



**OPERATING MANUAL
& SPARE PARTS LIST**

Cargotec Korea Ltd

EN



OPERATING MANUAL

Cargotec Korea Ltd

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1. Foreword

This operator's manual for HIAB 320T teaches you the right way to operate and maintain your crane.

In this Operating manual are :

- Important safety precautions and warnings
- Important directions for use
- An explanation of the arrangement of Operator's manual
- An explanation of the directions in the Operator's manual

▲ DANGER
If you have not studied the Operator's Manual for your crane carefully, this can lead to fatal accidents or serious damage.

Thus you should :

1. Study the entire Operator's Manual carefully
2. Use the crane only after having done so
3. Follow the directions for use, operation and maintenance of the crane exactly

!NOTE

HIAB reserves the right to change specifications, equipment, operating instructions and maintenance instructions without prior notice

2. The Operator's Manual

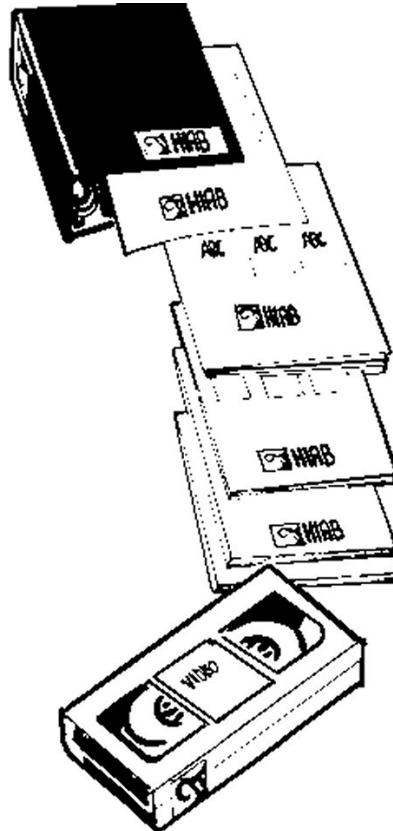
2-1. Structure

The Operator's Manual for your crane consists of :

- The Operator's Manual applies to all HIAB stiff-boom cranes.

It contains important safety precautions and warnings. The operator's Manual also contains important general instructions for use.

- Operation and Maintenance of your type of crane
- Technical Data for your crane
- Descriptions of options and extensions for your crane



2-2. Indications in the Operator's Manual

The following indications are used in the Operator's Manual :

! TIP

Tip to make work easy to carry out

! NOTE

Extra information that can prevent problems

CAUTION

Hazard for the crane or crane components.
Follow the instructions carefully



WARNING

Danger of injury to yourself or to bystanders, or
danger of serious damage
to the crane or other objects.
Follow the instruction carefully.



DANGER

Danger to life for yourself or to bystanders.
Follow the instructions carefully.



!NOTE

The sign  above occurs in the text as a black triangle ▲.

The same status is valid for both signs.

2-3. Other indications

Symbol for reference to illustration. ❶

Refers to an illustration.

Symbol for reference to a component in an illustration. ①

Refers to a component in an illustration.

[Option]

Indication for parts that are non-standard for the crane, but an option.

!NOTE

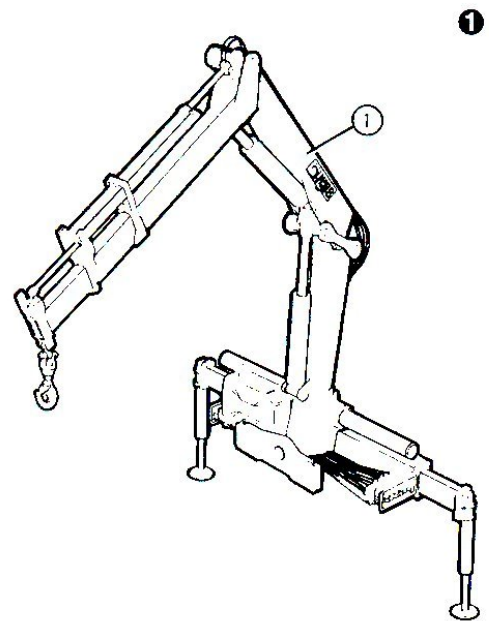
1. Do this
2. Do that

If actions are numbered, you should most certainly carry them out in numerical order!

!TIP

Are you looking for information?

Use the Table of Contents and the Index.



3. Safety precautions and warnings

3-1. Study these instructions carefully!

▲ DANGER

If you have not studied the Operator's Manual for your crane carefully, this can lead to fatal accidents and serious damage.



Thus you should:

1. Study the entire Operator's Manual carefully
2. Use the crane only after having done so
3. Follow the directions for use, operation and maintenance of the crane exactly

3-2. Knowledge required

▲ DANGER

Only persons with the requisite knowledge and experience with cranes may use the crane. Never operate the crane when you are sick, tired out, under the influence of medicines, alcohol or other drugs

1. Take the delivery instructions from your HIAB dealer.

Or be instructed by an experienced person from your own company.

2. Only then should you operate your crane. Ensure that you meet the statutory requirements of the country in which you will use the crane (for example, certificate, obligatory safety-helmet)

▲ DANGER

Carry out yourself only the maintenance work prescribed in the Operation and Maintenance for your type of crane. All other maintenance work should be done in a HIAB service workshop.

▲ Deal yourself only with the faults described in the Operation and Maintenance for your type of crane. All other work to rectify faults may only be performed by personnel in a HIAB service workshop.



3-3. Operating conditions

You may use the crane only under the following conditions :
in the open air, or in spaces with sufficient ventilation

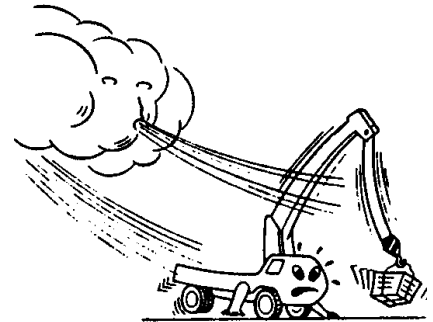
▲ DANGER

If you use the crane in a confined space you should suffocate from the exhaust gases from the vehicle.

With wind speed less than 13.3 m sec [approx. 29.7 mph]
Consult the wind speed table, Appendix 1.

▲ DANGER

Never use the crane in a high wind or storm.
When wind speeds exceed 13.3 m/sec
the crane will behave unpredictably.



▲ DANGER

Never use the crane during a thunder-storm.

▲ DANGER

At temperature below 0°C (32 °F) additional
precautions are needed when starting crane
operations. See the instructions in the Operation
and Maintenance for your type of crane.

On a flat surface. The maximum
permissible slope for your crane is
in the technical Data.

▲ DANGER

The crane can move uncontrollably
on a slope of more than
the maximum permissible one.



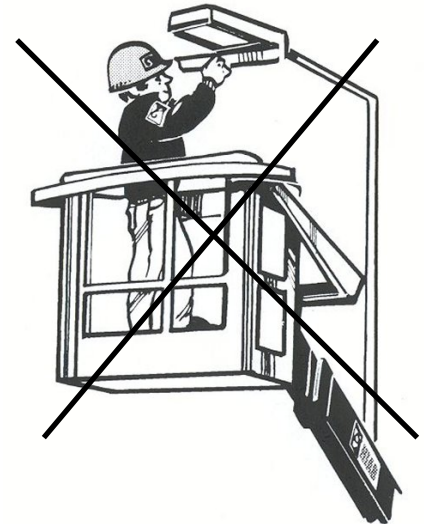
3-4. Use and maximum load

Use your crane only for loading and unloading cargo.

▲ DANGER

Never lift people with the crane!

People may only be lifted by cranes that are approved for it and equipped with a special platform for lifting people for work at heights.



▲ WARNING

Never use your crane for long periods continuously. (unless it has been made suitable for this purpose). Your crane is not a production crane and is not intended for continuous use.

Continuous use can shorten its life considerably.

!NOTE

The load plate and the load diagram on your crane show what are the maximum loads you can lift in the operating reach of your crane.

▲ DANGER

Never change the settings of the safety valves.

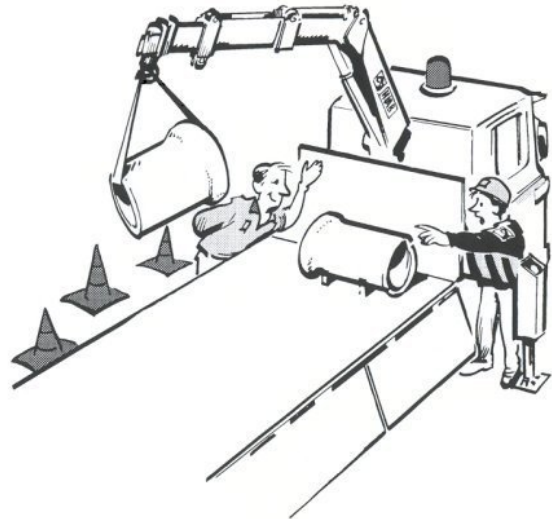
3-5. Preparation for use

▲ DANGER

Ensure that there are no unauthorized persons within the operating range of your crane!

! TIP

Mark out the working range, with for example, cones.



! TIP

Put on your vehicle warning lights.

▲ DANGER

If a part of the crane comes in contact with an electricity line, you will certainly be electrocuted!

▲ Maintain the following minimum distances between the crane and overhead electricity lines unless otherwise prescribed by national rules.

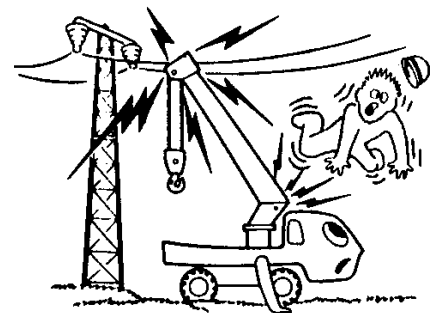


Table 1 : Minimum distance between crane and overhead electricity lines

Voltage(V)	Minimum distance to an insulated conductor	Minimum distance to an uninsulated conductor
< 500 V	0.6 m	2.5 m
500 ~ 40,000 V	2 m	5 m
> 40,000 V	-	8 m

Voltages are found :

- Up to 500V : to houses
- 500 ~ 40,000 V : trams, trains
- over 40,000V : power transmission

▲ DANGER

Put on the vehicle parking brake!
Otherwise the vehicle can begin to slide during lifting.

▲ Never use the outrigger legs as a parking brake. Then too, the vehicle could start to slide.

▲ Put on a safety helmet.
(legally compulsory in some countries!)

▲ Check that the ground is sufficiently flat.
Use chocks under the wheels on a gentle slope.



▲ Check that the ground is sufficiently firm. Check also that the ground is not undermined. Look out for sewers, cellars, excavations etc. The outrigger legs must not be able to sink in.

