

Service Information

1800-K/2020-K

HMF Z003266

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Pressure Setting Diagram, Hydrocontrol HC-D4
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Working pressure on Main-Relief Valve & Port-Relief Valves

Function	Direction	Port	1800-K (std.) [bar]	2020-K (HDL) [bar]
Main-relief valve			300	330
Slewing system	Right	A	P	P
	Left	B	P	P
Boom cylinder	Down	A	100	100
	Up	B	325	340
Jib cylinder	Up	A	325	340
	Down	B	200	200
Extension cylinders	Extend	A	P	P
	Retract	B	P	P
Rotator	Right	A	200	200
	Left	B	200	200
Grab	Open	A	200	200
	Close	B	200	200
Separate stabilizer valve		All	150	150

Working Pressure on Load-holding Valves

Function	Direction	Port		pressure ar]
Boom cylinder			325	350
Jib cylinder			330	350
Slewing system			185	185
Extension cylinders	Extend	Α	210	210
Extension cylinders	Retract	В	430	430

Pressure setting for Load Moment Limitation (LMB)

Load moment limitation (LMB)	290	320
HDL	-	290

Max. pump performance

Pump performance, 1-circuit	[l/min]	55	55
Pump performance, 2-circuit	[l/min]	2x50	-

Pressure setting diagram, fixed flow pump & Danfoss RC

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Working pressure on Main-Relief Valve & Port-Relief Valves

Function	Direction	Port	Port-relief valves	LS-pressure adjustment
			[bar]	[bar]
Main-relief valve			3	30
Slewing system	Right	Α	Р	180
Siewing system	Left	В	Р	180
Boom cylinder	Down	Α	125	100
Boom cylinder	Up	Right A Left B Down A	350	350
Jib cylinder	Up	Α	350	350
Jib Cyllidel	Up A Down B	250	230	
Extension cylinders	Extend	Α	Р	-
Extension cylinders	Left B Down A Up B Up A Down B Extend A Retract B Right A Left B Open A Close B Lift A	Р	-	
Rotator	Right	Α	Р	50-300
Rotatoi	Left	В	Р	50-300
Grab	Open	Α	Р	50-300
Glab	Close	В	Р	50-300
Winch 1,5T	Lift	Α	Р	160
TVIIICII 1,31	Lower	В	Р	160
Winch 2,5T	Lift	А	Р	185
VVIIIGI1 2,01	Lower	В	Р	185
Separate stabilizer valve		All	1	50

Working Pressure on Load-holding Valves

Function	Direction	Opening pressure [bar]
Slewing system	Right	185
Siewing system	Left	185
Boom cylinder	Up	350
	Down	-
lib ovlindor	Up	350
Jib cylinder	Down	300
Extension cylinders	Retract	430
Extension cylinders	Extend	210

Pressure setting for Load Moment Limitation (LMB)

Load moment limitation (LMB)	[bar]	315
HDL	[bar]	285

Max. pump performance

Choice of pump		1 x fixed
Pump performance	[l/min]	70

Pressure setting diagram, variable flow pump & Danfoss RC

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Working pressure on Main-Relief Valve & Port-Relief Valves

Function	Direction	Port	Port-relief valves	LS-pressure adjustment
			[bar]	[bar]
Main-relief valve			3	50
Slewing system	Right	А	Р	180
Siewing system	Left	В	Р	180
Boom cylinder	Down	Α	125	100
Boom cylinder	Up	В	350	330
Jib cylinder	Up	Α	350	330
old Cyllinder	Down	В	250	230
Extension cylinders	Extend	Α	Р	300
	Retract	В	Р	300
Rotator	Right	Α	Р	50-300
Notatol	Left	В	Р	50-300
Grab	Open	Α	Р	50-300
Glab	Close	В	Р	50-300
Winch 1,5T	Lift	Α	Р	160
VVIII 1,5	Lower	В	Р	160
Winch 2,5T	Lift	А	Р	185
VVIIIGI1 2,3 1	Lower	В	Р	185
Separate stabilizer valve		All	1	50

Working Pressure on Load-holding Valves

Function	Direction	Opening pressure [bar]
Slowing aveter	Right	185
Slewing system	Left	185
Boom cylinder	Up	350
	Down	-
lib cylindor	Up	350
Jib cylinder	Down	300
Extension cylinders	Retract	430
	Extend	210

Pressure setting for Load Moment Limitation (LMB)

Load moment limitation (LMB)	[bar]	315
HDL	[bar]	285

Max. pump performance

Choice of pump		1 x variable
Pump performance	[l/min]	100

Pressure setting diagram, fixed flow pump & Danfoss manual

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Working pressure on Main-Relief Valve & Port-Relief Valves

Function	Direction	Port	Port-relief valves	LS-pressure adjustment
			[bar]	[bar]
Main-relief valve			3	00
Slewing system	Right	Α	Р	180
Siewing system	Left	В	Р	180
Boom cylinder	Down	Α	125	100
	Up	В	320	350
Jib cylinder	Up	Α	350	350
	Down	В	250	230
Extension cylinders	Extend	Α	Р	280
	Retract	В	Р	280
Rotator	Right	Α	Р	50-300
Rotatol	Left	В	Р	50-300
Grab	Open	Α	Р	50-300
Olab	Close	В	Р	50-300
Separate stabilizer valve		All	1:	50

Working Pressure on Load-holding Valves

Function	on Direction	
Slowing avetom	Right	185
Slewing system	Left	185
Boom cylinder	Up	325
	Down	-
lib ovlindor	Up	350
Jib cylinder	Down	300
Extension cylinders	Retract	430
	Extend	210

Pressure setting for Load Moment Limitation (LMB)

Load moment limitation (LMB)	[bar]	285

Max. pump performance

Choice of pump		1 x fixed
Pump performance	[l/min]	70

Pressure setting diagram, variable flow pump & Danfoss manual

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Working pressure on Main-Relief Valve & Port-Relief Valves

Function	Direction	Port	Port-relief valves	LS-pressure adjustment
			[bar]	[bar]
Main-relief valve			3	50
Slewing system	Right	Α	Р	180
Siewing system	Left	В	Р	180
Boom cylinder	Down	Α	125	100
	Up	В	320	300
Jib cylinder	Up	Α	350	300
Jib Cylinder	Down	В	250	230
Extension cylinders	Extend	Α	Р	300
	Retract	В	Р	300
Rotator	Right	Α	Р	50-300
Rotator	Left	В	Р	50-300
Grab	Open	Α	Р	50-300
	Close	В	Р	50-300
Separate stabilizer valve		All	1:	50

Working Pressure on Load-holding Valves

Function Direction		Opening pressure [bar]
Slewing system	Right	185
Siewing system	Left	185
Boom cylinder	Up	350
	Down	-
Jib cylinder	Up	350
Jib Cylinder	Down	300
Extension cylinders	Retract	430
	Extend	210

Pressure setting for Load Moment Limitation (LMB)

