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HH26 Hooklift Equipment

Operators Manual

2nd Edition - 2020

bsi. ISO 9001 Quality Management
FM 13737

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www.harshuk.com

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HH26 Hooklift Equipment

1.0 Operators Manual Introduction

The Operators Manual is a very important element of the Hooklift Equipment and all responsible people for mounting, maintaining, repairing and operating the equipment must comply with these dispositions.

The manual must be preserved in the Cab of the Truck for quick availability and in case any persons requires consultation. In the event of loss, the user must report directly to their superior in order for a replacement to be issued.

The manual should be used in conjunction with scheduled training and demonstrations on familiarisation of the equipment use before any user is permitted to operate the Hooklift equipment independently.

The Hooklift equipment supplier reserves the right to amend and modify this manual without any obligation to revise or update previous editions.

Once the Hooklift equipment is handed over to the user the Hooklift equipment supplier is considered free from any responsibility in the following events;

- Improper use of the equipment
- Use of the equipment by untrained or non-qualified personnel
- Installation which does not comply with the mounting instructions
- Non authorised modifications
- Use of original spare / replacement parts
- Partial or non-observation of the operation instructions
- Exceptional unforeseen events

2.0 Hooklift Equipment Introductions

Designed for handling large quantities of bulk waste, the Hooklift equipment often also referred to as RORO equipment (Roll On, Roll Off) is proven to be an economical solution to industrial and commercial waste companies. An 8x4 32t GVW Hooklift is designed to carry large containers (CHEM TS8 Type 20 Containers – 5790mm (19ft) Internal Length) they are used for removing and transporting significant volumes of heavier waste materials. The Hooklift equipment loads, unloads, transports and tips the containers carrying the waste product. The main operations are as follows;

- Container loading and unloading from the ground to the chassis and vice-versa
- Container loading and unloading on a trailer
- Container tipping for material unloading

Hooklift equipment is often preferred by operators due to its versatility of use allowing reduced fleet sizes and vehicle numbers. Part of this versatility is the equipment ability to allow operation in confined and

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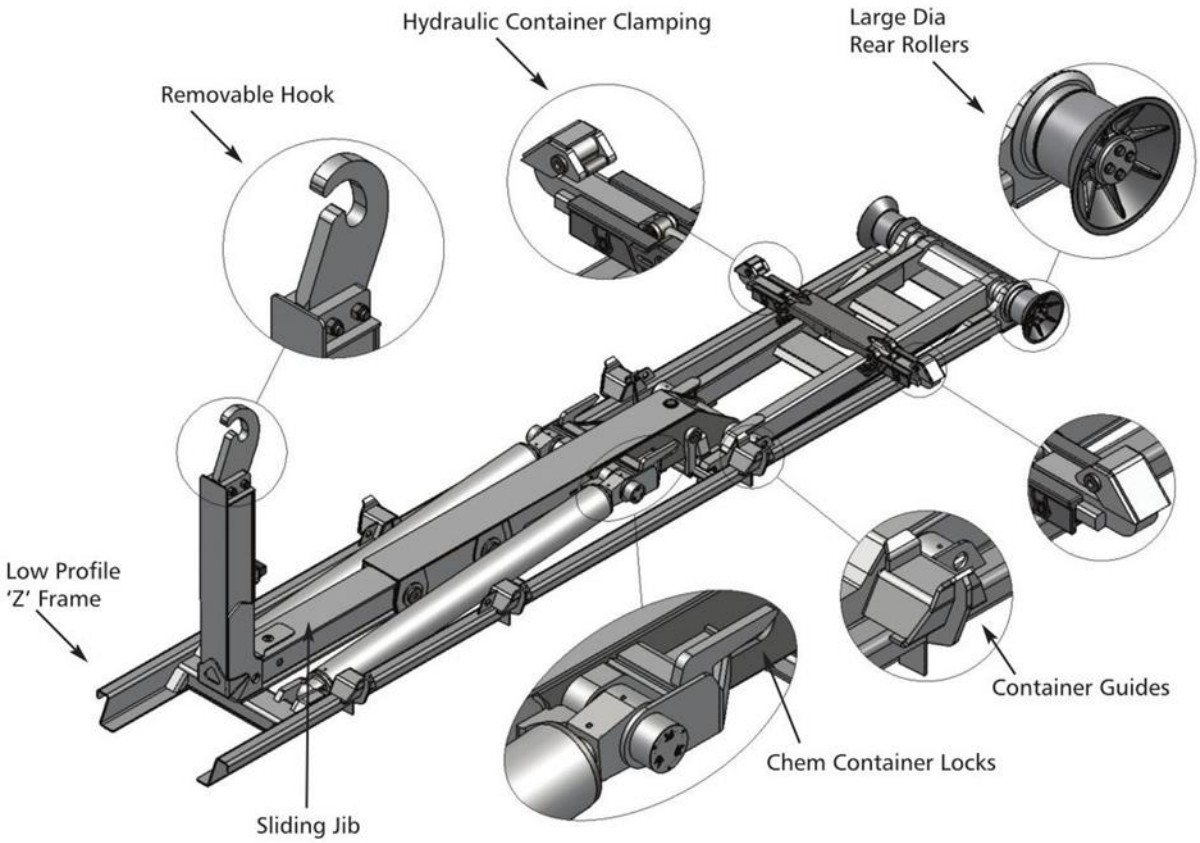
tight spaces. With an operational speed of approximately 90 seconds to load or unload a container it is a very practical solution for handling bulk waste products. Furthermore, complete operation of the Hooklift equipment is carried out inside the vehicle cab.

2.1 Explanation of the Main Hooklift Components

Understanding the main components of any Hooklift equipment is important to better appreciate the functionality and operational requirements of the equipment. A basic level of component knowledge is extremely useful. It is advised any users should familiarise themselves with the components when being trained or demonstrated the equipment.

The main structures to note are as follows;



- The central body with its sliding arm/jib which is moved by a hydraulic cylinder located inside the main structure
- Articulated arm hinged on the sliding arm in the centre of the body
- Rear 'H' frame which is only operated when in tipping mode
- Lateral lifting hydraulic cylinders which are operational when the container is loaded / unloaded or during tipping
- Container guides and container rollers for container loading

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- Container hydraulic locking/clamping to secure the container in transportation
- Large diameter rear roller for transition of the container when being loaded and unloaded
- Sliding stabiliser roller positioned at the rear of the vehicle moved by a hydraulic cylinder to the ground for the stabilising the vehicle during the loading and unloading or tipping modes – Not pictured.

3.0 Installation of the Hooklift Equipment

The Hooklift equipment will be mounted and fixed according to our standard procedures of practise with consideration taken for the chassis types and variations. Upon confirmation of any order the technical department will produce mounting installation drawings and guides based on the equipment selected and truck type. Weight and payload calculations are possible but may vary dependent upon model/types.

Harsh are ISO9001:2015 compliant and accredited by the British Standard Institute meaning we have fully audited systems giving us full traceability and process throughout the installation.

Harsh are also accredited member of CHEM. Formed in the 1960's CHEM provides Co-ordination and communication across equipment manufacturers to help standardise and provide guidelines on best practises for health and safety regulation and in drafting any legislation.

Harsh also is ECWVTA (European Community Whole Vehicle Type Approval) approved for installation of our Hooklift equipment on a wide variation of chassis manufacturers vehicles. ECWVTA requires all new registered vehicles after October 2014 to come complete with a full CoC certificate from every stage bodybuilder. Ensuring full traceability, documentation and process is followed and conforms to legislation.

4.0 Safety Instructions

Before using any Hooklift equipment it is important the Safety Instructions are read, understood and adhered to at all times without exception.

<u>Environment Checks;</u>

1. It is absolutely forbidden for any persons to be in the equipment acting radius during operation of the Hooklift. A safe distance between any persons and the equipment must be adhered to at all times.
2. Always check to ensure the equipment is being operated on a level and secure surface prior to operation
3. Always check for overhead obstructions such as power lines before use
4. Always check the vehicle surroundings before loading or unloading or tipping of the Container

<u>User Checks;</u>

1. It is forbidden for the equipment to be operated by a non-trained person

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2. Operators must ensure they have been instructed on the equipment lifting capacity, utilisation limits and warning light positions prior to operating
3. Please further consult section 4.0 Operators Equipment for further information

Operational Checks;

1. Operate the Hooklift equipment from inside the vehicle cab or a safe distance away from the moving components if the Hooklift is fitted with the Remote Control option. In the event of an emergency, the Operator can easily stop the equipment working by;
    a. Pressing the emergency stop button
    b. Releasing the PTO (power take off) Unit
    c. Via the Clutch Operation
2. Always ensure the In Cab monitoring system is off prior to driving the vehicle. The monitoring system inside the Vehicle Cab indicates a number of items used in the loading, unloading and tipping process with various indicators present. These indicators cover the following;
    a. PTO Warning Light – Showing the PTO is engaged and the Hooklift equipment is Live for operation
    b. Warning Light for Tipping – This light indicates the Hooklift main beam is off the truck chassis and raised in the air. Therefore, unsafe to travel until the arm is back in connection with the truck chassis and the light is off.
    c. Container Locking Light – This light indicates the container locks are off. Meaning it is not safe to travel with a container on the back of the Hooklift equipment until the container locks have been applied and secured. Once this has happened the light will go off.
    d. Stabiliser Roller / Axle Jacks warning Light – This indicates whether the stabiliser rollers or axle jacks are deployed on the ground for stabilisation in the loading, unloading and tipping process. The light must be out before travel.
    e. Flashlight– This indicates the system is on/off and should only be flashing when the Hooklift equipment is being used in the loading, unloading and tipping processes.

The Hooklift equipment is also equipped with ground controls in the event of a failure on the cab mounted controls. These must only be used in the event of a breakdown in order to complete a manoeuvre prior to directly heading to a repair facility.

5.0 Operators Equipment

5.1 Operators Workwear

Whenever maintaining, operating or cleaning any Hooklift Equipment said persons must ensure they have all the appropriate equipment and workwear PPE (personal protective equipment). Among these we recommend the following;

- Safety Helmet
- Non Slipping protective shoes with metallic reinforcement
- Gloves, ear protection and body protection

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- Reflective jacket
- Dust mask
- First Aid Box

Always ensure you are complying with your companies Health & Safety procedures and following any external sites legal safety guidelines prior to leaving the vehicle cab. Look out for the following symbols.

5.2 Operating Area

Before starting any operation of the Hooklift equipment make yourself sure that the movements of the equipment do not create dangerous situations to other persons or objects. Always check the environmental conditions and prepare adequate signals to limit the working area. Among these we recommend;

- Barriers and/or ribbons to restrict the area
- Fire extinguishers
- Danger signals
- Warning signs for hanging weights

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6.0 Hooklift Operational Procedures

The Hooklift equipment is suitable for transporting containers, loading, unloading and tipping of material out of the containers. The following section explains in detail the procedure for each of these functions.

6.1 Pneumatic Control Panel

The pneumatic control panel is located in the Vehicle cab besides the Driver's seat and looks something like the picture below.

Familiarise yourself with the control panel and its location to understand each lever and its function prior to any movement or operation.

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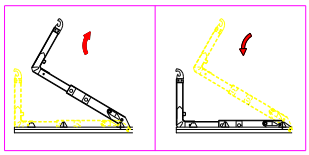
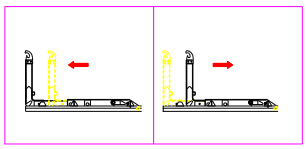
The controls operate the following manoeuvres;

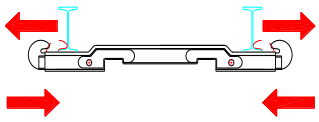


Lifting of the main cylinders



Extension of the Boom cylinder

Stabilising Roller / Axle Jacks deployment



Container Clamps locking operation

Prior to any manoeuvre or operation once all safety checks have been carried out and the user is ready to operate the equipment you must first of all engage the PTO unit. This is located usually on the vehicle dashboard and is part of the truck manufacturers processes. Please consult the truck manufacturer's guidelines for the PTO deployment if unsure.

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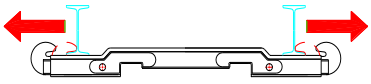
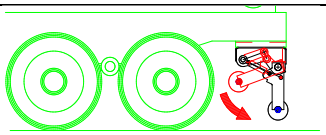
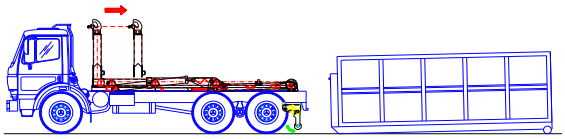
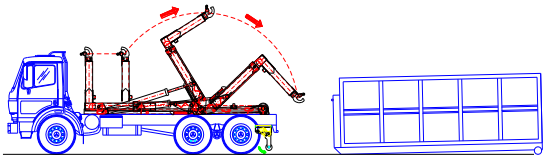
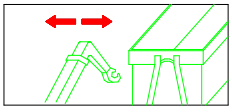
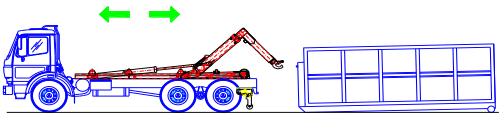
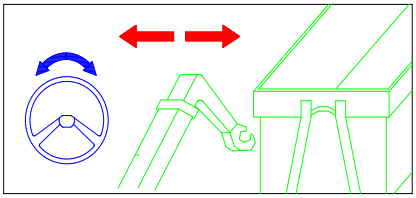
6.2 Loading Procedure

Engage the PTO by depressing the clutch (if non automatic gearbox) and wait for the dashboard symbol to appear displaying the PTO has engaged fully. Once engaged the hydraulic pump has begun to circulating hydraulic oil around the system back to tank ready for use of the Hooklift control panel.

It is assumed the Working area has been deemed Safe at this point and the PTO unit has been engaged and the Handbrake is applied. The user is now ready to load a container on to the back of the Hooklift equipment.

1. Ensure the Container Locking Clamps are fully open	
2. Deploy the Stabiliser Rollers / Axle Jacks. When the vehicle is not loaded the Stabiliser / Axle Jacks will not touch the ground	
3. Slide back completely the Sliding Arm by operating the Boom Cylinder	
4. Lifting the main arm upwards by operating the main lifting cylinders. The Hook will travel to the rear of the equipment ready to locate on the bail bar of the container.	
5. Put the vehicle into Reverse (take handbrake off), ready to receive the container and approach at coupling level. Taking care to ensure the vehicle and the body are aligned as much as possible. Hook should now be located on the container bail bar.	 
6. Correct any aligned issues by using the steering wheel to ensure the container are correctly sitting on the rear rollers. At this point the container should be sat on the Hooklift rear rollers and the ground with the vehicle moving freely.	

