

SEA CRANE

HIAB201-4
(KNUCKLE BOOM CRANE)

**OPERATING MANUAL
& SPARE PARTS LIST**



SEA CRANE

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(KNUCKLE BOOM CRANE)

OPERATING MANUAL



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1. Foreword

This operator's manual for Hiab201-4 teaches you the right way to operate and maintain your sea crane.

Therefore it is very important that you read this operator's manual before you start using the crane.

The manual gives you a short description of the crane as well as some instructions and maintenance advice. To give the crane a long life you should always follow this instructions.

For maintenance, in excess of greasing and simpler repairs which you easily can do by yourself, you should consult your Hiab dealer or service center which has trained personnel.

We reserve the right that without advance notice change data and equipment as well as maintenance procedures.

2. Safety instruction

- Before operating the crane, a basic knowledge of the operation and safety measures of the crane must be acquired.
- During operation, unauthorized person should keep out of the working area of the crane.
- Loading and unloading below or in the vicinity of any kind of electric cables or wires is highly dangerous and must never be permitted.
- Never exceed the maximum capacity given on the crane capacity plate. The load chart shows the lifting capacity including the attachment.
- Never swing until the load is clear of the ground.
- Never walk or stand below a suspended load.
- Do not push or pull with the crane which may cause damage to the crane.
- Make sure that put the crane in parking position if not use.
- For safety handling of the load

The curves on the load diagram indicate the maximum lifting capacity of your crane at certain outreach/height. If the load is handled beyond the reach/height indicated on the diagram, the boom system will drop slowly. Before handling a certain load, it is important to check on the diagram in which range your crane is capable to handle the load. During the operation, do not increase the outreach beyond this range. If the crane capacity at a certain outreach has been mistaken/exceeded, resulting in boom drop, you should quickly shorten the outreach to get the load within correct range.

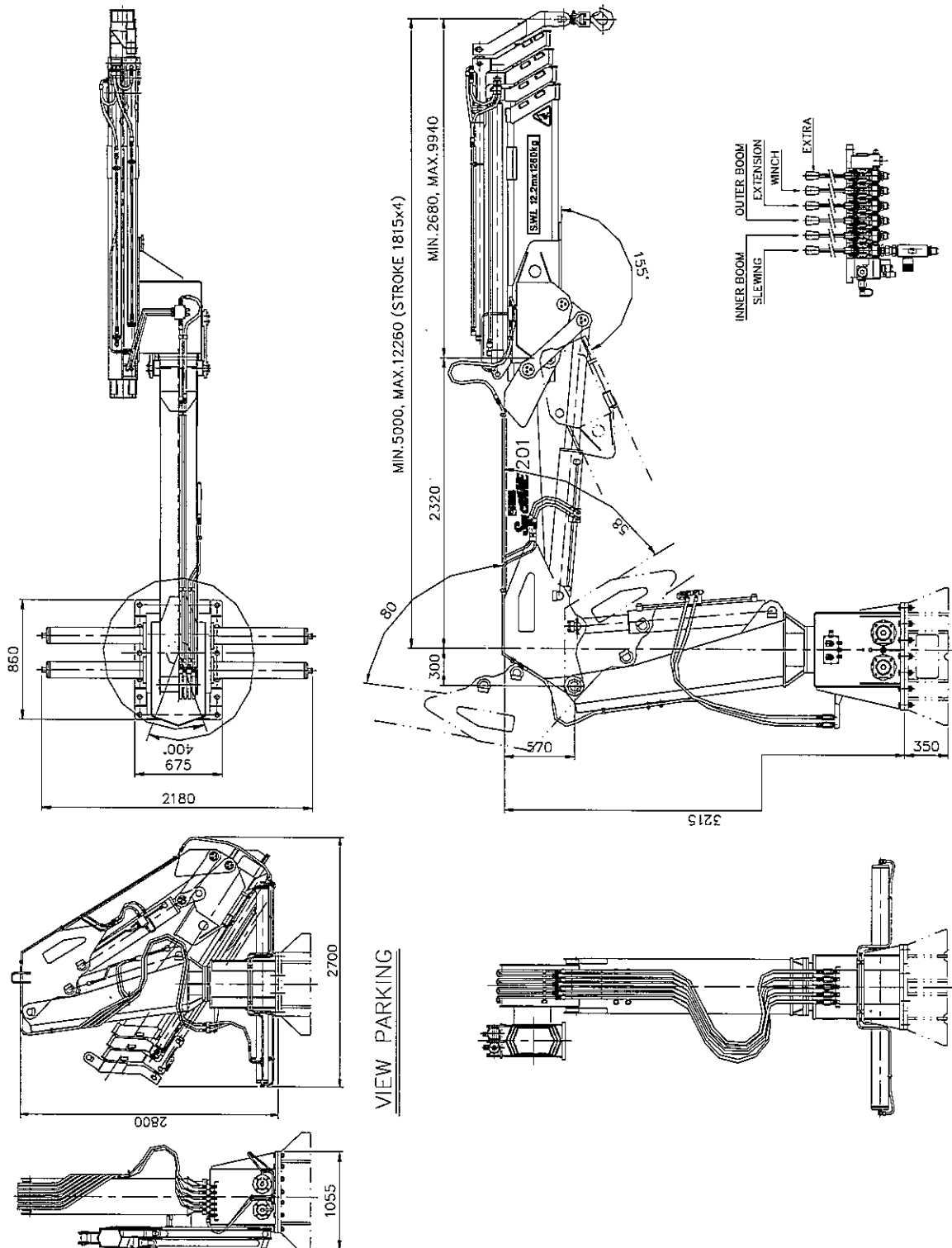
3. Technical description

3 - 1 Specification

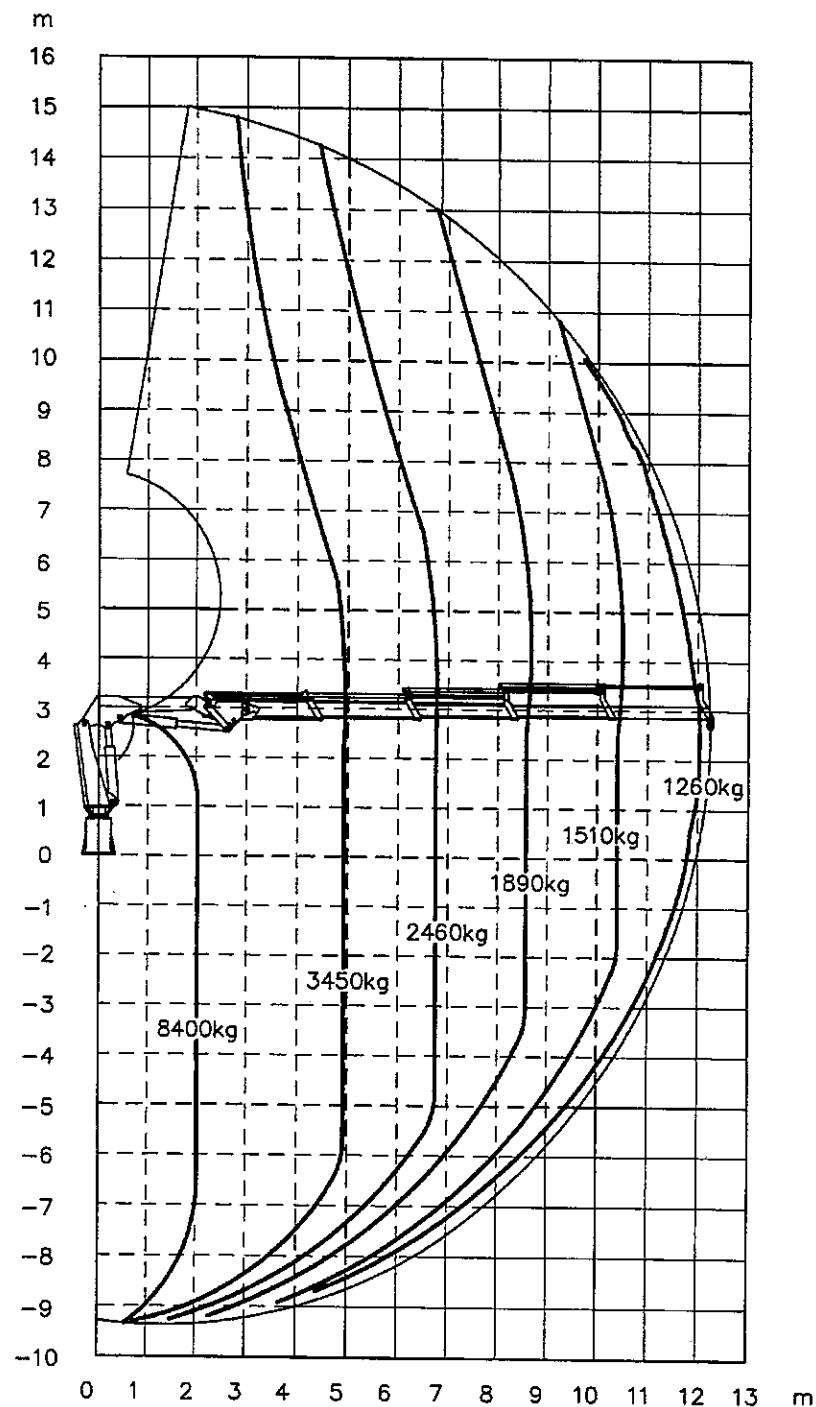
Items		Specifications	Remarks
Lifting capacity, max.		169kN-m	
Hydraulic outreach, standard		12.2m	From slewing center
Outreach – Lifting capacity		5.0m – 3,450kg	
		6.8m – 2,460kg	
		8.6m – 1,890kg	
		10.4m – 1,510kg	
		12.2m – 1,260kg	
Swing	Lange	400 ° Limited	
	Speed	1.2 rpm	
	Slope	5° of Heel & 2° of Trim	
Boom	Lifting range	-58 ° ~80 °	
	Lifting speed	0.84 m/sec	
Hoist	Load	-	
	Speed	-	
	Wire Rope	-	
Recommended oil flow		40 ℓ /min	
Working pressure		25 MPa	(250bar)
Height in folded position		2,800mm	
Width in folded position		2,700mm	
Weight in standard version		3,050kg	

We reserve the right that without advance notice change data and equipment as well as maintenance procedures.

3 - 2 Outline view

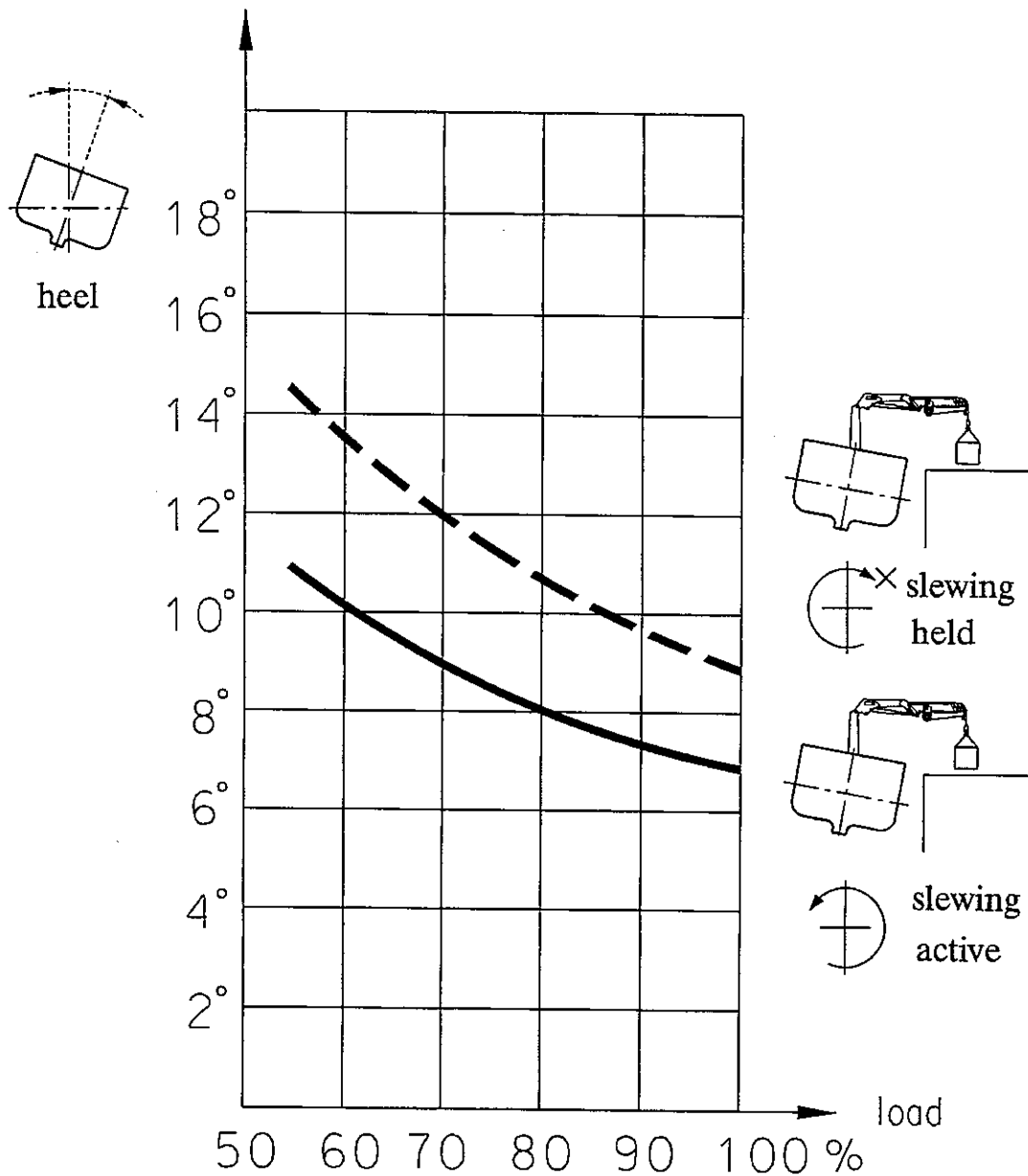


3 - 3 Load diagram & Working range diagram



The load indicated to the right of the curve can be handled with any loader function provided that the positions of the booms are optimized from a force point of view. The load shown above includes the weight of winch and hook.