Load moment limitation (LMB)	[bar]	285

Max. pump performance

Choice of pump		1 x variable
Pump performance	[l/min]	80

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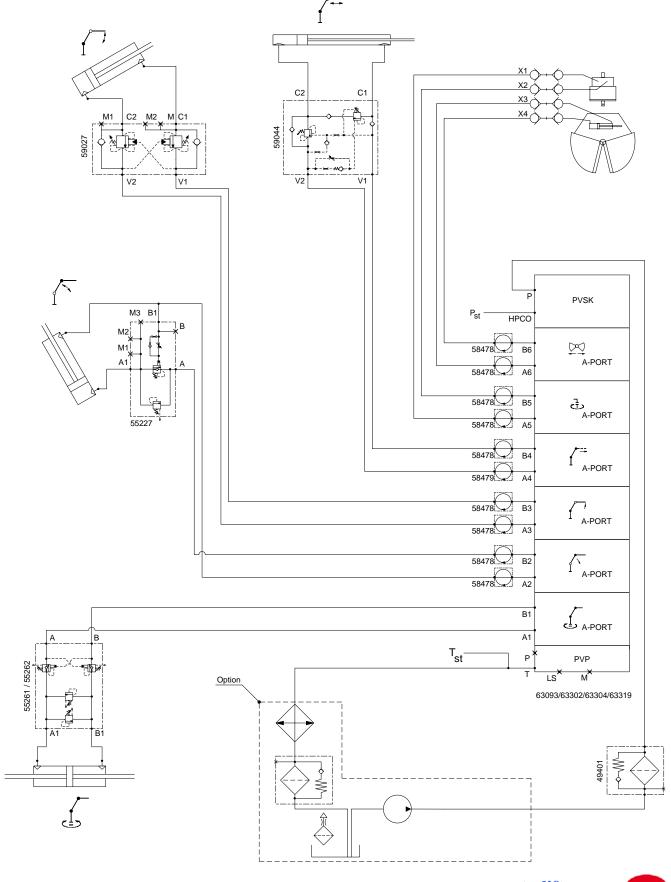
Working pressure for Fly-Jib

Functi	ion	Direction	Port	2020-K3 FJ600	2020-K4 FJ600	2020-K5 FJ350
		200		[bar]	[bar]	[bar]
LS-pressure adjustment	Up	А	300	300	300	
der	• Lo-pressure adjustment	Down	В	250	250	250
cylinder	Port-relief valves	Up	Α	320	320	320
_	Tort rener varves	Down	В	300	300	300
dic	Working Pressure on Load-holding	Up		330	330	330
	Valves	Down		290	290	290
nc 's	LS-pressure adjustment	Extend	А	275	275	275
nsic	Le pressure adjustment	Retract	В	275	275	275
Extension cylinders	Working Pressure on Load-holding	Extend		210	210	210
шо	Valves	Retract		430	430	430
Load r	noment limitation (LMB)			290	290	290

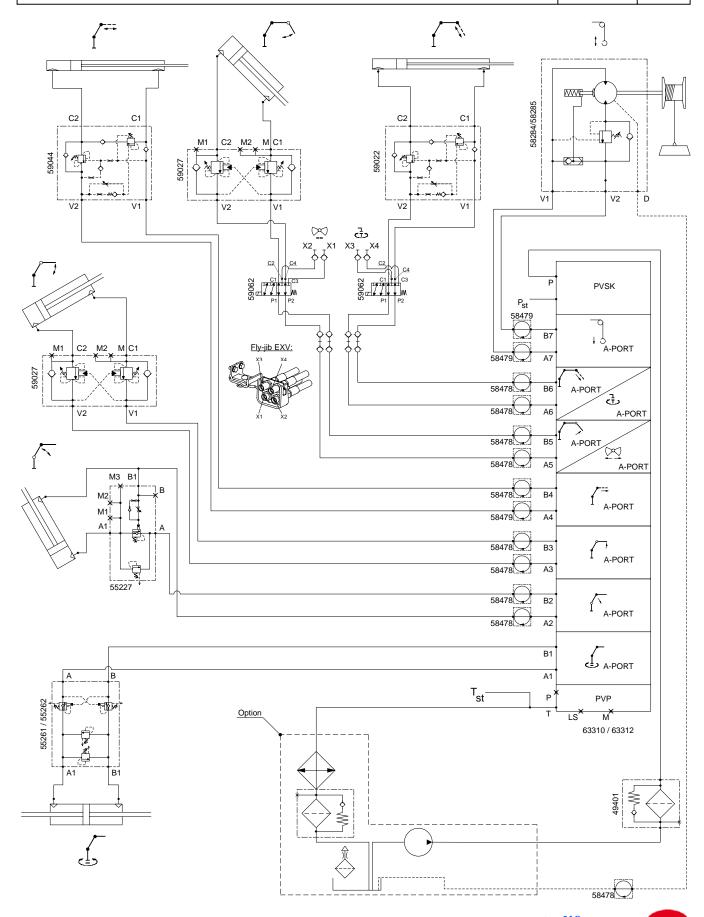
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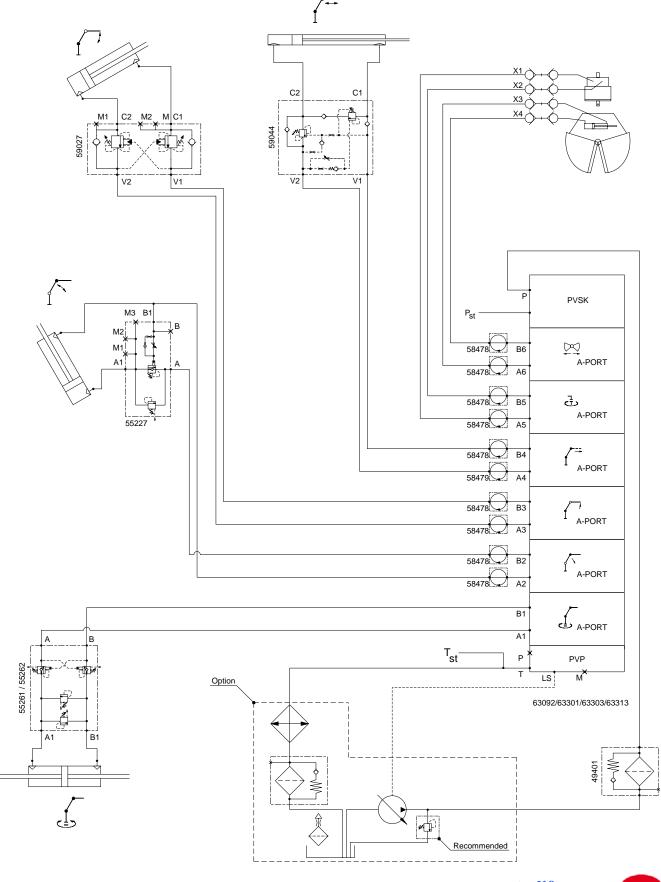
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Hydraulic Diagram - Danfoss, single-circuit variable 6 fcts. RC/HS dir. valve contr. (2 EXV: Grab + Rotator)