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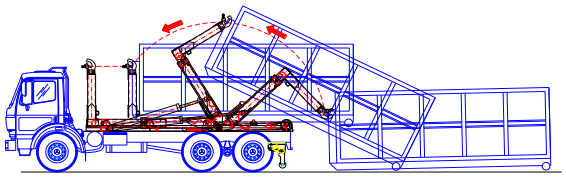
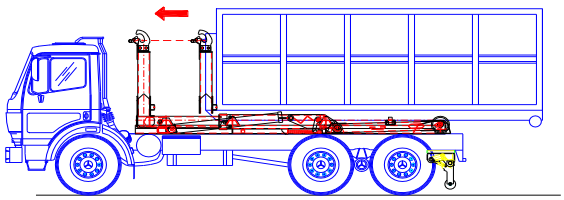
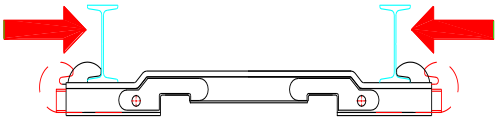
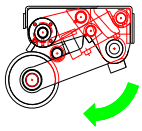
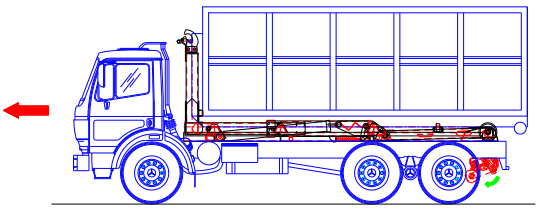
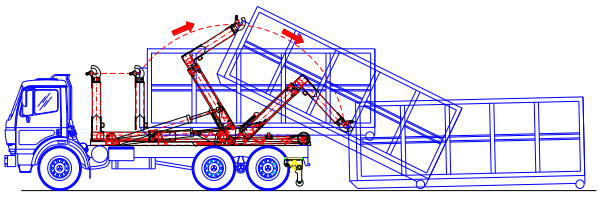
7. Operate the Main arm by operating the main cylinders pulling the container fully off the ground on to the back of the Hooklift equipment. Once the container has left the ground re apply the handbrake.	
8. The container will now be loaded on the Hooklift equipment but shifted towards the back of the truck chassis. Operate the sliding arm by booming the arm towards the vehicle cab until the arm reaches the stop position at the front of the equipment. Full extension.	
9. Operate the Container Locking Clamps to fasten the body to the equipment. The light in the cab should now go out.	
10. Operate the stabiliser rollers or axle jack upwards. The light should now go out.	
11. If all of the monitoring system is now off the vehicle is ready to travel.	

6.3 Unloading Procedure

1. Carry out the Loading procedure in the reverse order for Unloading, taking care at the beginning to deploy the stabiliser rollers or axle jacks.	

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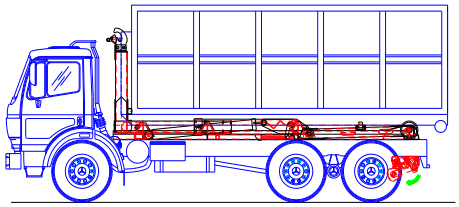
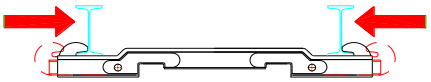
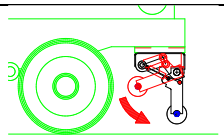
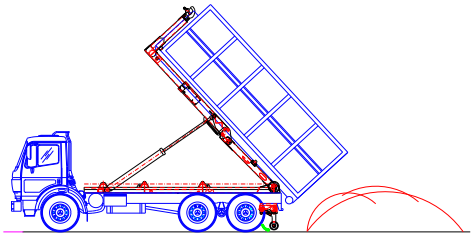
6.4 Tipping Procedure

1. Engage the PTO Unit as per the instruction in 6.2	
2. Firstly ensure the Sliding Arm is extended fully towards the vehicle cab as pictured	
3. Ensure the Container Locking Clamps are engaged and the light is out on the monitoring system.	
4. Deploy the stabiliser rollers or axle jacks. Light should come on.	
5. Ensure the correct tipping conditions are present (Consult tipping guides and environments checks). Ensure the container tail door is opened as per the instructions given by the container manufacturer	
6. Operate the main lift cylinders to lift up the container and begin the tipping process.	

Important – Do not make any manoeuvre during the tipping operation

<u>Reminders</u>

1. The Boom Cylinder movements are to be performed by the operator only
2. The Stabiliser roller or Axle jacks must be down before starting any container loading or unloading or tipping operations
3. Do not make any container loading, unloading if the sliding arm is not articulated/retracted
4. Do not move the vehicle with suspended loads
5. Keep out of the Hooklift working area whilst the equipment is in operation

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7.0 Risk Assessment / Evaluation of Risks

Risk analysis connected to the use of the Hooklift equipment and according to the Machine Directive 98/37 and the following integrations. The risks concerning this kind of equipment have been cancelled as much as possible using the safety procedures described and illustrated in this operators manual.

Main Risk	Remaining Risk	Solution	Note
Accidental crash of the operator against elements of the equipment	Cutting risk of arms and legs by the levers. Note; intervene on the emergency stop button	Only operate from inside the vehicle cab	If necessary limit the working area with appropriate signals, barriers, wear PPE
Slipping when entering the vehicle cab	Risk of sliding on slippery ground and on the access steps to the vehicle cab	Wear safety shoes	Keep the foreseen handles straight when entering and leaving the cab
Tipping risk of the vehicle	Risk of sideways falling of the container during the tipping phase	The container must be fixed well at the hook of the equipment	Always work on a plain surface and on a solid ground with the rear stabiliser rollers/axle jacks activated.
Crushing risk during them maintenance operations	Risk for face, arms and legs caused by hydraulic oil at high pressure	Periodic check of the high pressure pipes and the fittings	Before intervening on the fittings to make sure the pipes are not under pressure.
Risk of losing the container when driving	Risk of getting off the container leaving the vehicle onto other road users or the public.	The user must activate the hydraulic container locking clamps. Ensuring they are secure before travel.	The employer must foresee an emergency plan according to law N. 626/94 and further integrations

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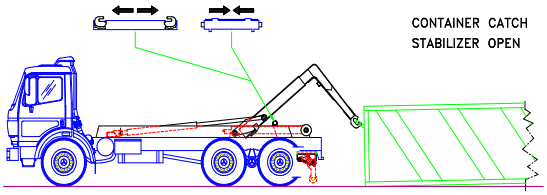
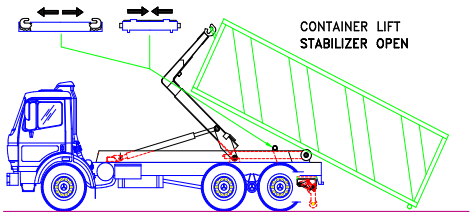
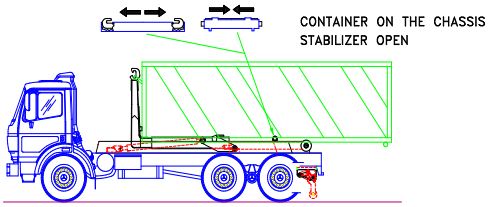
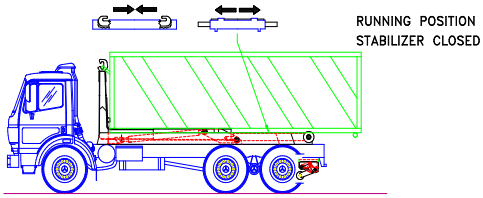
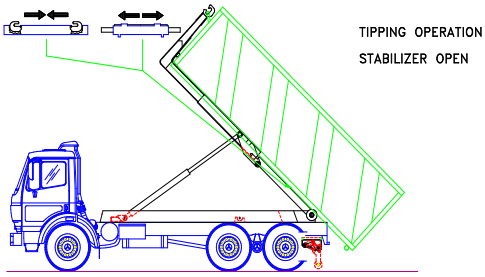
8.0 Summary of Hooklift Operation

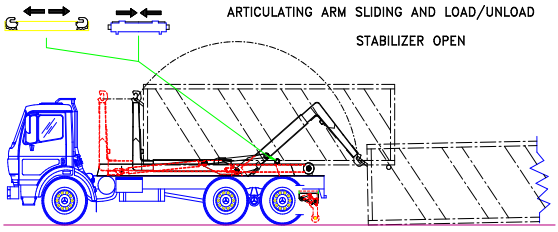












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9.0 Spare Parts for Hookloader

SPARE PARTS

24 service

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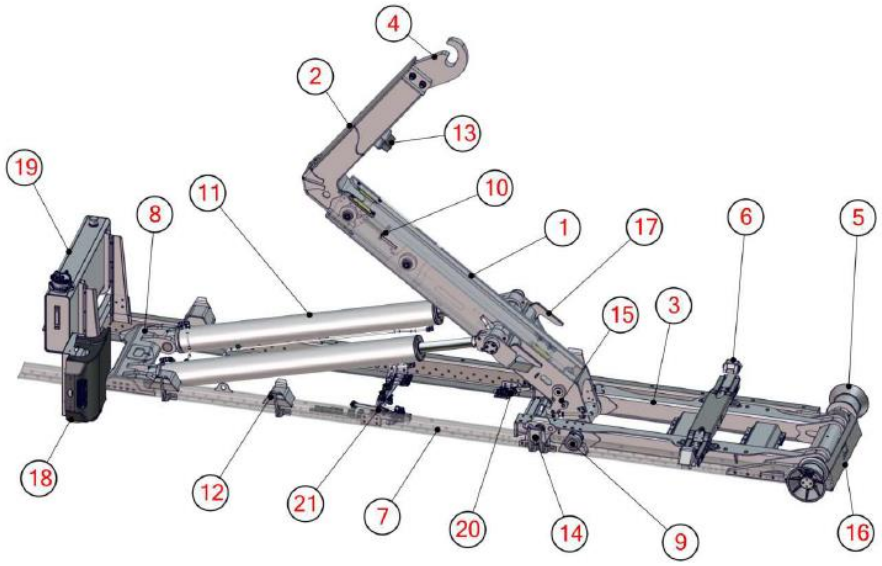
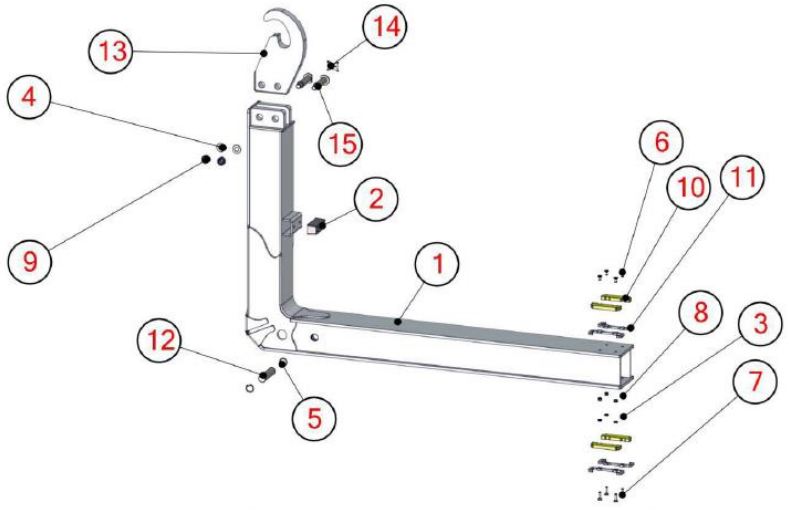
9.1 Spare Parts Identification

Parts denomination diagram for HH26 model



ID	DESCRIPTION	ID	DESCRIPTION	ID	DESCRIPTION
1	CENTRAL BODY	8	HOISTING CYLINDERS CROSS MEMBER	15	COUNTER HOOKS
2	SLIDING ARM	9	ROTATION CENTRE	16	HEAD STOCK
3	REARFRAME	10	SLIDING CYLINDER	17	FORKS
4	HOOK	11	HOISTING CYLINDERS	18	FLOW CONTROL
5	CONTAINER GUIDE ROLLERS	12	CONTEINER GUIDES	19	FRONTAL OIL TANK
6	CONTAINER LOCKING	13	RUBBER STOPPER	20	INTERLOCK 2 WAYS
7	REARFRAME	14	CONT. GUIDE ROLLERS	21	INTERLOCK 3 WAYS



ID BOM	Code	Qty
1	SIT20SF007	1
2	35.0027	1
3	DIN 6798-A13	4
4	DIN125 B27	2
5	DIN472 45x1.75	2
6	DIN7991 M12x25	4

ID BOM	Code	Qty
7	ISO10642 M12x45	4
8	ISO4032 M12	4
9	ISO7040 M27	2
10	SCM0192	4
11	SCM0195	4
12	SCM0250	1

ID BOM	Code	Qty
13	SGIT26CH1	1
14	SIT20SF20	1
15	SSF26UMP6	2

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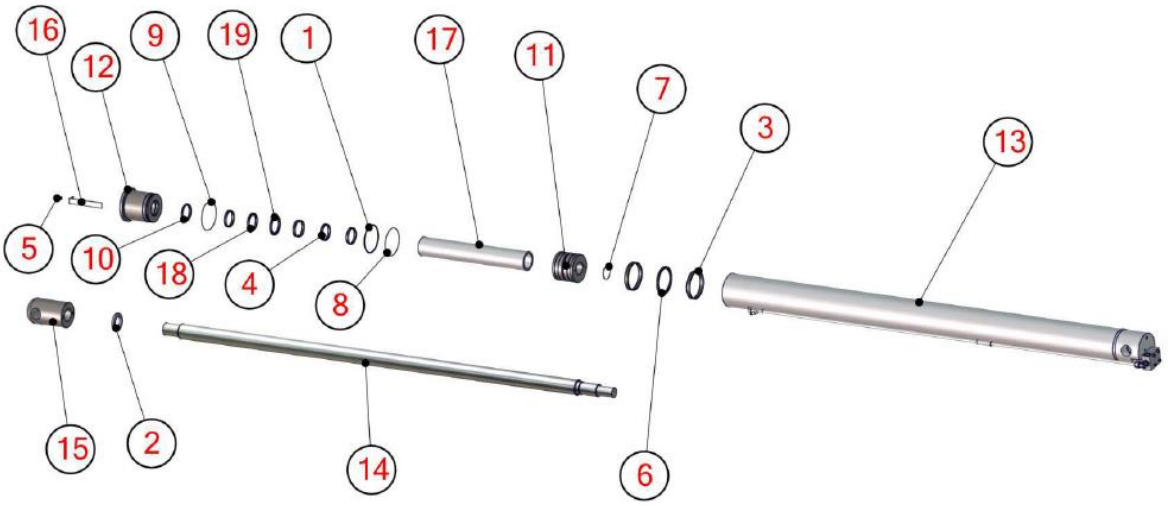
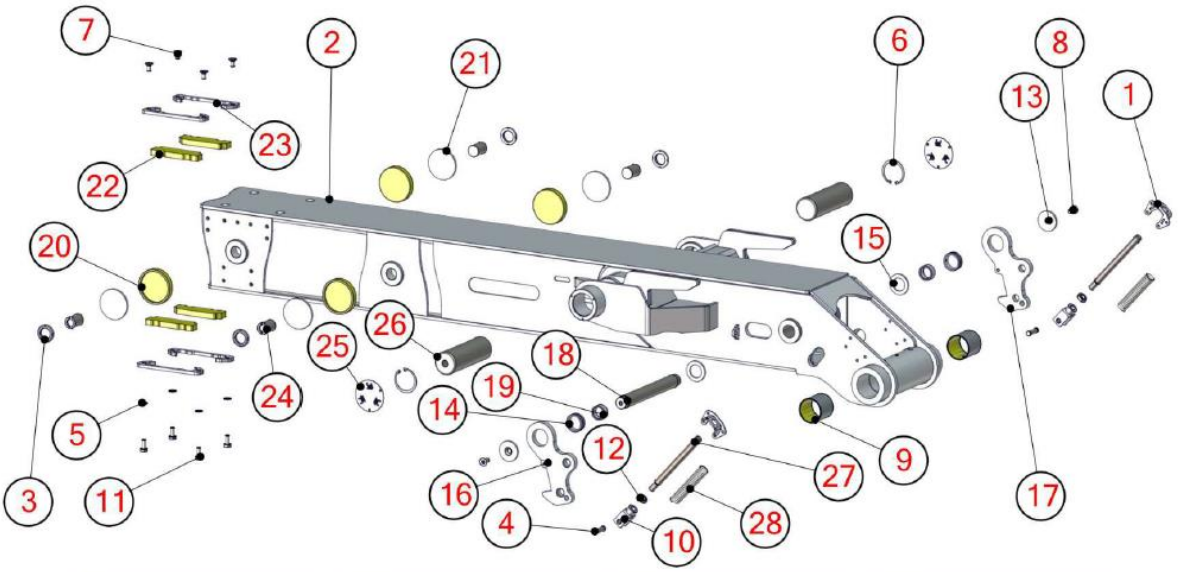