▲ DANGER

On a slippery surface, for example because of frost :
Place chocks under the wheels.

▲ Check that the add-on lifting accessories are in good order!
Add-on lifting accessories are sometimes fitted on the crane (winch, jib) or placed between the boom tip and the load (grapple, rotator).
Separate lifting accessories are connected to the standard load hook (slings, chains, shackles etc).

▲ WARNING

Check that there are no obstacles within the working range.



3-6. Use of the crane

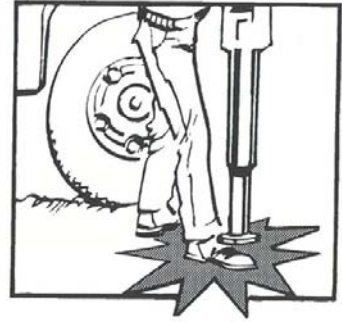
3-6-1. Starting crane operation

▲ DANGER

Ensure that you can see the outrigger legs when you are operating them.

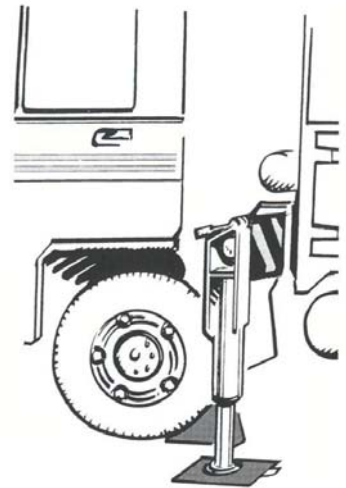
Operate the outrigger legs from the side of the legs concerned.

Do not stand in front of the hydraulically-operated outrigger legs when you are operating them!



▲ WARNING

Be careful that you do not lower the outrigger legs onto your foot.

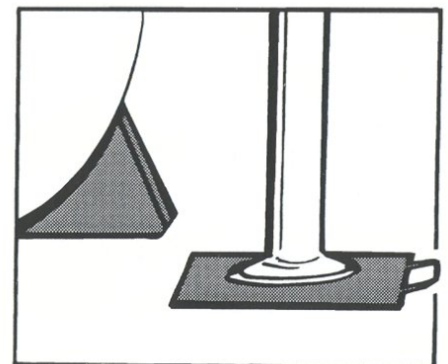


▲ DANGER

Where the ground is not firm enough, use support plates under the outrigger legs for additional support. Use support plates that are large and firm enough for your crane.

Check that the support plate as it comes under load is not pushed into the ground.

Check that the support plate does not bend under load.



▲ Do not lower the outrigger legs on the edge of an embankment, soft shoulder, slope etc. Lower the outrigger legs only on a flat surface.

▲ Slide the outrigger extension beams on both sides of the vehicle out completely. Then lower the outrigger legs for support.

▲ If outrigger extension beams are not slide out completely, then the crane can tip over.

▲ **WARNING**

Place the outrigger legs with low force on the ground.

Only for cranes with 2 outrigger legs :

Do not raise the vehicle! If you raise the vehicle with the outrigger legs this can damage the outrigger legs.

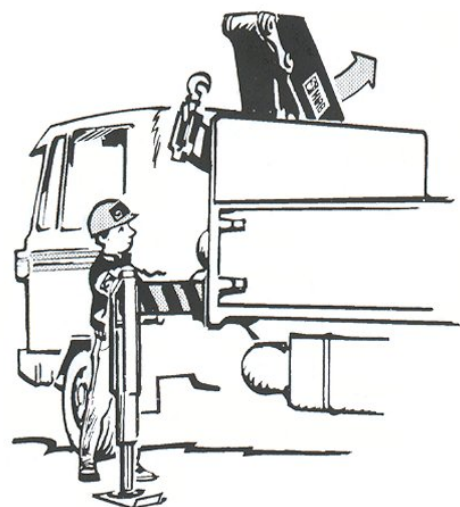
▲ **DANGER**

Never operate the outrigger legs if the crane has a load.

▲ **DANGER**

Unfold the crane according to the directions in the operation and maintenance for your crane.

▲ Never unfold the loader from the position shown in fig. 5

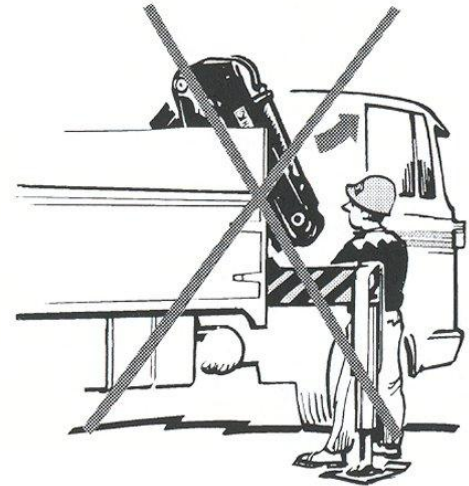


3-6-2. Crane operation

5

▲ DANGER

Keep checking that there is no unauthorized person within the operating reach of the crane!



▲ Make certain that you can always see the load! If your view of the loads is not adequate, have someone else give you signals. Appendix 2 contains a list of signals. Make certain that you and the person Assisting you knows these signals.

▲ Watch out for the safety of the person giving the signals!

▲ Never move the vehicle if you have a freely-suspended load on the crane.

▲ Never walk or stand under a suspended load! When operating never stand below the boom system or load!



▲ WARNING

Never slew at full speed to the final position. This will damage the slewing system.

▲ **WARNING**

Never push a load along the ground or the vehicle load space with the extension boom. This can cause damage, that will need expensive repairs, to the extension cylinder.

▲ Never use the extension boom as a jack. This could damage the slewing bearings and the connection between the crane column and the crane base.

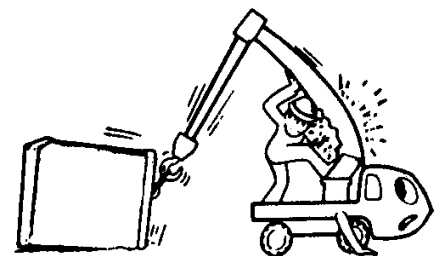
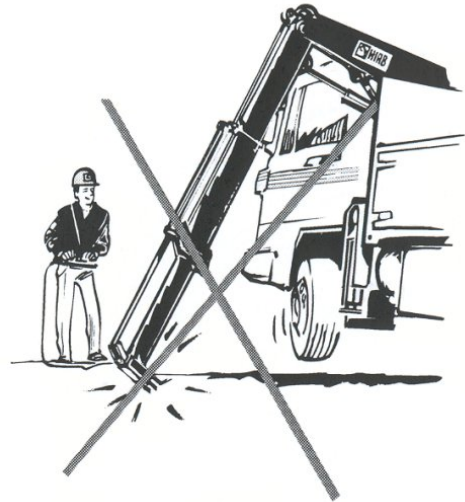
▲ Always lift the load from the ground before you start to slew. Do not tow the load over the ground. This can damage the boom system.

▲ If you are working with loads in tight openings (for example, windows) :

Check that the boom system can move freely upward and downward.

The boom system will bend somewhat when loading and unloading the crane.

▲ If the boom system is in a high position (inner boom above 70°) do not allow the boom to lower at full speed. The crane can go into uncontrolled movement.



▲ When loading the vehicle :

Take the load off the outrigger legs by withdrawing them slightly.
The outrigger legs must remain in light contact with the ground.

▲ Never operate the outrigger legs if the crane has a load.

▲ CAUTION

Operate the crane with smooth and gentle lever movements.

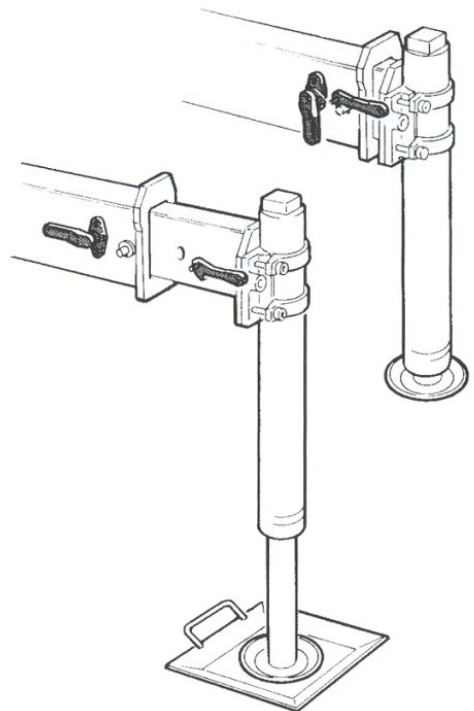
▲ If a cylinder is at its end position, free the operating lever.
Otherwise you will damage the hydraulic system.

3-6-3. Ending crane operation

▲ DANGER

Always end crane operation as follows :

- Fold up the crane according to the instructions in the Operation and Maintenance for your type of crane.
- Withdraw the outrigger legs and outrigger extension beams.
- Lock the outrigger legs and outrigger extension beams.



- Check that the locking works properly.
- Disengage the P.T.O or power supply after the work.
If you drive with the P.T.O or power supply engaged,
this will cause serious damage to the P.T.O/gearbox combination.
- Only after doing so should you drive away with the vehicle.

▲ DANGER

After use, always place the crane in the transport position!

If you can't park the crane and lifting accessories in the transport positions, but have to park it on the load space or over the load ;
secure the boom and the lifting accessories to prevent any movement of
of
the crane and the lifting accessories.



3-7. Driving with the crane

▲ DANGER

Never drive the vehicle if there is a load suspended from the crane.

▲ Before you start to drive away :

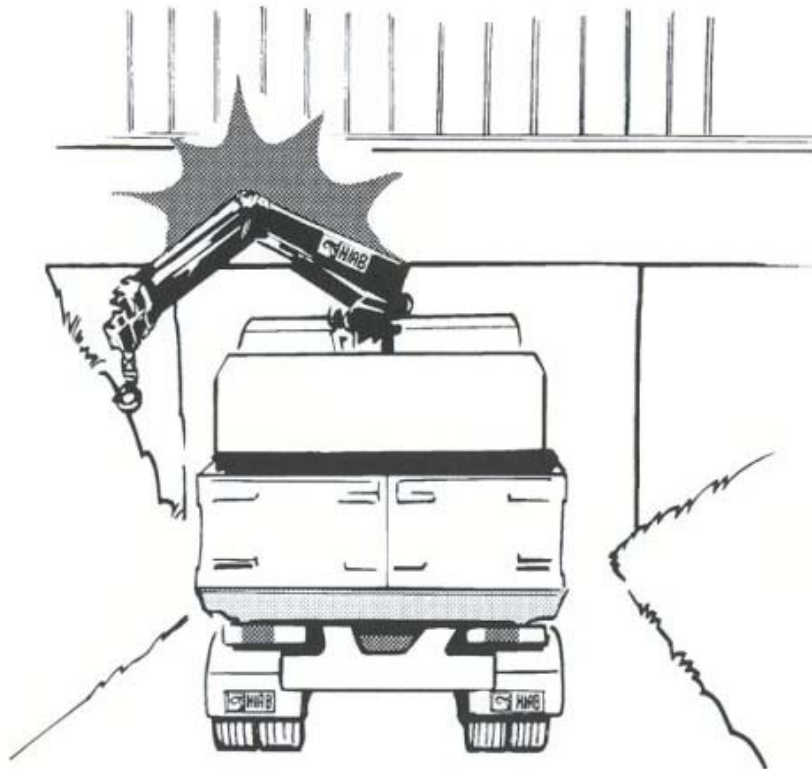
Check that you have no pump flow to the crane control valve.