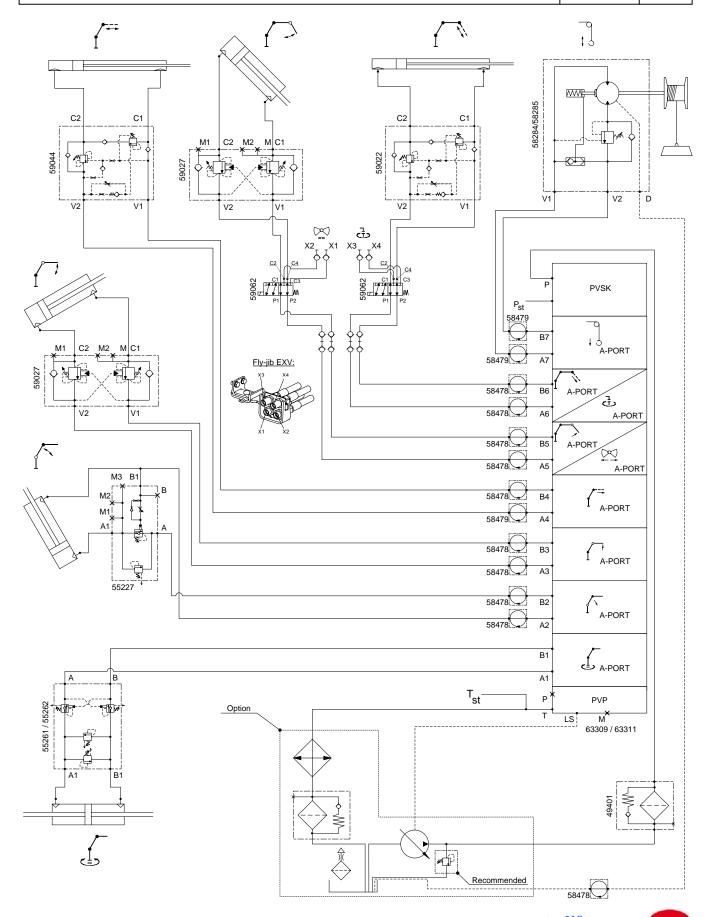
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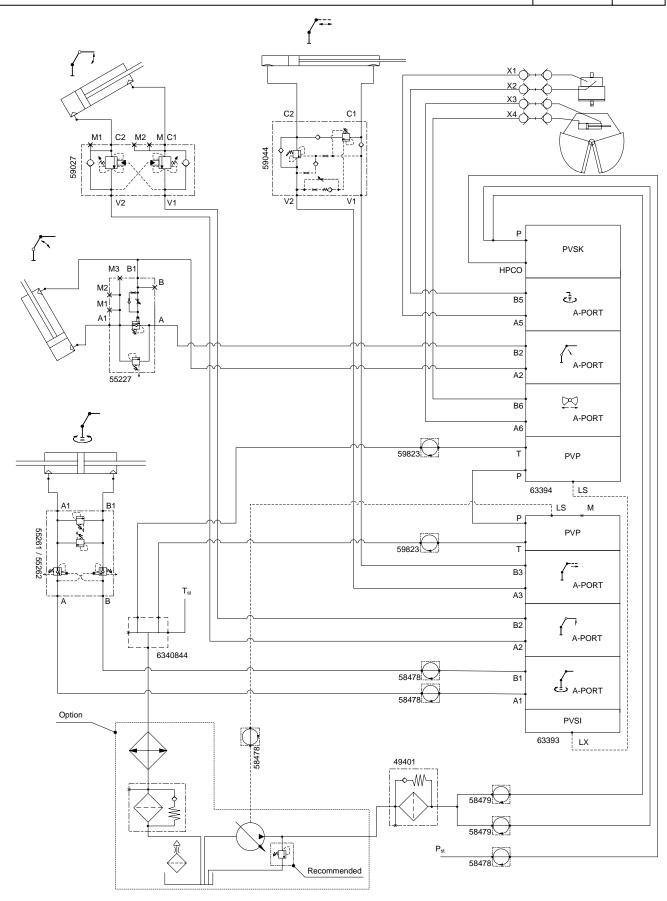
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Hydraulic Diagram - Danfoss, single-circuit variable 6 fcts. TS (2 EXV: Grab + Rotator)

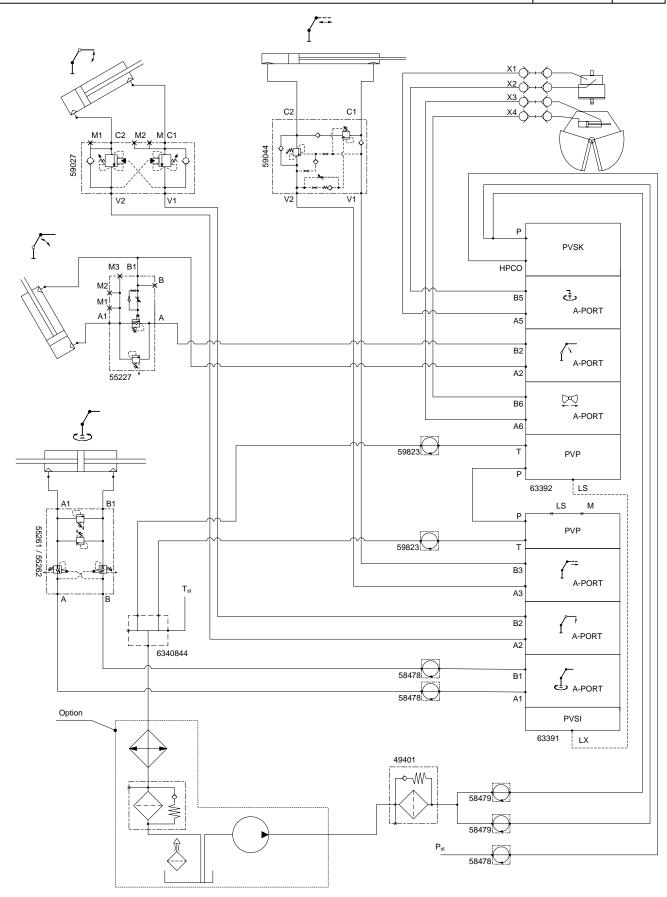
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Hydraulic Diagram - Danfoss, single-circuit fixed 6 fcts. TS (2 EXV: Grab + Rotator)

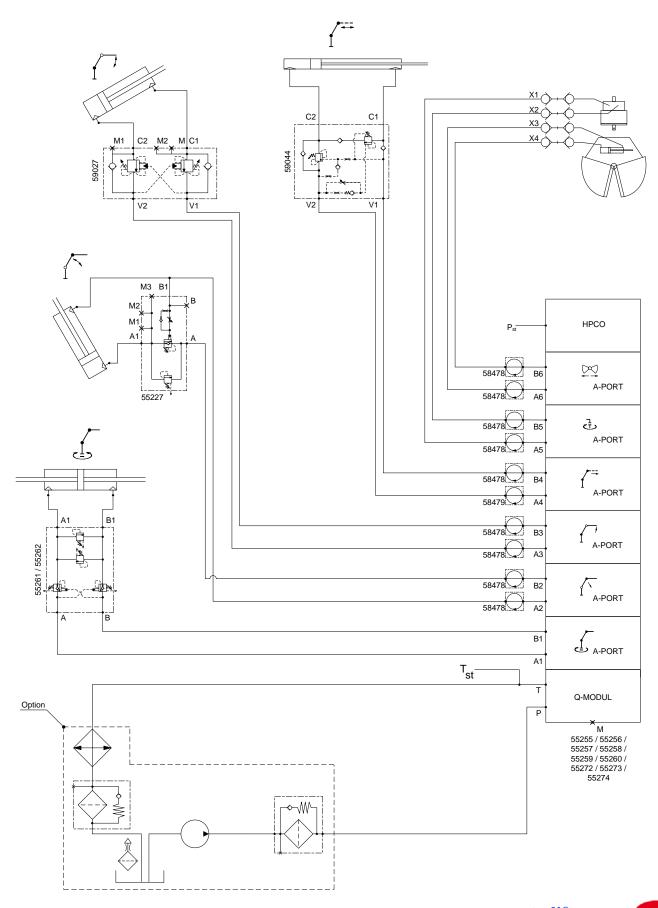
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Hydraulic Diagram - Hydrocontrol, single-circuit fixed 6 fcts. Std./HS, std./HS dir. valve contr. (2 EXV: Grab + Rotator)

