be Replaced As Per The Recommendation Given in Periodic Check List.

25 Return Line Filter Assy With AL Plate - Tamper



1. 1. Return Line Filter Assy
2. 2. Spring Washer M8
3. 3. Allen Bolt M8X25
4. 4. Return Line Filter Seal NBR 70



HIDROMAS



AIR BREATHER ASSEMBLY

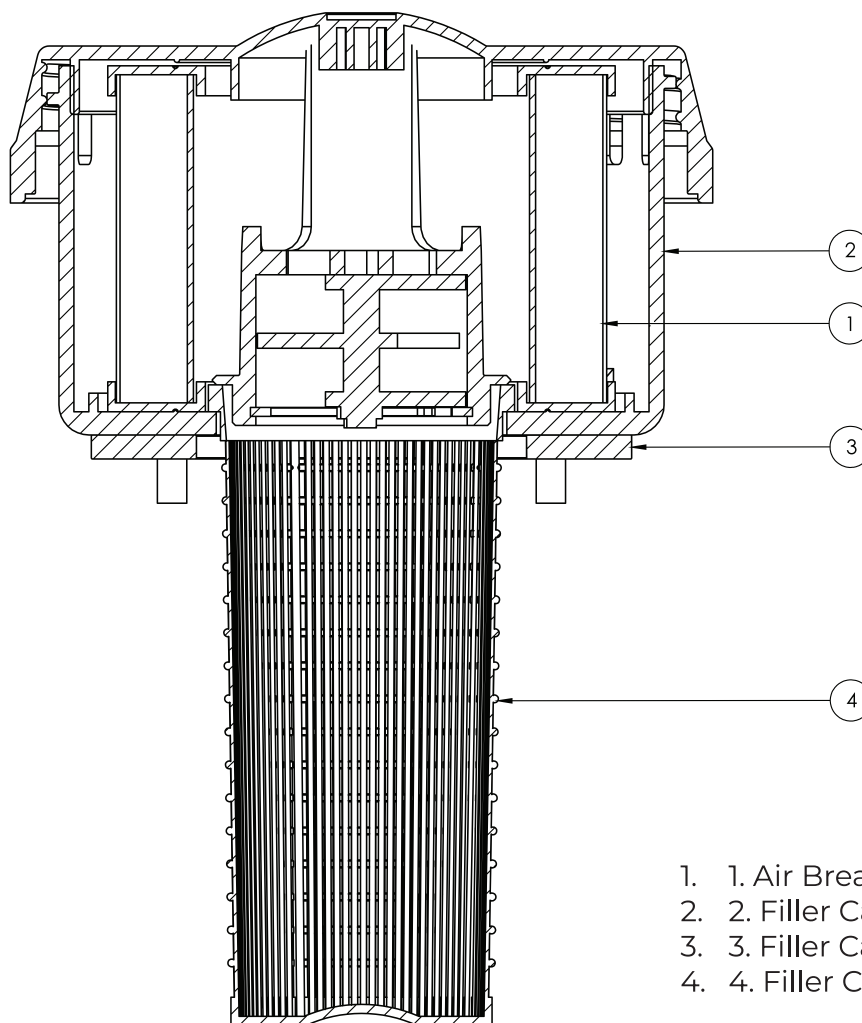
General

As the name indicates, this helps the Hydraulic oil to “Breathe In” or “Breathe Out” air, in order to maintain the atmospheric pressure inside tank, even when there is lower level of oil (in Cylinder tipped condition) or Higher level of oil (due to lowering down), in order to prevent any kind of deformation of tank. A Breather filter element of 10-micron Filtration capacity ensures entry of dust and foreign particle-free air inside hydraulic tank.

NOTE

Breather Element Must Be Replaced As Per the Recommendation Given in Periodic Check List.