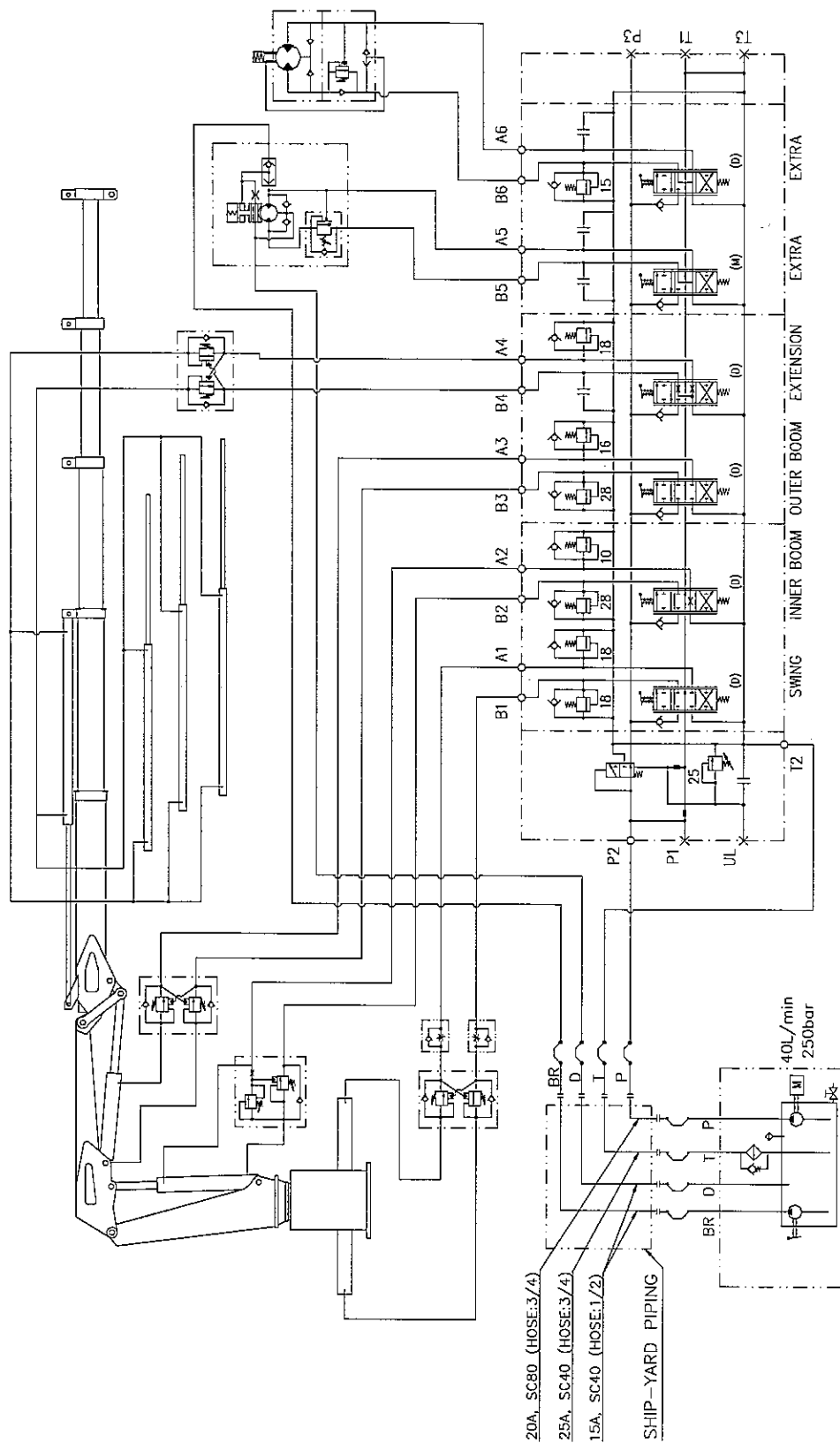
3 - 4 Slewing diagram



Controlable load under heel. In % of max load.

- Slewing active
- - - - - Slewing held

3 - 6 Hydraulic diagram



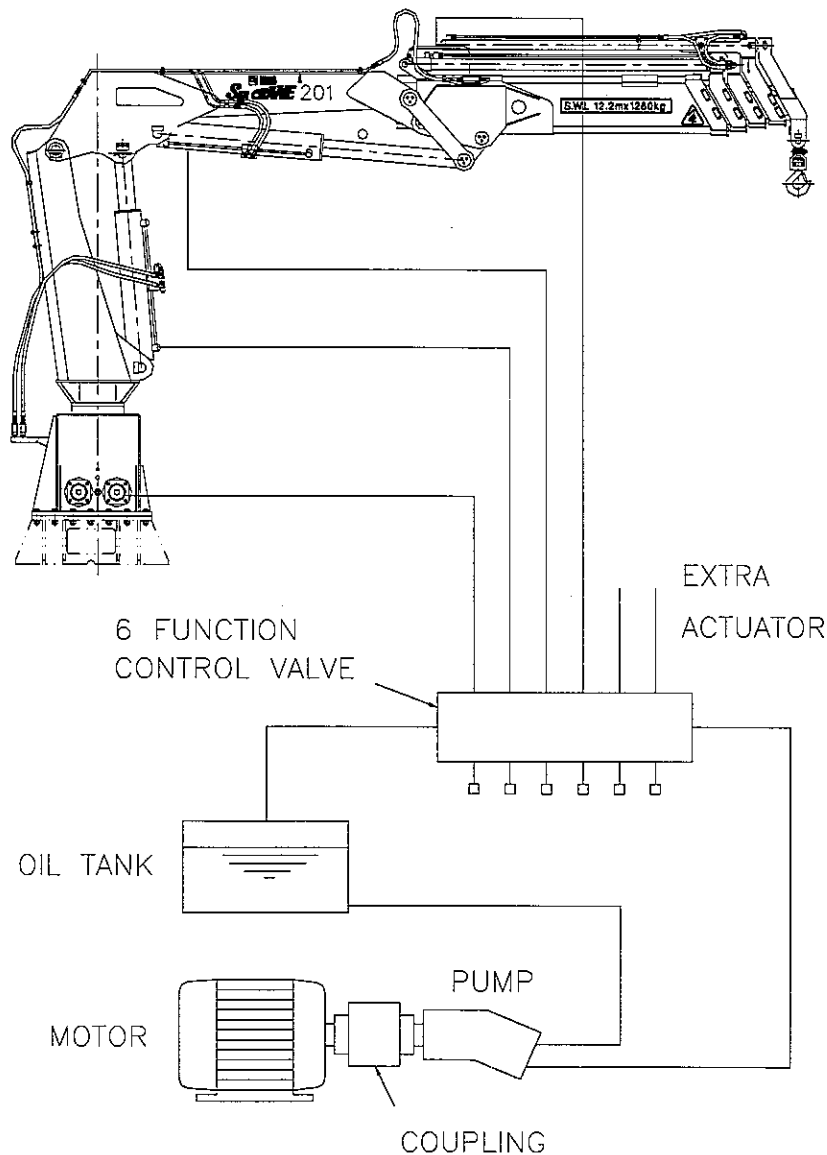
The numbers marked in each port are relief valve setting pressure in MPa. (1MPa \approx 10kg/cm²)

4. General description

4 - 1 Basic operation principle

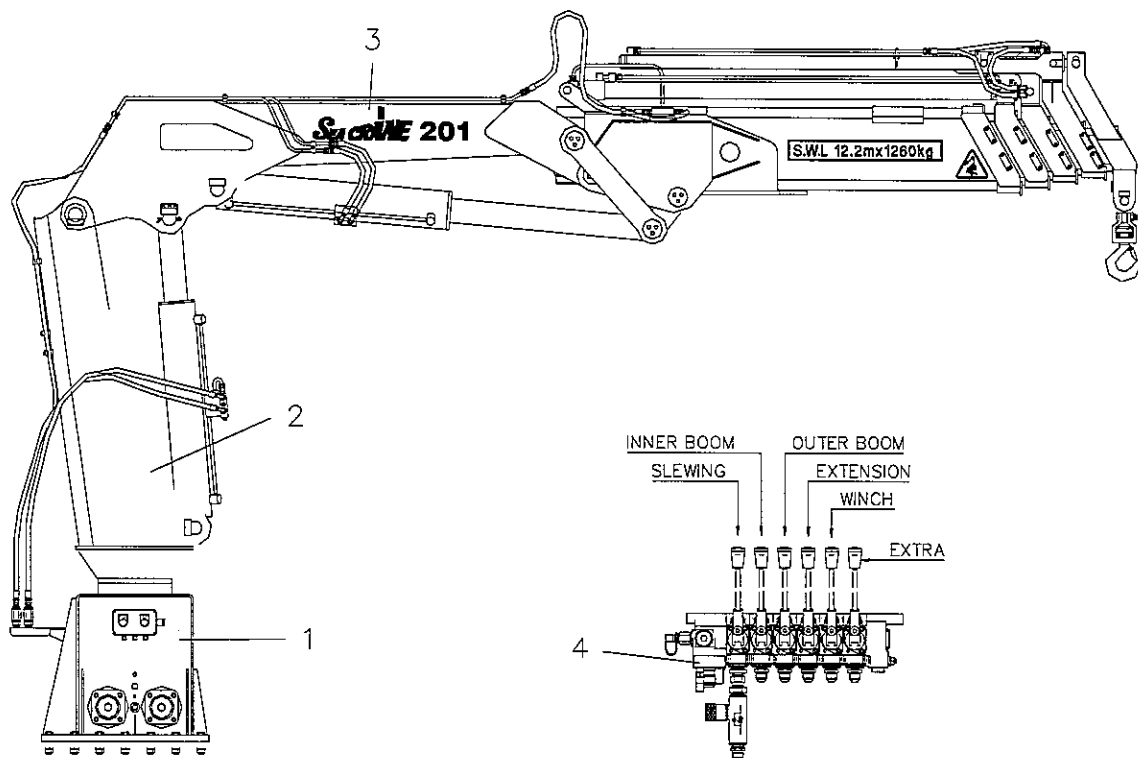
Hiab 201-4 crane consists of steel structures and hydraulic components.

The required power source for crane operation comes from the hydraulic pump giving high pressure hydraulic oil. This high pressure oil operates the cylinders and motors through the control valve and returns to the oil tank.



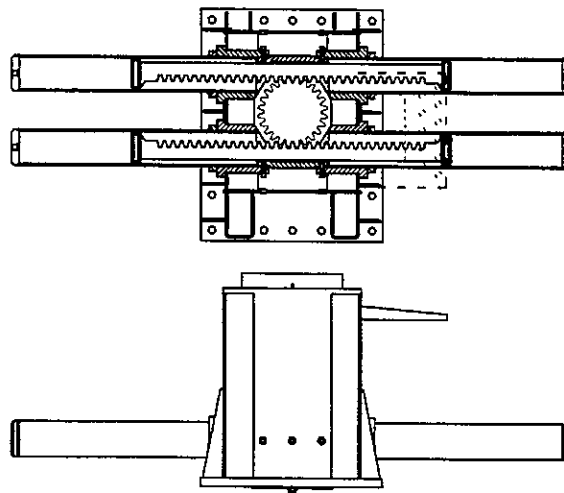
4 - 2 Main components

- 1) Base
- 2) Column (Post)
- 3) Boom system
- 4) Control valve



1) Base

The base is connected with the column structure and consists of welded housing and double swing rack. The swing is double rack and pinion type providing high swing torque. It works in an oil bath which serves efficient lubrication.

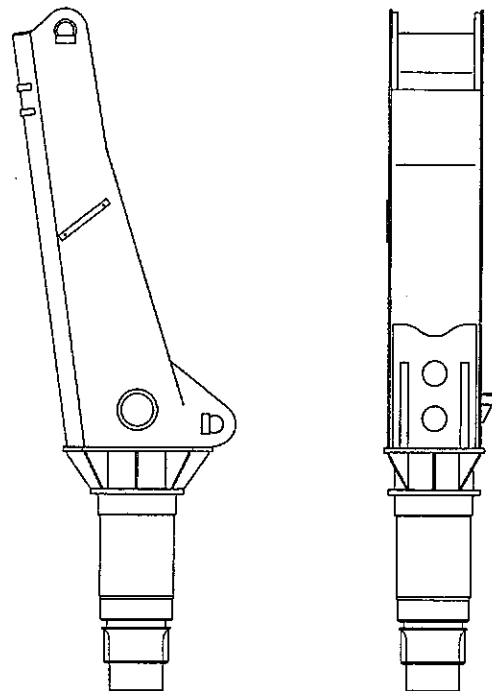


2) Column

The column is connected with the base and boom system. The post is a closed welded box design with opening through which the hydraulic hoses pass to the boom system.

The column is supported by an upper and a lower bronze bearing.

The pinion is a part of the column.

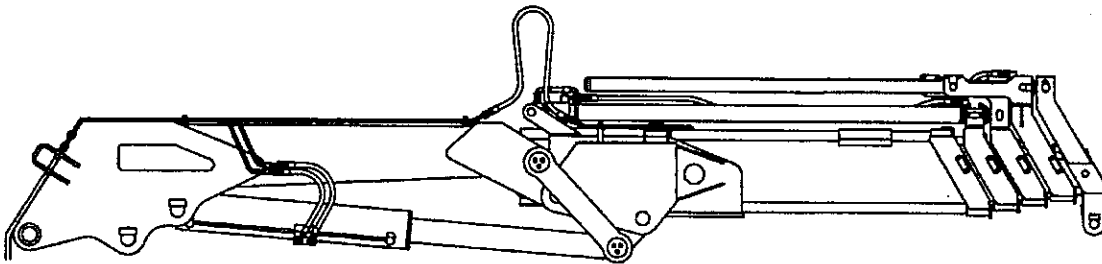


3) Boom system

The boom system consists of an inner boom, an outer boom, four(4) hydraulic extension booms and hydraulic cylinders moving each boom. The outer and extension booms are of weight saving, self guiding hexagonal sections.

The cylinders are provided with counter balance valves for holding load and optimal security when the hoses are ruptured.

The extension cylinders are on top of the outer boom and have journals so that they can follow the booms' deflection.



4) Control Valve

The crane is equipped with 6-function main control valve.

Main control of the crane: slewing, inner boom, outer boom, extension boom, winch, extra.

Main control valve is equipped with built-in main relief and port relief valves shown in the hydraulic diagram, which ensure that the crane can not lift in excess of the designed load chart.

There is a motor spool on the 5th function for winch

5. Operation

5 - 1 Procedure for opening the crane from the stowed position

- 1) Start the hydraulic unit & push the power button on panel.
- 2) Lift the outer boom until it clears the parking support on the outside of the post. To do this, push the control lever for the outer boom.
- 3) Raise the inner boom. The crane is now ready for use.

5 - 2 Procedure for parking the crane.