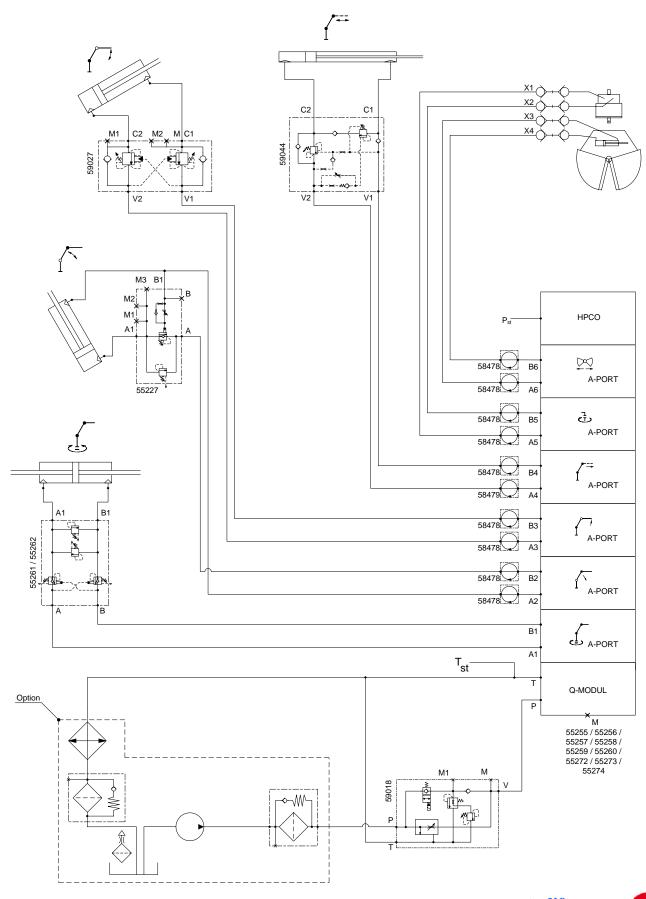
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Hydraulic Diagram - Hydrocontrol, single-circuit fixed 6 fcts. Std./HS, std./HS dir. valve contr. HDL (2 EXV: Grab + Rotator)

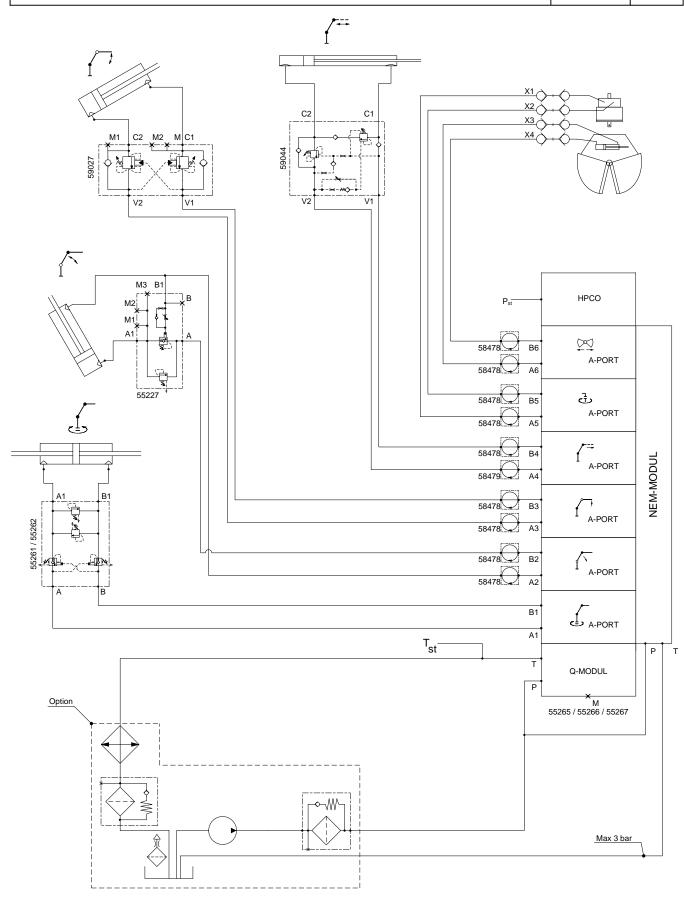
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Hydraulic Diagram - Hydrocontrol, single-circuit fixed 6 fcts. RC (2 EXV: Grab + Rotator)

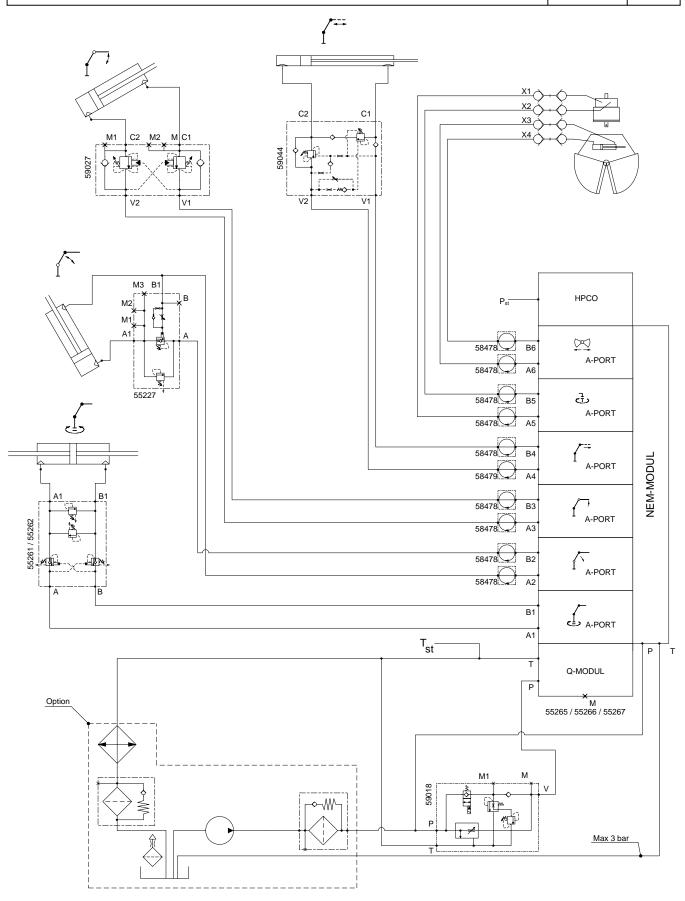
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Hydraulic Diagram - Hydrocontrol, single-circuit fixed 6 fcts. RC med HDL (2 EXV: Grab + Rotator)

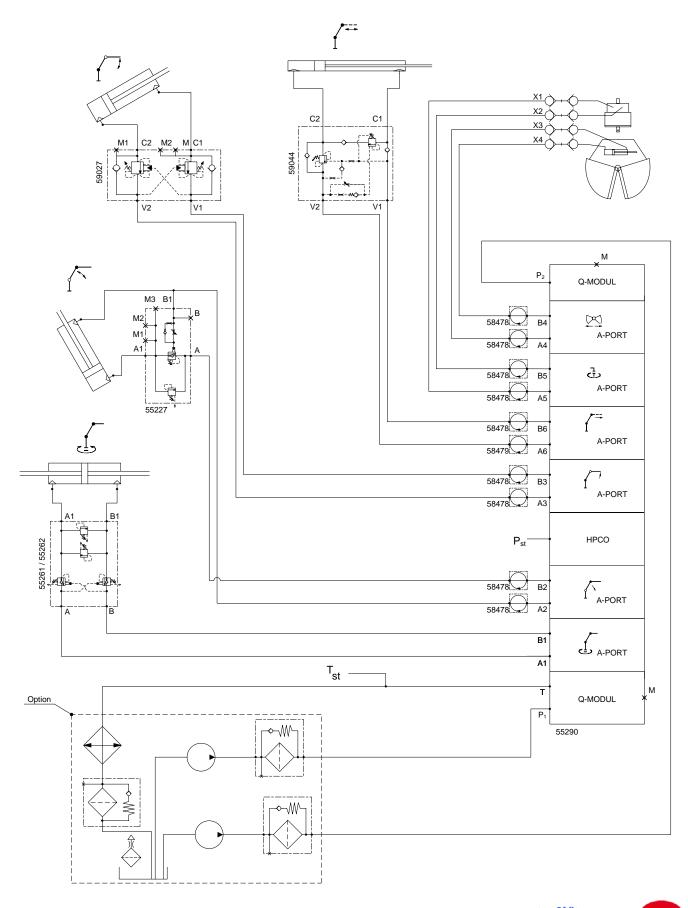
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Hydraulic Diagram - Hydrocontrol, dual-circuit fixed 6 fcts. HS dir. valve contr. (2 EXV: Grab + Rotator)