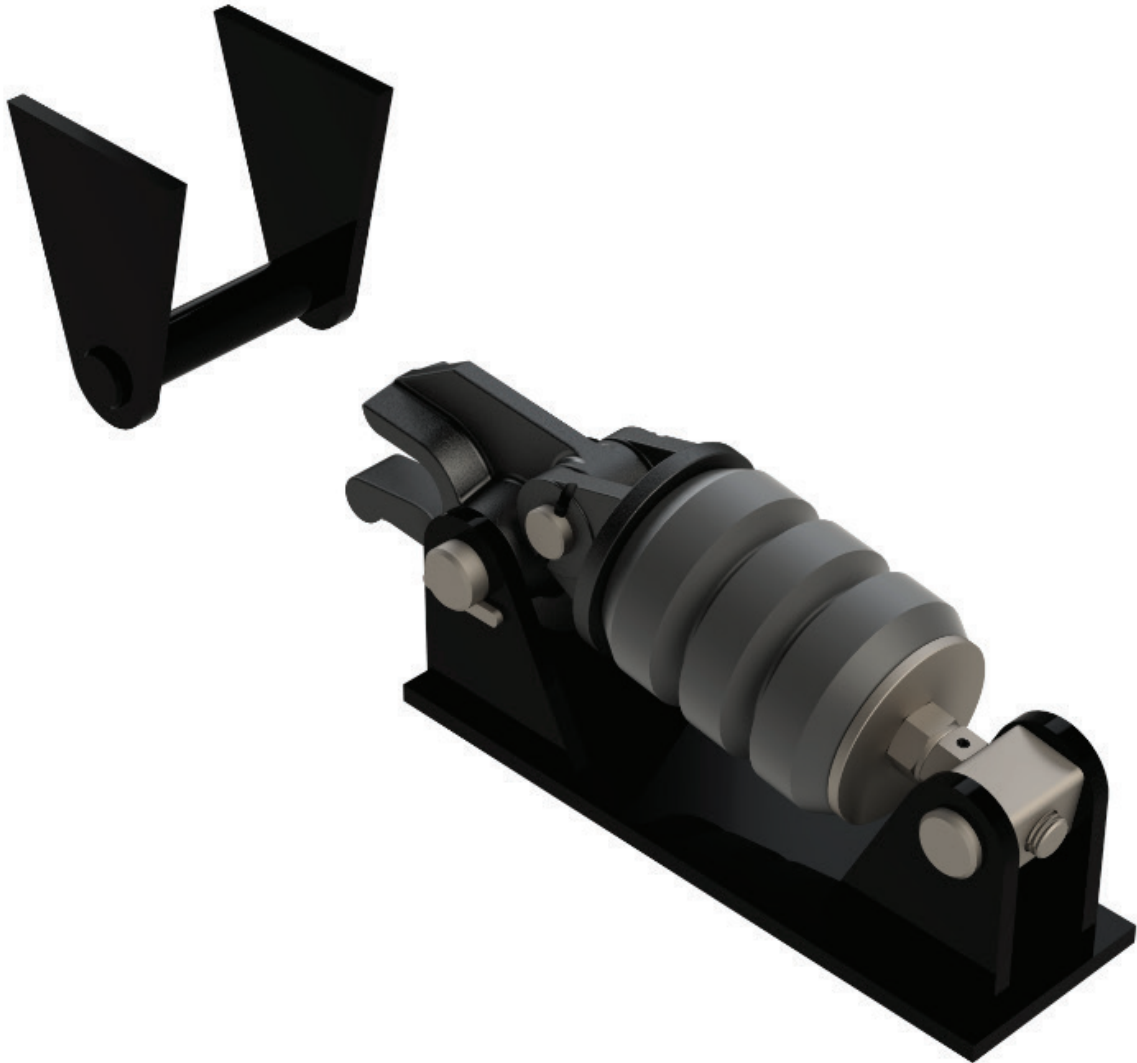
26 Breather Filter Assy



1. 1. Air Breather Element
2. 2. Filler Cap Plastic Assy
3. 3. Filler Cap Seal
4. 4. Filler Cap Strainer (METAL)



HIDROMAS



BODY LOCK KIT

27 Body Lock Kit

27.1 General

* Body lock kit Mounted underneath the body, Stops rattling of the empty tipper body on the chassis and thus prevents damage to the chassis, Structural part and sub-frame and reduce the noise nuisance.