The PTO or power supply must be disengaged.

▲ Take care that the width and height of the crane in the transport position

can produce no danger because of the headroom of bridges, tunnels etc.

▲ Take care with overhead power lines! Be sure that a part of the crane never comes in contact with overhead power lines.

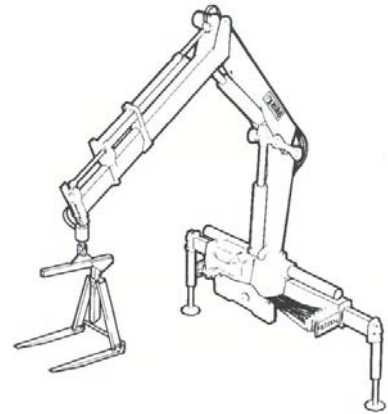


3-8. Use of lifting equipment

▲ DANGER

Use only lifting accessories (winch, grapple, rotator) which are suitable for your crane.
Get in touch with a HIAB dealer.

▲ Never attempt to install add-on lifting accessories yourself! Add-on lifting accessories may only be installed by an authorized HIAB dealer.



▲ When using lifting accessories :

Follow the instructions supplied with the equipment! Watch out for hazards!

Never try to adjust lifting accessories when you are working on the crane!

▲ DANGER

After fitting of the lifting accessories :

1. Check that the lifting accessories is securely fixed.
2. Only then should you use your crane.



▲ WARNING

When connecting and disconnecting lifting accessories :

- Clean the couplings.
- Dirt will damage the hydraulic system.
- Take care that your fingers are not trapped.

3-9. Use of demountable cranes

▲ DANGER

Ensure that there are no unauthorized persons in the immediate vicinity of the crane. When putting the crane onto or off the vehicle people can suffer fatal crushing injuries!

▲ After setting up : Check that the crane is properly locked!

▲ WARNING

Be cautious when putting the crane onto and off the vehicle. Putting it on and off roughly can seriously damage the crane or the vehicle.



3-10. Maintenance and service

▲ DANGER

Only carry out the maintenance yourself that is prescribed in the Operation and Maintenance for your type of crane.

All other maintenance work may only be carried out by HIAB service workshop!

▲ Do not do any welding work on the crane yourself! Welding work on the crane may only be carried out by, or in close consultation with, a HIAB service workshop.



▲ WARNING

Before welding on the vehicle

1. Disconnect the MINUS (-) cable,
2. Disconnect the PLUS (+) cable.
3. Place the earth connection as close as possible to the welding spot.
4. After this the welding work can be carried out.

After welding on the vehicle

1. Connect the PLUS (+) cable
2. Connect the MINUS (-) cable

▲ DANGER

Do not drill into the crane yourself.

Drilling work on the crane may only be carried out by, or in close consultation with, a HIAB service workshop.

▲ Never try to reinstall the crane.

Only a HIAB Dealer. may reinstall the crane.

▲ WARNING

Carry out the periodic maintenance according to the Operation and Maintenance for your type of crane.



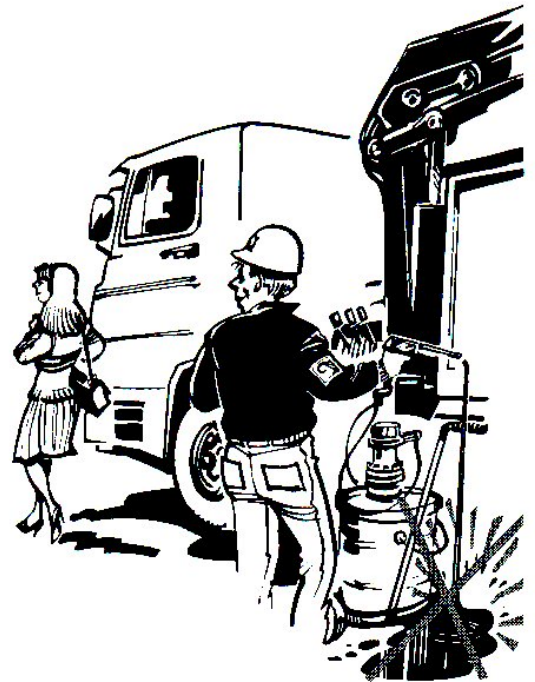
!NOTE

Always use original HIAB parts and tools.

▲ WARNING

Take the crane at least once a year to a HIAB service workshop for inspection and maintenance.

▲ Maintain lifting accessories according to the supplier's instructions.



- ▲ Clean your crane and accessories regularly, but :
 - Do not use any aggressive cleaning agents.
 - Never use a high-pressure cleaner on the control valves, cylinders, oil tank or on electronic parts. Only the crane surface may be cleaned with a high-pressure cleaner

▲ **WARNING**

Remember the environments.

- Do not spill oil when topping-up.
- Dispose of waste oil and oil filters to local regulations.

3-11. Faults

▲ **DANGER**

Ensure that faults in the crane are rectified immediately!

Follow the instructions for faults, in the Operation and Maintenance for your type of crane, exactly.

Never rectified faults yourself that may only be rectified by a HIAB service workshop.

▲ **DANGER**

If there is an oil leakage from the hydraulic system :

Keep well away from an oil leak.

The oil spraying out can cause serious injuries.

The oil in the hydraulic system is at a high pressure.

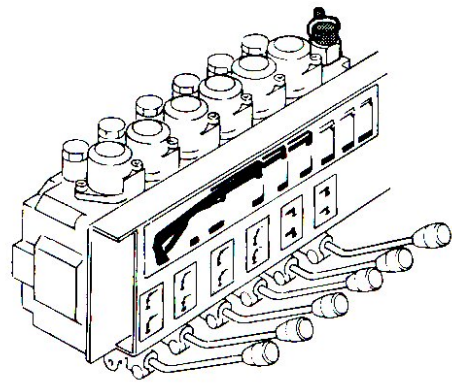
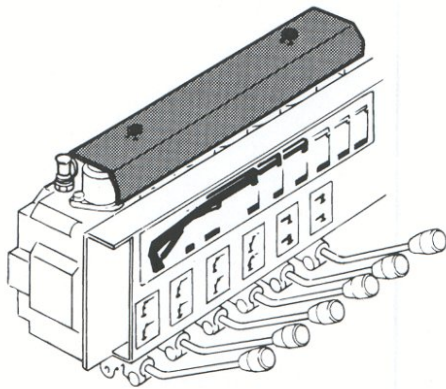
1. Disengage the P.T.O or power supply.
2. For further instructions see the Operation and Maintenance for your type of crane.

3-12. Warranty

!NOTE

HIAB only provides a warranty if :

- The instructions for maintenance and service have been followed, and
- Original HIAB parts have been used, and
- All the seals are still intact and
- The maintenance schedule in your Crane logbook is filled in up-to-date.