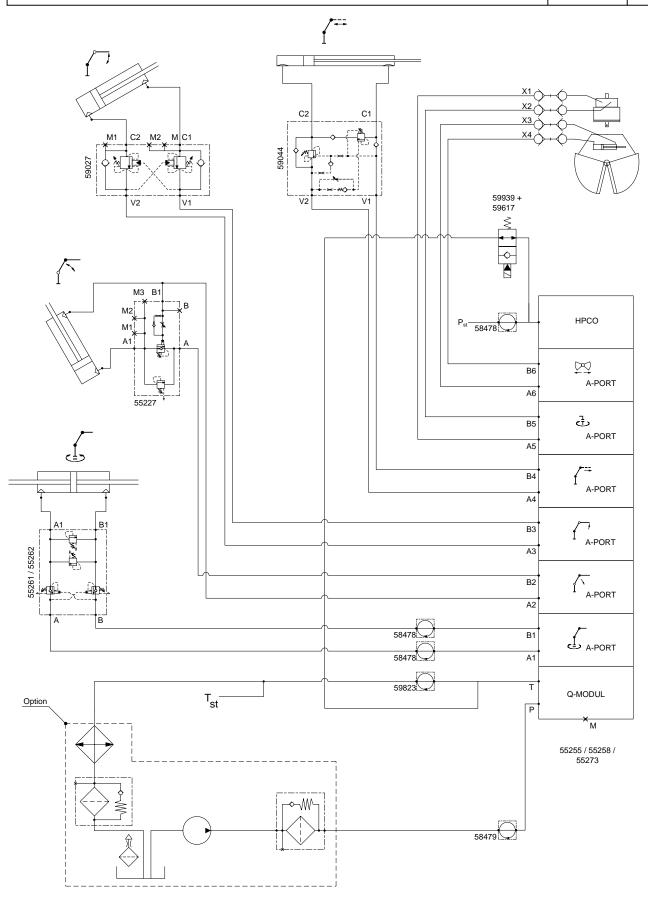
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Hydraulic Diagram - Hydrocontrol, single-circuit fixed 6 fcts. TS (2 EXV: Grab + Rotator)

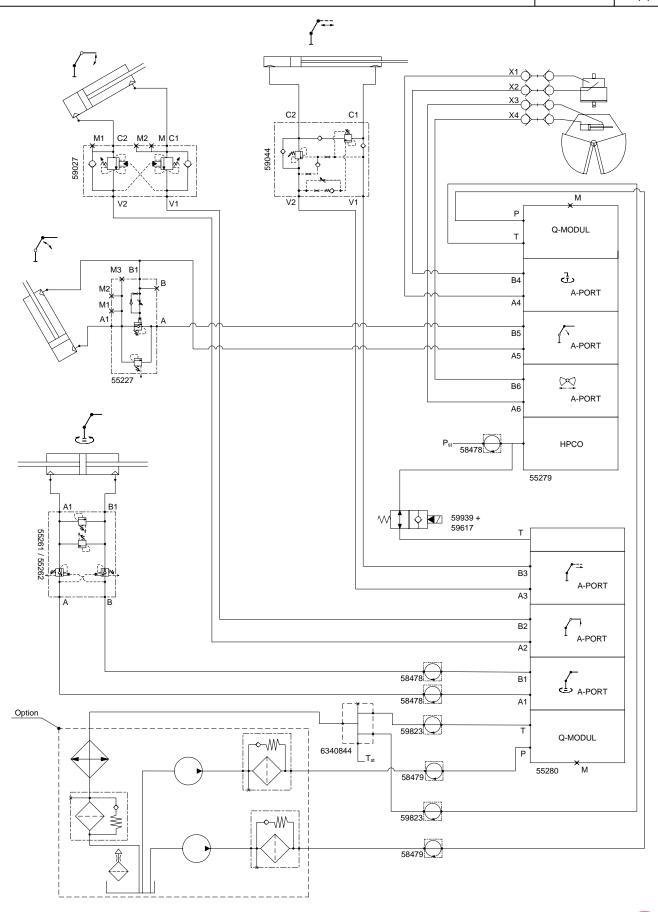
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Hydraulic Diagram - Hydrocontrol, dual-circuit fixed 6 fcts. TS (2 EXV: Grab + Rotator)

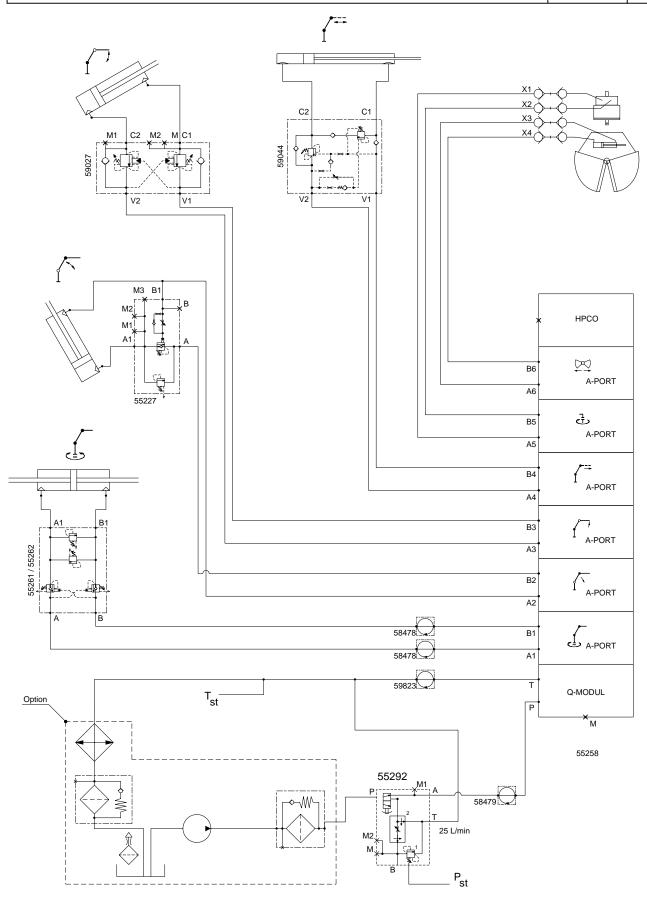
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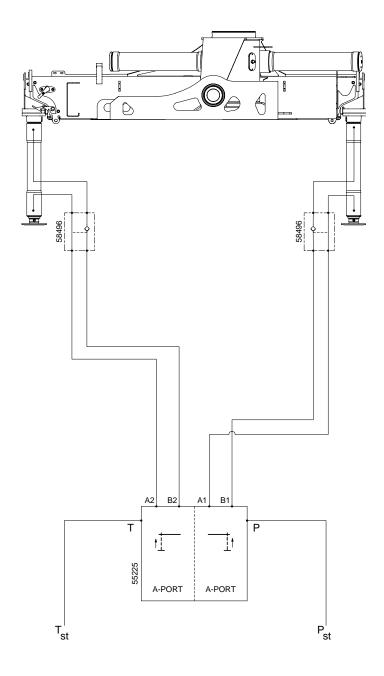