ID BOM	Code	Qty
1	AP 243	1
2	GH50X2	1
3	GRF 105 110 15	2
4	GRF 60 65 9.7	4
5	ISO4016 M10x16	1
6	KPD 110 94.5 6.3	1
7	O-RING 226	1

ID BOM	Code	Qty
8	O-RING 243	1
9	O-RING 244	1
10	SA 60	1
11	SCI00055	1
12	SCI00059	1
13	SCI00060	1
14	SCI00094	1

ID BOM	Code	Qty
15	SCI00144	1
16	SCI00161	1
17	SCI00197	1
18	SD 60 70 7	1
19	XB 60 75.1 6.3	1



ID BOM	Code	Qty
1	SCM00027	2
2	SIT20CC7006	1
3	23146	4
4	3160101757	2
5	DIN 6798-A15	4
6	DIN472 80x2.5	2
7	DIN7991 M14x25	4
8	DIN7991 M14x30	2

ID BOM	Code	Qty
9	EKX 80 80	2
10	FFF12404	2
11	ISO4016 M14x30	4
12	ISO8675 M20x1.5	2
13	SCC12025	2
14	SCC26UM35A	2
15	SCC26UM61-6	2
16	SCM0095	1

ID BOM	Code	Qty
17	SCM0096	1
18	SCM0107	1
19	SCM0108	2
20	SCM0190	4
21	SCM0191	4
22	SCM0192	4
23	SCM0194	4
24	SCM0278	4

ID BOM	Code	Qty
25	SDFP0001A	2
26	SIT20CC20	2
27	SL3CCT59	2
28	SLTMCG02	2

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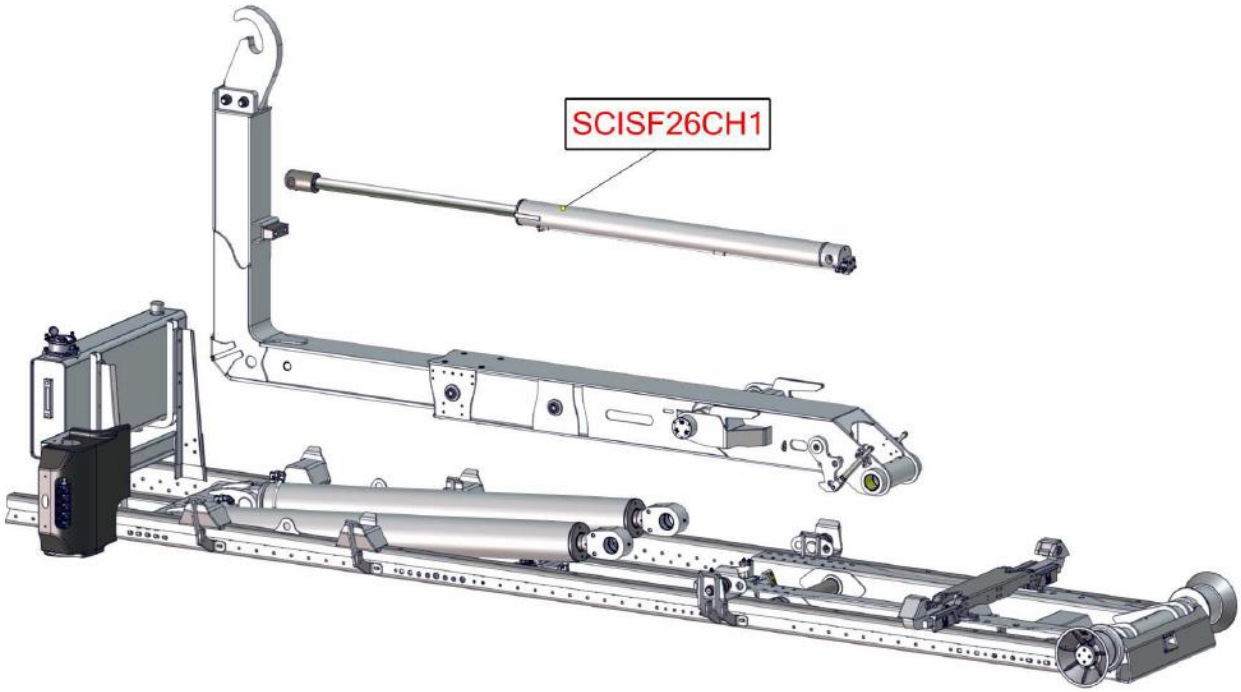

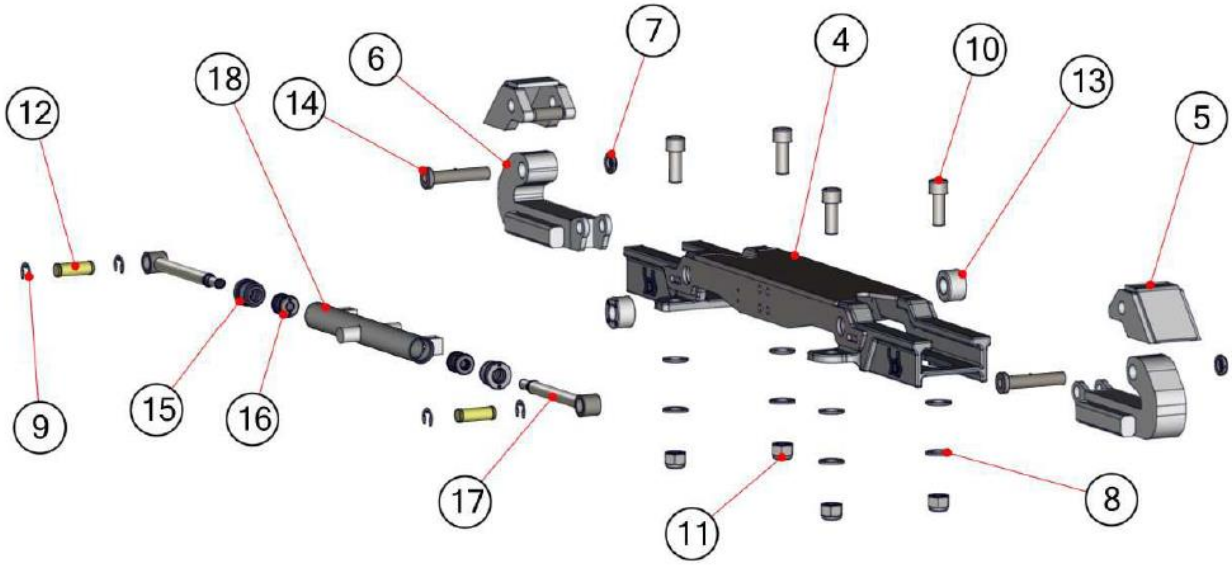

ID BOM	Code	Qty
4	SBENIT05	1
5	SBITD0001	2
6	SBL26CH001	2
7	23610	2
8	DIN125 B25	8
9	DIN6799 19	4

ID BOM	Code	Qty
10	DIN912 M24x60	4
11	ISO7040 M24	4
12	SBEIT012	2
13	SBENIT02	2
14	SBITD011	2
15	SCI00001	2

ID BOM	Code	Qty
16	SCI00002	2
17	SCI00004	2
18	SCI00198	1

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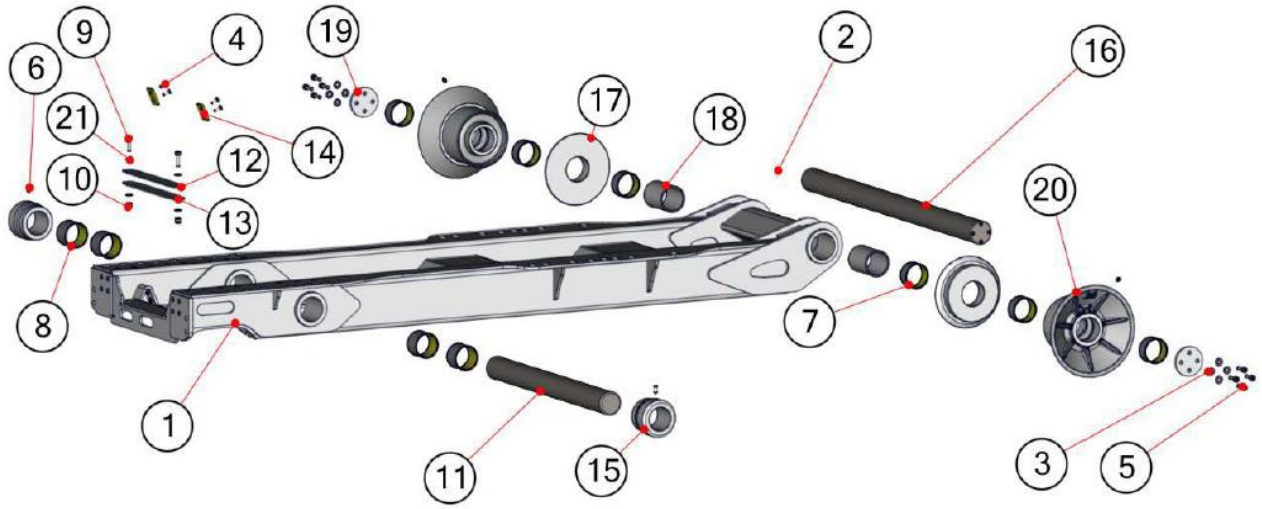
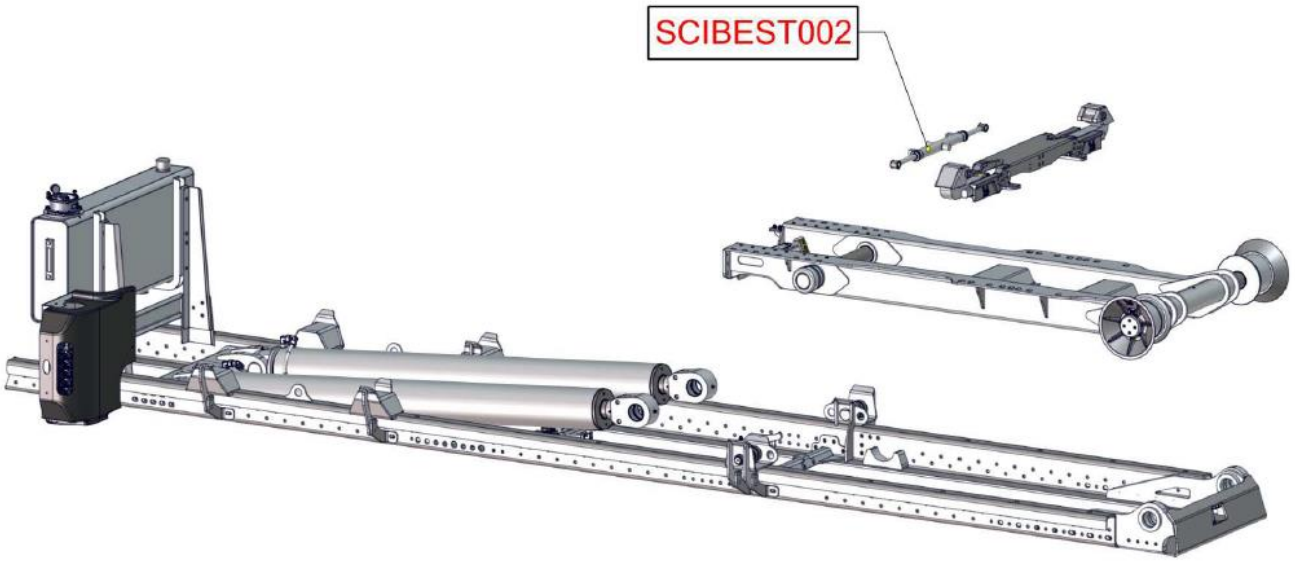


ID BOM	Code	Qty
1	STL260001	1
2	0510100101	3
3	DIN125 B 13	8
4	DIN7991 M8x25	4
5	DIN912 M12x35	8
6	DIN914 M12x25	2
7	EKX 80 40	6
8	EKX 80 60	4

ID BOM	Code	Qty
9	ISO4016 M12x40	2
10	ISO7040 M12	2
11	SCC26UMP2	1
12	SCM0016	1
13	SCM0017	1
14	SCM0031	2
15	SCM0039	2
16	SCT11505	1

ID BOM	Code	Qty
17	SCT11506	2
18	STN26UBB1	2
19	STT26MP1BISA	2
20	T002	2
21	Washer DIN125 B 13	4



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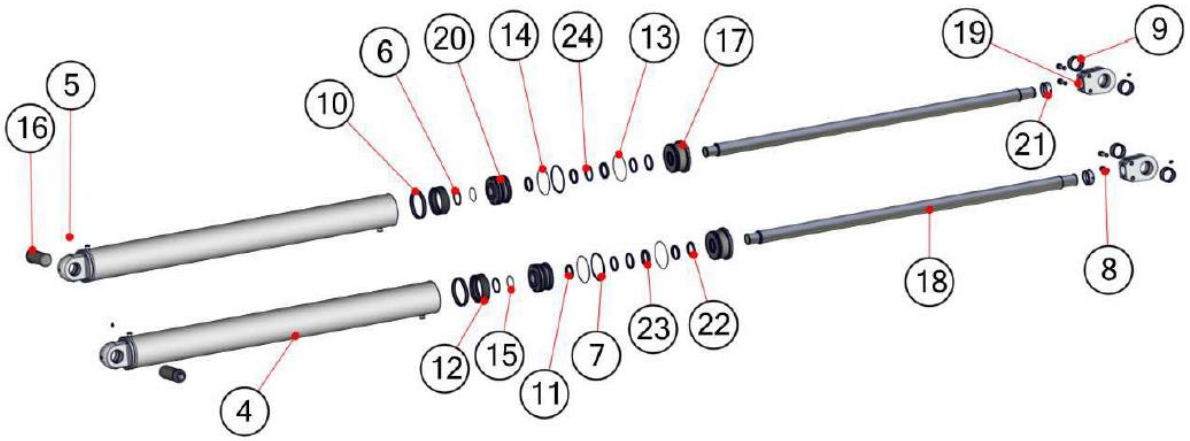
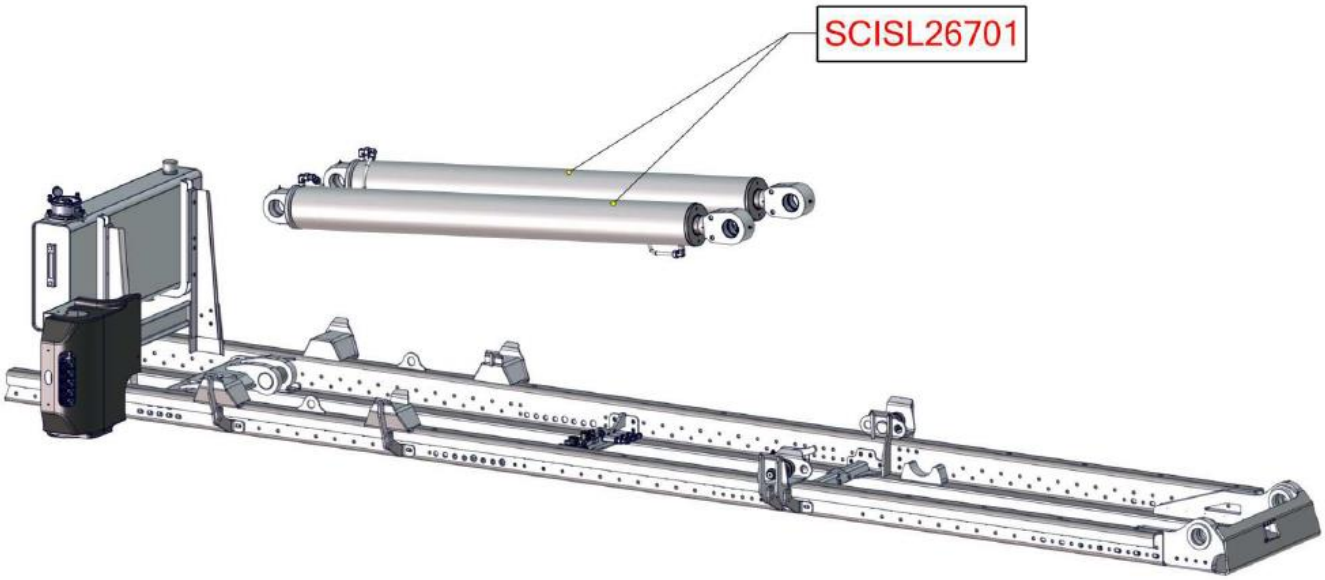