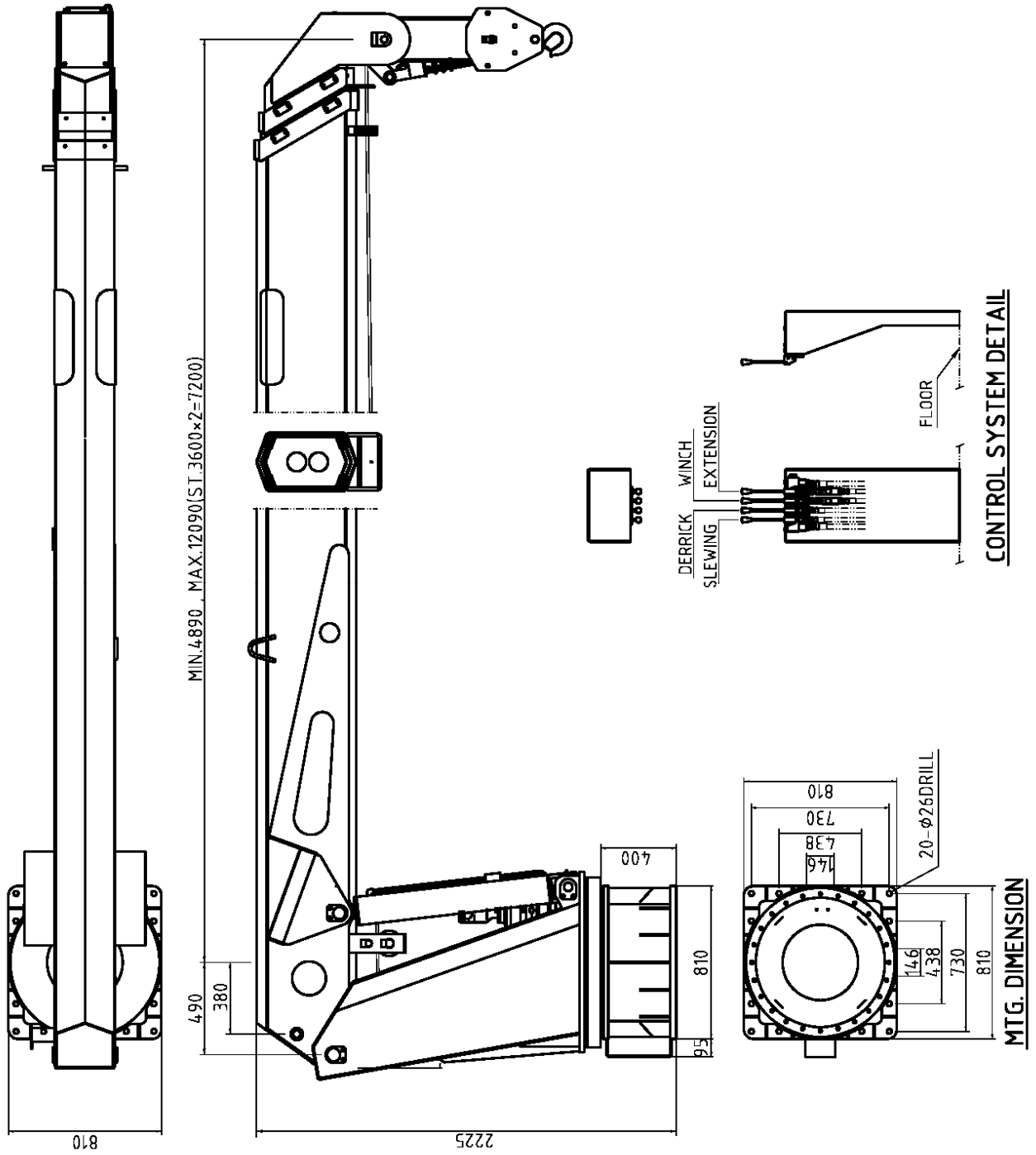


4. Technical description

4 - 1 Specification

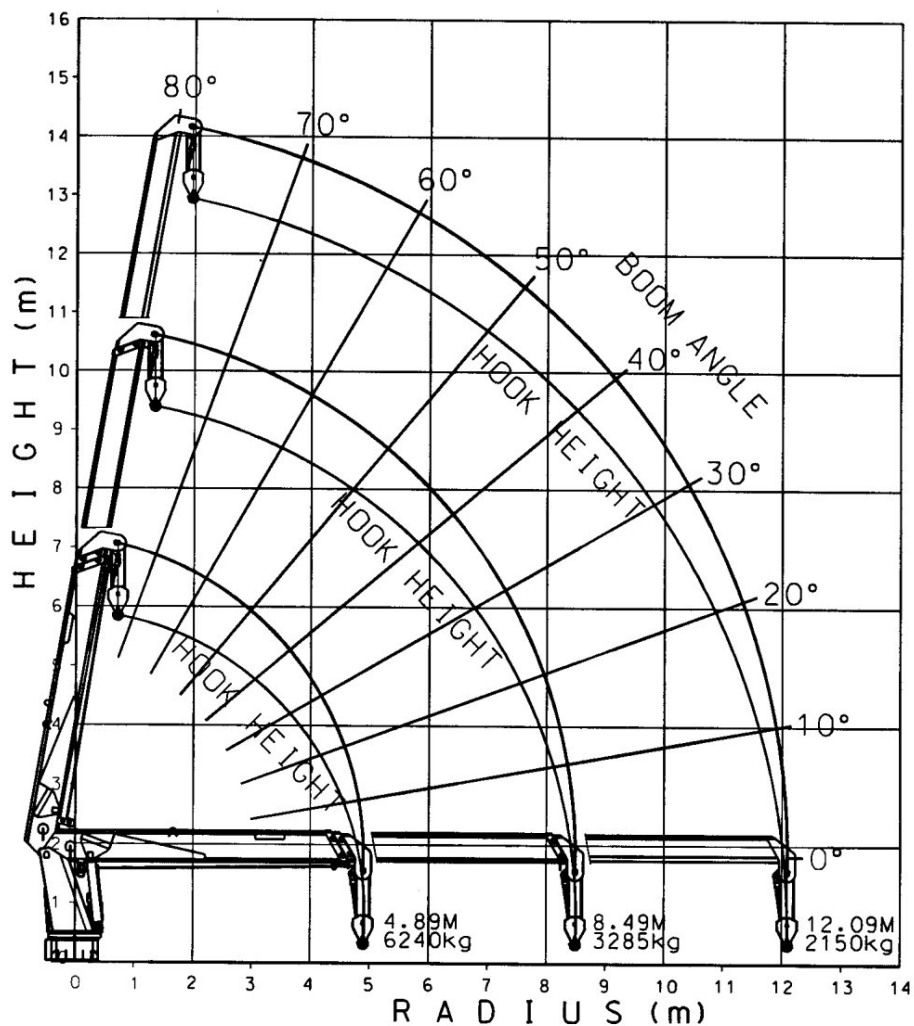
Description		Specification	Remarks
Lifting Capacity		31.5 ton-m	
Working Radius		12.09 m	
Outreach - Lifting Capacity		2.0 m - 10000 kg 4.89 m - 6240 kg 8.49 m - 3285 kg 12.09 m - 2150 kg	
Working Height		12.9 m	From bottom of base
Boom lifting Angle		0 ~ 80 deg.	
Rated oil Flow		52 L / min (1000 rpm)	
Working pressure		190 bar	
Boom	Type	Hex. Box construction	
	Section	3	
	Length	Min. 4.89 Max. 12.09m (cyl' stroke : 3600*2=7200)	
Winch	Type	Planetary gear reduction with hydraulic brake	
	Single line Pull	2500 kg(3 rd layer)	4 falls(10000kg)
	Wire	12.5 mm dia. – 80m	
Slewing	Type	Planetary gear reduction with hydraulic brake	
	Angle	360 deg., Continuous	
	Speed	1.3 rpm	
Safety function		Hydraulic Relief valve Hook safety latch Counter balance v/v Hydraulic slewing brake OLP valve	
Weight		3,400 kg	

4 - 2 Outline view

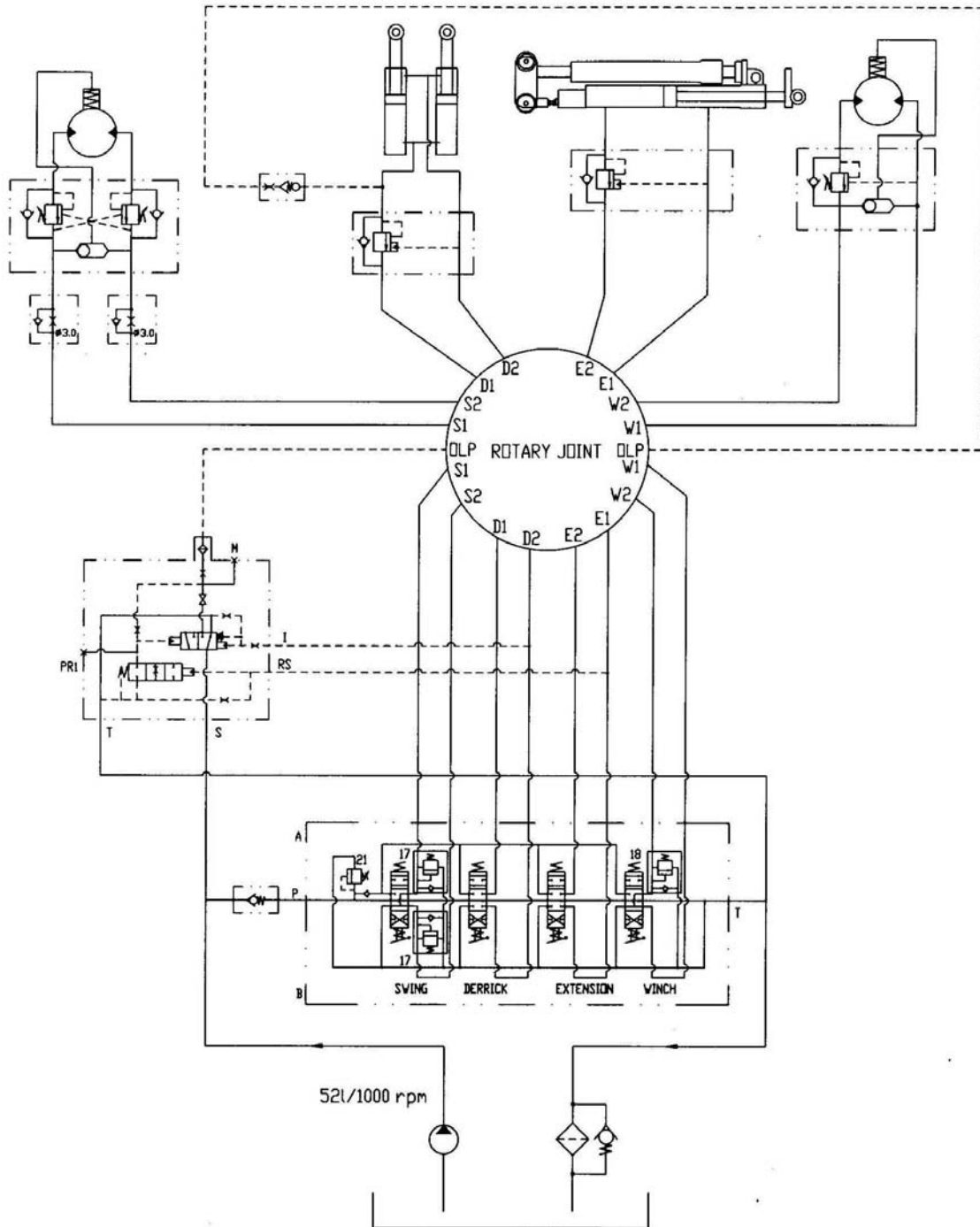


4 - 3 Lifting capacity table & working radius

boom angle	1 st boom		2 nd boom		3 rd boom	
	R(m)	Q(kg)	R(m)	Q(kg)	R(m)	Q(kg)
80 deg	0.44	10000	1.07	8000	1.69	6000
70 deg	1.35	10000	2.58	7100	3.81	4910
60 deg	2.20	9670	4.00	5340	5.80	3650
50 deg	2.97	8250	5.28	4490	7.60	3040
40 deg	3.63	7450	6.39	4010	9.15	2700
30 deg	4.17	6960	7.29	3720	10.40	2490
20 deg	4.57	6650	7.95	2530	11.33	2360
10 deg	4.81	6435	8.35	3400	11.90	2265
0 deg	4.89	6240	8.49	3285	12.09	2150