* This Body lock kit is a revolutionary solution for continuous tipper problem of chassis receiving enormous hammering from the tipper body caused by potholes and bumps on the roads.

* Body Lock kit ensures a fixed connection between tipper body chassis. The continuous load depending on where Body lock is fitted and the dimension of the tipper body, we can adjust the compression load in Power block. The compression load can vary from 250 to 1600 kgs.

27.2 Welding of Body Lock Kit

* The Body lock Kit to be Fully supported and welded over the entire surface before the compression Load is set, So that no bending moment will arise on the power block and locking.

* Also the body Lock weldable Bracket has to be fully welded.

27.3 Dismantling of Body Lock Kit

* Open the Body lock with hollow steel bar and remove the setting pin.

* While setting pin is removed and Body fix closes, there is a possibility of clamping between the power block and hook.

* Greasing points should be properly greased at regular intervals.

* Condition of power block and compression rod must be checked twice a year.



HIDROMAS

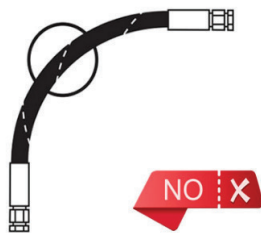


HOSES & ADAPTERS

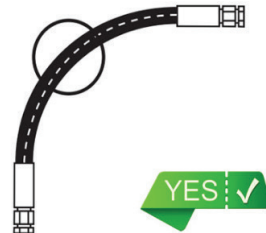
28 SUCTION & HIGH PRESSURE HOSES

- > Make sure the proper hose orientation in order to ensure
 - * Same is not getting rubbed with any object
 - * There is no twist
 - * Hose is not bent too sharply
- > The Mounting torque of the hose clamp must be 6Nm
- > Take care the hoses do not come in contact with hot or Moving parts like the exhaust or drive shaft
- > Use Nylon Tape or seal the thread of elbows and hose pillars without O-ring, do not use Nylon tape in combination with elbows or hose pillars with O-ring.

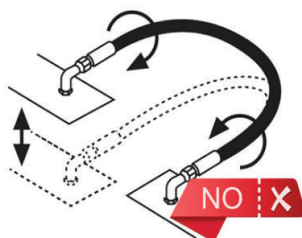
29 HOSE ORIENTATION



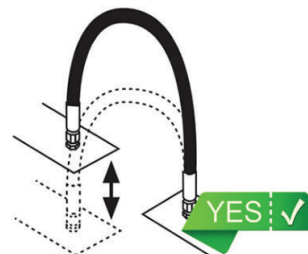
Wrong installation:
distorting assembly.



Right installation:
without twisting

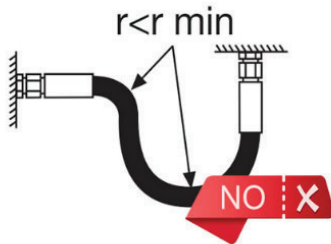


Wrong installation
horizontal installation.

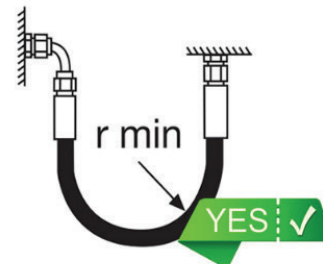


Right installation
upright installation.

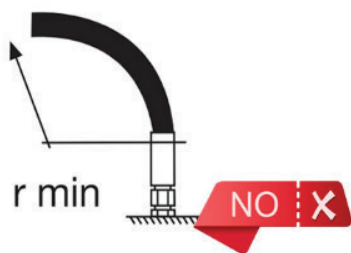
Avoid the tight Bend Radius. So please use the proper fittings. Do not begin to bend closer than 1.5 times hose diameter to the ferrule.



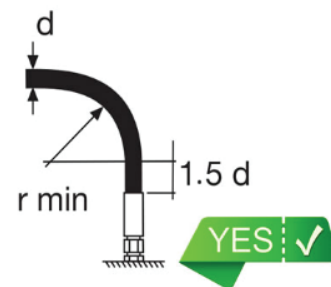
Wrong installation – the actual radius is smaller than minimum radius.