ID BOM	Code	Qty
4	SCISL267C1	2
5	0510100101	4
6	AP 338-620	2
7	AP 362	2
8	DIN912 M20x60	4
9	EKU 80 40	4
10	FE 170	2
11	GRF 80 85 9.7	6

ID BOM	Code	Qty
12	KGD 170 145	2
13	O-RING 260	2
14	O-RING 362	2
15	O-RING 620	2
16	SCC26UMP3	2
17	SCI00171	2
18	SCI00172	2
19	SCI00218	2

ID BOM	Code	Qty
20	SCI00225	2
21	SCI00246	2
22	SWP8095	2
23	UP 80 95 12	2
24	XB 80 95.1 6.3	2



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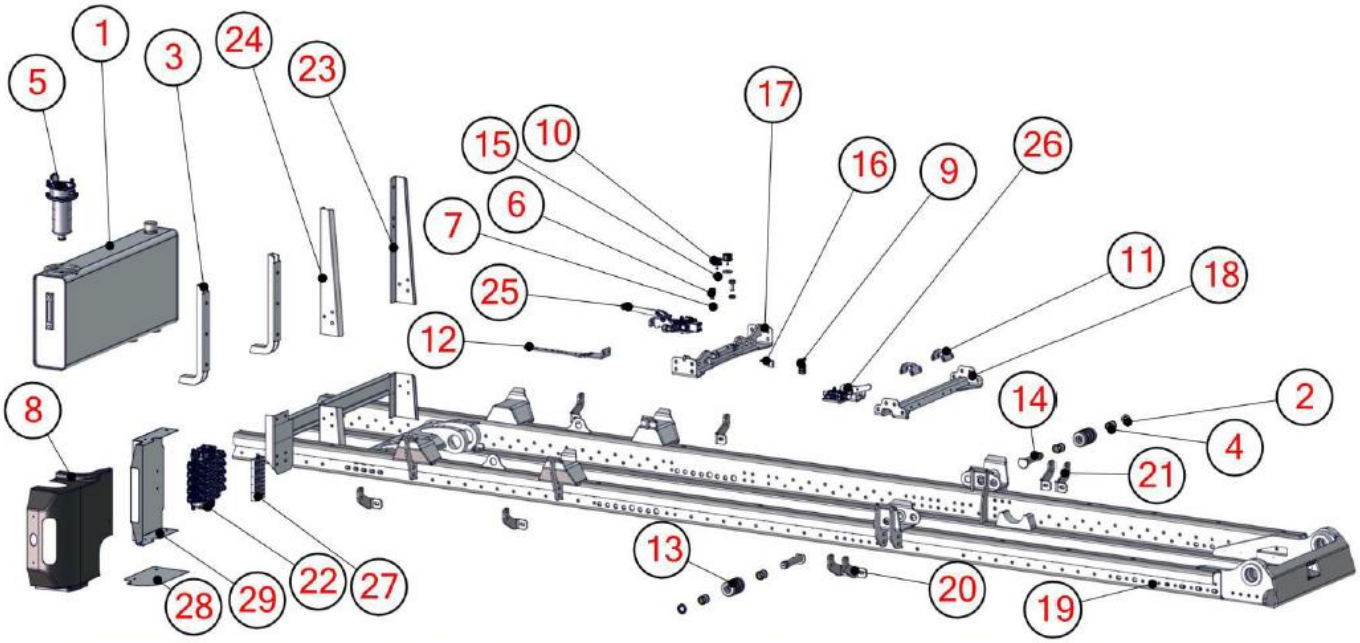

ID BOM	Code	Qty
1	0201140	1
2	23614	2
3	9S0201140	2
4	EKX 40 40	4
5	HHR20406	1
6	ISO4016 M20x40	2
7	ISO4035 M20	2
8	N01	1

ID BOM	Code	Qty
9	NF B112KD-DN3	1
10	P 50 30	2
11	SCM0015	2
12	SCM0217	1
13	SCM0245	2
14	SCM0246	2
15	SCM0259	2
16	SCM0260	1

ID BOM	Code	Qty
17	SCT000036	1
18	SCT000037	1
19	SCT000044	1
20	SCT00143	4
21	SCT00145	4
22	SDS150-4	1
23	SFSDS003SD	1
24	SFSDS003SS	1

ID BOM	Code	Qty
25	SINT0021-7	1
26	SINT0023	1
27	SP778053520	1
28	VAOFF268	1
29	VAOFF269	1

Front Oil Tank

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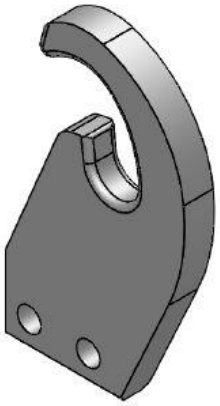
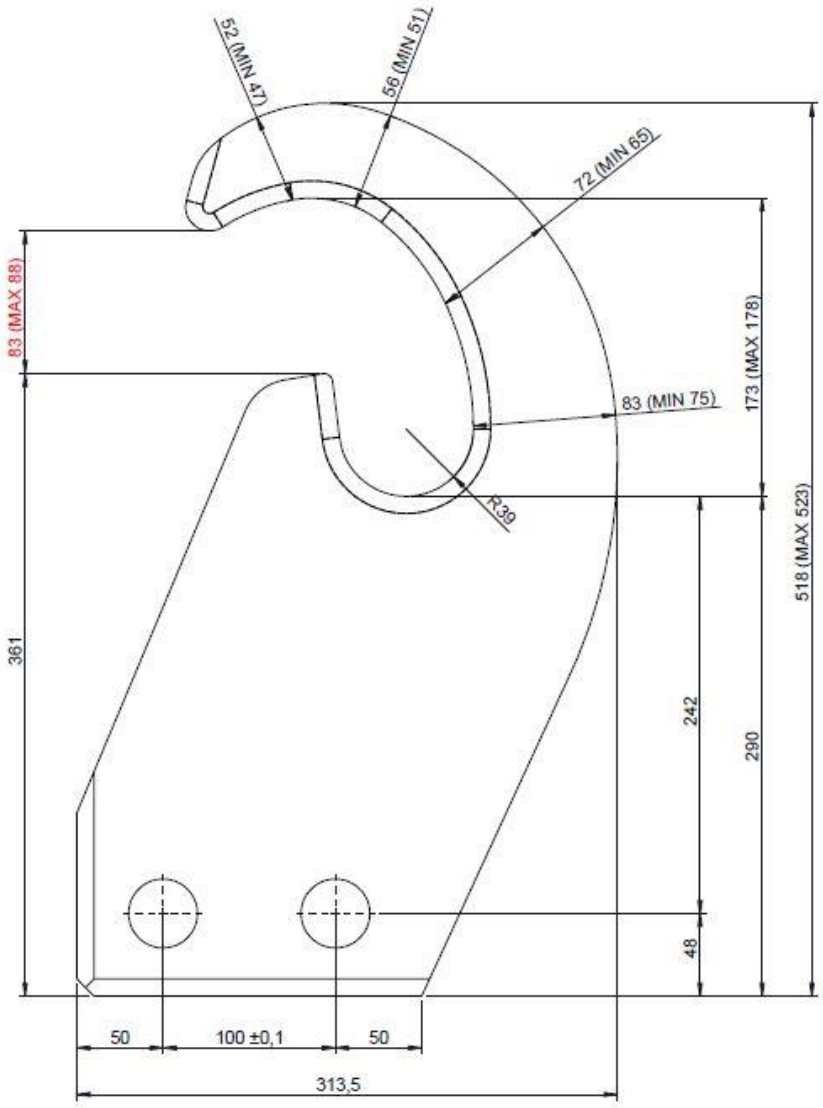
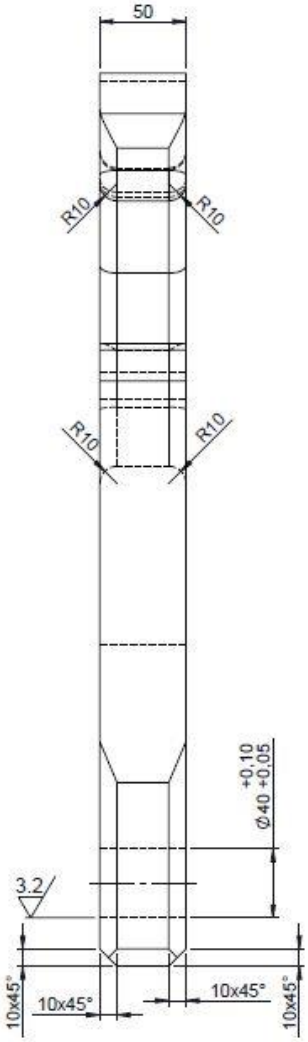
9.2 Hook Detail – SGIT26CH1



10% wear is allowed before the hook requires maintenance.

The 10% wear dimension is shown in brackets (MIN) alongside the starting dimension.





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10.0 Maintenance of Equipment for Hookloader

MAINTENANCE

24 service

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Maintenance should be carried out by trained professionals only and all health and safety checks listed in this manual along with site health and safety processes should be adhered to at all times. It is imperative before works are carried out on the Hooklift equipment safe and the environment is secure.

10.1 Routine Maintenance

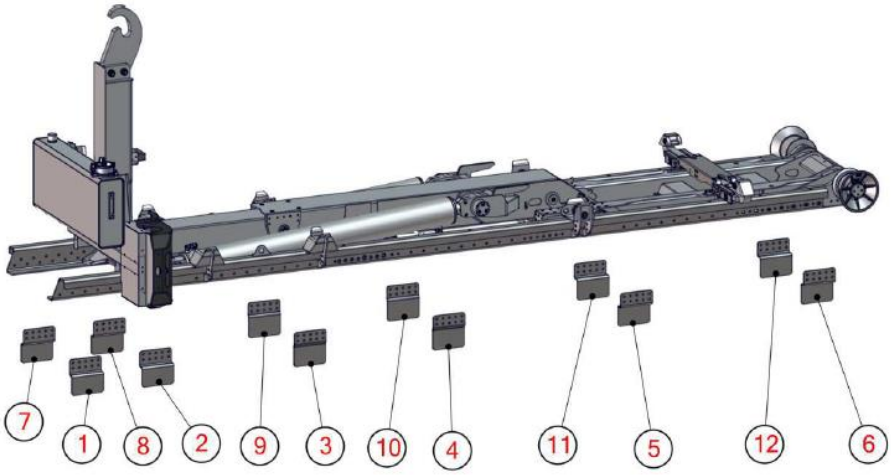
Routine maintenance should be carried out by a trained competent professional and adhere strictly to all health and safety procedures and risk assessments.

The routine maintenance guide provided is calculated for a single person in a standard workshop for the entire maintenance cycle. It is anticipated the total time to carry out the routine maintenance listed should be between 60-90 minutes.

10.2 What to check for on Routine Maintenance

This section provides a helpful guide on the items to check when maintaining the HH26 Hookloader equipment.

Chassis to Hooklift connecting/mounting plates
After the first 30-40 working hours perform a complete check on the fixation plates, bolts and nuts with specific attention to the front cylinders cross member connection plate.



ID	POSITION	MATERIAL	BOLTS	TORQUE
1	Start underframe	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
2	Cross member attachment hoisting cylinder	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
3	Cross member support central body	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
4	Central underframe	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
5	Rotation center	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
6	End underframe	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
7	Start underframe	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
8	Cross member attachment hoisting cylinder	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
9	Cross member support central body	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
10	Central underframe	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
11	Rotation center	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm
12	End underframe	S355-ST52	Min. No.5 M14x50 Class 10.9	198 Nm

Required time 10-15 minutes.

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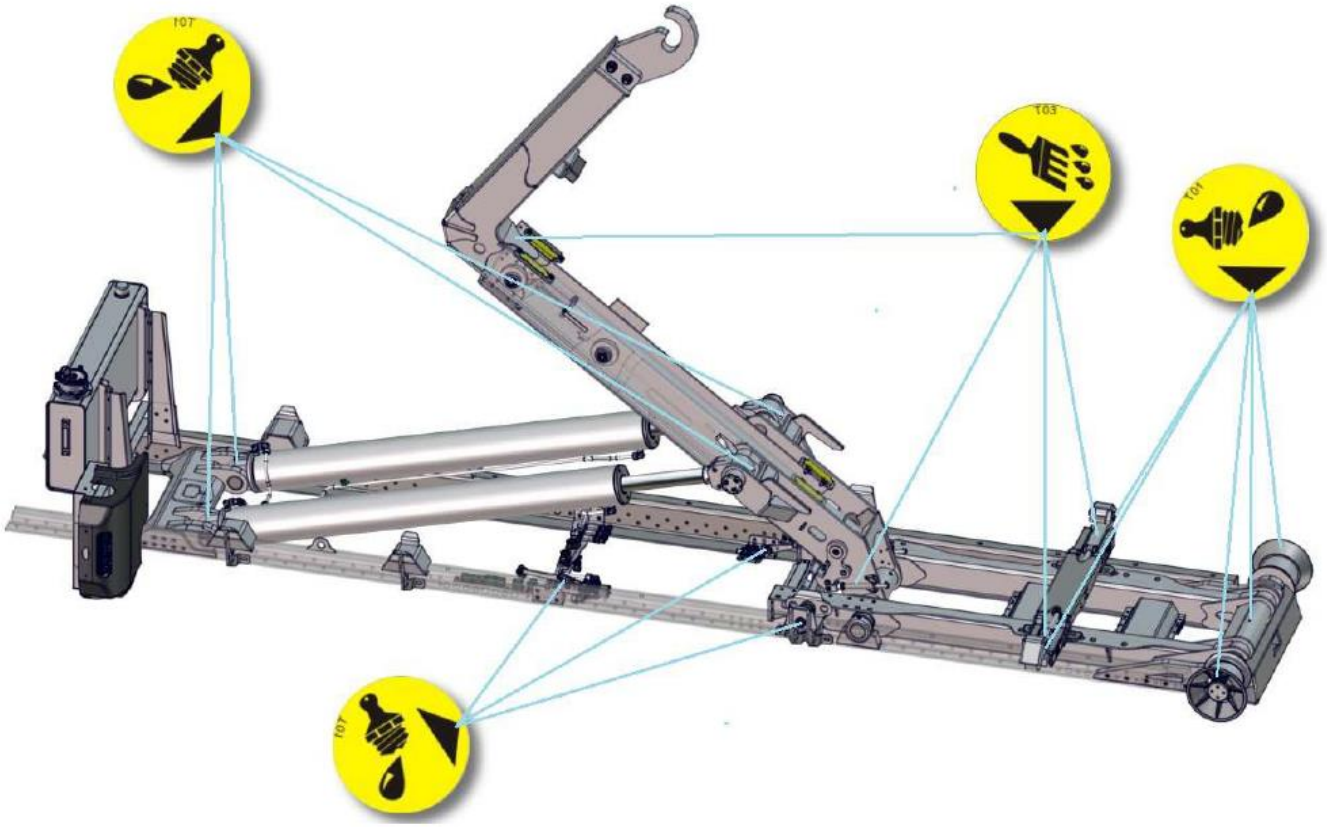
Greasing

Every 60 hours of operating time, and not longer than every 3 months, perform complete equipment washing and greasing. Remember to grease; sliding pads, rotation half moons, interlock, mechanical safety lock spring hooks, hook security, hydraulic locking sliding jaws and rear rollers.