- 1) Slew the crane so that the boom system is parallel to the slewing cylinders. The parking indicator marks the correct position.
- 2) Retract the extension fully.
- 3) Fold the outer boom as far as it goes under the inner boom
- 4) Lower the inner boom onto the parking support
- 5) Lower the outer boom onto the parking support on the post.
- 6) Switch off the hydraulic unit

(note) Always stow the crane as above when not in use. If the crane has to be stowed in any other way, e. g. on the deck of a ship, the following additional points apply :

- The exposed piston rods of the cylinders must be protected with grease.
- The boom must be secured against lateral movement.

We recommend the crane be run at least once a day if it has to be parked with cylinder surface exposed. Unless this is done regularly, salt crystals settling out from the marine environment on the piston rod will wear out the seals of the cylinders.

5 - 3 Starting up in cold weather

When the crane is started up in cold weather, the wear on the hydraulic system, particularly on the pump, is greater than in normal operating temperatures. In order to minimize wear, the crane should be started as follows:

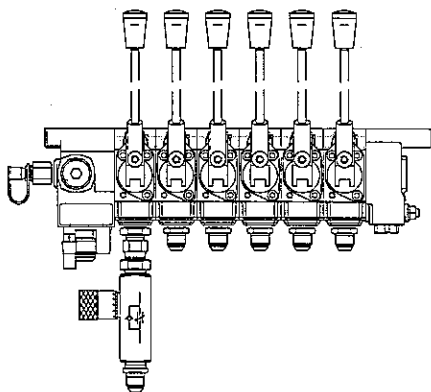
- 1) Leave the oil to circulate for 10 to 15 minutes.

Don't touch any of levers.

- 2) Raise the crane from the parked position as described earlier.

- 2) The crane is now ready for use.

5 - 4 Operation of crane



Control valve has 6 levers for operating crane.

Please refer to below chart explaining the function of each lever.

No.	Operated components	Pull	Push
1	Slewing	Counter clockwise	Clockwise
2	Inner boom	Up	Down
3	Outer boom	Up	Down
4	Extension	Retracting	Extending
5	Winch	Hoisting	Lowering
6	Extra	-	-

6. Maintenance

6 - 1 Preventive service

The following describes the services and maintenance which are needed to keep the crane in service and in good order. These points must be checked regularly, and adjustments must be carried out as necessary. Before the crane left our factory, every valve in hydraulic system and every other part of the crane was thoroughly tested and properly adjusted. Servicing and any subsequent adjustment that is necessary must be carried out by a competent person.

Daily inspection

- Check the oil level in the hydraulic oil tank
- Inspect the lines, connections and other components of the hydraulic system in order to detect any oil leakage
- Check the ropes, rope clamps, rope guides and the other attachments used with the crane to ensure that they are free from damage
- Check that the crane can be operated with ease and that the control levers automatically return to their neutral position
- Check that the rest of the crane is free from damage
- Repair at once any part or component of the crane that is damaged

Monthly Inspection & Maintenance

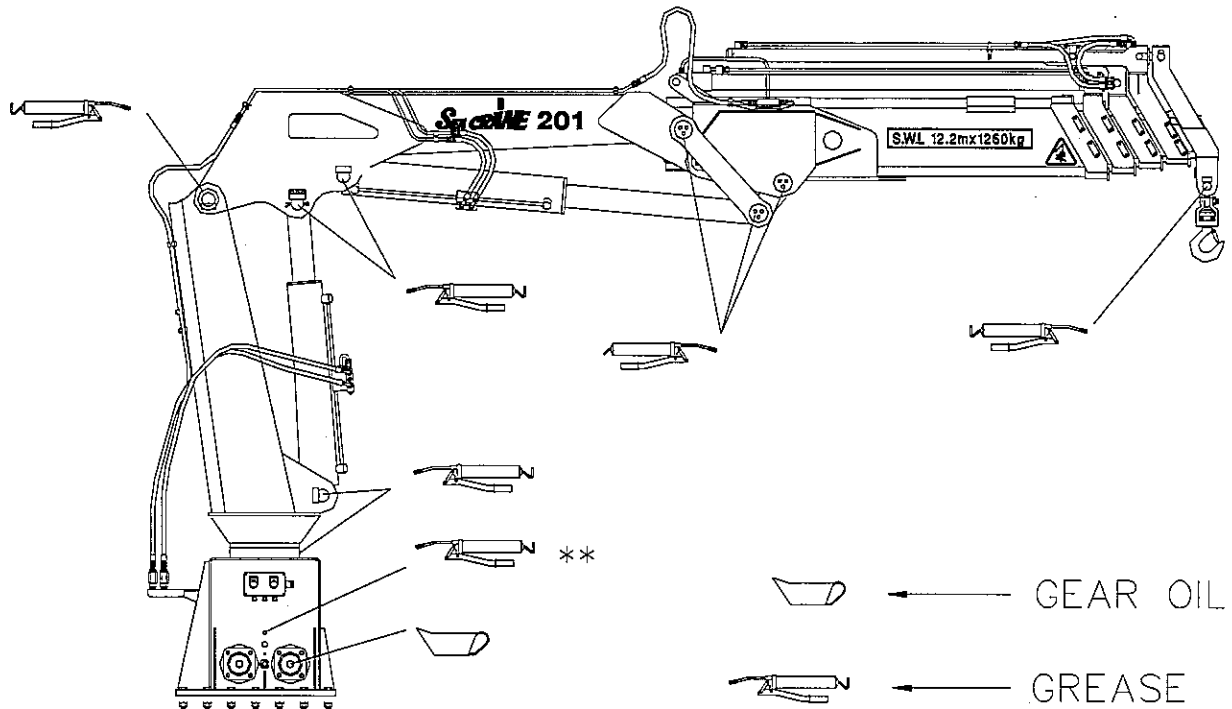
- Check pressure settings and lead seal
 - Check for oil leakage
 - Check and advance screwed connections
 - Check and advance the attachment bolts of the crane
 - Check and advance hose and pipe couplings
 - Check catches and other locking devices
 - Check the functions and lever symbols of control levers
 - Check hooks, ropes and chains, and any other lifting gear that is used
 - Check that all the prescribed notices are in place
 - Carry out a visual inspection of structural parts to detect any deformation, play in joints. etc.
 - Clean or replace filters
 - Check oil levels and lubrication in accordance with the lubrication chart in the manual
 - Put the crane through test-running and test-loading, and listen for any suspicious noises
-
- Notice : Operate the crane at least twice a month to circulate the hydraulic oil even it is out of use.

Annual Maintenance

- Clean up the external.
- Check & change the hydraulic oil.
- Check & change the oil in slewing housing.

6 - 2 Lubrication chart

Good performance and trouble-free operation of the crane depends a great deal on service. For this reason, always follow the recommendation on the lubrication chart.



Recommendable grease (or equivalents)

- Shell Alvania grease EP2
- Mobil Mobilux EP2
- Esso Uniway EP2 N
- Castrol Spheerol EP2

Recommendable gear oil (or equivalents)

- Shell Spirax AX 80W-90
- Mobil Mobilube HD Plus 80W-90
- Esso Gear oil GX 80W/90
- Castrol EPX 80W/90

Note : ** marked grease.

Loosen the plug by L-wrench before injection grease

6 - 3 Hydraulic oil changing

Check the level in the tank every day. The oil level must be visible in the sight glass. At this check, the crane must be in parked position. Top up with hydraulic oil if necessary.

Hydraulic oil becomes contaminated in time, and malfunctions may begin to appear in the hydraulic system. You should therefore change the hydraulic oil at least once a year.

After changing the oil, you must operate all the hydraulic functions of the crane through their full range. The reason for this is to expel any air that is present, which would otherwise destroy the seals in the hydraulic system.

Always bear in mind that trouble can be minimized by having a clean hydraulic system. For this reason, keep the surroundings clean whenever you have to work inside the hydraulic system.

When changing the oil, change the filters at the same time.

The hydraulic system and the hydraulic fluid are matched in respect of lubricating performance, effect on the seals and other materials, and non-inflammability. For this reason, do not mix different types of hydraulic fluid, such as mineral oils, synthetic fluids and water-based fluids, and never adulterate your hydraulic fluid with diesel oil or alcohol-based products.

Recommendable oil(or equivalents)

- Shell Tellus oil T 46
- Mobil DTE 15M
- Esso Unavis N 46
- Castrol Hyspin AWH-M 46

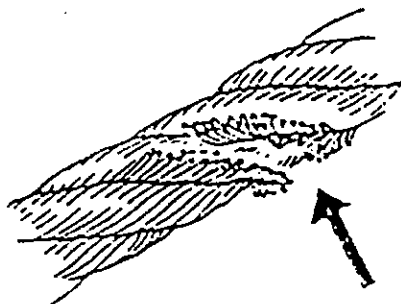
6 – 4 Winch rope

The winch rope must be regularly cleaned and greased for maximum life, bearing in mind that the rope is subject to wear and to heavy stresses which set a limit of its service life. It is good practice to replace the rope at regular intervals by a new one. The gradual wear and unravelling of the rope is difficult to detect and to gauge.

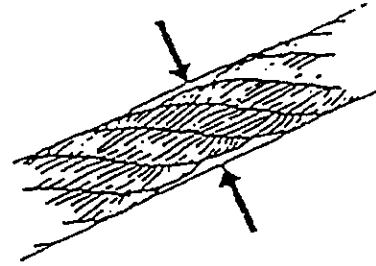
However, the following safety rules applying to winch ropes can be followed.

The winch rope must be changed as soon as any of the following occur;

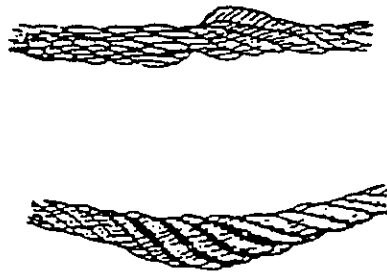
- 1) When 5 % of wires in any length of ten rope diameters are broken, worn or corroded



2) When visible changes occur in the diameter (more than 7 %) of the winch rope in comparison with the normal stretching and diameter reduction of a newly fitted rope



3) The rope develops kinks or a heavy spiral twist



Lubricating a winch rope

When the rope is used for a long period it becomes dry, which gives rise to rapid wear and to rust attacks. Accordingly, it is necessary to lubricate or grease the rope at regular intervals.

Lubrication must be carried out as follows:

- Clean dust and dirt off the rope and wipe it dry
 - Apply an appropriate amount of a recommended lubricant with a brush, rag or similar implement.
- Be sure that only a rope lubricant is used.

7. Anti two block system

7 - 1 Anti two block system

- When hook hit the limit switch, send signal to solenoid.
Then wire rope up and extending boom were stopped in order to prevent over-winding.



HIAB201-4

(KNUCKLE BOOM CRANE)

SPARE PARTS LIST



INSTRUCTION

This spare parts catalogue has several main divisions each embracing a main component group, where you can find easily the necessary part.

Each drawing is followed by the corresponding written material.

Parts shown in the drawings are numbers by position starting from 1, drawings are numbered as;

(page numbering)

HIAB201-4	7	:	0	
.....				Edition
.....				Page
.....				Model no.

The position number is listed with written part number, description, quantity and specification/remarks.

When ordering spare parts, please inform ;

1. Model no.
2. Page numbering
3. Part number & description
4. Quantity
5. Your complete address

This spare parts catalogue can be changed without prior notice and will be informed accordingly.

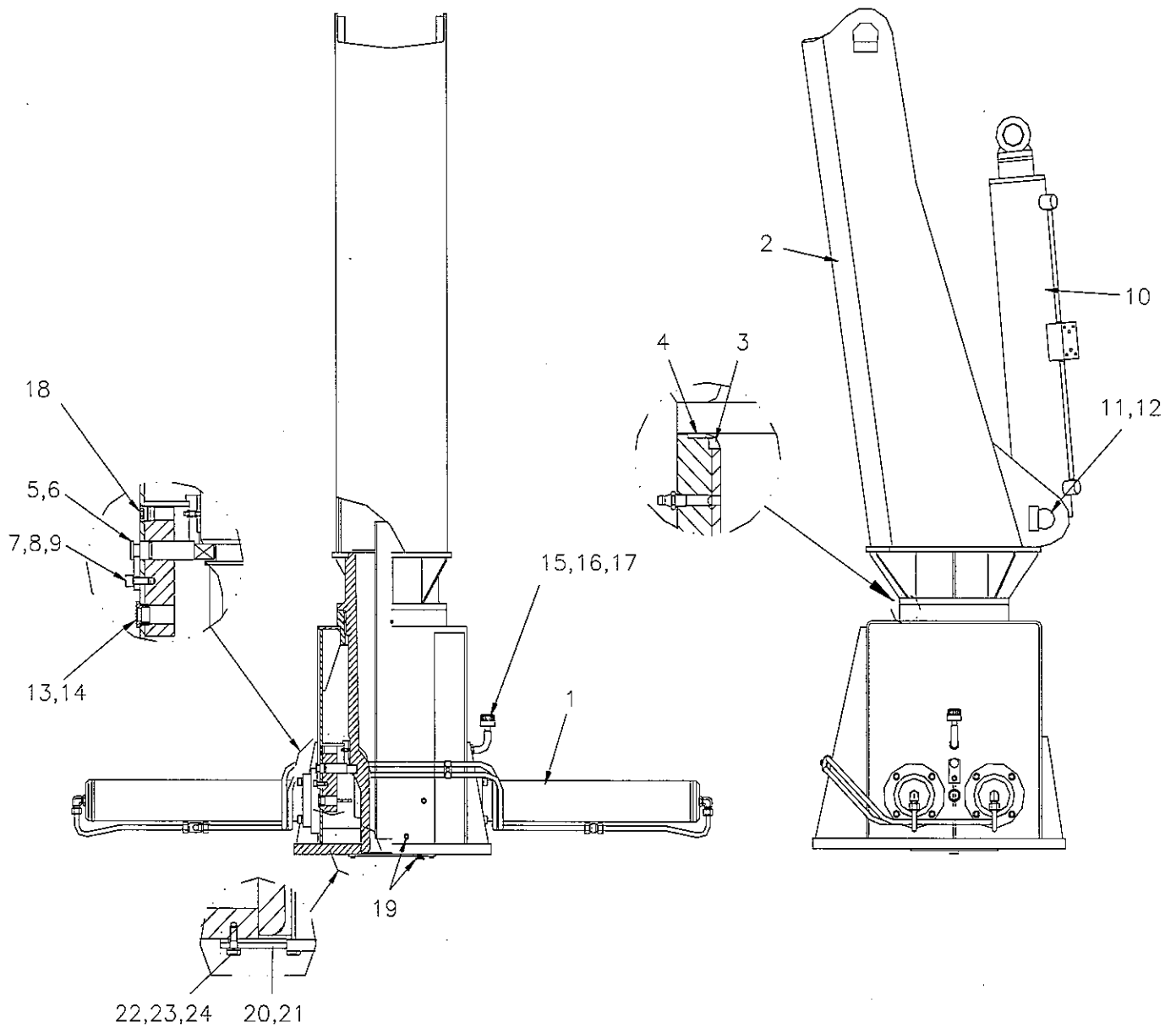
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SECTION 1.1 - BASE & COLUMN ASS'Y