4 - 4 Hydraulic diagram

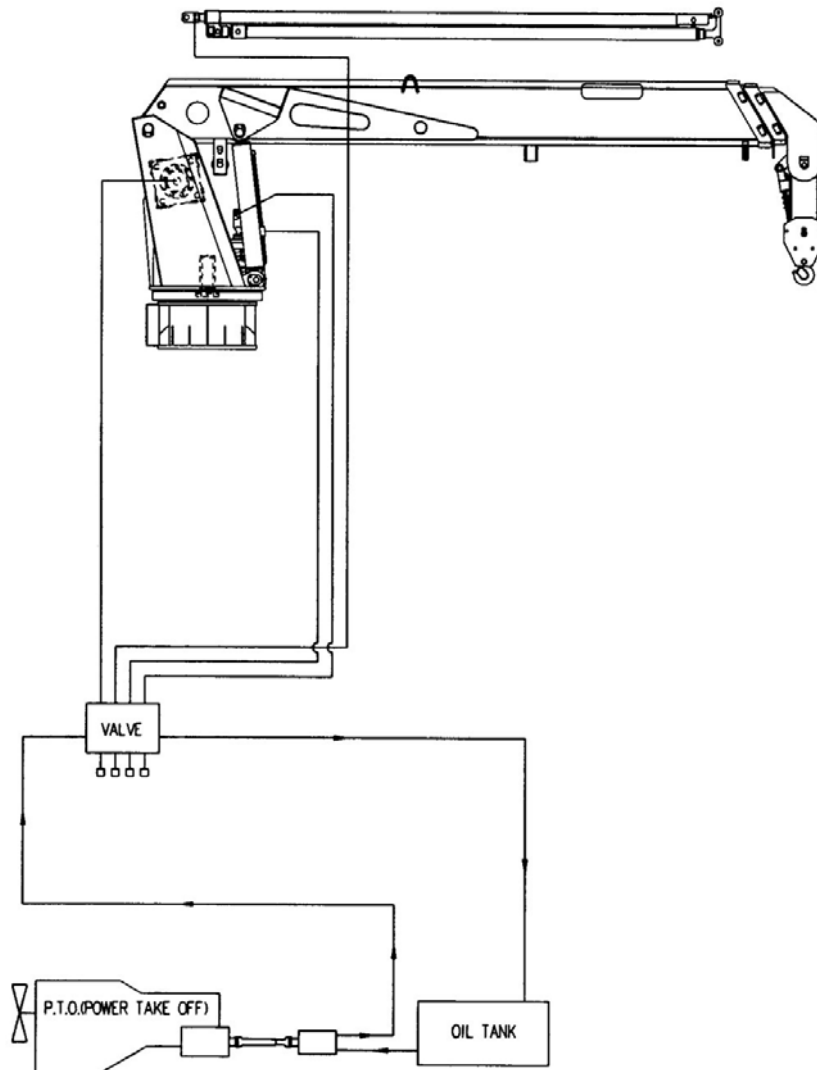


5. General description

5 - 1 Basic operation principle

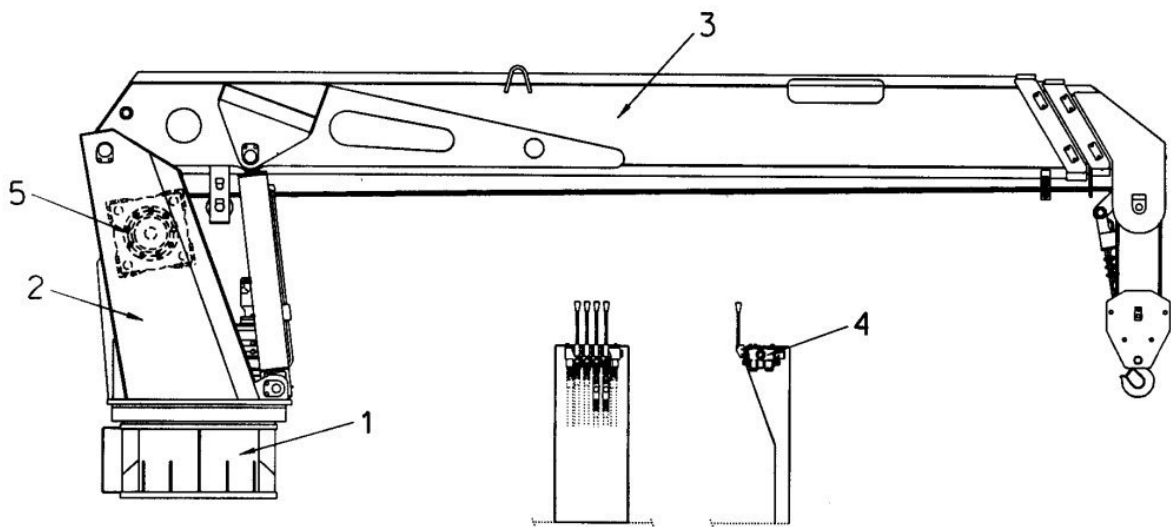
Hiab 320T-3 crane consists of mainly steel structures and hydraulic components.

The required power source for crane operation comes, via the chassis' power take off (PTO), 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.



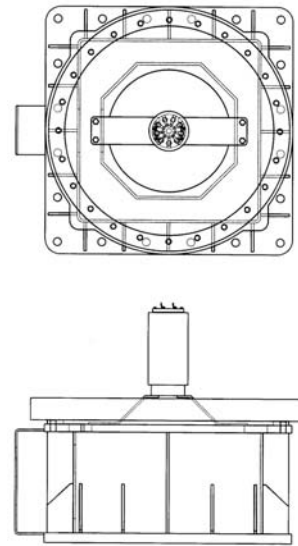
5 - 2 Main components

- 1) Base
- 2) Column
- 3) Boom system
- 4) Control valve
- 5) Winch



1) Base

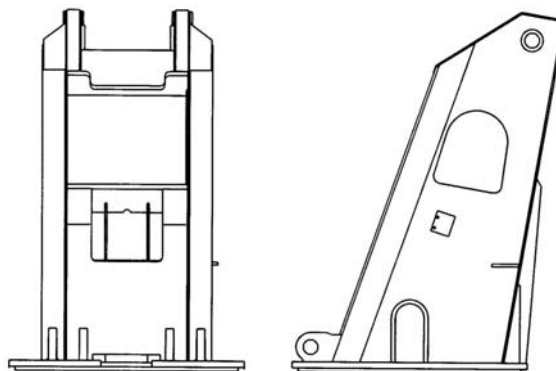
The base is connected with the column structure by slewing bearing, which makes the crane rotate, and is mounted on the chassis frame with strong anchor bolts.



2) Column

The column is of a closed welded box design and connected with the base. The column supports the boom system via derrick cylinder.

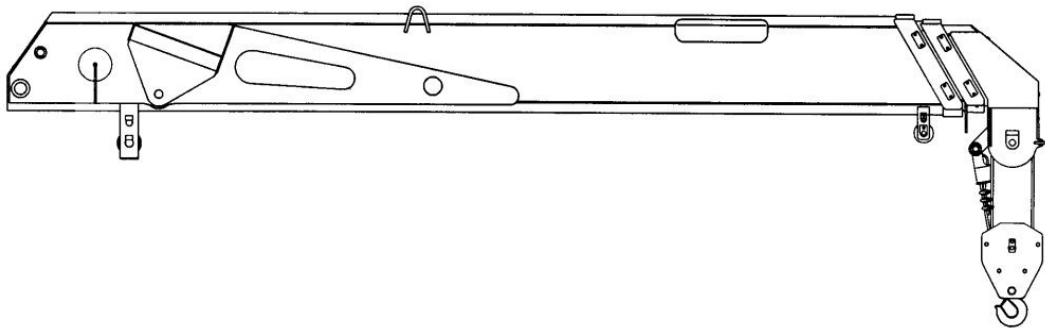
The winch system is mounted in the column structure.



3) *Boom system*

The boom system consists of main boom, three extending booms and extension cylinders.

The two cylinders are of a double acting type. The counter balance valve makes the cylinders operate at constant speed regardless of the suspended load.



4) *Control Valve*

The Hiab 320T-3 stiff boom crane is equipped with 4-function control valve which is for main controls of the crane (slewing, derrick, winch, extension). This valve is equipped with built-in main relief and port relief valves shown in the hydraulic diagram. The relief valves makes that the crane can not lift in excess of the designed load chart.

5) Winch

The winch consists of hydraulic motor, gearbox and winch drum. The winch is installed inside of the column structure. The hydraulic brake is included in winch gearbox.

5 - 3 OLP (over load protection) system

The OLP system is a fully hydraulic concept that stops the main hydraulic flow when the pressure in the derrick cylinder has reached the maximum allowable level, preventing aggravating movements.

The safety system resets automatically after a pressure decreasing movement.

Although the safety system is triggered by the pressure of the derrick cylinder only, it prevents all aggravating movements. Only the extension can be moved inwards as an exception, to solve the overload situation. The crane and vehicle have a guaranteed stability.

6. Operation

6 - 1 Before operating the crane

- Turn on the power the power pack.
- Turn on the power the remote controller. (optional)
- Slew the crane where the load is located in.
- The crane is now ready for use.

6 - 2 Warming up when cold weather

In cold weather, the viscosity of the operating oil could be very high. It can make some damages to the hydraulic components. Please warm up as follows.

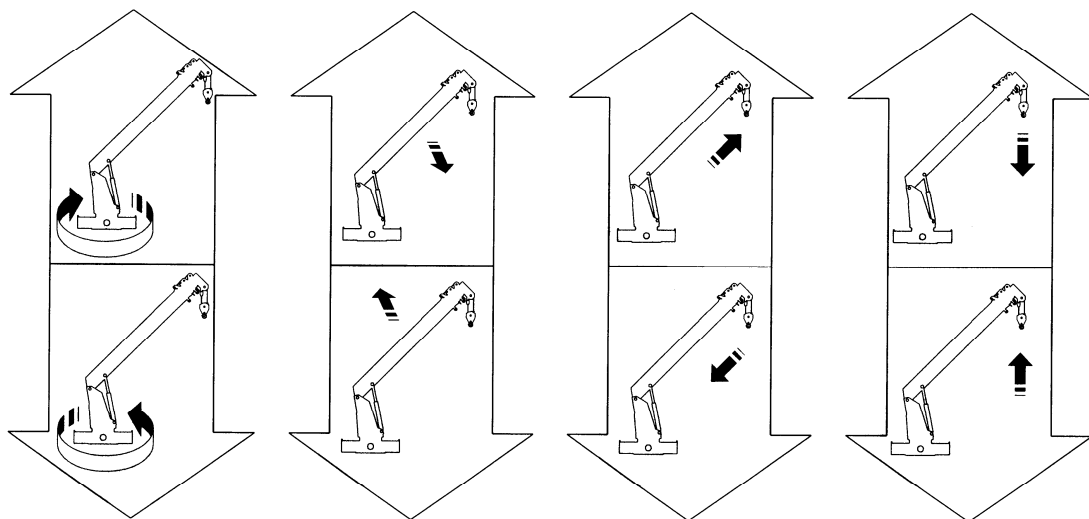
- Engage the PTO and run the hydraulic oil pump at low RPM.
- After 10-15 minutes without movement of the control valve, operate the crane slowly.

6 - 3 Operation of crane

Standard control valve has 4 levers for operating crane.

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

No.	Operated components	pull	push
1	Slewing	left	right
2	Derrick	up	down
3	Extension	retracting	extending
4	Winch	up	down



(note)

1) When boom raising / lowering,

Move the lever slowly when loaded.

Fast movement could cause tilting of the chassis or damages to the crane due to dynamic forces.

2) When hook raising / lowering,

Do not lower more when load touches the ground.

If you do so, the wire can get tangled.

When load is lowered, minimum 3 turns of wire should remain on the drum.

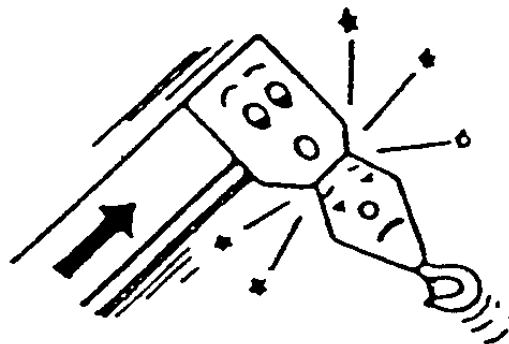
To keep good laying of the wire, wind slowly.