Required time 15 minutes

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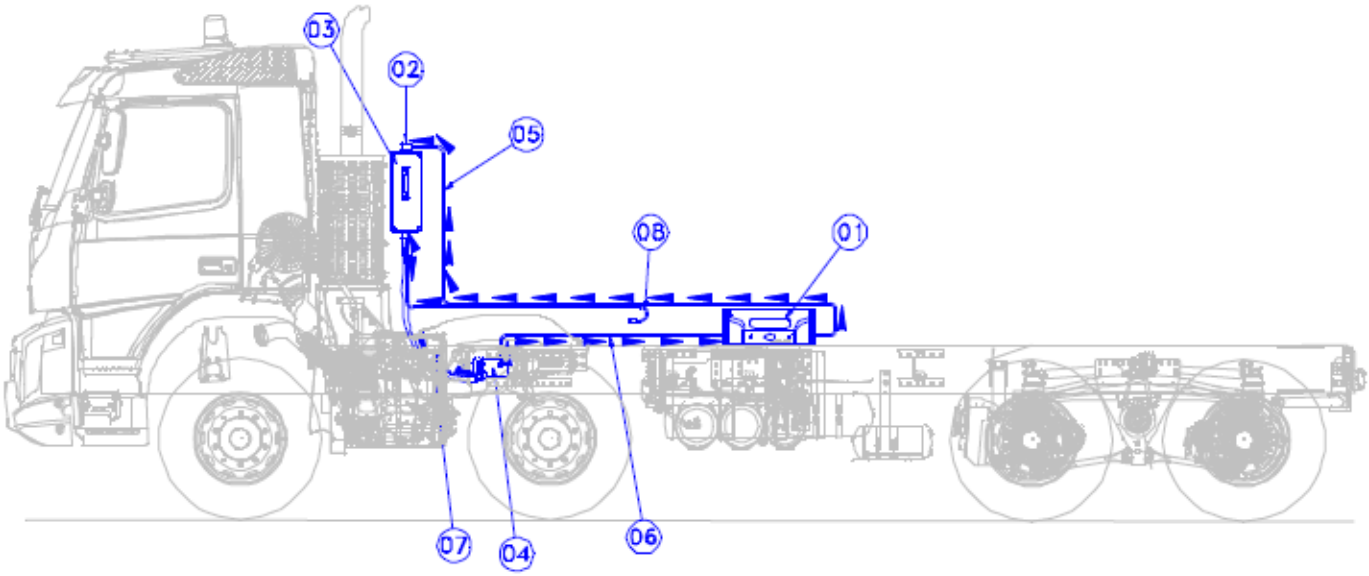
Hydraulic Circuit

Every 60 hours of operating time, and not longer than 3 months, check carefully the hydraulic circuit, flexible hoses and joints, flow control, suction hose, inlet high pressure hose and exhaust hose to verify hydraulic circuit component conditions, leaking or oil sweating. Consult the Oleo- dynamic system control diagram for info on the hydraulic circuit.



POS.01 FLOW CONTROL
POS.02 OIL FILTER
POS.03 OIL TANK
POS.04 PUMP
POS.05 HEXAUST FLEX HOSE ø1" (FLOW CONTROL/OIL TANK)
POS.06 INLET FLEX HOSE ø3/4" (PUMP/FLOW CONTROL)
POS.07 SUCTIOON FLEX HOSE ø2" (OIL TANK/PUMP)

Required time 10 minutes

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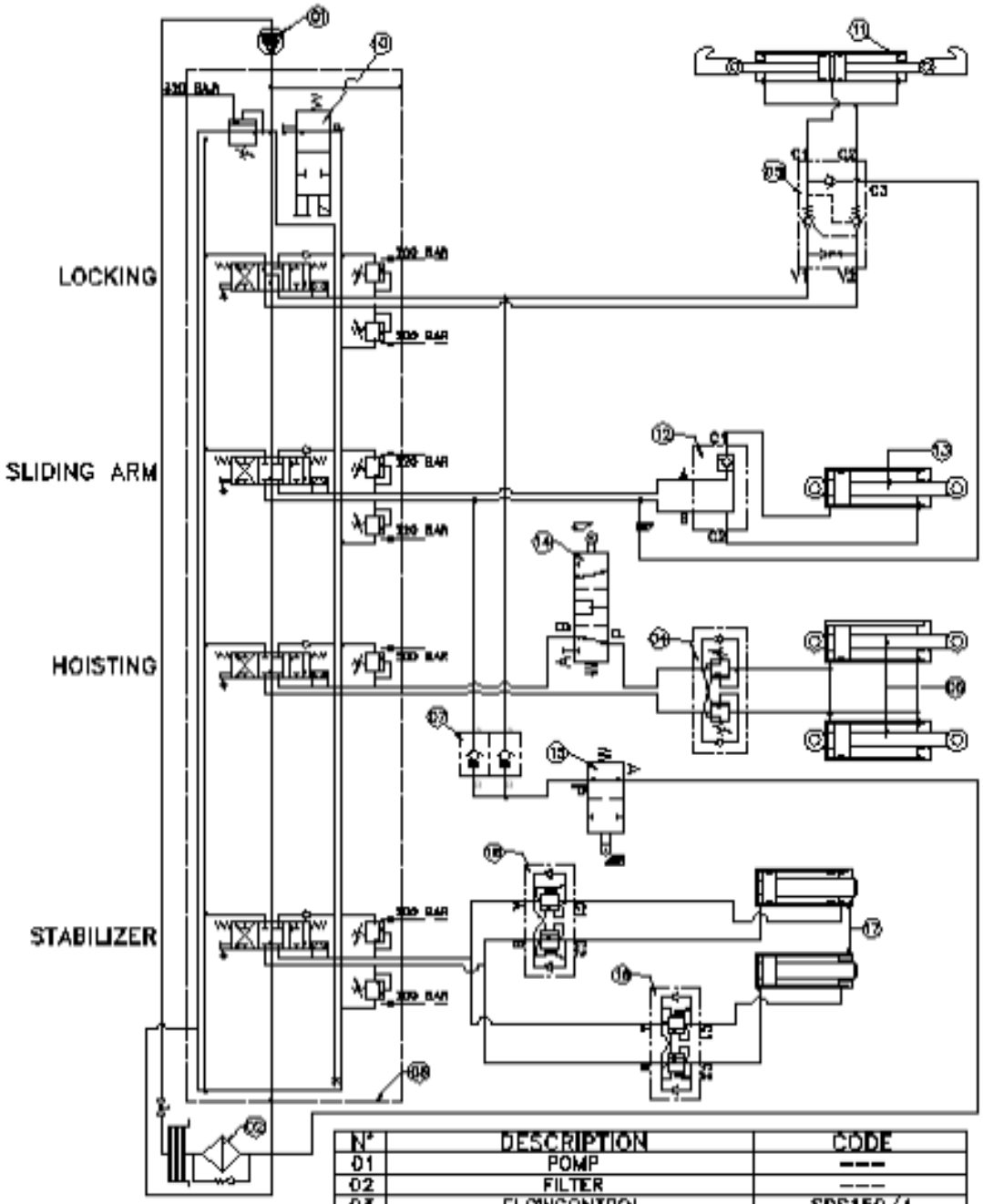

N°	DESCRIPTION	CODE
01	POMP	---
02	FILTER	---
03	FLOWCONTROL	SDS150/4
04	BLOCK VALVE	A0704011200
05	PILOTAVE VALVE	B0503560100
06	HOISTING CYLINDERS	070695MA7180
07	CHECK VALVE	A1204000100
10	ELECTROVALVE	5CAR410311
11	LOCKING CYLINDER	SCIBEST001
12	BLOCK VALVE	A0503050200
13	SLIDING CYLINDER	124080032
14	INTERLOCK VALVE 3 WAYS	124050035
15	INTERLOCK VALVE 2 WAYS	122014050
16	STABILIZER VALVE	
17	STABILIZER CYLINDERS	

Rear Axle Jacks Stabilizer function – optional

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Pressure Gauge
Check pressure settings by a pressure gauge on the flow control on the inlet headstock. This should be between 280-300 bar.

The bin locks should be pressure tested at the same place. This should be 220-250 bar.

The stabilizer jacks (optional extra) should be pressure tested at the same place. This should be 220-250 bar.

Required time 5 minutes

Hooklift Control Sequences
Check the hydraulic circuit controls by performing opening and closing each hydraulic function from the cab control as well as any ground control levers or remote controls.

Required time 5 minutes

Cylinders
During loading and unloading operations check carefully the cylinder rods chromium plating condition and the seals condition, remove any dirt and dust from the cylinder protection ring.

Require time 5 minutes

Hydraulic Oil
Every 150 hours check and clean or change the oil filter cartridge. During this operation check carefully the quality of the oil and level. Adjusting the level if necessary.

Required time 10 minutes

Structural Controls
Every 3 months perform a complete careful structure control, checking welding on the Hooklift components with particular attention to the stress connections: cylinder cross members, rotation centre, rear headstock, hook bolts and nuts, hydraulic locking bolted supports.

Required time 15 minutes

Electrical Circuit
Hydraulic locking: perform hydraulic locking open / close and check the proximity switch fastening nuts. Verify that the locking warning light shows the non locked position (red LED). PTO Cab warning light: perform engage / disengage of the PTO switch positioned on the cab control board to verify the warning light function.

Required time 5 minutes

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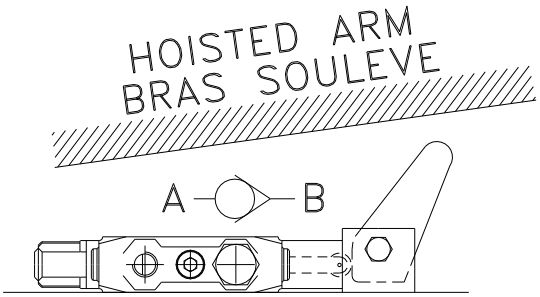
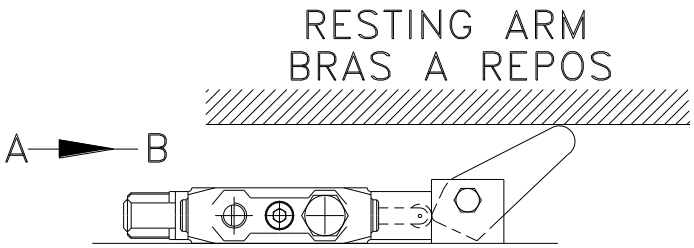
Hydraulic Safety Devices

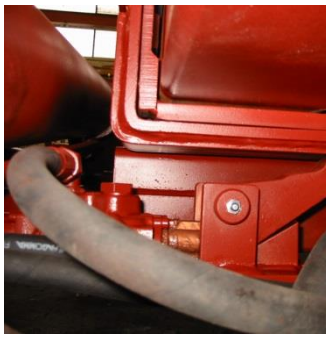


Interlock Valve close position container hydraulic Locking non active



Interlock valve open position container hydraulic locking activated

Check weekly the interlock valve, lubricating periodically the spring wheel cursor s pictured below.



Required time 10 minutes

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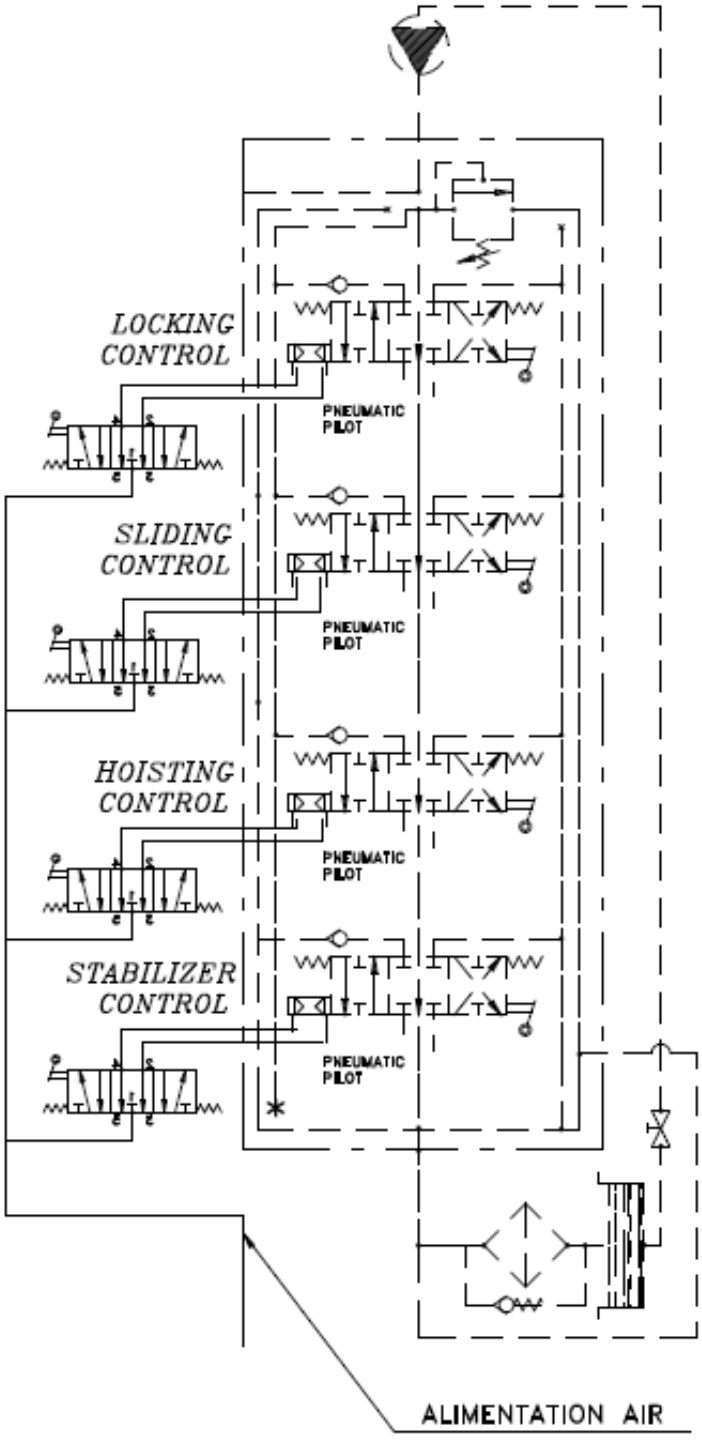
10.3 System Diagrams