Hydraulic Diagram - Hydrocontrol, single-circuit fixed 6 fcts. TS, ex. CE (2 EXV: Grab + Rotator)

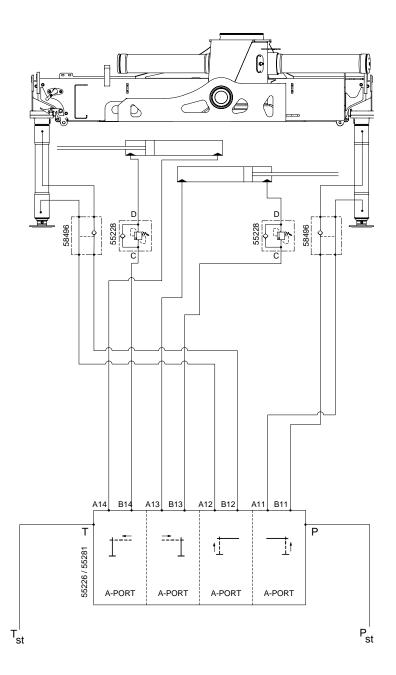
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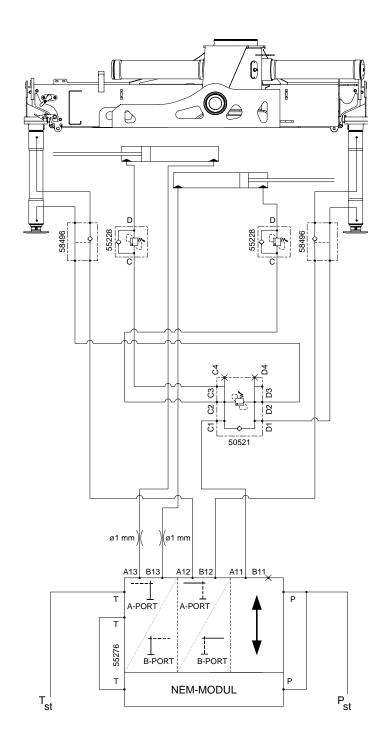


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Hydraulic Diagram - Stablilizer circuit – 4 fcts.	Catalogue no.	Section 51
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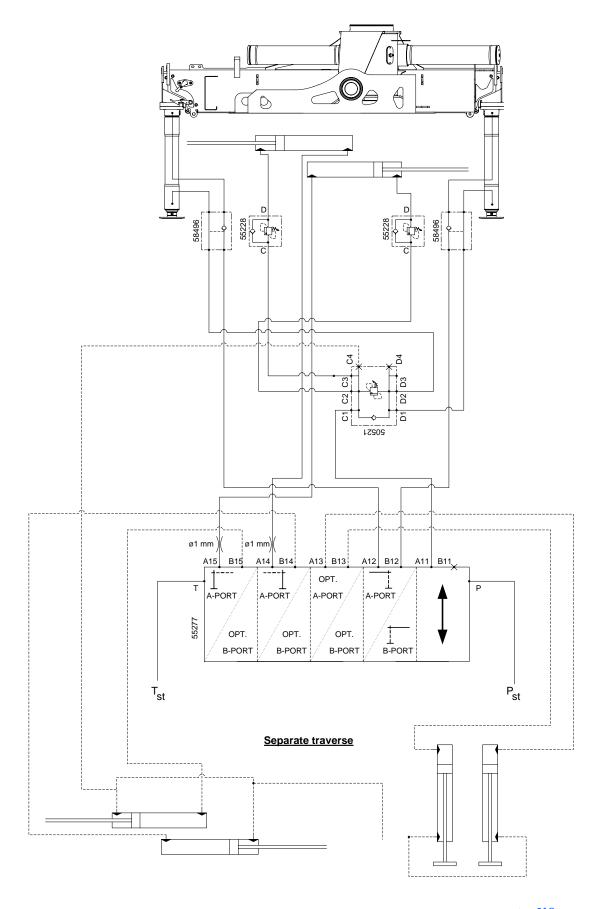


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Hydraulic Diagram - Stablilizer circuit – 4 fcts. + 4 available fcts.

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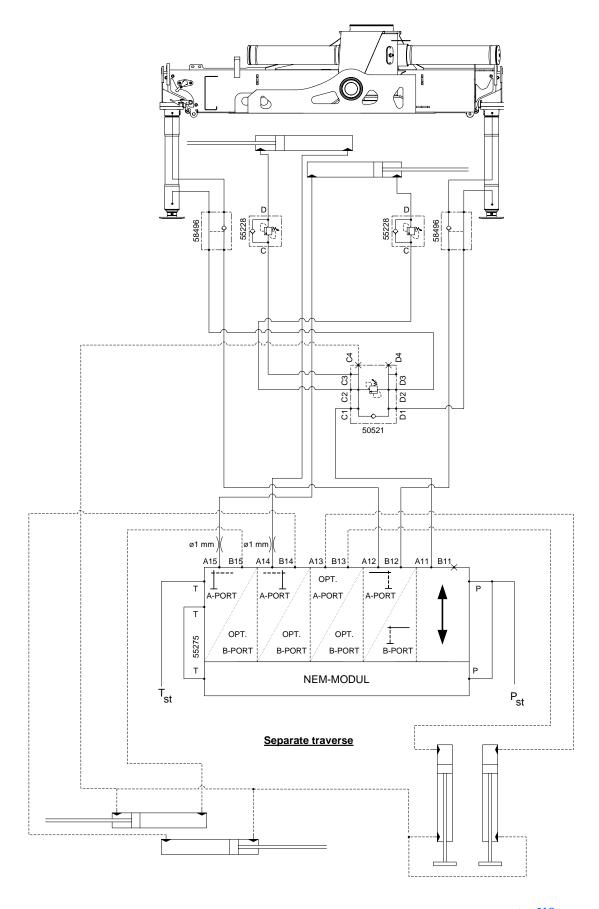


Service Information, 1800-K/2020-K



Hydraulic Diagram - Stablilizer circuit – 4 fcts. + 4 available fcts. RC

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The present instructions are valid for the following loaders:

Loaders	Catalogue
1300-K / 1420-K	38 084
1310-K / 1430-K	38 085
1500-K / 1720-K	38 086
1510-K / 1730-K	38 087
1800-K / 2020-K	38 088
1810-K / 2030-K	38 089
2200-K / 2420-K	38 090
2210-K / 2430-K	38 091

The loader models concerned by these instructions are to a great extent equipped with maintenance-free bearings. However, for a limited number of bearings, regular lubrication has to be carried out according to these instructions.

The loader has to be greased in the following places:

- 1. Central greasing on the base.
- 2. The push rods at the boom and jib cylinders .
- 3. Sliding surfaces in the boom system.

Please see the Instruction Manual, Loaders, for recommended oil and grease.

Ad. 1) Central lubrication on the base:

The base is equipped with a central greasing point where all lubrication of moving parts in the slewing system is carried out.

The central greasing point is placed on the cross beam of the base and is indicated in the figure below.

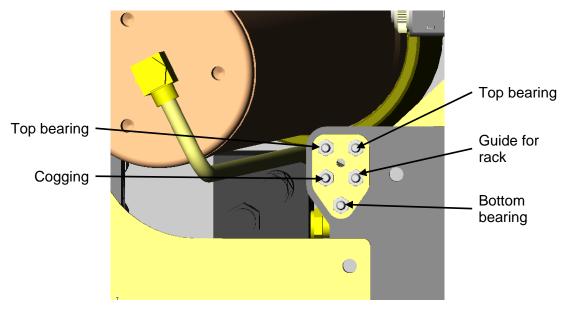


Figure 1 – Central greasing point on the base

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Greasing has to be carried out at the greasing points indicated above, while the loader is swung from stop to stop. Repeat the lubrication of the cogging twice. The loader has to be lubricated again after 50 hours of operation or as a minimum every month. Furthermore the loader has to be lubricated right before a longer period of standstill.