Right installation – actual radius is larger than minimum radius.



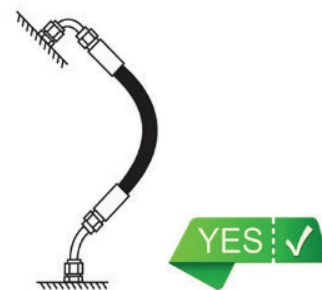
Wrong installation – begin to bend lower than 1.5 times of diameter to the ferrule.



Right installation – start point leaves at least 1.5 times of diameter to the ferrule.

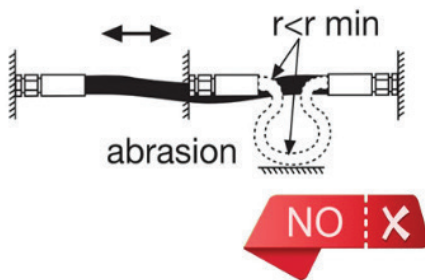


Wrong installation – improper fitting cause tight bend.

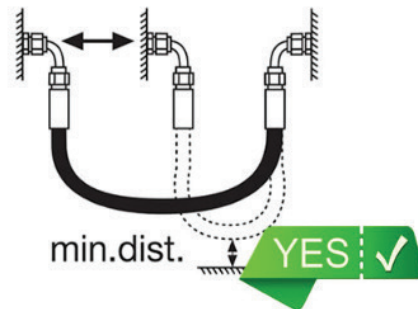


Right installation – suitable fitting for suitable radius.

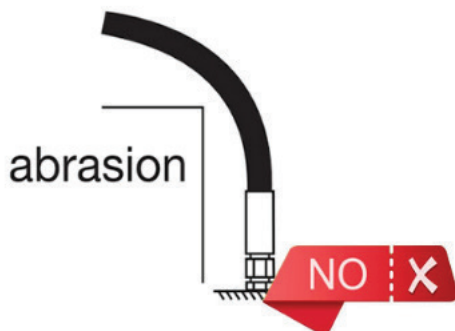
Avoid Contacting with objects. It may cause abrasion or damage. So in the processes of application, please pay particular attention to specify the hose length to avoid tensile stress or abrasion.



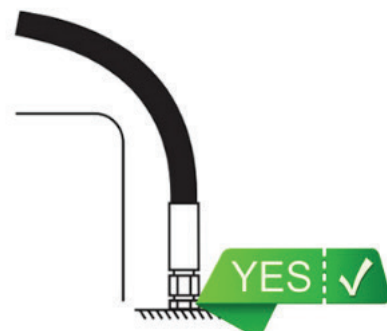
Wrong installation – smaller distance with subject may cause abrasion.



Right installation – suitable distance for far away from subject.



Wrong installation – direct contact with abrasive subjects.



Right installation – adjust radius to avoid contacting with abrasive subjects.

RECOMMENDED REPLACEMENT



HIDROMAS

Sl. No.	Description of Items	Replacement Periods
1	Air Breather FilterElement	Once in every 4 months in normal working condition. (Non-Mining application)
		Once in every 2 months in dusty working condition. (Mining application)
2	Return Line FilterElement 150Lpm	Once in every 4 months in normal working condition. (Non-Mining application)
		Once in every 2 months in dusty working condition. (Mining application)
3	Hydraulic Oil	First change at 6 months and thereafter once in a year.

NOTE

- * Over and above the Schedule, Filter and Breather element Need to be replaced whenever Hydraulic oil is changed.
- * In the Event of material particles Found, due to failure of components, hydraulic oil needs to be changed along with new Components.
- * Do Not use a steam cleaner when cleaning Hydraulics. When using pressurized cleaner, water temperature should be below 40°C
- * Greasing for Lubrication is on Maintenance Schedule basis.