Pneumatic Plan



Rear Axle Jacks Stabilizer function – optional

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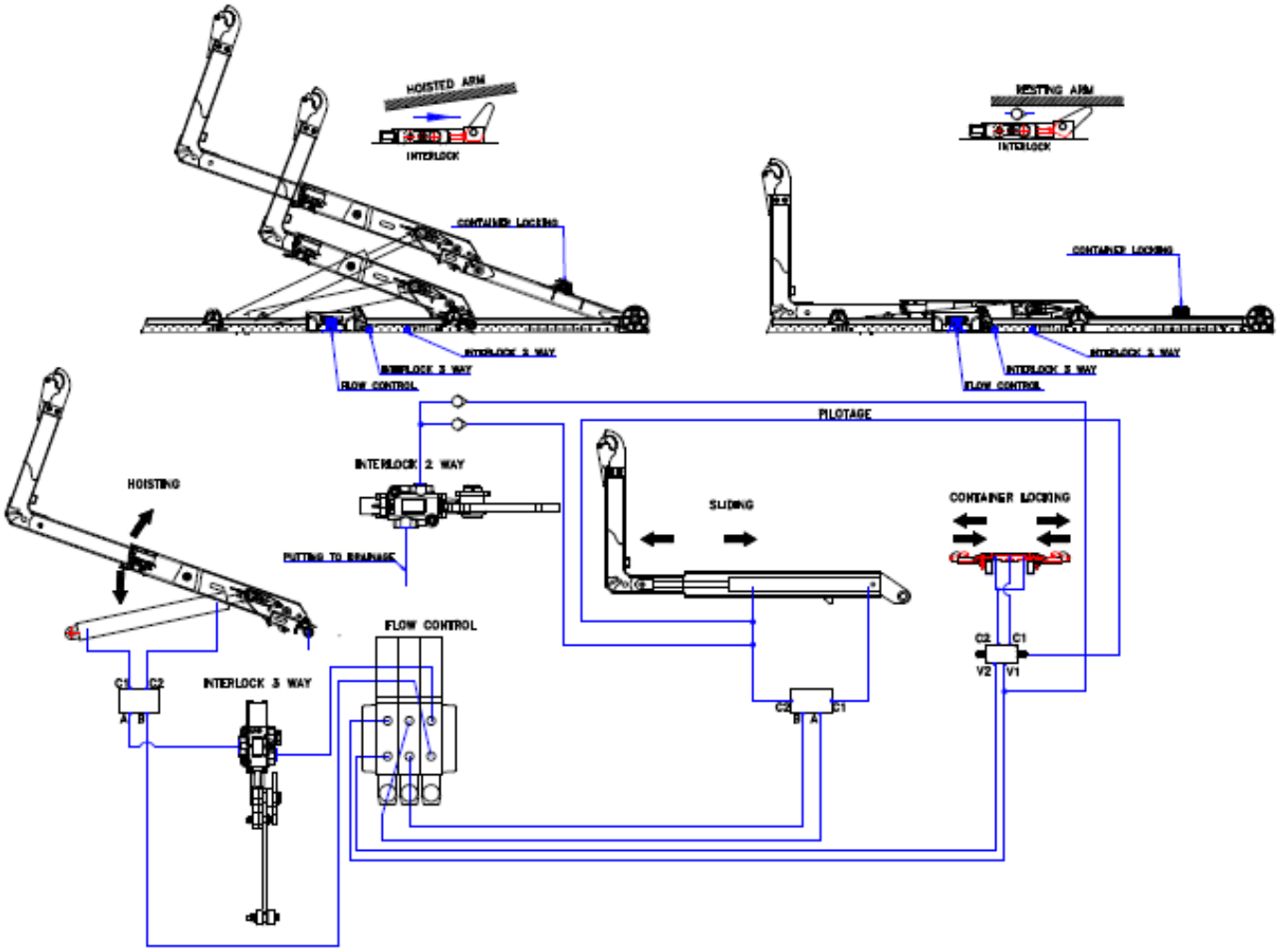
Interlock



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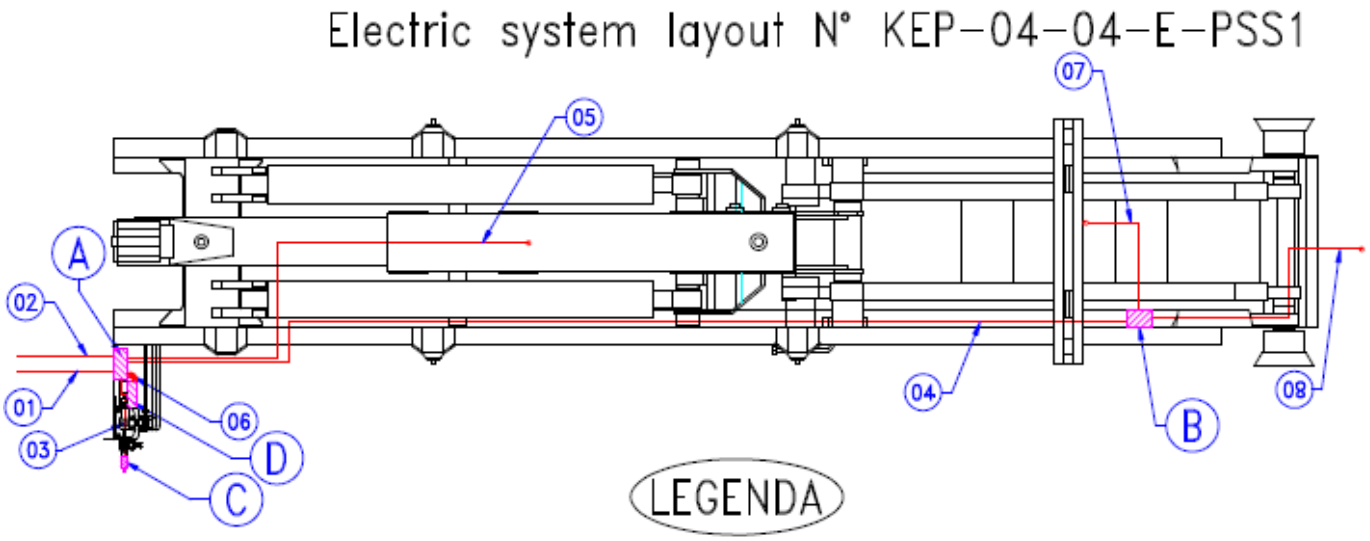
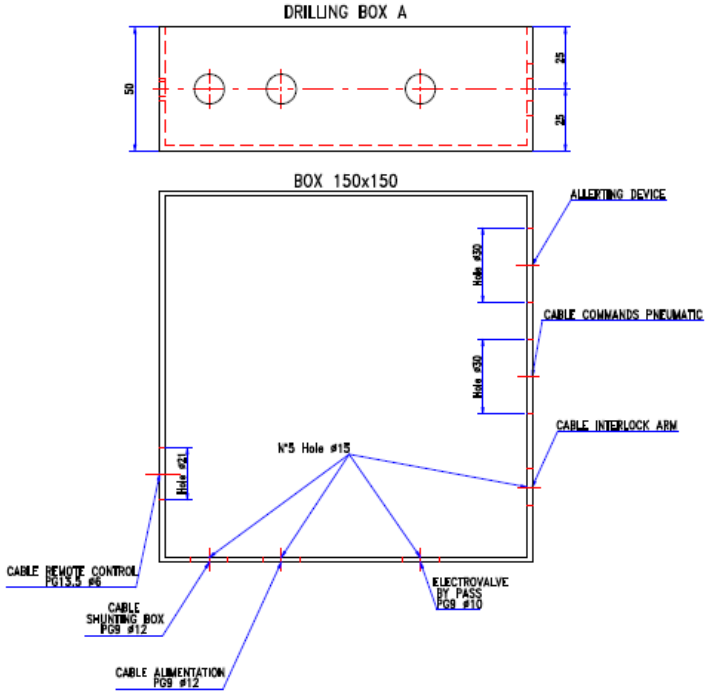
Standard Electropneumatic Installation



① Cable alimentation
② Cable remote control
③ Cable derivation box C – box A (Electrovalve)
④ Cable derivation box B – box A
⑤ Cable sensor arm interlock
⑥ Cable blocking pneumatic kuhnke
⑦ Cable locking pressostat
⑧ Cable sensor stabilizer

Ⓐ Card electrical box
Ⓑ Shunting box
Ⓒ Electrovalve
Ⓓ Blocking pneumatic kuhnke (SP778053520)



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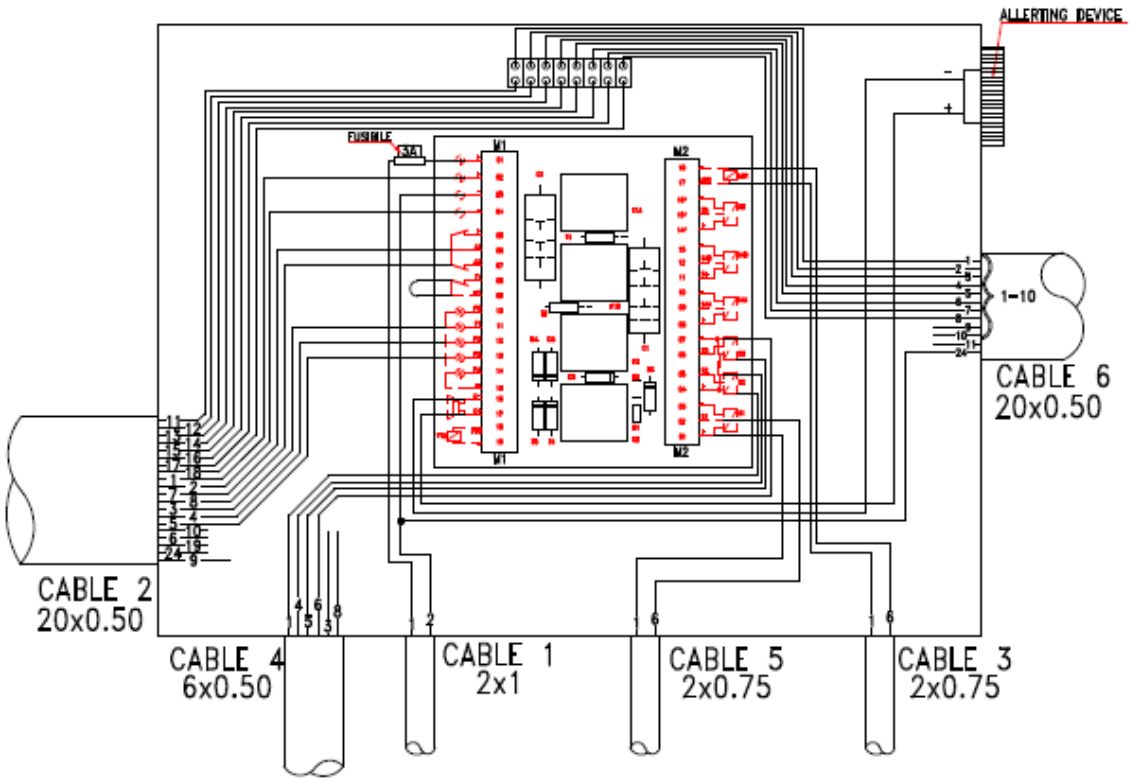
BOX A



CABLE 2 20x0.50		
FILO	COLORE	DESCRIZIONE
1	MRRONE	POSITIVE
2	BLUE	NEGATIVE
11	GRAY-PINK	SIGNAL
12	GRAY-MARRON	SIGNAL
13	GREEN-MARRON	SIGNAL
14	RED-BLUE	SIGNAL
15	YELLOW-MARRON	SIGNAL
16	WHITE-GRAY	SIGNAL
17	WHITE-GREEN	SIGNAL
18	WHITE-YELLOW	SIGNAL
3	GREEN	SIGNAL ARM
4	PINK	SIGNAL LOCKING
5	GRAY	SIGNAL STABILIZER
8	YELLOW	STOP
7	VIOLET	START
9	BLACK	---
10	RED	---
6	WHITE	---
19	WHITE-BLUE	---
24	PINK-MARRON	---

CABLE 06		
WIRE	COLOUR	DESCRIPTION
1	BLACK	SIGNAL MOVIMENT
2	BLACK	SIGNAL MOVIMENT
3	BLACK	SIGNAL MOVIMENT
4	BLACK	SIGNAL MOVIMENT
5	BLACK	SIGNAL MOVIMENT
6	BLACK	SIGNAL MOVIMENT
7	BLACK	SIGNAL MOVIMENT
8	BLACK	SIGNAL MOVIMENT
9	BLACK	---
10	BLACK	---
24	YELLOW-GREEN	NEGATIVE

CABLE 4 6x0.50 (SHUNTING BOX)		
FILO	COLORE	DESCRIZIONE
1	MARRON	POSITIVE
6	WHITE	NEGATIVE
4	PINK	SIGNAL LOCKING
3	GREEN	---
5	GRAY	SIGNAL STAB.
8	YELLOW	---

CABLE 1 2x1 (ALIMENTATION)		
FILO	COLORE	DESCRIZIONE
1	MARRON	POSITIVE FOR KEY +15
2	BLUE	NEGATIVE

CABLE 5 2x0.75 (DOUBLE SPEED)		
FILO	COLORE	DESCRIZIONE
1	MARRON	POSITIVE
6	WHITE	NEGATIVE

CABLE 3 2x0.75 (ELECTROVALVE)		
FILO	COLORE	DESCRIZIONE
1	MARRON	POSITIVE
6	WHITE	NEGATIVE

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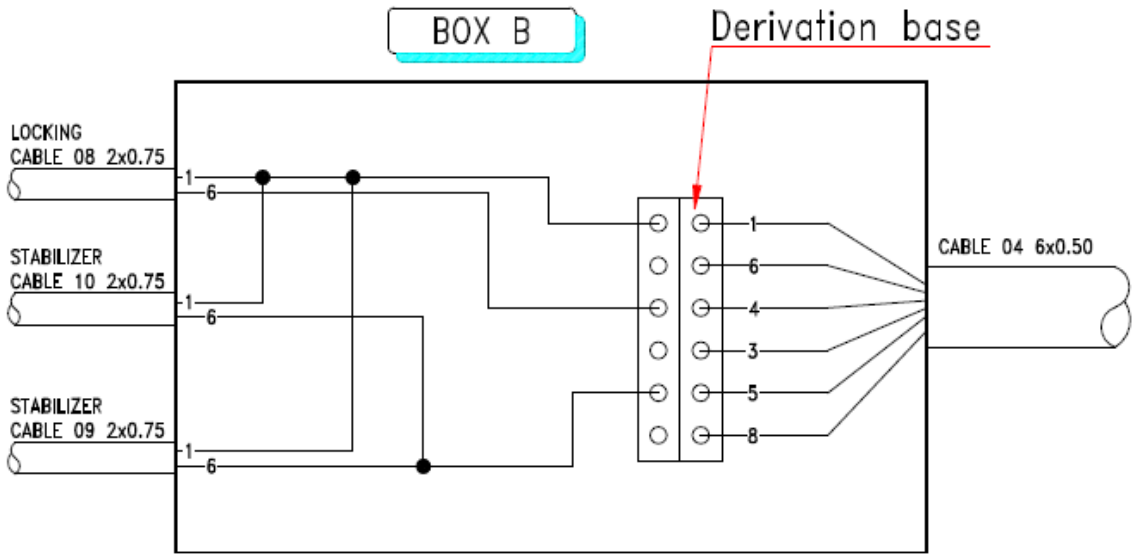
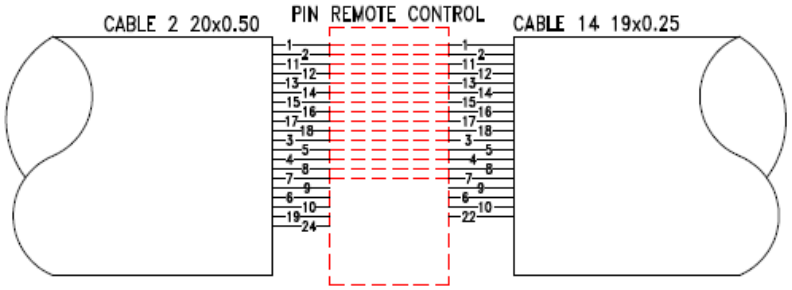