BASE & COLUMN ASS'Y

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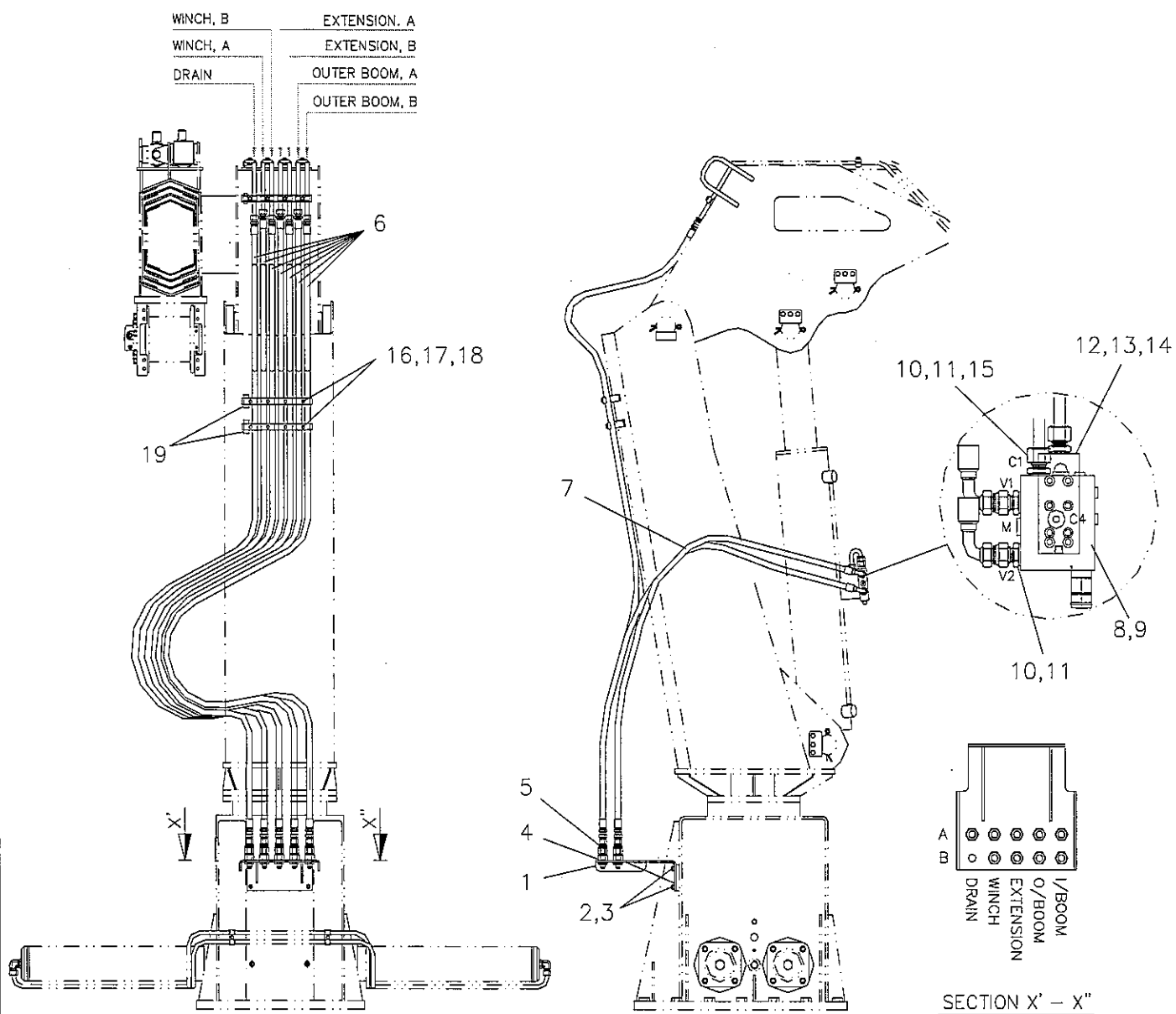
SECTION 1.1 - BASE & COLUMN ASS'Y

BASE & COLUMN ASS'Y				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	A02-2922	BASE ASS'Y	
2	1	A02-2334	COLUMN	
3	1	6011162	O-RING	1B P315
4	1	BC-5001	PAD, SLIDE	t5
5	1	BC-5101	SHAFT	Φ28×142
6	1	6012252	O-RING	1B G25
7	1	BC-0003	STOPPER	t10
8	1	3612128	WASHER, SPRING	WS12
9	1	2611508	BOLT, HEX. S/H	BB12×25
10	1	H01-2363	CYLINDER, I/B	DC
11	1	BC-5004	SHAFT	Φ70×302
12	1	1311951	PIN, SPLIT	PW10×110
13	1	BA-0005	PLUG, LEVEL	PF1"
14	1	6010332	O-RING	1B P29
15	1	8260108	ADAPTOR	PT3/4×PT1/2
16	1	S01-4276	PIPE-L	PT1/2×PT3/8
17	1	S01-1683	BREATHER, AIR	PT3/8
18	2	S01-4237	PLUG, PT	PT3/4
19	2	S01-4223	PLUG, PT	PT1/2
20	1	A05-3282	COVER, BOTTOM	
21	1	BC-5106	GASKET	t5
22	12	BA-0082	SPACER	Φ10×t1.0
23	12	3612088	WASHER, SPRING	WS8
24	12	2110888	BOLT, HEX. HEAD	BA8×25

SECTION 2.1 - HOSES, COLUMN

HOSES, COLUMN

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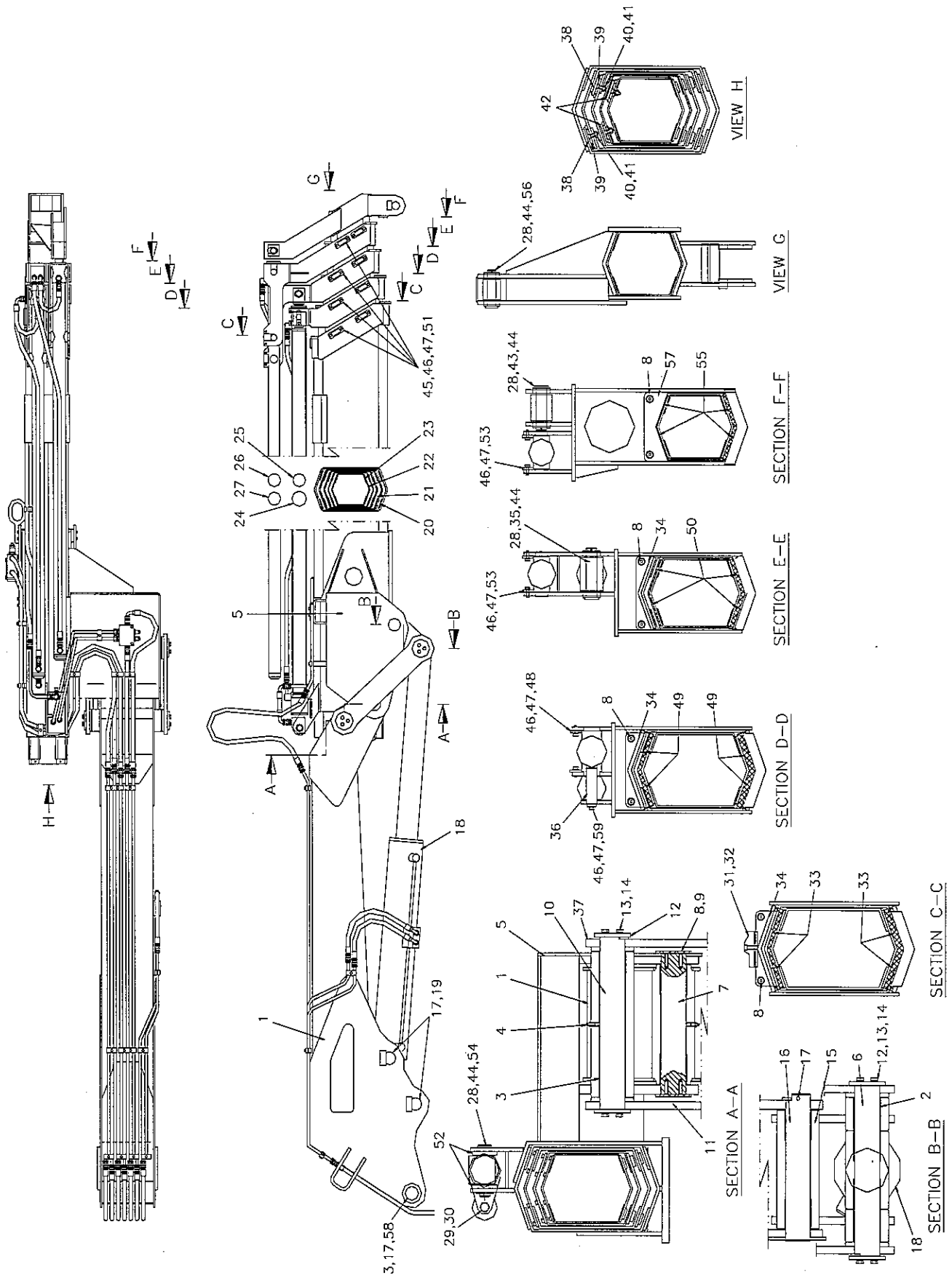
SECTION 2.1 - HOSES, COLUMN

HOSES, COLUMN					00
Pos.	Q'ty	Part No.	Description	Remarks	
1	1	M05-4105	BRACKET	t4.5	
2	4	2611188	BOLT, HEX. S/HEAD	BB10×20	
3	4	3612108	WASHER, SPRING	WS10	
4	9	S01-2989	ADAPTOR, BULKHEAD	PF1/2×UNF3/4	
5	9	497 8943	HOUSING, SWIVEL	PF1/2×UNF3/4	
6	7	H01-5265	HOSE, H.P (HMFJU)	3/8×4100-3/4UNF	
7	2	H01-5266	HOSE, H.P (HEJU)	3/8×3600-3/4UNF	
8	1	985 2352	LOAD HOLDING VALVE	31MPa	
9	4	2610968	BOLT, HEX. S/HEAD	BB8×50	
10	4	6800081	WASHER, SPRING	NF1/2	
11	4	9521048	NIPPLE, PF UNF	PF1/2×UNF3/4	
12	1	M01-1487	BLOCK		
13	4	2611018	BOLT, HEX. S/HEAD	BB8×75	
14	2	6010172	O-RING	P14	
15	1	H01-5264	PIPE, HYDRAULIC	Φ12×t1.5	
16	16	319 7336	CLAMP, HOSE	3/8"	
17	8	2115948	BOLT, HEX. HEAD	BA8×40	
18	8	3612088	WASHER, SPRING	WS8	
19	2	M01-3457	SPACER	3/8"	

SECTION 3.1 - BOOM SYSTEM

BOOM SYSTEM

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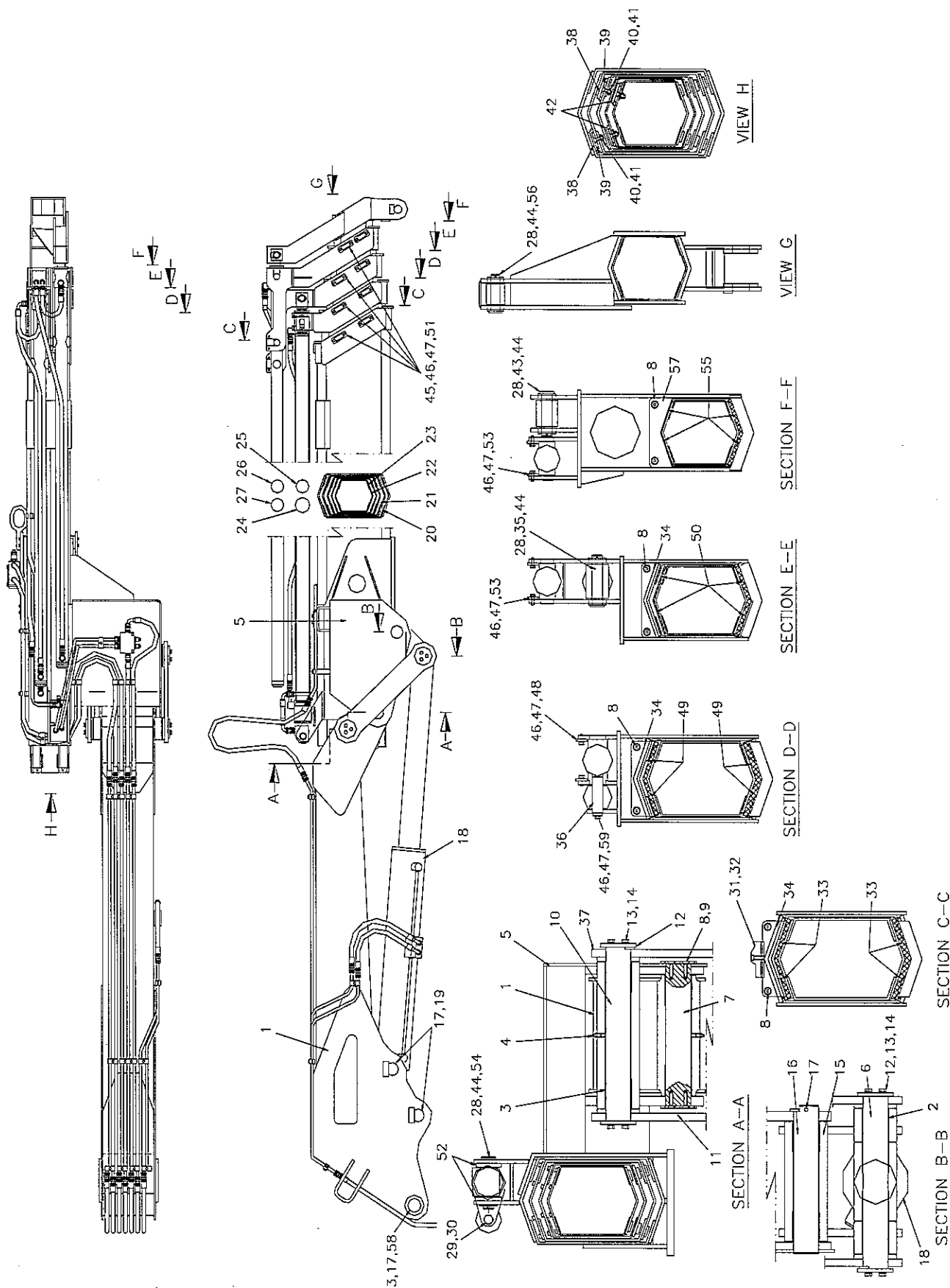
SECTION 3.1 - BOOM SYSTEM