Below is indicated where the central greasing points are connected on the central part of the base.

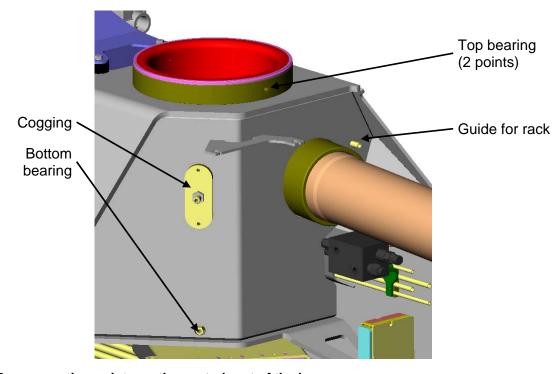


Figure 2 – connection points on the central part of the base.

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Ad. 2) The push rods at the boom and jib cylinders:

Lubricate the loader's push rods at the boom cylinder at the points indicated below. They have to be greased after 250 hours of operation or every third month as a minimum.

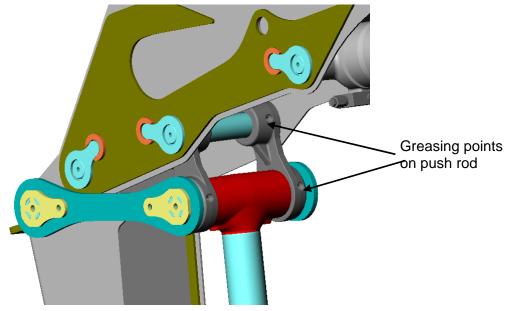


Figure 3 – Greasing points on inner push rods at the boom cylinder Please note:

The 1310-K, 1430-K, 1510-K, 1730-K, 1810-K, 2030-K, 2210-K, 2430-K only have a push rod at the jib cylinder.

Lubricate the loader's outer push rod at the jib cylinder at the points indicated below. They have to be greased after 250 hours of operation or every third month as a minimum.

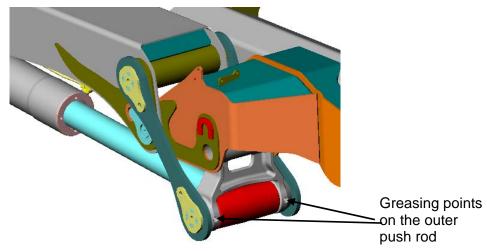


Figure 4 – Greasing points on outer push rod at the jib cylinder

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Ad. 3) Sliding surfaces in the boom system:

Grease the boom system on all surfaces where the bearing slide blocks are running. I.e. grease the extensions externally on the underside and internally on the upper side.

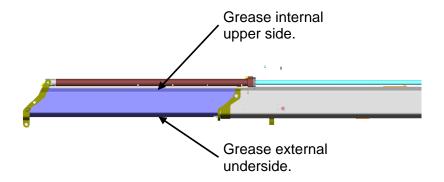


Figure 5 - Boom system with indication of greasing points.

The boom system has to be greased after 100 hours of operation or every month as a minimum. Furthermore the boom system has to be lubricated right before a longer period of standstill.

Service Information, 1800-K/2020-K Change of slewing area Catalogue no. 38 088 210 Section 38 088 210 Date 05-10-2009 1(5) Page 05-10-2009 1(5)

The present instructions are valid for the following loaders:

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1310-K / 1430-K	38 085
1500-K / 1720-K	38 086
1510-K / 1730-K	38 087
1800-K / 2020-K	38 088
1810-K / 2030-K	38 089
2200-K / 2420-K	38 090
2210-K / 2430-K	38 091

These instructions describe how to change the slewing area of a ready-mounted loader.

Please note that it is more difficult and expensive to change the slewing area, when the loader has already been delivered than if it is a part of the HMF supply.

Workflow:

1. Take off the lubricating brush and the slewing sensor (- if the loader is equipped with a such). The components are fitted on the side of the central part of the base. Each component is fitted with two (2) x M6 screws.



Figure 1 – Cover for lubricating brush on the side of the central part of the base.

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2. All hoses coming out of the column are removed from the control valve.



Figure 2 – Hose connection for control valve

3. Take off the bottom protection plate. The plate is fitted with two (2) x M8 bolts with nuts.



Figure 3 – The underside of the loader with protection plate fitted.

4. Remove the hose clamp fixing the hoses at the protection plate.

Please note:

If there is no marking of the function of each individual hose, this has to be added before disassembling. It should also be marked where the hose clamp fixes the hoses. This should be done to be able to recreate the correct length of each hose from the hose clamp to the control valve.



Figure 4 – Hose routing through the underside of the column

5. Loosen the hose connection and pull it downwards until the circlip on the bottom of the column is visible and can be reached. The hose connection is fitted by means of four (4) x M8 button head screws. Take off the circlip on the bottom of the column.



Figure 5 – The underside of the loader with protection plate and hose connection removed.

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6. It is now possible to lift up the column and place it again in the new slewing area required.

Please note:

Make sure that the column is free of the top and bottom bearings, when it has been raised approx. 75 mm. We recommend that lifting of the column with boom system is carried out as a two-point lift so that the burden is kept stable when it is no longer supported by the top and bottom bearings. Otherwise bearings, coggings and hose connections may be damaged.

Depending on loader model, we recommend the following lift of the column in connection with change of slewing area:

1300-K - 1730-K Series: 140 mm 1800-K - 2430-K Series: 150 mm

In the picture below, you see a cross-section of the lower part of a column and the central part of a base. You see the column lifted up to the area where the slewing area can be changed. Please note the dirt-repelling recess above the lower column bearing. If the column is lifted too high, it will hit against the rack, if the column with its recess is not tilted away from the rack.

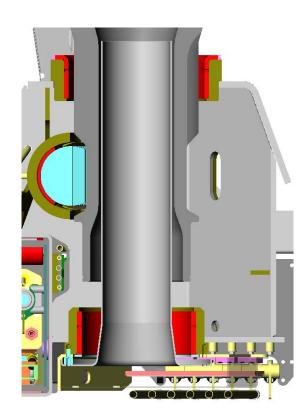


Figure 6 – Picture of the cross-section of the central part of a base with the column lifted.

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Assembling takes place in the opposite order as the items above. Make sure that the hose connections coming out of the column are positioned without the hoses being mutually twisted. This is how to ensure the longest possible life span of the hose routing inside the column.

Before tightening the hose clamp on the protection plate for fixing of hoses, each hose has to be positioned with correct length from the hose clamp to the control valve. This is to ensure that there is enough free hose length inside the column. (- this is used for instance in case of replacement of hoses.). In this connection it may be easiest to carry out the adjustment of the length of the hose by temporarily loosening and lifting the complete kit of hoses through the protection plate at the top of the column. Please see Service Information for replacement of hoses inside the column.

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The present instructions are valid for the following loaders:

Loaders	Catalogue	
1300-K / 1420-K	38 084	
1310-K / 1430-K	38 085	
1500-K / 1720-K	38 086	
1510-K / 1730-K	38 087	
1800-K / 2020-K	38 088	
1810-K / 2030-K	38 089	
2200-K / 2420-K	38 090	
2210-K / 2430-K	38 091	

These instructions describe how to change hydraulic hoses in the column.

Replacement of hoses with internal hose routing inside the column is more demanding than for loader models with hose routing on the outside of the column. However, a longer life span for the internal hose routing and a more functional loader design compensates for this.