3) When extending, thanks to selector valve, boom extends from 1st to the last sequent.

When retracting, conversely.

Be carefully aware of the hook movement.

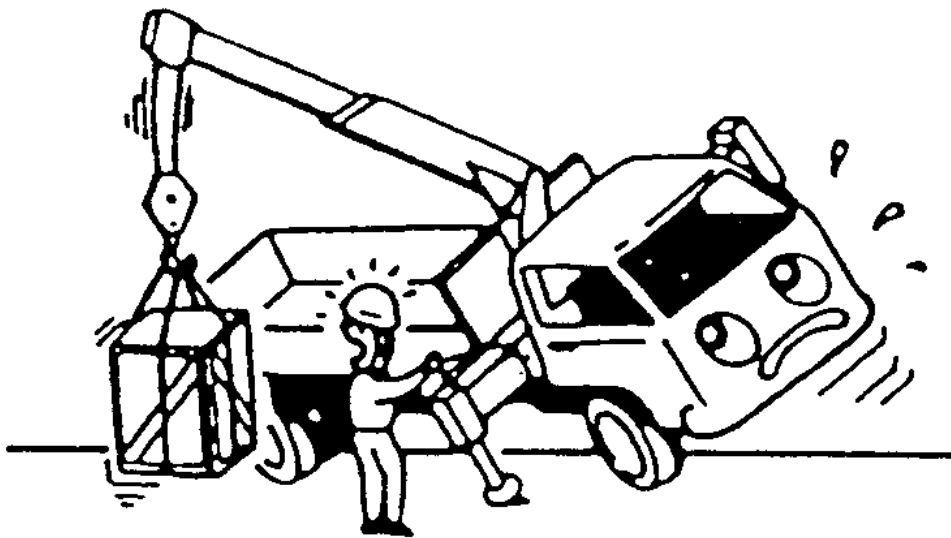
When extending, hook is up and when retracting, hook is down.



4) When slewing, slew as slow as possible

When you rotate the crane to the truck cab position, be careful about the stability.

Never slew until the load is clear of the ground.



6 - 4 Over winding alarm

Hiab 320T-3 is equipped with an overwinding alarm system as an option. If the hook block is too near the boom tip, the alarm system will be activated.

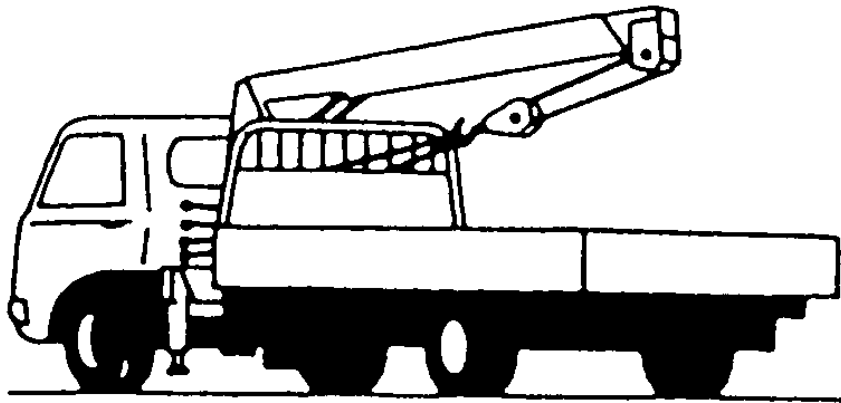
- Before operating the crane, turn on the overwinding alarm switch.
- If the alarm is activated, retract the boom or lower the hook.
- After operating the crane, turn off the overwinding alarm switch.

(note) Do not shorten the wire length.

Please be careful when the extending boom or the raising hook, because the alarm system can not be activated when of the electric wire is damaged etc.

6 - 5 After operation the crane (for driving)

- Retract the booms fully
- Rotate the boom at the driving position
(front or rear side. Refer the sticker on slewing cover and column base plate)
- Retract the outrigger legs fully
- Retract the outrigger beam fully
- Lower the boom at lowest position
- Settle the hook with the safety rope on the chassis
- Operate (wind) the winch until the safe rope is tensioned
- Put manual accel lever in neutral position
- Disengage the PTO, then the pump stop running



(note) Driving with the pump running may cause PTO and pump damages.
It's very dangerous to drive without the hook in a fixed position.
Check again that the outrigger system is fully retracted and locked.

7. Safety instruction when operating

- Press the clutch pedal fully and then engage or disengage the PTO
- When cold weather, please warm up the operating oil for 10 - 15 minutes
- Operate the crane on even ground condition
- Before operating the hook, turn on the overwinding alarm switch
- Be careful not to touch the hook block on the ground, which could cause the wire to get tangled
- Do not drag the load using the crane which may cause damage to the crane
- Do not exceed the lifting capacity shown in the load table
- Slew as slow as possible
- When load and unload in underground, check the remaining wire length on the winch drum. Minimum 3 turns.
- Do not leave from the operating position when load is suspended
- Do not be allowed that unauthorized persons is in the working area
- Make sure that the hook is firmly fixed and the PTO disconnected before driving
- You should consult your dealer and/or trained person if you find some problems

- Operate the crane smoothly

If operated fast, the life cycle of the crane can be reduced and/or there can be some component troubles.

At starting/finishing point, the movement should be reduced.

- Before operating the crane, make sure the outrigger system is extended and firmly settled on the ground. If the ground is not rigid, use auxiliary support plate under the support leg plate.

(note) In case low rpm of the engine, boom can

tremble and/or do not move. In this case a little increase of the engine rpm can make it possible.

The oil temperature should be kept below 80°C. High oil temperature can cause damages to the hydraulic components.

From 45°C to 55°C is the best operating temperature for the crane.

8. Preventive service & Maintenance

8 - 1 Daily Inspection

Where?	What?
Power take off	<ul style="list-style-type: none"> ● Abnormal noise and/or heat? ● Engaging movement is smooth or not?
Drive shaft	Loosened or not?
Oil tank	<ul style="list-style-type: none"> ● Oil level? ● Leakage?
Slewing system	<ul style="list-style-type: none"> ● Leakage? ● Greasing condition? ● No loosened bolts? ● Abnormal noise?
Derrick cylinder	<ul style="list-style-type: none"> ● Shaft condition? ● No loosened bolt? ● Leakage? ● No movement when stopped?
Boom system	<ul style="list-style-type: none"> ● No loosened bolt? ● Any crack? ● Smooth extending/retracting?
Winch gear box	<ul style="list-style-type: none"> ● Oil leakage? ● Abnormal noise?
Pump	<ul style="list-style-type: none"> ● Mounting condition? ● Leakage? ● Abnormal noise?
Hook	<ul style="list-style-type: none"> ● Rotate when loaded? ● Any damages?
Wire rope	Any damage?
Control lever	<ul style="list-style-type: none"> ● Smooth movement? ● Return neutral position well when release the lever?
Outrigger system	<ul style="list-style-type: none"> ● Any crack? ● Leakage of the cylinder? ● Any internal leakage?
Control valve	<ul style="list-style-type: none"> ● Any leakage? ● Smooth movement?
Overwinding alarm	Alarm when activated?
Hook latch	Enough spring tension?
Pipes & hoses	Any leakage?
Base	Mounting bolt condition?

8 - 2 Slewing bearing & mounting bolts

If there is some abnormal noise from the slewing system and/or the mounting parts when operating the crane or driving, please consult your Hiab dealer or service center. That kind of noise could come from loosened condition of the mounting bolts. At least, mounting bolts of slewing bearing located inside of the column should be checked every 2 years.

8 - 3 Wire rope

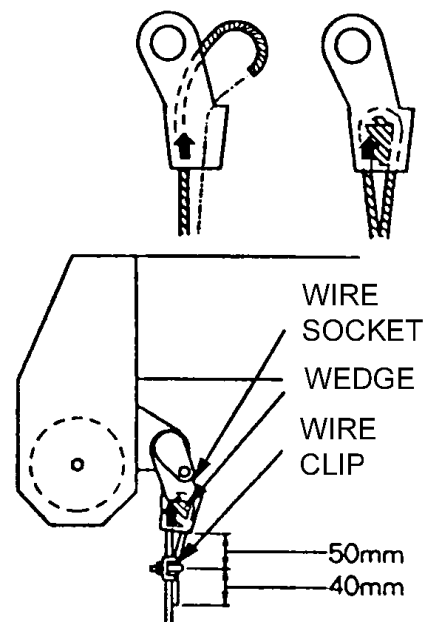
1) How to fit the wire rope

Pass the end of a wire rope into the wire socket along the arrow mark on the socket.

Do not forget to attach the wedge and wire clip.

When attaching the wire socket to the boom, make sure that the arrow

mark on the face of the wire socket faces outwards as shown the in drawing.



2) Adjusting twisted wire rope

Wire rope tends to turn in the untwisting direction under tension. When the hook carries two or more wire rope slings, they can easily turn, especially when they are still new. Wire rope becomes steady with use.

The wire rope adjustment procedure is:

- Extend the boom fully

- Set the boom to an angle of about 65 deg

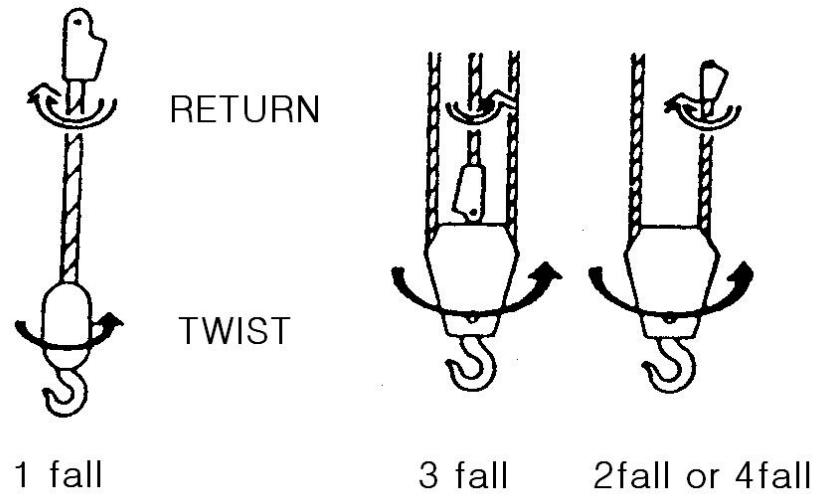
- Hoist a load so that the wire ropes will be tense

- Check the wire ropes for the number of turns

- Remove the wire socket, and turn it in the wire rope untwisting direction by the number of wire rope turns multiplied by the number of wire rope slings.