BOOM SYSTEM				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	A02-2335	INNER BOOM	
2	2	4325551	BUSHING, DX	PM8080DX
3	8	4325511	BUSHING, DX	PM7080DX
4	3	4610708	NIPPLE, GREASE	A-PT1/8
5	1	A02-2936	BOOM, OUTER	
6	1	BO-5038	SHAFT	Φ80×461
7	1	BO-5003	SHAFT	Φ70×375
8	12	BO-0005	BOLT, FLAT HEAD	M10×35
9	2	BO-5004	PLATE	
10	1	BO-5005	SHAFT	Φ70×461
11	1	BO-5006	LINK, SIDE	
12	4	BO-5008	PLATE	t9
13	12	3612108	WASHER, SPRING	WS10
14	12	2111228	BOLT, HEX. HEAD	BA10×30
15	1	BO-5009	LINK, INNER	
16	1	BO-5014	SHAFT	Φ70×397
17	2	1311951	PIN, SPLIT	PW10×110
18	1	H01-2364	CYLINDER, OUTER BOOM	
19	2	BO-5016	SHAFT	Φ70×324
20	1	A02-2337	BOOM, 1st EXTENSION	
21	1	A02-2076	BOOM, 2nd EXTENSION	
22	1	A02-2077	BOOM, 3rd EXTENSION	
23	1	A02-2078	BOOM, 4th EXTENSION	
24	1	H01-5399	CYLINDER, 1st EXTENSION BOOM	
25	1	H01-5400	CYLINDER, 2nd EXTENSION BOOM	
26	1	H01-5401	CYLINDER, 3rd EXTENSION BOOM	
27	1	H01-5402	CYLINDER, 4th EXTENSION BOOM	
28	4	1310941	PIN, SPLIT	PW4×50
29	1	3612168	WASHER, SPRING	WS16
30	1	BO-0025	BOLT, HEX. HEAD	M16×30

SECTION 3.1 - BOOM SYSTEM

BOOM SYSTEM

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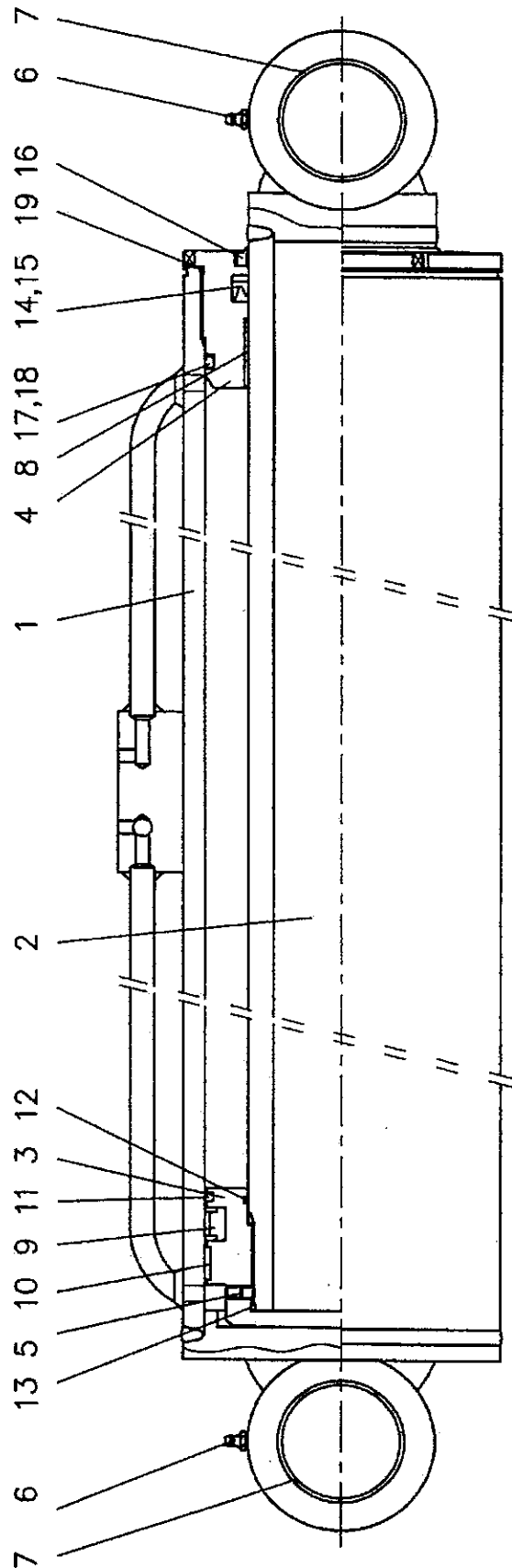
SECTION 3.1 - BOOM SYSTEM

BOOM SYSTEM					00
Pos.	Q'ty	Part No.	Description	Remarks	
31	1	BO-1028	GUIDE, CYLINDER	t28	
32	4	2610908	BOLT, HEX. SOCKET HEAD	BB8×25	
33	4	M01-3447	PAD, SLIDE	t25	
34	3	M05-4149	STOPPER, PAD	t9	
35	1	S01-4356	SHAFT	Φ30×135	
36	1	S01-3197	SHAFT	Φ30×103	
37	1	BO-5007	LINK, SIDE		
38	4	M01-1520	PAD, SLIDE	t17	
39	8	BO-0015	STOPPER	t6	
40	8	2241787	SCREW, MACHINE (C/S)	BC8×20	
41	8	S01-0005	NUT, SELF LOCKING	M8	
42	4	BO-5026	PAD, SLIDE	t12	
43	1	S01-4357	SHAFT	Φ30×115	
44	6	3511308	WASHER, PLAIN	WP30	
45	8	N01-2056	PLATE	t6	
46	34	3612088	WASHER, SPRING	WS8	
47	34	2110888	BOLT, HEX. HEAD	BA8×20	
48	2	M05-2517	STOPPER	t9	
49	4	M01-3448	PAD, SLIDE	t25	
50	4	BO-5030	PAD, SLIDE	t20	
51	16	S01-0766	PAD, SLIDE	t18	
52	2	M01-1254	RING	t11	
53	4	M05-4151	STOPPER	t9	
54	1	S01-4359	SHAFT	Φ30×137	
55	4	BO-1033	PAD, SLIDE	t19	
56	1	S01-4358	SHAFT	Φ30×97	
57	1	M05-4150	STOPPER, PAD	t9	
58	1	TT-5001	SHAFT	Φ70×403	
59	1	BO-0023	STOPPER	t6	

SECTION 4.1 - INNER BOOM CYLINDER

INNER BOOM CYLINDER

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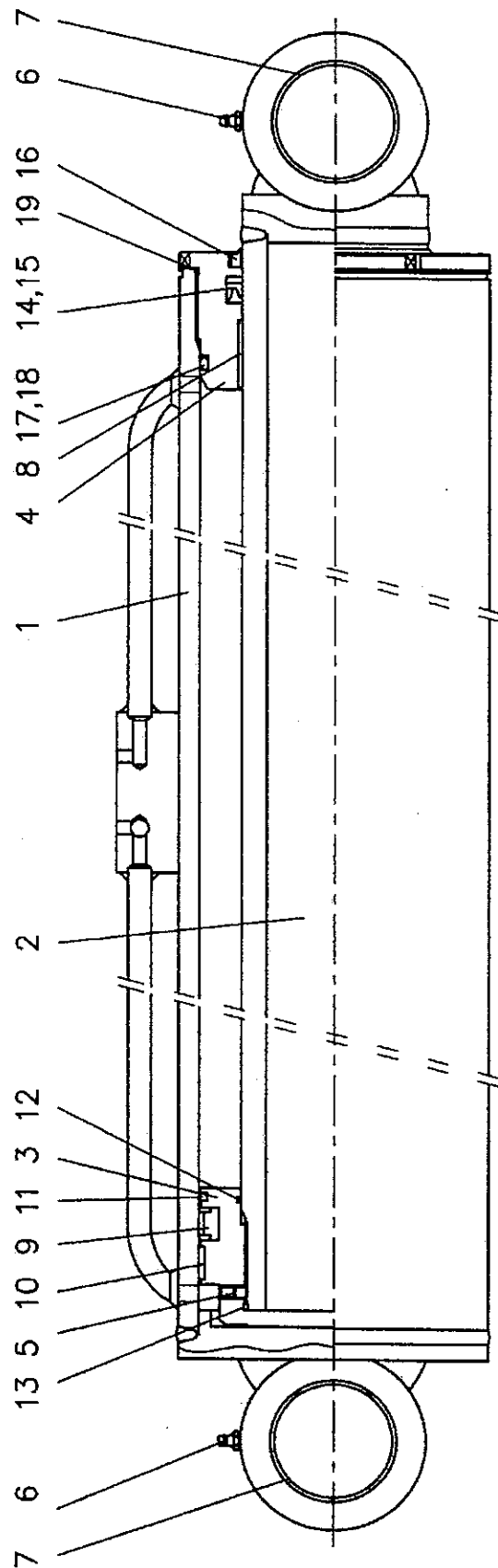
SECTION 4.1 - INNER BOOM CYLINDER

INNER BOOM CYLINDER				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	HN39IB020-01	TUBE ASS'Y	
2	1	HN 56 IB0 20	ROD ASS'Y	
3	1	HN 19 IB0 30	PISTON	
4	1	HN 19 IB0 40	ROD COVER	
5	1	2350456	SCREW	M6×P1.0×8L
6	2	4610702	NIPPLE, GREASE	PT1/8
7	4	4325511	BUSHING, DX	PM7080DX
8	1	N01-3668	BUSHING, DU	MB12040DU
9	1	N01-3669 *	SEAL, PISTON	CTM-160
10	1	S01-1153 *	RING, WEAR	Φ160×Φ153×20w
11	1	N01-3670 *	RING, DUST	Φ160×Φ152×6w
12	1	6012442 *	O-RING	1B G120
13	1	6012422 *	O-RING	1B G110
14	1	6513911 *	U-PACKING	IDI 120
15	1	6037691 *	RING, BACK-UP	Φ120×Φ140×t3
16	1	6112141 *	SEAL, DUST	KWU 120
17	1	6012502 *	O-RING	1B G150
18	1	6035451 *	RING, BACK-UP	Φ150×Φ160×t1.9
19	1	6012492 *	O-RING	1B G145
-	1	S01-1105	KIT, SEAL	PARTS MARKED *

SECTION 5.1 - OUTER BOOM CYLINDER

OUTER BOOM CYLINDER

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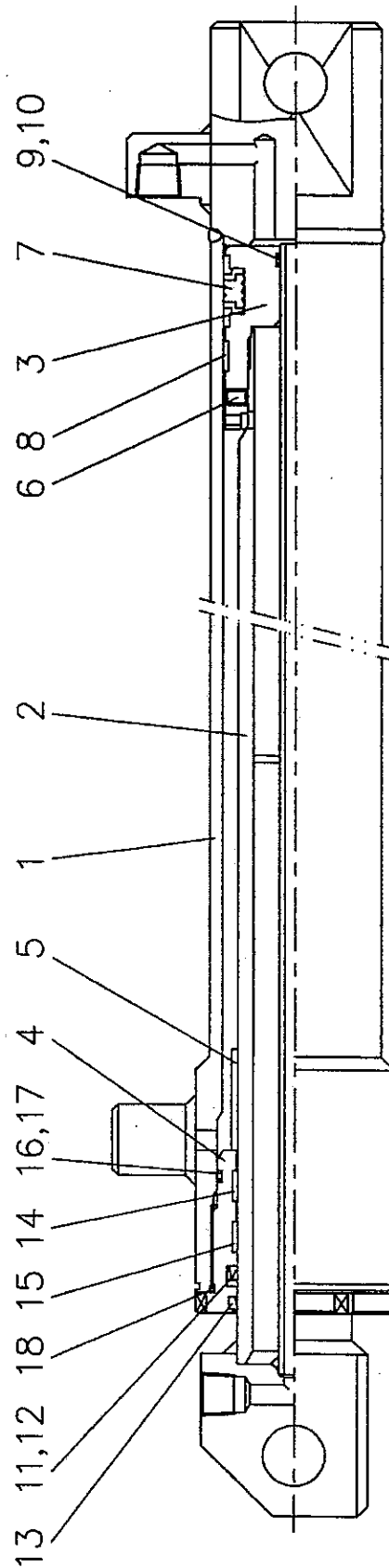
SECTION 5.1 - OUTER BOOM CYLINDER

OUTER BOOM CYLINDER				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	HN39OB020-01	TUBE ASS'Y	
2	1	HN 56 IB0 20	ROD ASS'Y	
3	1	HN 19 IB0 30	PISTON	
4	1	HN 19 IB0 40	ROD COVER	
5	1	2350456	SCREW	M6×P1.0×8L
6	2	4610702	NIPPLE, GREASE	PT1/8
7	2	4325511	BUSHING, DX	PM7080DX
8	1	N01-3668	BUSHING, DU	MB12040DU
9	1	N01-3669 *	SEAL, PISTON	CTM-160
10	1	S01-1153 *	RING, WEAR	Φ160×Φ153×20w
11	1	N01-3670 *	RING, DUST	Φ160×Φ152×20w
12	1	6012442 *	O-RING	1B G120
13	1	6012422 *	O-RING	1B G110
14	1	6513911 *	U-PACKING	ID1 120
15	1	6037691 *	RING, BACK-UP	Φ120×Φ140×t3
16	1	6112141 *	SEAL, DUST	KWU 120
17	1	6012502 *	O-RING	1B G150
18	1	6035451 *	RING, BACK-UP	Φ150×Φ160×t1.9
19	1	6012492 *	O-RING	1B G145
-	1	S01-1105	KIT, SEAL	PARTS MARKED *