In case of urgent repair of hose rupture, carry out emergency repair as described in the Service Information sheet no. 38 0XX 230 – "By-pass hose routing for emergency repair".

If you have problems locating, which one of the hoses that have been damaged, it may be necessary to carry out a separate pressure test for each individual hose.

Procedure:

1. Dismount the hose shield at the top of the column.



Figure 1 – Photo of the upper part of the column with hose shield

2. Lift up the bundle of hoses either by means of a workshop crane or by means of the HMF service tools P/N 82 00 030 (please see spare parts catalogue). When using the service

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tools, fit the threaded pins into the hole plate for the bundle of hoses at the top of the column. Then fit the service tools onto the flange at the top of the column. Thereupon connect the threaded pins to the lifting tools. Dismount the screws at the back of the column holding the hole plate. Then lift the bundle of hoses using the service tools. Now there is access to the hole plate with swivel coupling and hose ends.

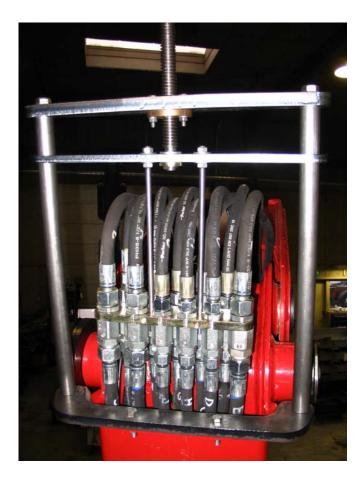


Figure 2 – Photo of the top of the column with the bundle of hoses lifted using the service tools

3. Take off the end of the damaged hose from the swivel coupling on the hole plate. Screw the end of the damaged hose together with the end of the new hose. (In case of limited space under the loader, it may be necessary to pull the new hose through using a string or the like instead of direct connection to the damaged hose. This is because the rigid part next to the connection cannot be turned out into the open at the bottom of the column).

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4. Dismount the protection plate underneath the base.



Figure 3 – Photos of the protection underneath the base with and without protection plate.

- 5. Take off the end of the damaged hose from the control valve.
- 6. Loosen the clamp fixing the hoses at the protection plate to the point where the upper hose end can come through.
- 7. Pull out the damaged hose (- with the new one connected to the upper end) down through the column. Pull the hose from below.
- 8. Connect the hose ends to the swivel coupling on the hole plate as well as to the control valve.
- 9. Tighten the hose clamp and mount the protection plate.
- 10. Lower the hole plate into the column and mount it again. Dismount the service tools.
- 11. Mount the hose shield onto the column again.

In case of hose rupture you have to consider whether you should pull up the entire hose kit and change all hoses fed inside the column instead. One or several of the other hoses may also be worn and need replacement.

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Change hoses led out of the front plate of the column for connection to the boom cylinder in the following way:

- 1. Dismount the hose connection on the load-holding valve on the boom cylinder.
- 2. Take off the nuts on the front plate behind the boom cylinder. (It may appear easier to dismount the lower pin in the boom cylinder and turn it away. The loader must be properly supported before dismounting the pin).
- 3. Dismount both hose connections for the boom cylinder on the control valve.
- 4. Tie the two lowest hose ends together with a string. This string must have a free end of at least 2 metres.
- 5. Pull out the hose kit from the top of the column.

Change the damaged hose, and both of them if necessary. To remount the hose/s, reverse the procedure.



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The present information is valid for the following loaders:

Loaders	Catalogue
1300-K / 1420-K	38 084
1310-K / 1430-K	38 085
1500-K / 1720-K	38 086
1510-K / 1730-K	38 087
1800-K / 2020-K	38 088
1810-K / 2030-K	38 089
2200-K / 2420-K	38 090
2210-K / 2430-K	38 091

This information describes establishing of an emergency hose connection for the loader functions in case of hose rupture on the part of the loader's hose routing that is fed inside the column.

The emergency hose connection can be used until you reach a service point.

The following hoses can be used for emergency purpose:

Hose connection from – to:	Hose no.:
Control valve – Boom "up/down"	00 15 250
Control valve – Jib "extend/retract"	00 17 610
Control valve – Extension "extend" (hole plate on jib)	56 524
Control valve – Extension "retract" (hole plate on jib)	00 17 550
Control valve – Extra valves (hole plate on jib)	00 17 550
Control valve – Winch (hole plate on jib)	56 524

All permanent hose equipment, which is fitted on the loader, appears from the spare parts catalogue of the loader in question.

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By-pass hose routing for emergency repair	Catalogue no.	Section 230
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In the following it is indicated in the photos how the different emergency hoses are fitted.



Figure 1 – Illustration of fitting of the hose loop from the control valve and further onto the loader. Please note the first fixing of the upper end of the hose loop on the boom cylinder as well as hydraulic connection down to the boom cylinder.



Figure 2 – Illustration of the hose routing further up to the connection on the jib cylinder.

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Figure 3 – Illustration of the hose routing further out under the main boom.

Cut off the part of the damaged hose sitting below the main boom. Cut it as far to the back below the boom as you can reach, and take off the part of the hose which is fitted on the hole plate on the jib. Remove the piece of hose.

Instead of mounting by means of cable ties, it may be advantageous to fit the emergency hose under the hose clamp below the boom.

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Lifting yoke for handling of loader	Date 18-03-2009	Page 1(3)

The present instructions are valid for the following loaders:

Loaders	Catalogue	
1300-K / 1420-K	38 084	
1310-K / 1430-K	38 085	
1500-K / 1720-K	38 086	
1510-K / 1730-K	38 087	
1800-K / 2020-K	38 088	
1810-K / 2030-K	38 089	
2200-K / 2420-K	38 090	
2210-K / 2430-K	38 091	

This information serves as instruction for safe internal handling of the loader in case of lifting when moving and mounting it on a truck, etc.

The figure 1 below shows a complete lifting yoke (82 00 010).



Figure 1 - Complete lifting yoke

Spare parts numbers of the lifting yoke parts appear from the spare parts catalogue of the loader in question.

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The figure below shows the positioning of the lifting yoke in connection with lifting.

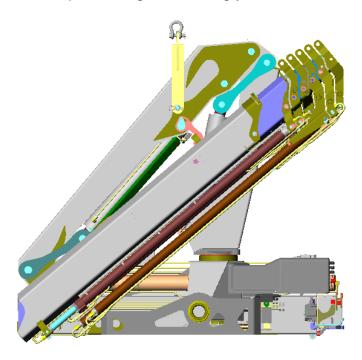


Figure 2 – Loader with lifting yoke seen from the side

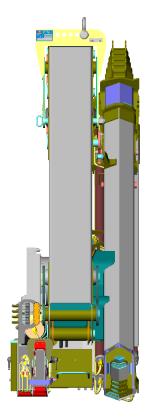


Figure 3 – Loader with lifting yoke seen from the rear.

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Lifting Instructions:

The max. permissible lifting capacity of the lifting yoke is 4.0 t.

The following instructions have to be followed when using the lifting yoke:

- The loader must be locked in stowing position while handling it by means of the lifting yoke. (Locking can take place by fitting of a pin in the stowing bracket or by securing of the main boom to the base).
- The lifting yoke is equipped with a row of holes used for attachment over the centre of gravity of the loader. (cf. figure 3).
- Never lift the loader with a Fly-Jib fitted in the boom system.
- When lifting, always keep at least a 5 metres safety distance from the loader.

The positioning of the centre of gravity of the loader depends on the loader configuration as regards the number of extensions and the equipment, etc. Therefore, the loader may, in certain loader configurations, not be completely in vertical position during lifting. In this connection, please pay attention to the fact that the loader may skid on the surface when it is lifted.