AFTER INSTALLATION CHECKS



HIDROMAS

After completing the installation, it is advisable to perform the following checks:

- 1. Oil Level Check:** Verify the oil level and ensure the suction line is filled with oil.
 - Confirm that valves are open, and the oil level in the tank is up to the Bull's-eye indicator.
- 2. Bolts and Nuts:** Use a torque wrench to ensure all bolts and nuts are tightened properly.
- 3. Cylinder Movement:** Check that the cylinder moves smoothly, and hoses do not interfere with any components.
- 4. Cylinder Extension:** Confirm that the cylinder extends in a straight line during tipping, avoiding contact between the rear end of the body and other truck parts.
- 5. Pneumatic Hoses:** Ensure pneumatic hoses are correctly routed without any interference between moving components.
- 6. Pneumatic Pressure:** If the cylinder extends too slowly, check the pneumatic pressure (minimum 6 bar).
- 7. Smooth Extension:** If the cylinder does not extend smoothly, check the oil tank level and refill as needed.
- 8. Full Extension:** If the cylinder does not fully extend, check the oil tank level and refill if it is too low.
- 9. ACV Position:** If the body extends when the ACV is in the lowering position, check for reversed pneumatic hoses at the tipping valve.
- 10. Pump Connection:** Verify that the pump is connected according to ISO and UNI connection types.
- 11. Pressure and Flow Check:** Check the pressure and flow of the pump according to the system requirements and its capacity.
- 12. Suction Line Filter:** Ensure there is no filter on the suction line. The presence of a filter can lead to pump inefficiency, cavitations, and excessive wear, reducing the pump's life.
- 13. Mounting Pump to PTO:** Use a suitable gasket when mounting the pump to the power take-off (PTO).
- 14. Hydraulic System Inspection:** Examine all fittings, connections, hoses, and parts within the hydraulic system for any issues.

While in operation:

- The initial start should occur when the body is empty, operating at a low rate suitable for trucks idling. This should continue for a few minutes. It is essential to inspect for any issues related to noise, seals, and the pump's functionality. In the event of an abnormal situation, the system must be switched off, and a thorough investigation should be conducted to identify the problem.
- After the initial system start, verify the oil level in the tank and add oil if necessary.
- Avoid exceeding the specified rates and pressures for the pump. Refer to the user manual for the exact specifications.

MAINTENANCE SCHEDULE



HIDROMAS

Type	Description	Application	Daily	Weekly	Every 2 months	Every 6 Months	Yearly
General Maintenance	Air System	Air Hoses	Check damages & leaks	-	-	-	-
		Air Control Valve	Check damages & leaks	-	-	-	-
		Knock-Off Valve	Check damages & leaks	-	-	-	-
		Air Breather	-	Check Air Breather Filter for Dirty	Change air breather filter (for 60 cycle/day)	Change air breather filter (for 10 cycle/day)	-
	Hydraulic System	Cylinder	- Check damages & leaks - Check Brackets bolts and nuts.	Inspect the top nut and rod eye under the dust cover for any signs of play; If play is detected, replace the top nut and Rod eye with a new one and apply the recommended torque value.	-	-	-
		Pump	-	Check "leak indicator" hole of pump	-	-	-
		Directional Control Valve	Check damages & leaks	-	-	-	-
		Hydraulic Hoses	Check damages & leaks	-	-	-	-
		Return Filter	-	Check oil return filter	Change oil return filter (for 60 cycle/day)	Change oil return filter (for 10 cycle/day)	-
		Oil Tank	- Check damages & leaks - Check oil level in the oil tank. oil level has to be in the middle of the spy eye or level indicator, while body is resting on the sub frame	-	-	-	Change oil and make sure tank is clean
	Greasing Points	-	-	Grease chassis and lifting brackets	-	-	-
				Grease Rod eye on tipper body			
				Grease Body lock clamp			

Warning : In addition to the regular maintenance schedule, it is necessary to replace the filter and breather elements whenever the hydraulic oil is changed.