CABLE 08 2x0.75 BLOCCO		
WIRE	COLUR	DESCRIPTION
1	MARRON	POSITIVE
6	WHITE	SIGNAL LOCKING

CABLE 10 2x0.75 STAB.		
WIRE	COLUR	DESCRIPTION
1	MARRON	POSITIVE
6	WHITE	SIGNAL STABILIZER

CABLE 09 2x0.75 STAB.		
WIRE	COLUR	DESCRIPTION
1	MARRON	POSITIVE
6	WHITE	SIGNAL STABILIZER

CABLE 04 6x0.50		
WIRE	COLUR	DESCRIPTION
1	MARRON	POSITIVE
6	WHITE	NEGATIVE
4	PINK	SIGNAL LOCKING
3	GREEN	---
5	GRAY	SIGNAL STABILIZER
8	YELLOW	---



CABLE 2 20x0.50		
WIRE	COLOUR	DESCRIPTION
1	BROWN	POSITIVE
2	BLUE	NEGATIVE
11	GRAY-PINK	SIGNAL
12	GRAY-BROWN	SIGNAL
13	GREEN-BROWN	SIGNAL
14	RED-BLUE	SIGNAL
15	YELLOW-BROWN	SIGNAL
16	WHITE-GRAY	SIGNAL
17	BINACO-GREEN	SIGNAL
18	WHITE-YELLOW	SIGNAL
3	GREEN	SIGNAL INTERLOCK ARM
4	PINK	SIGNAL LOCKING
5	GRAY	SIGNAL STABILIZER
8	YELLOW	STOP
7	VIOLET	START
9	BLACK	---
6	WHITE	---
10	RED	---
19	BINACO-BLUE	---
24	PINK-BROWN	---

CABLE 14 19x0.25		
WIRE	COLOUR	DESCRIPTION
1	BROWN	POSITIVE
2	BLUE	NEGATIVE
11	GRAY-PINK	SIGNAL
12	GRAY-BROWN	SIGNAL
13	GREEN-BROWN	SIGNAL
14	RED-BLUE	SIGNAL
15	YELLOW-BROWN	SIGNAL
16	WHITE-GRAY	SIGNAL
17	BINACO-GREEN	SIGNAL
18	WHITE-YELLOW	SIGNAL
3	GREEN	SIGNAL INTERLOCK ARM
4	PINK	SIGNAL LOCKING
5	GRAY	SIGNAL STABILIZER
8	YELLOW	STOP
7	VIOLET	START
9	BLACK	---
6	WHITE	---
10	RED	---
22	BINACO-PINK	---

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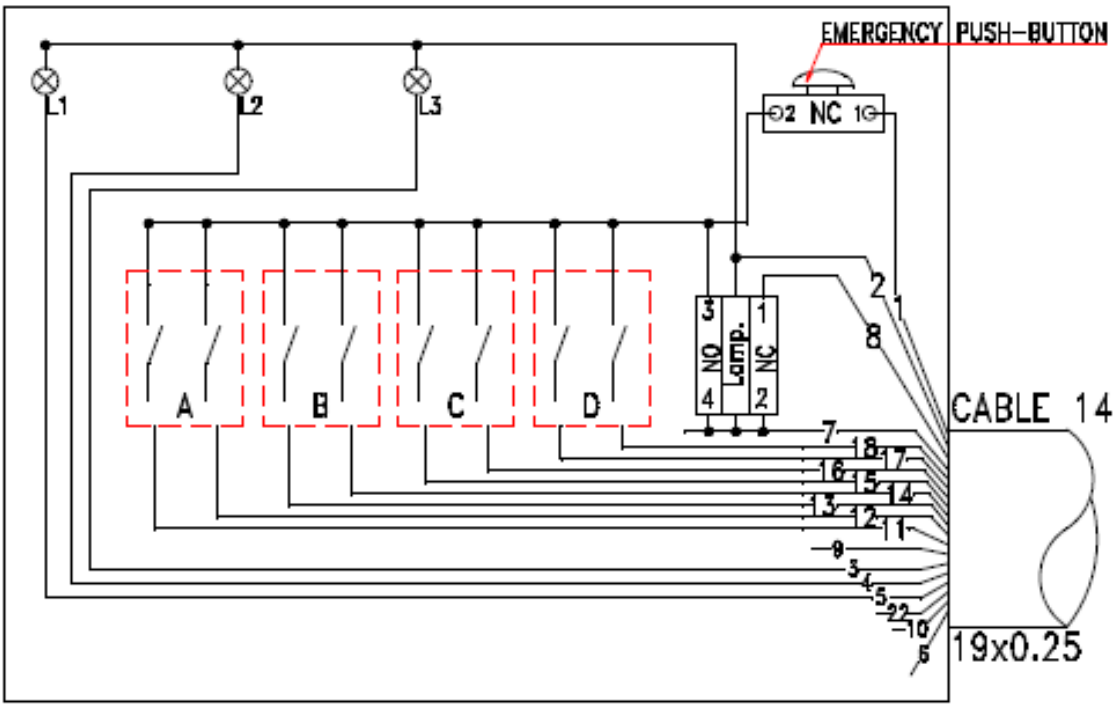
REMOTE CONTROL 4ELEMENT



LEGENDA

A HOISTING
B LOCKING
C SUSPENSION STABILIZER
D SLIDING ARM

Led1: Suspension stabilizer display
Led2: Locking display
Led3: Interlock arm display

CABLE 14 19x0.25		
WIRE	COLOUR	DESCRIPTION
1	BROWN	POSITIVE
2	BLUE	NEGATIVE
11	GRAY-PINK	SIGNAL
12	GRAY-BROWN	SIGNAL
13	GREEN-BROWN	SIGNAL
14	RED-BLUE	SIGNAL
15	YELLOW-BROWN	SIGNAL
16	WHITE-GRAY	SIGNAL
17	BINACO-GREEN	SIGNAL
18	WHITE-YELLOW	SIGNAL
3	GREEN	SIGNAL INTERLOCK ARM
4	PINK	SIGNAL LOCKING
5	GRAY	SIGNAL STABILIZER
8	YELLOW	STOP
7	VIOLET	START
9	BLACK	---
6	WHITE	---
10	RED	---
22	BINACO-PINK	---

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10.4 Maintenance Reporting

Fill in the report charts to record your routine maintenance check dates. Reference the checks carried out and any comments/issues found or rectified in the following reports. Ensure it is signed and verified by your line manager or another trained professional engineer.

MAINTENANCE REPORT

CUSTOMER _____ DATE _____

VEHICLE _____ REGISTRATION NO _____

VEHICLE LOCATION _____

EQUIPMENT

HOOKLIFT MODEL _____ SERIAL NO _____

JOB NO _____

COMMENTS

_____
_____
_____
_____
_____
_____
_____
_____

Hooklift Control Sequences Checks
Electric circuit and monitoring control sequence checks.

Sliding arm proximity check [ ] Comments _____

Hydraulic locking proximity check [ ] Comments _____

Stabilizing Roller proximity check [ ] Comments _____

Front hydraulic locking ADR [ ] Comments _____

PTO & Pump Visual Checks

Oil Leaking Check [ ] Comments _____

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Condition of the Equipment Visual Check [ ] Comments _____

High Pressure Pump Output [ ] Comments _____

Oil Tank Suction Hose [ ] Comments _____

Oil Tank & Filter Cartridge [ ] Comments _____

Oil Level Gauge [ ] Comments _____

Gate Valve [ ] Comments _____

Three Way Oil Switch [ ] Comments _____

Hydraulic Circuit Checks

Steel Pipes and Flex Hoses to

- Hoisiting Cylinders [ ] Comments _____
- Telescopic Arm Cylinder [ ] Comments _____
- Hydraulic Locking Cylinder [ ] Comments _____
- Rear Stabilizer Cylinder [ ] Comments _____

Structural Control Checks

Hooklift Hook [ ] Comments _____

Bolts & Nuts Fastening [ ] Comments _____

Telescopic Arm [ ] Comments _____

Centre Body [ ] Comments _____

Half Moon Rotation Centre [ ] Comments _____

Rear Frame [ ] Comments _____

Hydraulic Locking [ ] Comments _____

Rear Stabilizer Roller (optional) [ ] Comments _____

Rear Headstock [ ] Comments _____

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Fixation Plates [ ] Comments _____

Bolts & Nuts Fastening [ ] Comments _____

Oil Tank Supports [ ] Comments _____

Oil Tank & Filter [ ] Comments _____

Container Guide [ ] Comments _____

ADDITIONAL COMMENTS

_____

_____

_____

_____

_____

_____

_____

_____

DATE _____ SIGNATURE _____

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10.5 Routine Maintenance Record

DATE	ROUTINE MAINTENANCE CHECK	TECHNICIAN	MANAGER

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11.0 HITS (Harsh Improved Tuck Support)

HITS

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Introduction

Harsh Ltd prides itself on being an industry leader in the products and the services we offer. We aim to provide products that give the operator added value in payback and profit generation. This core belief is at the very heart of Harsh from its foundation with the World's first stabilised Tipping Gear back in 1987. This unique product concept and design revolutionised the industry and changed the way in which the tipping sector treated safety. From that day forward Harsh has continued from its Yorkshire roots to improve and support the commercial vehicle sector by sourcing and designing industry leading products.

The introduction of the Sheeting System Division in 1996 saw the UK's first ever automated tarpaulin covers fitted on UK road going vehicles. The demount handling equipment introduced in 1999 saw Harsh design in house its own Skip and Hookloaders. Not satisfied with simply importing readymade continental versions, Harsh set about designing our very own demount bodies. With all the benefits needed to operate effectively in the UK. Working with manufacturing partners with a vast amount of experience we tailored the demount designs to UK specifications. This saw the launch of the Harsh T Range of Skiploaders and the Harsh Hooklift models.

This recipe of providing products with added value has underpinned the continued growth of Harsh from a small family company into a worldwide recognised brand in vehicle hydraulics and ancillary equipment. We currently export our products all over the world with notable joint ventures in New Zealand, Australia and South Africa.

It is however our expertise and knowledge of the UK market which has seen us recently launch our new HITS programme; focusing our attention on a more service led business support unit. HITS has grown from its initial inception in providing one large nationwide operator with a tailored service package, into a service package offered with all our products as standard.

What is HITS?

HITS stands for Harsh Improved Truck Support and is a tailor made service led package that helps support working trucks to ensure minimum repair and maintenance costs and ultimately reduce vehicle downtime.

How does HITS work?

Every one of our products is sold with a full Harsh warranty as per our standard terms and conditions of sale. HITS in its basic format is our way of extending full product service support beyond the initial sale. Whether in terms of a quick service response, warranty, parts on the shelf or friendly technical advice HITS has it covered. Simply telephone Harsh on 01759 372100 or Peter Arthur our Service Manager on 07984 412 717 – Available 24/7 HITS will have your queries dealt with quickly and efficiently.

We also go beyond the industry norm and carry out full inspections and reports on everyone one of our Service Jobs to enable you the customer to learn exactly what has happened with your vehicle. This also enables us to build a portfolio on each of your individual trucks, compare data and suggest areas for preventative maintenance checks. Working in a Service partnership with our customers really does provide added value on our products.

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How does HITS offer nationwide support?

We have 2 fully stocked Service Vans based at our Full Sutton, York HQ available at a moment's notice to travel anywhere in the UK. Fully stocked with mobile equipment to carry out onsite repairs our service engineers are trained to get you moving again as fast as possible.

Requiring a faster response, we also have 1 small minivan for an even quicker service; often available as a gesture for courtesy hire if your truck requires back to factory support. This takes the logistical nightmare of a breakdown out of your hands immediately, whilst we deal with your repair quickly and efficiently.

We also have our very own Harsh tractor unit, which enables us to collect and deliver trailers. A further example of our investment in HITS and the importance we place on our Service Support.

Do you have a Service Engineer in my local Area?

Yes. We have a complete nationwide network of Dealers / Service engineers all fully trained and most complete with a range of stocked parts to keep you moving. Please see our Dealer List attached to this document for further details on your nearest engineer.

Ring Harsh on 01759 372100 or Phil Bovingdon our Service Manager on 07984 412789 and we will arrange for your nearest agent to be ready awaiting your arrival.

Do you have Parts off the Shelf?

HITS offers a complete range of spare parts available off the self-next day to anywhere in the UK. With over 35,000 vehicles equipped with Harsh equipment we send out on average 15 spare part items per day across our product ranges to help support Harsh products in the field. Using a guaranteed before Noon carrier we aim to have your parts packed and packaged inside an hour of your order. Delivered to you the next working day or Saturday AM if required.

Telephone our Spares Department on 01759 372100 for friendly helpful advice with product documentation and schematics to aid identification.

Do you offer Extended Terms or R&M Packages?

HITS can be if required further encompassing and include extended warranty options, full periodic service reports and onsite maintenance checks as well as fully stocked onsite parts outlets. For further details on these possibilities please speak with your Harsh representative to tailor design a package to suit your needs.

For example, we have numerous HITS packages which currently involve periodic fleet inspections using a traffic light reporting system for tippers or routine maintenance schedules for waste handling equipment. These reports

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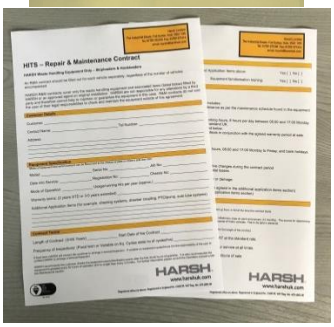
are then fed back to you the customer and a programme is then agreed to ensure any potential VOR are dealt with prior to it occurring.

A preventative maintenance system that has dramatically reduced downtime and repair costs for numerous customers.

HITS has also been extended recently to cover other manufacturers products where possible to help with one easy point of contact.



Industry Accreditations

Harsh Ltd are ISO9001:2008 compliant credited by the British Standard Institute. Meaning we have full audited systems which give us full traceability and processes in place to ensure full support.

We are active members of the UK CHEM (Container Handling Equipment Manufacturers) committee set up to lobby government with regards to the best practises for the UK waste handling industry.

Harsh are also currently working towards ECWVTA (European Community Whole Vehicle Type Approval) legislation coming into play in October 2014.

After Sales Service & Customer Care – How do we compare?

In an independent survey, Harsh came out top on after sales service and customer care for the hydraulic industry in the UK. With note to our special attention to detail and our personal approach to customers. We are proud of this achievement and endeavour to provide honest, quick and simple answers to any of your questions or needs.