- After attaching the wire rope socket back in position, wind up and down the wire ropes all the way and repeat it a few times to check that they are back to normal. If there is still a twist remaining, repeat the above process.

- Turn the wire socket opposite to the wire rope twisting direction, except in the case of 3-rope sling in which case the wire socket should be turned in the same direction.



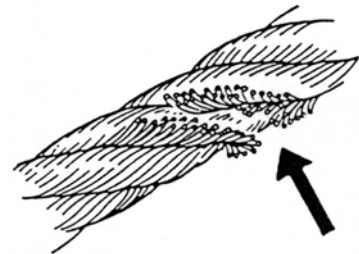
3) How to look after the winch rope

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.

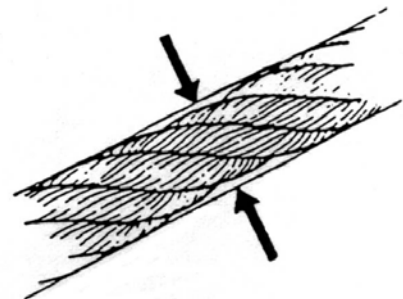
However, the following safety rules applying to winch ropes can be followed.

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

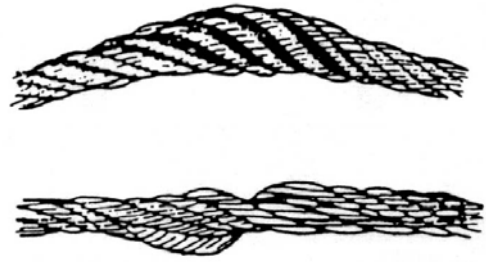
- When 5 % of wires in any length of ten rope diameters are broken, worn or corroded



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



- The rope develops kinks or a heavy spiral twist



4) Lubricating a winch wire

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.

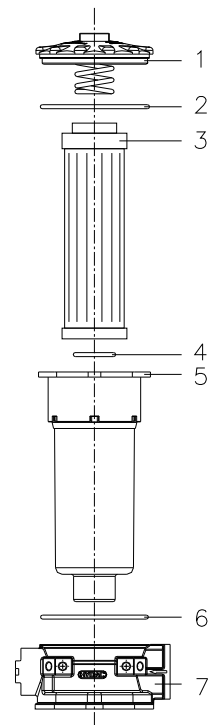
8 - 4 Changing a filter insert

A clean hydraulic system gives better operating economy. The oil filter insert should therefore be changed for the first time after 50 running hours and from then on every 500 running hours, subject to a minimum of at least two changes a year.

For best results, always fit a genuine Hiab insert.

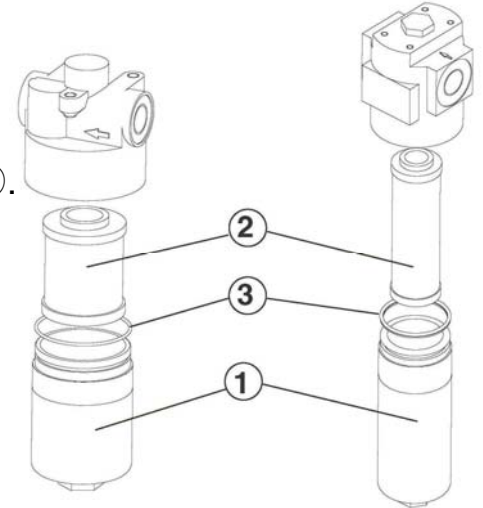
Replacing the return oil filter insert

- Clean the immediate surroundings of the return filter.
- Turn the cover ① to free it while pressing on it
- Pull the return filter out of the oil tank
- Remove the filter insert ③
- Insert a new filter insert
- Fit new sealing rings ②,④
- Replace the return filter in the tank
- Attach the cover on the return filter



Replacing the filter insert in the pilot filter and in the high pressure filter

- Clean the immediate surroundings of the pressure filter.
- Dismantle the filter housing ①.
- Remove the filter insert ②.
- Clean the filter housing.
- Fit a new filter insert. Also fit new sealings ③.
- Reassemble the filter housing.



▲ WARNING

Dirt will damage the hydraulic system

8 - 5 Inspection points when operating

- Is there any leakage?
- Does the crane operate smoothly?
- Is there any abnormal noise?
- How about the oil temperature?

If the oil temperature is higher than 75 deg C, then stop the crane operation

8 - 6 Inspection after operation

- Clean & smooth for next use?
- Any crack & abnormal noise?
- Any leakage in connections?

8 - 7 Inspection & maintenance after one month in operation

- Check the pressure settings and lead seals
- Check for oil leakage
- Check and advance screwed connections
- Check and advance hose and pipe couplings
- Check catches and other locking devices
- Check the functions and levers of the control valve
- Check hook, ropes 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 deformation and cracks etc.

- Cleaning, replacement of 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

8 - 8 Inspection & maintenance after 6 months in operation

- Clean the crane
- Check pressure settings and lead seals
- Check for oil leakage
- Check and advance screwed connections
- Check and advance hose and pipe couplings
- Check catches and other locking devices
- Check the functions and levers of control valve
- Check hook, ropes 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 deformation and cracks etc.
- Clean or replace the 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
- Do a security check on the mountings of the pump and anchor bolts
- Clean or change the hydraulic oil

9. Lubrication

9 - 1 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.

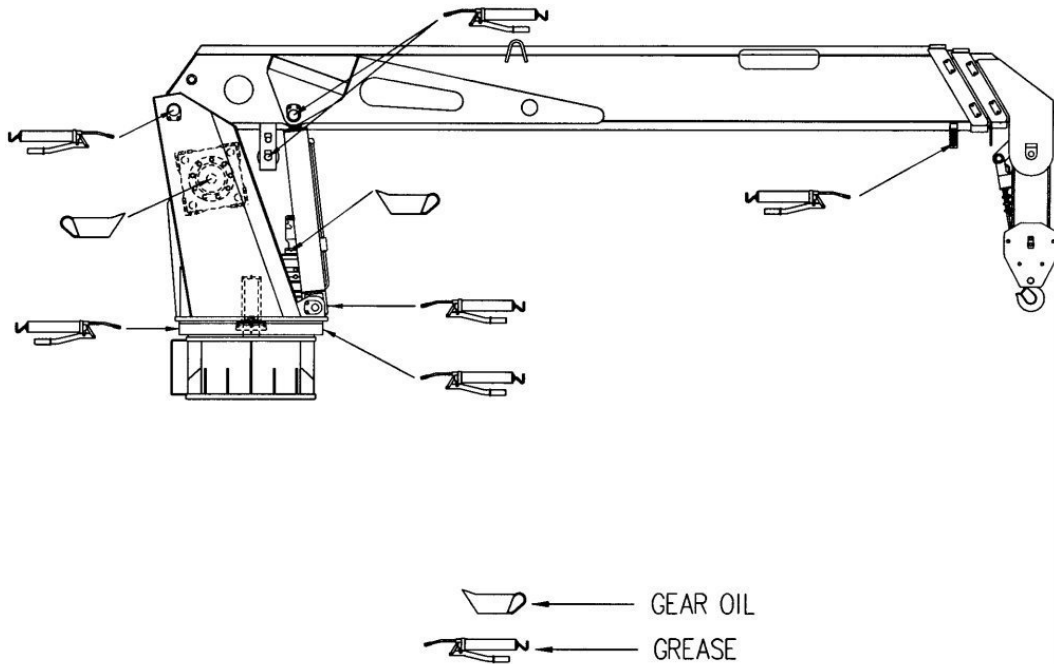
When changing the oil, change the filters at the same time. The hydraulic system and the hydraulic fluid are matched in respect of lubricating performance, effect on the seals and other materials, and non-inflammability. For this reason, do not mix different types of hydraulic fluid, such as mineral 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
- Total Equivis ZS 46

9 - 2 Lubrication

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
- Total Multis MS2

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
- Total Transmission TM 80W/90

10. Fault Tracing

Fault tracing is mainly based on organized routine for finding a certain functional disorder, its reason and how to correct it. The following charts contain some faults which may arise during operation, how they appear and which steps to be taken.

Most important, however, is that the crane is checked and necessary adjustments made before the crane is taken into operation.

Some common damages and disturbances:

- The crane is incorrectly used in a way for which it is not designed
- The crane and/or its accessories have not been properly maintained
- The crane is operated against obstacles

Fault	Possible reason	Measure
Overwinding alarm system will not be activated	<ul style="list-style-type: none"> ● Low battery voltage ● Fault in buzzer ● wire disconnect 	<ul style="list-style-type: none"> ● Change the battery ● Change the buzzer ● Connect
Still running the engine, but the crane will not operate	<ul style="list-style-type: none"> ● PTO disconnected ● Lack of operating oil ● Low setting of the relief valve ● Damage in pump 	<ul style="list-style-type: none"> ● Check the PTO ● Top up the oil ● Check the relief valve setting pressure ● Repair or change pump
Noise in power take off	<ul style="list-style-type: none"> ● Damages in bearing and/or gear ● Damage in drive shaft 	<ul style="list-style-type: none"> ● Repair or change <p>Change the drive shaft</p>
Noise in pump	<ul style="list-style-type: none"> ● Lack of oil ● Air leaking in suction pipe ● Loosening of mounting bolt of the pump ● Dirt in strainer ● Drive shaft alignment is not good ● Worn out universal joint ● Damage in pump casing 	<ul style="list-style-type: none"> ● Top up the oil ● Tightening ● Tightening ● Clean the strainer ● Realign ● Change ● Change

Boom do not extend	<ul style="list-style-type: none"> ● Dirt in counter balance valve or damage in seal ● Internal leakage in cylinder ● Sequence valve fault ● Lack of oil 	<ul style="list-style-type: none"> ● Clean and/or change ● Repair ● Clean/repair ● Top up the oil
Boom do not retract	Dirties in counter balance valve or damage in seal	Clean and/or change
Boom automatically retract when loaded	<ul style="list-style-type: none"> ● Internal leakage in cylinder ● Some leakage at connection parts ● Damage in check valve 	<ul style="list-style-type: none"> ● Repair ● Repair ● Clean and change the seal
Some noise in slewing system and/or insufficient torque	<ul style="list-style-type: none"> ● Damage of slewing gear ● Damage of the bearing in the gearbox ● Pump faulty ● Insufficient oil in the gearbox ● Motor faulty 	<ul style="list-style-type: none"> ● Change ● Change the bearing ● Repair/change pump ● Top up the gear oil ● Change motor
Jerky when slewing	<ul style="list-style-type: none"> ● Too much clearance in slewing gear and pinion ● Worn out of the wormwheel in gearbox ● Loosening of the gearbox mounting bolts 	<ul style="list-style-type: none"> ● Adjust the pinion gear ● Change the gearbox ● Tighten the bolts
Outrigger cylinder do not extend	<ul style="list-style-type: none"> ● Lack of oil ● Dirties in relief valve 	<ul style="list-style-type: none"> ● Top up the oil ● Clean and/or repair
Outrigger cylinder retract when loaded	<ul style="list-style-type: none"> ● Damage in pilot check valve ● Internal leakage in cylinder 	<ul style="list-style-type: none"> ● Repair/change ● Repair
Outrigger cylinder down when driving	<ul style="list-style-type: none"> ● Damage in pilot check valve ● Internal leakage in cylinder ● Leakage from the cylinder 	<ul style="list-style-type: none"> ● Repair/change ● Repair ● Repair
Leakage in winch motor	<ul style="list-style-type: none"> ● Drain line is clogged ● Damage of the packing 	<ul style="list-style-type: none"> ● Repair ● Repair
2 nd boom will not retract	Sequence valve faulty	Repair
3 rd boom will not extend	Sequence valve faulty	Repair