WARRANTY GUIDELINES



HIDROMAS

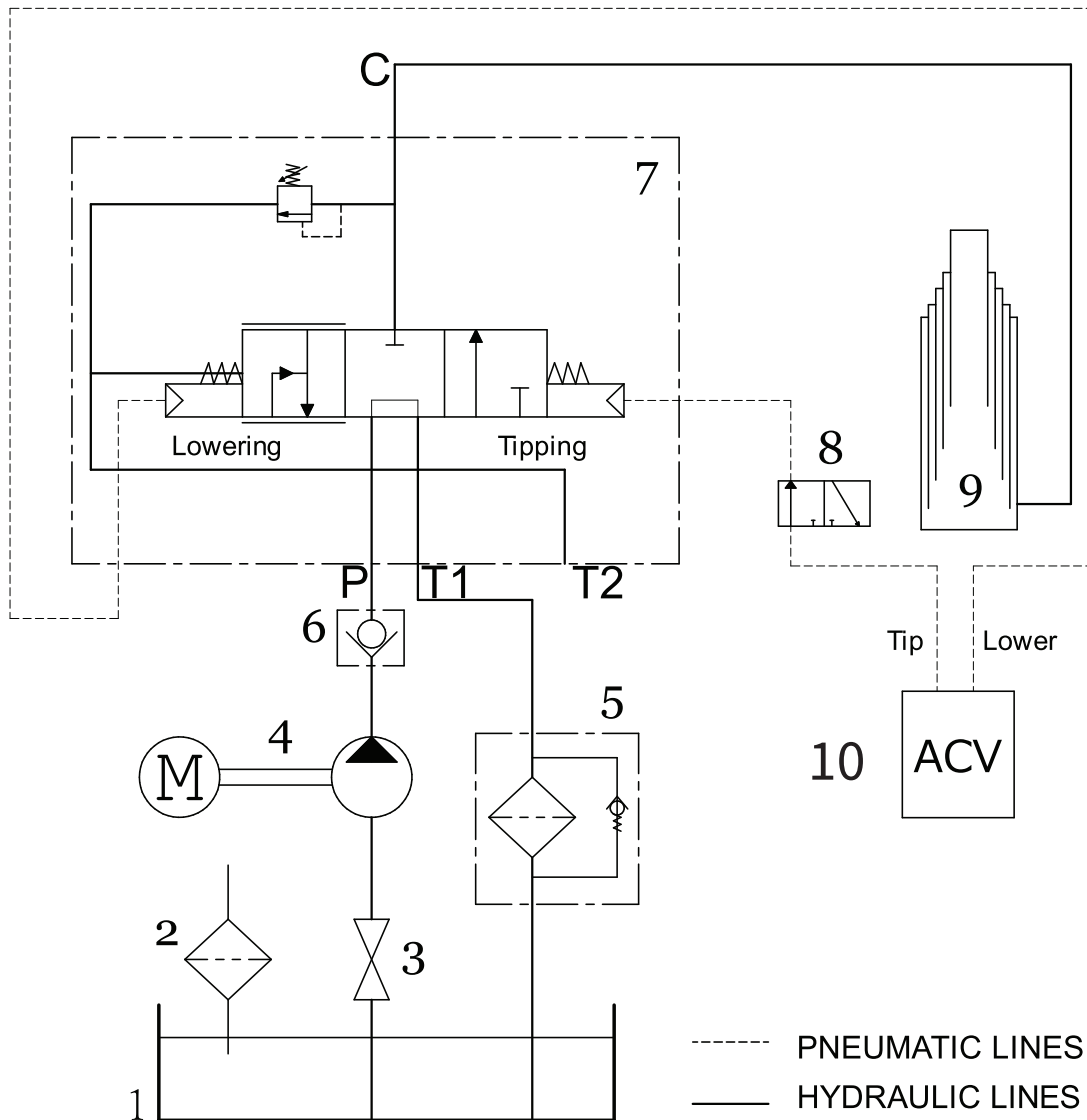
COMPONENT DESCRIPTION	TYPE OF FAILURE	REASON	ACTION	REMARKS
TIPPING CYLINDER	CYLINDER BENT	*Tipping on Uneven Terrain. *Operating the Vehicle with the Body in a Tipping Position. *Vehicle Toppling in the Event of an Accident.	Warranty N.A. Warranty N.A. Warranty N.A.	
	CYLINDER BULGE	*Tipping valve set pressure has been tampered with. *Malfunctioning pressure relief valve. *Sticky spool of the tipping valve. *Excessive speed during the lowering operation. *Clogged filter.	Warranty N.A. Warrant applicable Warrant applicable Warranty N.A. Warranty N.A.	If maintenance Schedule are Followed If maintenance Schedule are Followed
	CYLINDER SCORING	*Scoring on stages due to slider scroing. *Scoring in the axis of trunnion due to side load. *Scroing due to stop ring dislocation and groove deformation. *Welding spatters and spark jumping due to earthing due to cylinder	Warrant applicable Warranty N.A. Warrant applicable Warranty N.A.	If maintenance Schedule are Followed Schedule are Followed and correct grade of oil is used Provided correct grade of oil is used & Maintenance shedules
	OIL LEAKAGES FROM STAGES	*Premature seal failure. *Excessive loading. *Overextended body. *Operational misuse. *Elevated oil temperature due to frequent tipping. *Contaminated oil. *Presence of welding spatters on the seal running area.	Warrant applicable Warranty N.A. Warranty N.A. Warranty N.A. Warranty N.A. Warranty N.A.	Unauthorized extension of the body will void all warranty claims.
	OIL LEAKAGE FROM CYLINDER	*Premature failure of seal.	Warranty N.A.	
	STAGE TUBE COMING OUT	*Jerky operation by pushing backward after unloading.	Warranty N.A.	
	CYLINDER BASE TUBE CRACK	*Crack is on trunnion side due to side loads. *Crack is on all around trunnion.	Warranty N.A. Warrant applicable	
	CYLINDER STUK	*Sliders over riding.	Warrant applicable	