SECTION 6.1 - 1st EXTENSION BOOM CYLINDER

1st EXTENSION BOOM CYLINDER

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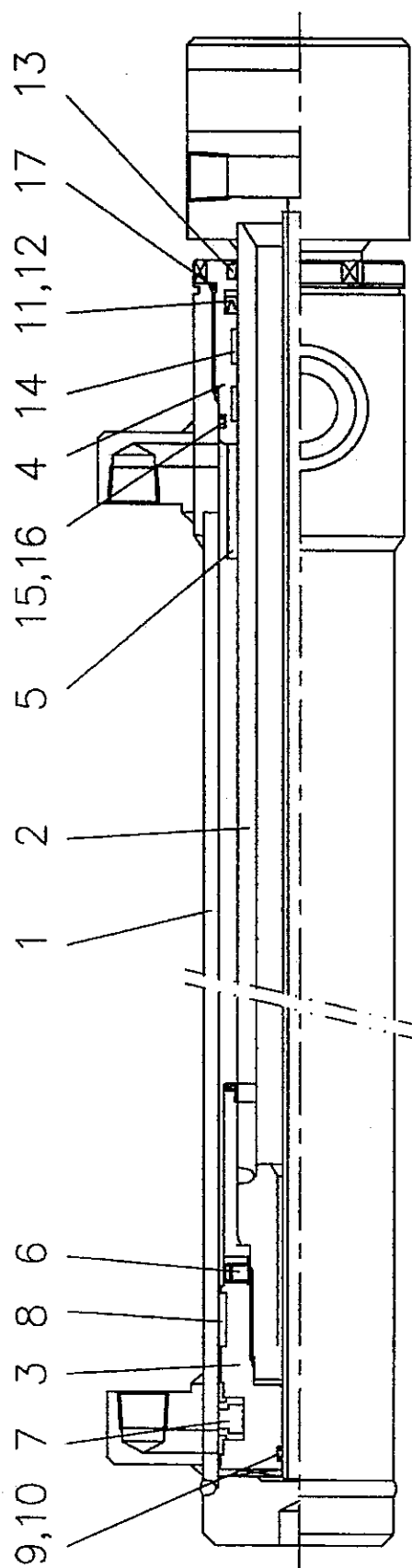
SECTION 6.1 - 1st EXTENSION BOOM CYLINDER

1st EXTENSION BOOM CYLINDER				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	HN 29 E1A 10	TUBE ASS'Y	
2	1	HN 58 E1A 20	ROD ASS'Y	
3	1	HN 29 E10 30	PISTON	
4	1	HN 29 E10 40	ROD COVER	
5	1	HN 29 E10 50	SPACER	
6	2	2350446	SCREW	M6×P1.0×6L
7	2	6211331 *	SEAL, COMPACT	PCB-0A0700-NCRO
8	1	S01-0641 *	RING, WEAR	Φ70×Φ65×15w
9	1	6010172 *	O-RING	1B P14
10	1	6034161 *	RING, BACK-UP	T3 P14
11	1	6513711 *	U-PACKING	ISI 60
12	1	6037141 *	RING, BACK-UP	Φ60×Φ70×t3
13	1	6115671 *	SEAL, DUST	KDD60
14	1	S01-1563 *	RING, WEAR	Φ60×Φ55×10w
15	1	S01-0872 *	RING, WEAR	Φ60×Φ55×15w
16	1	6012342 *	O-RING	1B G70
17	1	6035751 *	RING, BACK-UP	T3 G70
18	1	6012352 *	O-RING	1B G75
-	1	S01-1539	KIT, SEAL	PARTS MARKED *

SECTION 7.1 - 2nd EXTENSION BOOM CYLINDER

2nd EXTENSION BOOM CYLINDER

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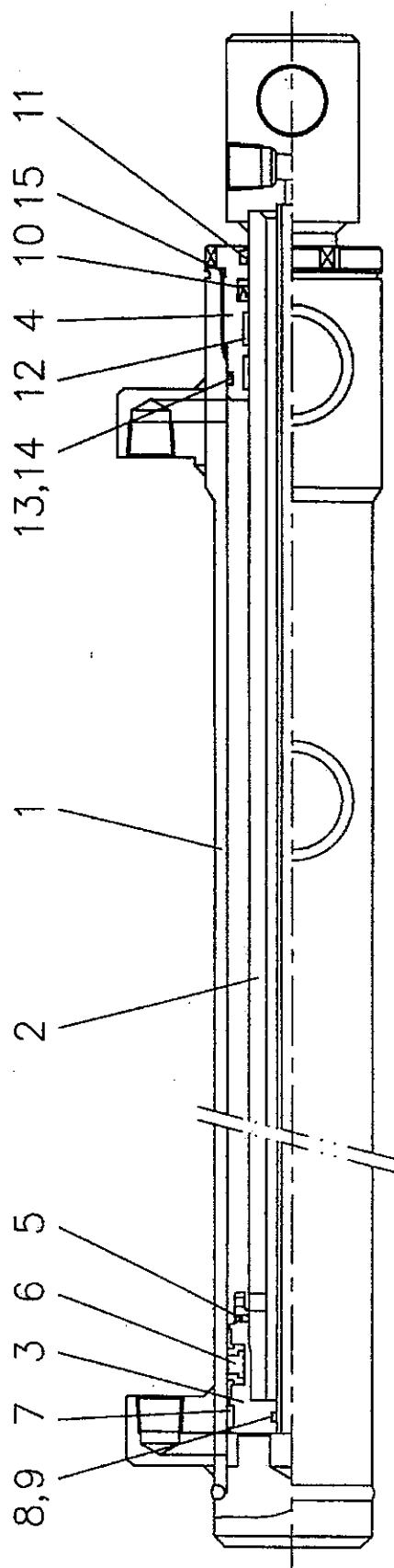
SECTION 7.1 - 2nd EXTENSION BOOM CYLINDER

2nd EXTENSION BOOM CYLINDER				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	HN 58 E2A 10	TUBE ASS'Y	
2	1	HN 58 E2A 20	ROD ASS'Y	
3	1	HN 29 E20 30	PISTON	
4	1	SS 33 T20 50	ROD COVER	
5	1	HN 29 E20 40	SPACER	
6	1	2350446	SCREW	M6×P1.0×6L
7	1	6211321 *	SEAL, COMPACT	PCB-0A0650-NCRO
8	1	S01-0878 *	RING, WEAR	Φ65×Φ60×15w
9	1	6010172 *	O-RING	1B P14
10	2	6034161 *	RING, BACK-UP	T3 P14
11	1	6513671 *	U-PACKING	ISI 50 +B/U
12	1	6115631 *	SEAL, DUST	KDD50
13	1	6037001 *	RING, BACK-UP	Φ50×Φ60×t3
14	2	S01-0877 *	RING, WEAR	Φ50×Φ55×15w
15	1	6012322 *	O-RING	1B G60
16	1	6035731 *	RING, BACK-UP	T3 G60
17	1	6012332 *	O-RING	1B G65
-	1	S01-1540	KIT, SEAL	PARTS MARKED *

SECTION 8.1 - 3rd EXTENSION BOOM CYLINDER

3rd EXTENSION BOOM CYLINDER

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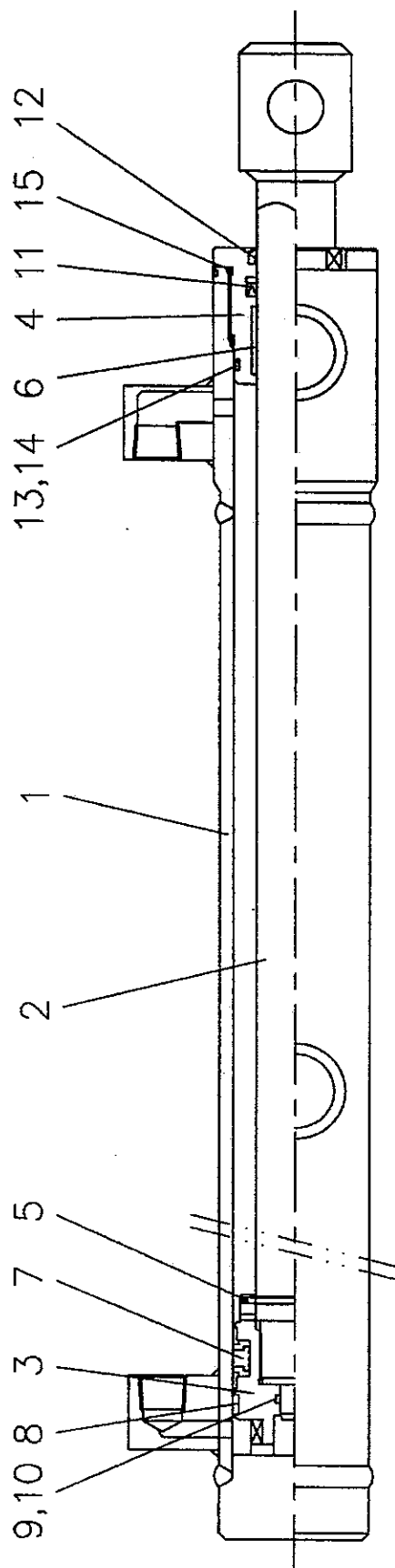
SECTION 8.1 - 3rd EXTENSION BOOM CYLINDER

3rd EXTENSION BOOM CYLINDER				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	HN 58 E3A 10	TUBE ASS'Y	
2	1	HN 58 E3A 20	ROD ASS'Y	
3	1	HN 20 E1A 30	PISTON	
4	1	HN 24 E20 30	ROD COVER	
5	1	2350456	SCREW	M6×P1.0×6L
6	1	6211261 *	SEAL, COMPACT	PCB-1A0600-NCRO
7	1	S01-0636 *	RING, WEAR	Φ60×Φ54×8w
8	1	6010172 *	O-RING	1B P14
9	2	6034161 *	RING, BACK-UP	T2 P14
10	1	S01-2678 *	U-PACKING	NI-300
11	1	6115611 *	SEAL, DUST	KDD40
12	2	S01-1564 *	RING, WEAR	Φ40×Φ45×20w
13	1	6012312 *	O-RING	1B G55
14	1	6035721 *	RING, BACK-UP	T3 G55
15	1	6012322 *	O-RING	1B G60
-	1	S01-1541	KIT, SEAL	PARTS MARKED *

SECTION 9.1 - 4th EXTENSION BOOM CYLINDER

4th EXTENSION BOOM CYLINDER

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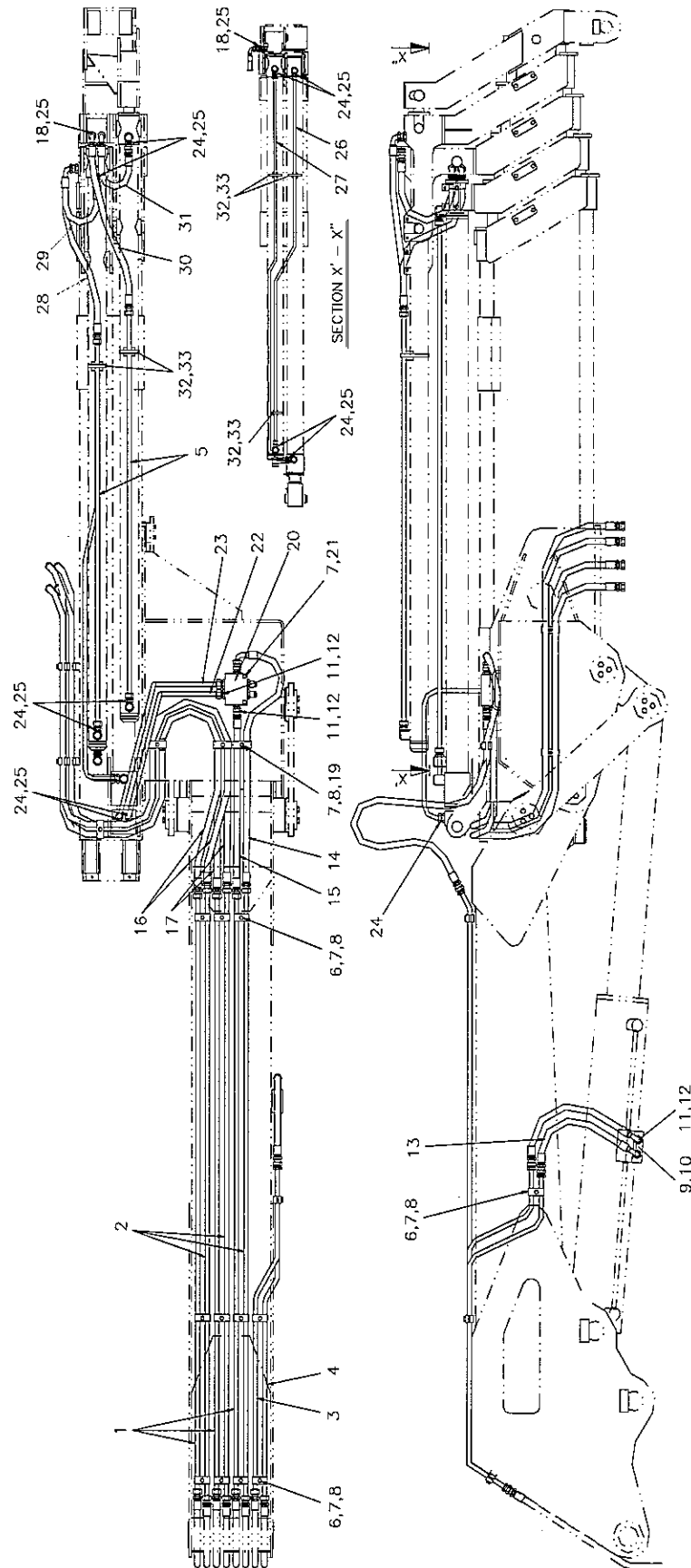
SECTION 9.1 - 4th EXTENSION BOOM CYLINDER

4th EXTENSION BOOM CYLINDER				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	HN 58 E4A 10	TUBE ASS'Y	
2	1	HN 58 E4A 20	ROD ASS'Y	
3	1	HN 46 E20 30	PISTON	
4	1	HN 58 E40 40	ROD COVER	
5	1	2350456	SCREW	M6×P1.0×6L
6	1	4321041 *	BUSH, DU	
7	1	6211231 *	SEAL, COMPACT	PCB-1A0550-NCRO
8	1	S01-0894 *	RING, WEAR	Φ50×Φ55×8w
9	1	6010172 *	O-RING	1B P14
10	2	6032161 *	RING, BACK-UP	T2 P14
11	1	S01-2155 *	PACKING, ROD	NI-300
12	1	6115591 *	SEAL, DUST	KDD35
13	1	6012312 *	O-RING	1B G55
14	1	6035721 *	RING, BACK-UP	T3 G55
15	1	6012322 *	O-RING	1B G60
-	1	S01-2744	KIT, SEAL	PARTS MARKED *