Service Contact Details

Service Manager – Peter Arthur
Harsh Ltd
T. 01759 372 100
M. 07984 412 717
E. peter.arthur@harshuk.com

Spare Parts Department
Harsh Ltd
T. 01759 372100
E. harsh@harshuk.com

Aftersales Administration – Sharon Lazenby
Harsh Ltd
T. 01759 372 100
E. Sharon.lazenby@harshuk.com

Workshop Manager – Phil Bovingdon
Harsh Ltd
T. 017559 372100
M. 07984 412 879
E. phil.bovingdon@harshuk.com

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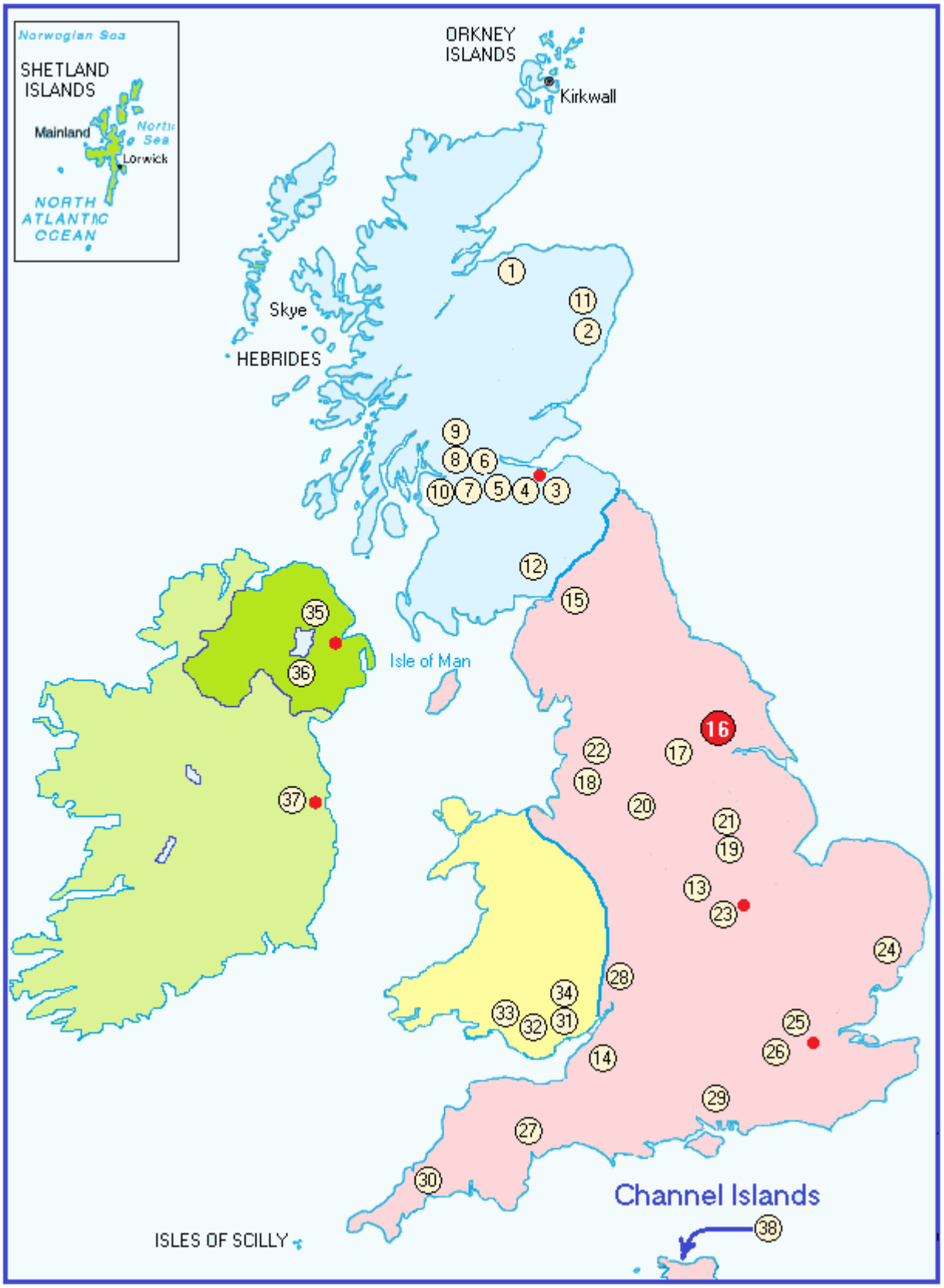
UK Dealer Network



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SCOTLAND

Ref	Company	Location	Contact	Tel	Email
1	James Munro Engineering	Forres	James Munro	01309 672681	finoamunro641@btinternet.com
2	Gordon Nicol	Stonehaven	Gordon Nicol	07976 829874	gordienicol@live.com
3	Bulkweld Limited	Broxburn	Eddy Mollon	01506 811 453	eddy@bulkweld.com
4	Alex Inglis Scotland Ltd	Bellshill	David Smith	01698 823 213	David@alexinglis.co.uk
5	Outreach Ltd	Falkirk	Colin Mansen	01324 889000	cmansen@outreachltd.com
6	P M H Coachbuilders Ltd	Bonnybridge	Peter Hogan	01324 841702	pmhcoach@aol.com
7	Central Commercial Services	Bothwell	Barry Sweeney	07854 782 891	centralcommercialservices@hotmail.co.uk
8	DJS Engineering Ltd	Glasgow	Darren Johnson	07971 055278	djsscotland@me.com
9	J M Services	East Kilbride	Jim Mills	07786 710075	jm.services@live.co.uk
10	Thistle Hydraulics Ltd	Denny	Geoff Howells	01324 821 300	sales@thistlehydraulics.co.uk
11	W J Rattray	Inverurie	Bill Rattery	01467 631 345	wjrattray@hotmail.com
12	Carlton Engineering	Moffat	John Carlton	01683 220582	www.carlton-engineering.com

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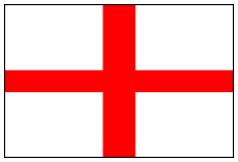

ENGLAND

Ref	Company	Location	Contact	Tel	Email
13	Chassis Development Services Ltd	Walsall	George Creegan	01922 410 990	george@chassisdevelopmentservices.co.uk
14	GJC Commercials Ltd	Bristol	Richard	01179 644 411	info@gjccommercials.com
15	S J & K Holliday	Carlisle	Steve Holliday	01228 672 060	
16	Harsh Ltd	York	Peter Arthur	07984 412 717	Peter.arthur@harshuk.com
17	MTMS Ltd	Leeds	Matthew Tate	07714 274 129	
18	Hydraulic Spares Centre	Bolton	Michael Booth	01204 527 594	hydraulicsparescentre@live.com
19	Muldoon Transport Systems Ltd	Swadlincote	Richard Jones	012835 22 956	richardjones@muldoon.com
20	Nixon Vehicle Inspection	Congleton	Mark Nixon	07525 900 979	
21	Swadlincote Aluminium Company Ltd	Swadlincote	Rob Winfield	01283 223 323	
22	Thompson Spares & Service Ltd	Blackburn	Nathan Ewins	07765 863 379	nathanewins@thompsonsuk.com
23	Truckweld	Wisbech	Trevor Howlett	07957 165 337	info@truckweld.co.uk
24	Tip N Lift	Ipswich	Paul Cox	01473 747 222	paul@tipnlift.co.uk
25	KEL Services	Pinner	Paul Kelly	07769 723 045	
26	S&S Hydraulics	Staines	Stacy Burgoyne	07779 235 038	info@sandshydraulics.co.uk
27	Wains Transport	Cullompton	Bruce	01884 266 300	wainstransport@yahoo.co.uk
28	Fleetcare Services Vehicle Engineers Ltd	Ross on Wye	Rob Waters	01989 565 777	
29	H P Hydraulics	Fareham	Nigel Howes	01329 822 277	
30	Highway Commercials	St Austell	Viv Retallick	01726 682 70	highwaycommercialsupplies@hotmail.com

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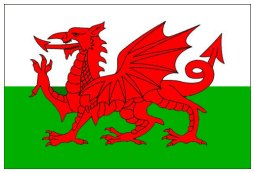

Wales

Ref	Company	Location	Contact	Tel	Email
31	KCS Transport Ltd	Barry	Ken Sievewright	01446 751 423	
32	Neath Coachbuilders	Neath	Paul Oakley	01639 643 629	paul.oakley@neathcoachbuilders.co.uk
33	Neath Coachbuilders	Swansea	Chris James	01792 781 660	Chris.james@neathcoachbuilders.co.uk
34	Tanner Electrics	Cardiff	Paul / Lee	02920 727 190	

Northern Ireland

Ref	Company	Location	Contact	Tel	Email
35	McErlean Trailers	Toomebridge	Martin McErlean	02879 659 959	mcerleantrailers@hotmail.co.uk
36	Muldoon Transport Systems Ltd	Dungannon	Justin Muldoon	07867 500 089	Justin@muldoon.com

Republic of Ireland

Ref	Company	Location	Contact	Tel	Email
37	Kieran Trehy Hydraulics	Dublin	Kieran Trehy	003531 8 644 915	

Channel Islands

Ref	Company	Location	Contact	Tel	Email
38	Rabeys Garage Ltd	Guernsey	Paul Bourgaise	01481 244 551	paul.bourgaise@rabeys.com

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12.0 Appendix

APPENDIX

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Sheeting Systems

It is common for most Hooklift equipment to have an automated sheeting system fitted as standard. The sheeting system is designed to help contain the bulk waste being carried from coming out of the container whilst in transit. The automative nature of sheeting systems also prevents the operator from having to climb and manually sheet the container load. Thus it is health and safety friendly, whilst an extremely quick and effective way of covering the load. There are many different types of sheeting system on offer each with its own unique style and benefits to the user.

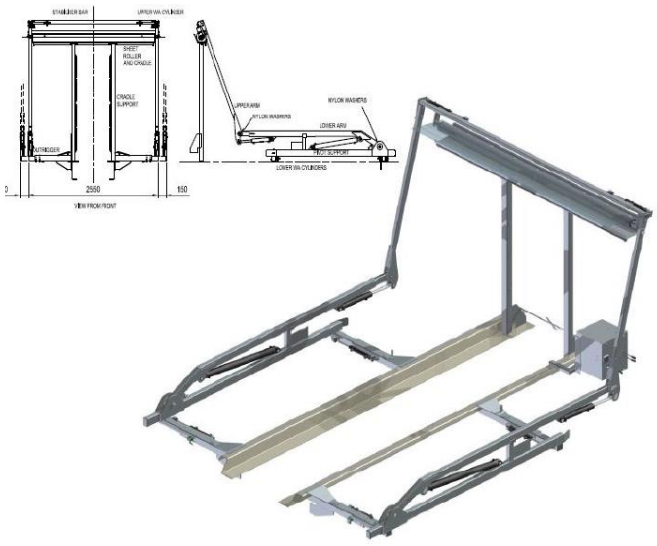
Harsh Hook N Go Sheeting System

As standard we fit the Hook N Go system is fully complies to the latest ECWVTA legislation on vehicle width restrictions.

It is a robust sheeting system designed to suit 8x4 rigid chassis fitted with Hooklift equipment for normal operations with containers built with CHEM – TS8 type 20 subframes. It covers CHEM 20 containers up to 50 cubic yards and 22 foot in length.

Fully hydraulically operated it is integrated into the Hooklift equipment hydraulics and uses a diverter valve to direct the flow of hydraulic oil from Hooklift equipment to the sheeting system. Meaning you cannot operate the sheeting system whilst the Hooklift is being used and vice-versa.

The nature of the Hook N Go system enables the Arms to come out each side by 150mm prior to operation and extension of the arms from the resting cradle. Allowing the arms to freely pass besides the container to cover the load.



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Hook N Go Operational Procedures

The sheeting system can be partially operated inside the vehicle cab and safely outside the cab on the passenger side of the vehicle at the front.

It is important to ensure the Hooklift equipment isn't active and the container is securely clamped onto the Hooklift equipment prior to climbing outside the cab.

Prior to operation it is important the operator carries out Environment Checks, User Checks and Operational Checks as per listed in the Hooklift section of this manual. Special attention must be displayed to the environment checks to ensure operation of the sheeting system does not occur when overhead power lines or obstacles are present.

It is also important to ensure all persons are away from moving arms prior to operation of the sheeting system.

It is assumed a loaded container is present on the Hooklift equipment at this point prior to sheeting system operation

Covering the Load

1. Ensure the PTO Unit is engaged (same procedure as the Hooklift equipment instructions)
2. Ensure the Diverter Valve option is selected on Sheeting System and not Hooklift equipment. This will send the hydraulic oil to the sheeting system controls.
3. Operate the pull/push lever in the vehicle cab to send the sheeting arms to the maximum width position – 150mm extension each side. This will enable the arms to pass freely down the container sides.
4. Climb outside the cab to the passenger side front passing across the front of the vehicle when doing so. Position yourself next to the sheeting system controls in full view of your working area. Now operate the two lever for arms extension and arm coverage to send the sheeting arms across the container from front of the vehicle to the rear of the vehicle. Adjusting the extension and retracting levers appropriately to suit the different sizes of container being used.
5. Rest the roller assembly on top corner of the rear of the container when covered. The sheet should remain tight and under tension, covering the load inside the container.
6. Climb back into the cab passing back across the front of the vehicle before operating the pull/push lever to retract the arms back into the standard arm position in step 3.
7. It is now safe for the vehicle to travel.

If necessary you can use the adjustable manual hook to deploy the pleated sheet flaps down the side of the container before carrying out Step 6.

Uncovering the Load

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Follow the steps in covering the Load but in reverse, ensuring the diverter valve is set to sheeting system prior to operation. The roller must be fully rested in the tower cradle position before travel when not covering a load.

Maintenance

Hook N Go Tarp Replacement

You will require the Wheel Drive to carry out this procedure.

It is recommended the procedure is carried out using protective gloves and a risk assessment is done on the surrounding work area before the procedure goes ahead.

It is also important the operative has had the relevant training and information on best practise with regards to the procedure before carrying out any works.

Replacing Tarp

1. Checking Ratchet Mechanism
    a. Use appropriate safe working at height methods as per your training
    b. Visually ensure the roller is drilled and bolted at the ratchet mechanism end.
    c. Ensure the ratchet mechanism is working by applying the 'Wheel Drive' to the 25mm (1") roller shaft and apply a turn. The ratchet will click as the spring loaded pawl moves around the sprocket and adds tension. This has ensured the ratchet is working properly and the wheel drive doesn't spin freely.

2. Removing the Old Tarp
    a. Power the roller up vertically out of the cradle by 50mm-100mm (2-4").
    b. Add the 'Wheel Drive' to the 25mm (1") roller shaft securing with the locking screw.
    c. Take the securing bolt out to allow the roller to spin freely
    d. Unlatch the ratchet pawl whilst holding the 'Wheel Drive' taking care to release the tension slowly.
    e. Warning – spring pressure is present and it is important to hold firmly the 'Wheel Drive' allowing it to turn slowly to let the tension off the spring. The spring tension is far less at the front of the truck than the rear.
    f. Power the system across the Hooklift equipment to the rear of the truck. Positioning the roller approximately 1220mm (4ft) off the ground.
    g. Unroll the remaining tarp off the roller. Remove the screws and tarp clamp from the roller.
    h. Remove the old tarp from the cradle by removing the bolts holding the tarp bar inside the front sleeve of the tarp. Discard the tarp safely.

3. Installing the New Tarp
    a. Re-insert the tarp bar into the sleeve of the tarp. Centre the tarp on the tarp bar and re-attach the tarp bar to the cradle.

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b. Attach the rear end of the tarp to the roller with tarp clamp and screws. Making sure the tarp is centred.
c. Power the sheeting system from the rear of the truck back across the Hooklift equipment and into the cradle, manually rolling the tarp onto the roller

4. Adding Tension to the Roller
    a. Ensure the 'Wheel Drive' is secured and locked on
    b. Ensure the ratchet pawl is in position on the sprocket
    c. Apply turns 9-11 complete in a clockwise direction on the 'Wheel Drive' ensuring you are wearing protective gloves at all times. With each turn you should hear a clicking sound as the ratchet pawl passes over the sprocket. Tension is being added to the spring. The ratchet mechanism should not allow the spring to lose tension and unravel.
    d. Add back in the securing bolt between the upper arm and the roller shaft
    e. Operate the sheeting system to check tension.
    f. Does it have enough spring tension to roll up the tarp? If not, repeat the process adding additional turns.
    g. Does it roll the tarp straight in or does it roll to one side? If the tarp rolls to one side with the arms moving together, then you need to remove the slack in the tarp, so the tarp will roll up evenly on the roller. If the tarp rolls to one side you will need to repeat the process.

If you have any questions or require any further assistance please do not hesitate to contact the Harsh Service team on 01759 372100.