WARRANTY GUIDELINES



HIDROMAS

COMPONENT DESCRIPTION	TYPE OF FAILURE	REASON	ACTION	REMARKS
DIRECTIONAL CONTROL VALVE	OIL LEAKAGE	*Premature failure of seal.	Warrant applicable	If Provided maintenance Schedule are Followed
	MALFUNCTION OF VALVE	*Sticky Spool	Warrant applicable	
	HIGH OPERATING PRESSURE	*Pressure Relief valve Tampered	Warranty N.A.	
	WORKING PRESSURE IS TOO LOW	*Low system pressure as relief valve malfunctioning	Warrant applicable	
HYDRAULIC PUMP	PUMP FAILS	*Tampering with the relief valve set pressure. *Insufficient hydraulic oil in the tank. *Operating the pump without opening the T valve. *External damage resulting from an impact with an external object. *Incorrect grade of oil being used. *Excessive engine rpm causing wear on the thrust plate and	Warranty N.A. Warranty N.A. Warranty N.A. Warranty N.A. Warranty N.A. Warranty N.A.	
	PUMP LEAKAGE	*Oil Contamination levels are high.	Warranty N.A.	If Provided maintenance Schedule are Followed
	PUMP DRIVE SHAFT BROKEN	*Warning hole oil Leakage *Manufacturing Defect.	Warrant applicable	
	THRUST PLATE & WEAR OUT OF HOUSING	*System Pressure Relief is Tampered. *Entry of Foreign particles	Warranty N.A. Warranty N.A.	
HYDRAULIC HOSES	OIL LEAKAGE	*Excessive RPM of Engine. *Oil Contamination.	Warranty N.A. Warranty N.A.	
		*Leakage from crimping. *Hose bursting. *Twisting caused by incorrect fitment. *External damage from rubbing and hitting.	Warrant applicable Warrant applicable Warranty N.A. Warranty N.A.	



- 1- Oil Tank
- 2- Air Breather
- 3- Suction Valve
- 4- Pump
- 5- Return Line Filter
- 6- Non-Return Adapter
- 7- Directional Control Valve
- 8- Knock-Off Valve
- 9- Telescopic Cylinder
- 10- Air Control Valve



HIDROMAS

YOUR GLOBAL TIPPING PARTNER



HIDROMAS

HMS GLOBAL BV.
Dukdalfweg 26 1041 BE
AMSTERDAM / NETHERLAND

www.hidromasglobal.com

Manual No : ZI1102206A-23