SECTION 10.1 - BOOM HOSE & PIPE

BOOM HOSE & PIPE

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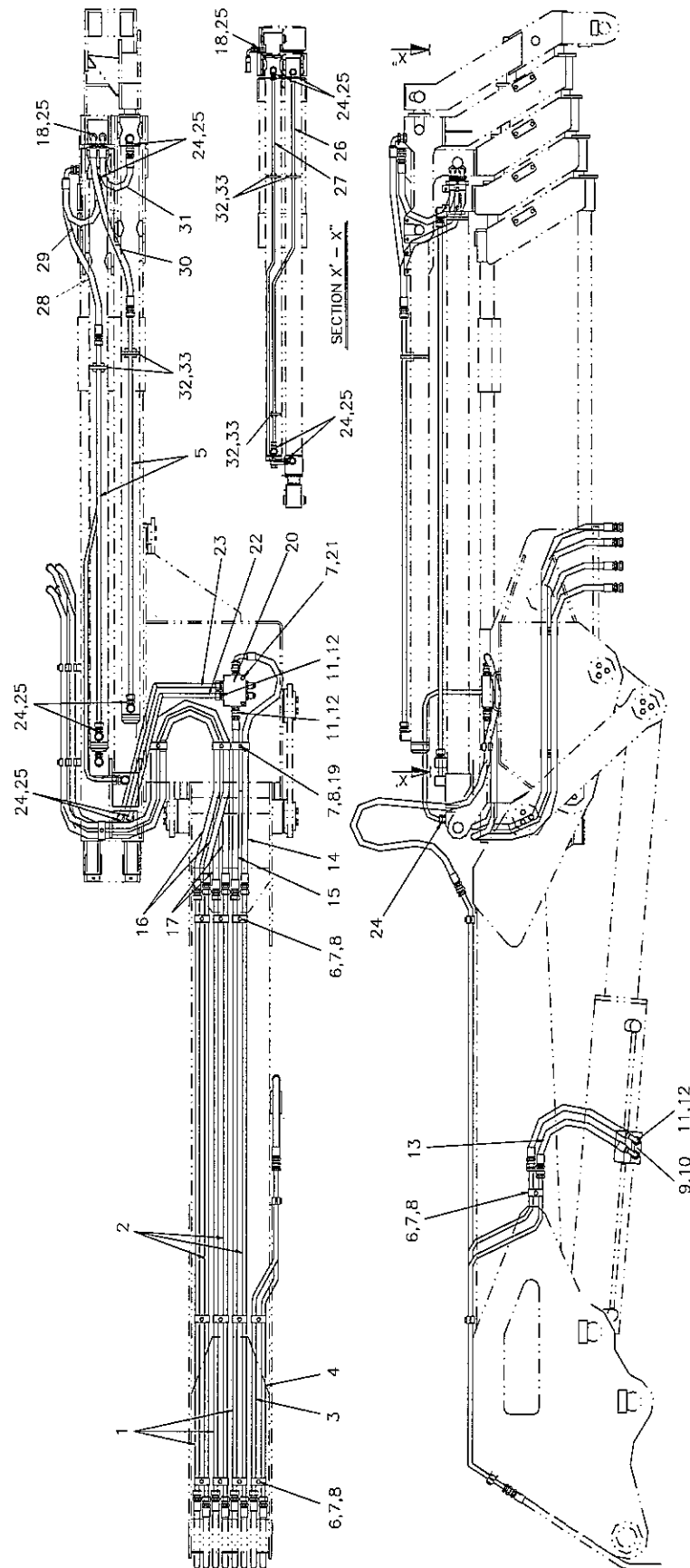
SECTION 10.1 - BOOM HOSE & PIPE

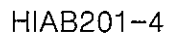
BOOM HOSE & PIPE					00
Pos.	Q'ty	Part No.	Description	Remarks	
1	3	H01-5444	PIPE, HYDRAULIC	Φ12×t1.5	
2	3	H01-5445	PIPE, HYDRAULIC	Φ12×t1.5	
3	1	H01-5275	PIPE, HYDRAULIC	Φ12×t1.5	
4	1	H01-5276	PIPE, HYDRAULIC	Φ12×t1.5	
5	2	H01-5448	PIPE, HYDRAULIC	Φ12×t1.5	
6	24	S01-4269	CLAMP, PIPE	Φ10-Φ16	
7	24	3612088	WASHER, SPRING	WS8	
8	22	2115948	BOLT, HEX. HEAD	BA8×40	
9	1	H02-0227	VALVE, COUNTER/B	DOUBLE	
10	4	2615998	BOLT, HEX. S/HEAD	BB8×60	
11	6	6010172	O-RING	1B P14	
12	6	9520038	NIPPLE, PF JIC	PF3/8×3/4UNF	
13	2	H01-5277	HOSE, H.P (HEMFJU)	3/8×900-3/4UNF	
14	1	7590548	HOSE, H.P (HEMFJU)	3/8×1600-3/4UNF	
15	1	7536888	HOSE, H.P (HEMFJU)	3/8×1200-3/4UNF	
16	2	7537508	HOSE, H.P (HEMFJU)	3/8×3500-3/4UNF	
17	2	7537488	HOSE, H.P (HEMFJU)	3/8×3400-3/4UNF	
18	4	S01-2962	NIPPLE, PF JIC LONG	PF1/2-3/4UNF	
19	18	319 7336	CLAMP, HOSE	3/8	
20	1	CS-1227	VALVE, COUNTER/B	DOUBLE	
21	2	2115968	BOLT, HEX. HEAD	BA8×50	
22	1	H01-5278	PIPE, HYDRAULIC	Φ12×t1.5	
23	1	H01-5279	PIPE, HYDRAULIC	Φ12×t1.5	
24	10	9521048	NIPPLE, PF JIC	PF1/2-3/4UNF	
25	14	6800081	WASHER, SEALING	NF1/2	
26	1	H01-5446	PIPE, HYDRAULIC	Φ12×t1.5	
27	1	H01-5447	PIPE, HYDRAULIC	Φ12×t1.5	
28	1	7590148	HOSE, H.P (HEMFJU)	3/8×600-3/4UNF	
29	1	7569108	HOSE, H.P (HEJU)	3/8×500-3/4UNF	
30	1	7590108	HOSE, H.P (HEMFJU)	3/8×500-3/4UNF	

SECTION 10.1 - BOOM HOSE & PIPE

BOOM HOSE & PIPE

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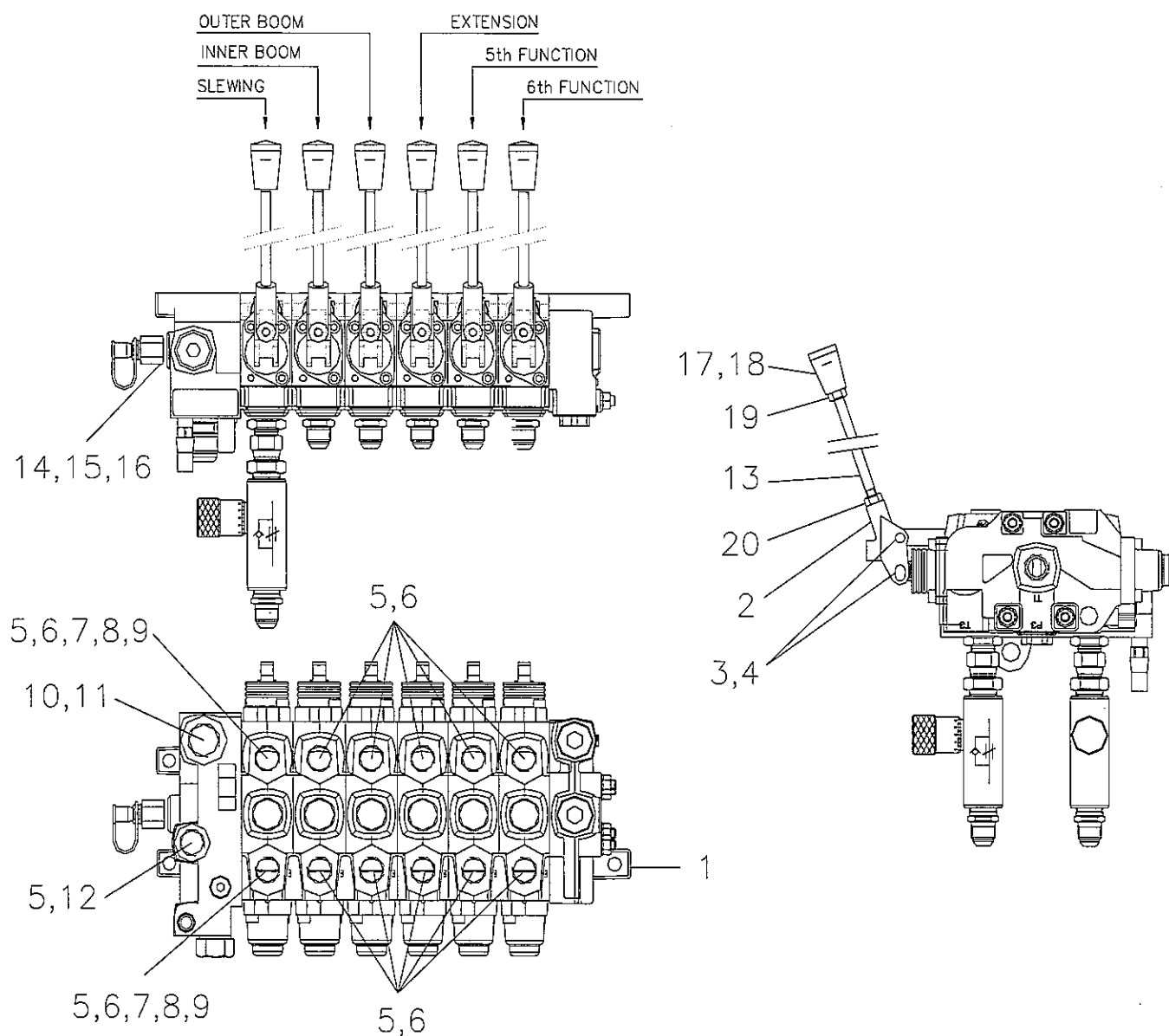


BOOM HOSE & PIPE				00
Pos.	Q'ty	Part No.	Description	Remarks
31	1	7569088	HOSE, H.P (HEJU)	3/8×450-3/4UNF
32	5	350 6495	SUPPORT	
33	5	7811081	CLAMP, HOSE	CH66

SECTION 11.1 - CONTROL SYSTEM

CONTROL SYSTEM

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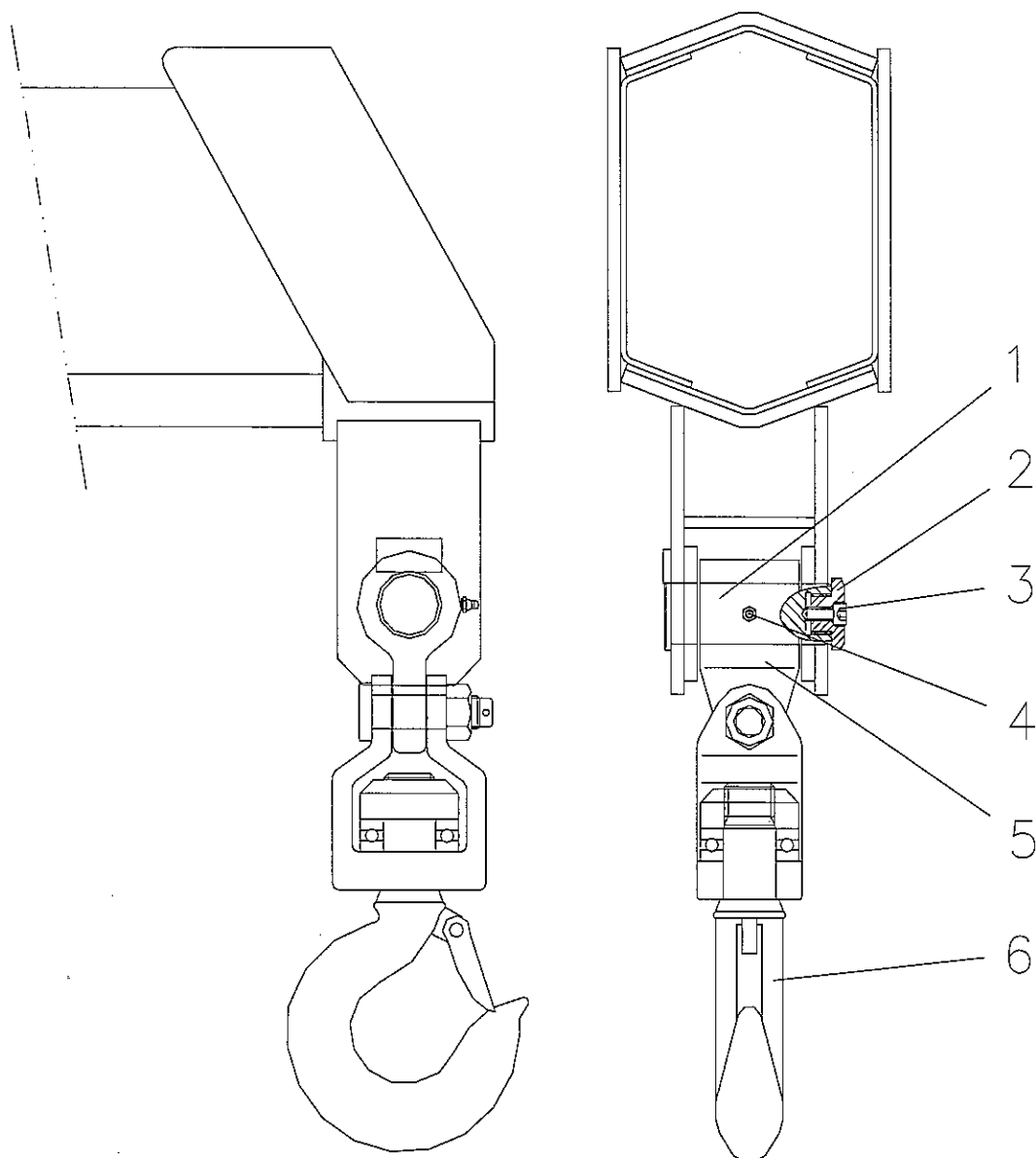
SECTION 11.1 - CONTROL SYSTEM

CONTROL SYSTEM					00
Pos.	Q'ty	Part No.	Description	Remarks	
1	1	H02-0523	VALVE, HYDRAULIC	V80M-6	
2	6	S01-3177	LINK, LEVER	MP3	
3	12	S01-3178	PIN	Φ8×22	
4	12	S01-3179	CIRCLIP	Φ8	
5	13	6800081	WASHER, SEALING	NF1/2	
6	12	9521048	NIPPLE, PF JIC	PF1/2 3/4-16UNF	
7	2	S01-3008	NIPPLE, SWIVEL JIC	PT1/2 3/4-16UNF	
8	2	CS-7026	VALVE, FLOW CONTROL	F800	
9	2	9511508	NIPPLE, PT JIC	PT1/2 3/4-16UNF	
10	1	6800121	WASHER, SEALING	NF3/4	
11	1	9521078	NIPPLE, PF JIC	PF3/4 1 1/16-12UNF	
12	1	9521058	NIPPLE, PF JIC	PF1/2 7/8-14UNF	
13	6	M01-1474	BAR, LEVER	Φ10	
14	1	6800041	WASHER, SEALING	NF1/4	
15	1	9270758	NIPPLE, PF HOSE FEMAIL	PF1/4×PF1/8	
16	1	S01-1255	NIPPLE, GAUGE	TEMA PF1/8	
17	1	S01-0048	KNOB	RED	
18	5	S01-0047	KNOB	BLACK	
19	6	3113108	NUT, HEX.	NA10	
20	6	3113088	NUT, HEX.	NA8	

SECTION 12.1 - ATTACHMENT, HOOK

ATTACHMENT, HOOK

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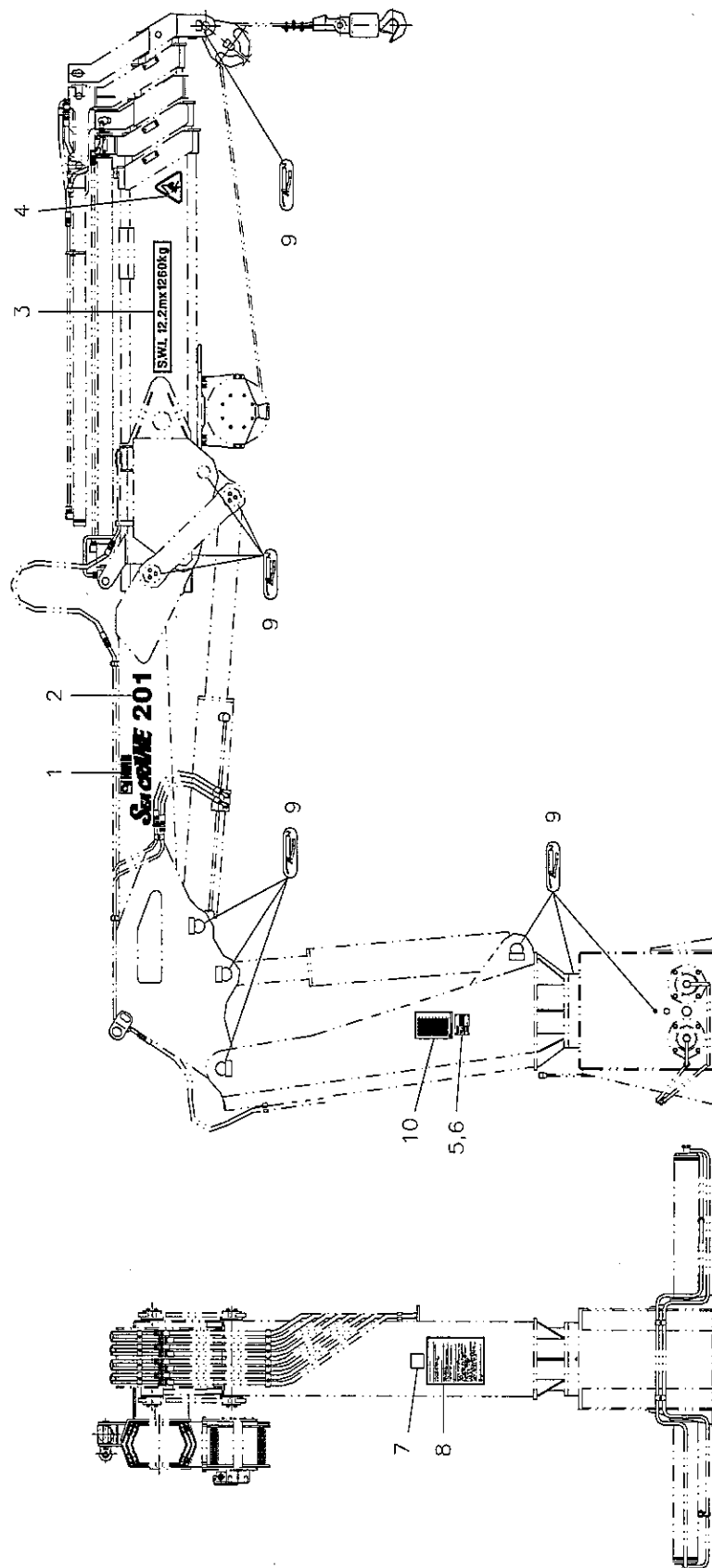
SECTION 12.1 - ATTACHMENT, HOOK

ATTACHMENT, HOOK				00
Pos.	Q'ty	Part No.	Description	Remarks
1	1	BO-0026	SHAFT	Φ45×122
2	1	BO-0027	BOLT, LOCK	M30×P3.5
3	1	2611228	BOLT, HEX. S/HEAD	BB10×30
4	1	4610701	NIPPLE, GREASE	A-PT1/8
5	1	351 6571	ATTACHMENT	
6	1	984 2870	LOAD, HOOK	8 TON

SECTION 13.1 - ARRANGEMENT, STICKER

ARRANGEMENT, STICKER

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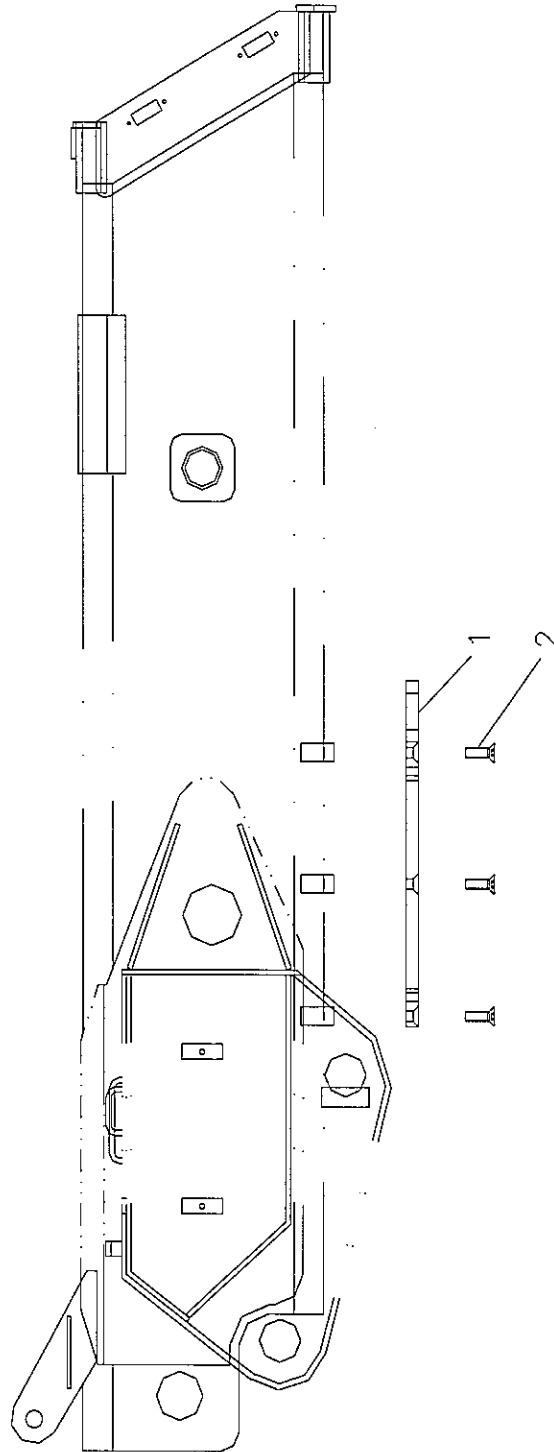
SECTION 13.1 - ARRANGEMENT, STICKER

ARRANGEMENT, STICKER				00
Pos.	Q'ty	Part No.	Description	Remarks
1	2	P01-0221	PLATE, SEA LOGO	D3
2	2	P01-0226	PLATE, 201	
3	2	P01-0495	PLATE, SWL	
4	2	P01-0731	PLATE, WARNING	
5	8	S01-1882	RIVET, STAINLESS	
6	1	P01-0774	PLATE, NAME	
7	1	P01-0659	STICKER, PARKING	
8	1	P01-0461	PLATE, WARNING	
9	16	P01-0159	STICKER, GREASE	
10	1	P01-2175	PLATE, CAPACITY	

SECTION 14.1 - WINCH INSTALLATION

WINCH INSTALLATION

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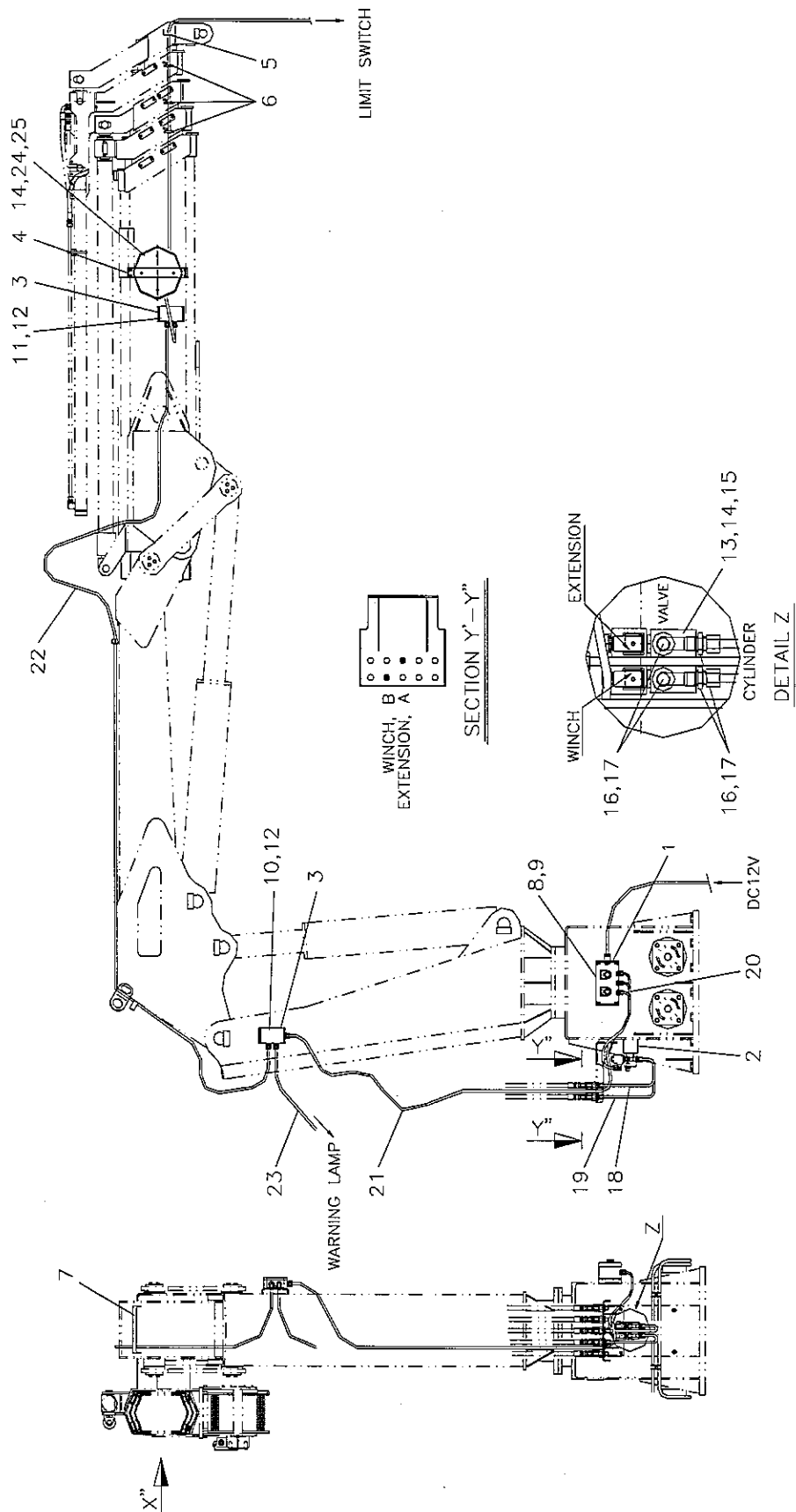
SECTION 14.1 - WINCH INSTALLATION

WINCH INSTALLATION					00
Pos.	Q'ty	Part No.	Description	Remarks	
1	1	M05-4106	PLATE, WINCH	t20	
2	6	S01-3198	BOLT, FLAT HEAD	M16×50L	

SECTION 15.1 - ELECTRIC SYSTEM

ELECTRIC SYSTEM

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SECTION 15.1 - ELECTRIC SYSTEM

ELECTRIC SYSTEM

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Pos.	Q'ty	Part No.	Description	Remarks
1	1	W01-7241	PLATE	t6
2	1	W01-5326	PLATE	t4.5
3	2	W01-7242	PLATE	t6
4	1	W01-7751	PLATE	t4.5
5	1	W01-7753	PLATE	t3.2
6	3	W01-7752	BAR, ROUND	Φ8
7	1	W01-8026	PLATE	t3.2
8	4	2610448	BOLT, HEX. S/HEAD	BB6×12
9	1	E01-0900	JUNCTION BOX	AL122208
10	1	E01-0901	JUNCTION BOX	AL081306
11	1	E01-0840	JUNCTION BOX	AL081306
12	4	2610168	BOLT, HEX. S/HEAD	BB4×12
13	2	3612088	WASHER, SPRING	WS8
14	6	2110868	BOLT, HEX. HEAD	BA8×16
15	1	H02-1024	VALVE, SOLENOID	DC12V
16	4	9521048	NIPPLE, PF JIC	PF1/2×3/4UNF
17	4	6800081	WASHER, SEALING	NF1/2
18	1	H01-5282	PIPE, HYDRAULIC	Φ12×t1.5
19	1	H01-5283	PIPE, HYDRAULIC	Φ12×t1.5
20	2	E01-0402	FLEXIBLE CORD	1.5SQ 2C 1m
21	1	E01-0398	FLEXIBLE CORD	1.5SQ 4C 5m
22	1	E01-0902	FLEXIBLE CORD	1.5SQ 2C 8m
23	1	E01-0400	FLEXIBLE CORD	1.5SQ 2C 2m
24	1	E01-0864	CABLE REEL	ER-0522-2C
25	4	S01-4496	NUT, LOCKING SUS	M8