Appendix 1 : Wind speeds

Wind force	Wind speed averaged over 10 min. at a height of 10 m		characteristics
	Above flat ground		
	m/s	Wind type	
0	0.0 ~ 0.2	Calm	Calm, smoke rises vertically or nearly vertically
1	0.3 ~ 1.5	Slight breeze	Wind direction recognizable from smoke plumes, wind begins to be noticeable on the face; leaves begin to rustle and weather vanes can start to move
2	1.6 ~ 3.3		
3	3.4 ~ 5.4	Moderate wind	Leaves and twigs in continuous movement, small branches begin to move. Dust and paper begin to move over the ground
4	5.5 ~ 7.9		
5	8.0 ~ 10.7	Fairly strong wind	Small leaved branches make swaying movements : crested waves from on lakes and canals.
6	10.8 ~ 13.8	Strong wind	Large branches moving; you hear the wind whistling In the telephone wires : umbrellas can only be held With difficulty.
7	13.9 ~ 17.1	Severe wind	Entire trees moving; the wind causes difficulty when you walk into it.
8	17.2 ~ 20.7	Stormy wind	Twigs break off, walking is difficult.
9	20.8 ~ 24.4	Storm	Causes superficial damage to buildings(chimney pots, roof-tiles, and TV antennae are blown off).
10	24.5 ~ 28.4	Severe storm	Uprooted trees : considerable damage to buildings etc. (occurs infrequently on land).
11	28.5 ~32.6	Very severe storm	Causes extensive damage (occurs very infrequently on land).
12	>32.6	Hurricane	

Appendix 2 : Signals when using a crane

If you cannot see the load properly, someone else should give you signals. This appendix gives a number of the standard signals.

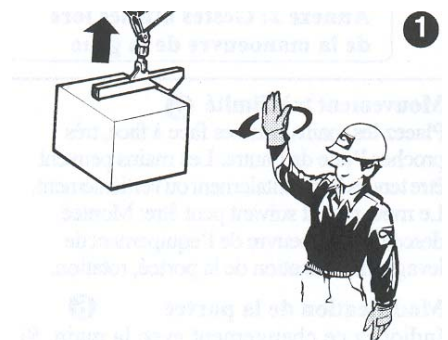
!NOTE

Have the person giving the signal stand facing you as far as possible.

The speed of the hand and arm movements indicate at what speed the crane movement should be made.

Lift

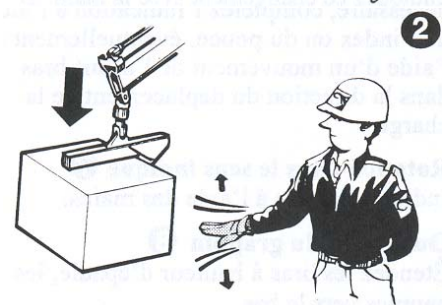
Rotate the fist about the wrist,
with the arm raised at an oblique angle.



Lower

With the arm outstretched, move the hand energetically up and down.

If necessary, the entire arm may be moved.

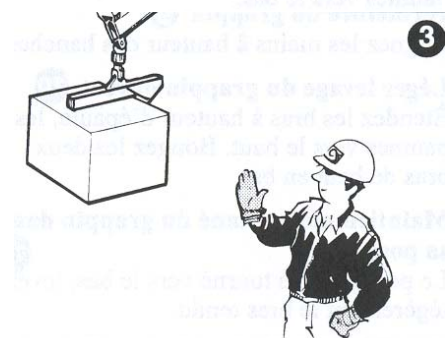


Stop all crane movements

Also : hold the load in position

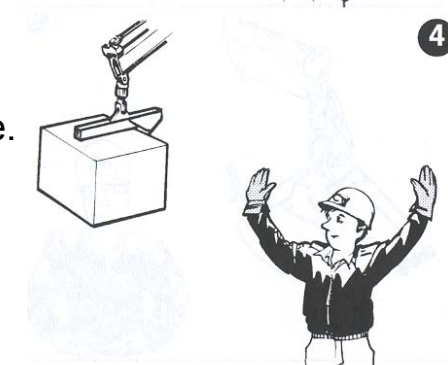
Raise the open hand, with the palm clearly visible, and the arm to shoulder height.

Keep the hand still.



Emergency stop for all movements by the crane.

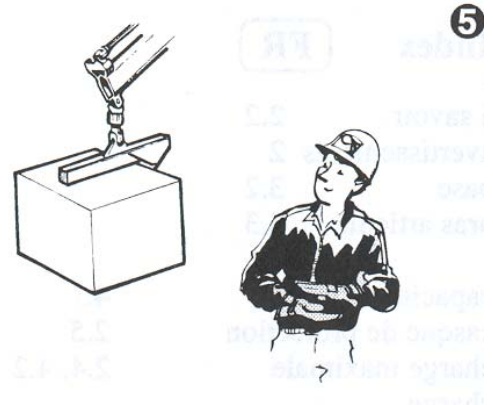
Raise the hands and the arms to an oblique angle.



Very short movement

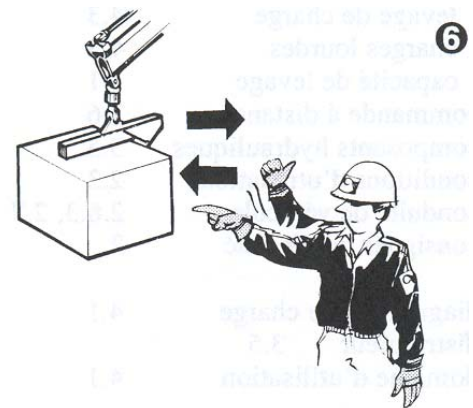
Place the hands a very short distance apart, with the palms facing each other.

The hands may be held either horizontally or vertically. The next movement may be :
Lift, lower, move the lifting gear, change the reach, or turn.



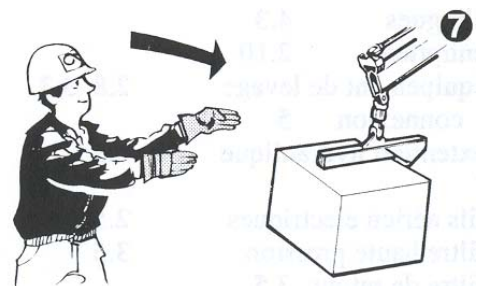
Change the reach

Indicate this by means of the hand, if necessary providing a precise indication with the index finger or the thumb and, if necessary, moving the forearm in the direction in which the load is to be moved.



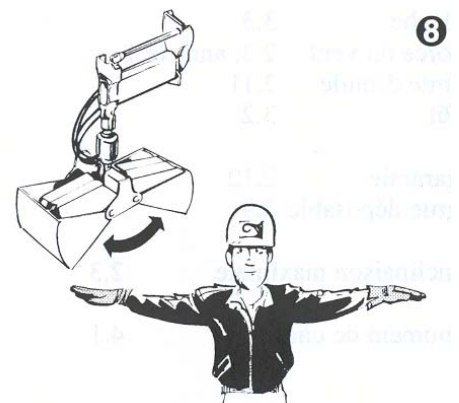
Turn in the direction indicated

Indicate the direction with the hands.



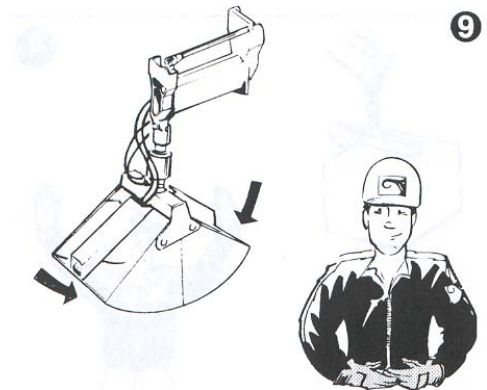
Open the grapple

Extend the arms at shoulder height, with the palms facing downwards.



Close the grapple

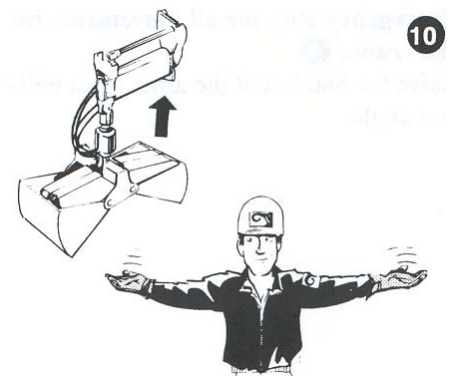
Move both hands close together.



Lift the open grapple a little

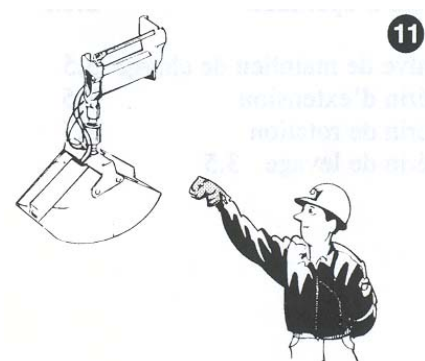
Extend both arms at shoulder height,
with the palms facing upwards.

Make vertical movements with
both arms outstretched.



Keep the grapple in position briefly

Raise the hand slightly drooping,
with the fist clenched.



EN



SPARE PARTS LIST

Cargotec Korea Ltd

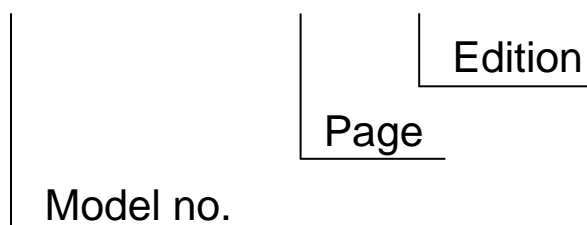
Instruction

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)

HIAB320T - 8 : 0



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 will be informed accordingly.



주요 부분 지시도
MAIN SUBDIVISIONS

HIAB320T-3 0 : 5
2016. 01.

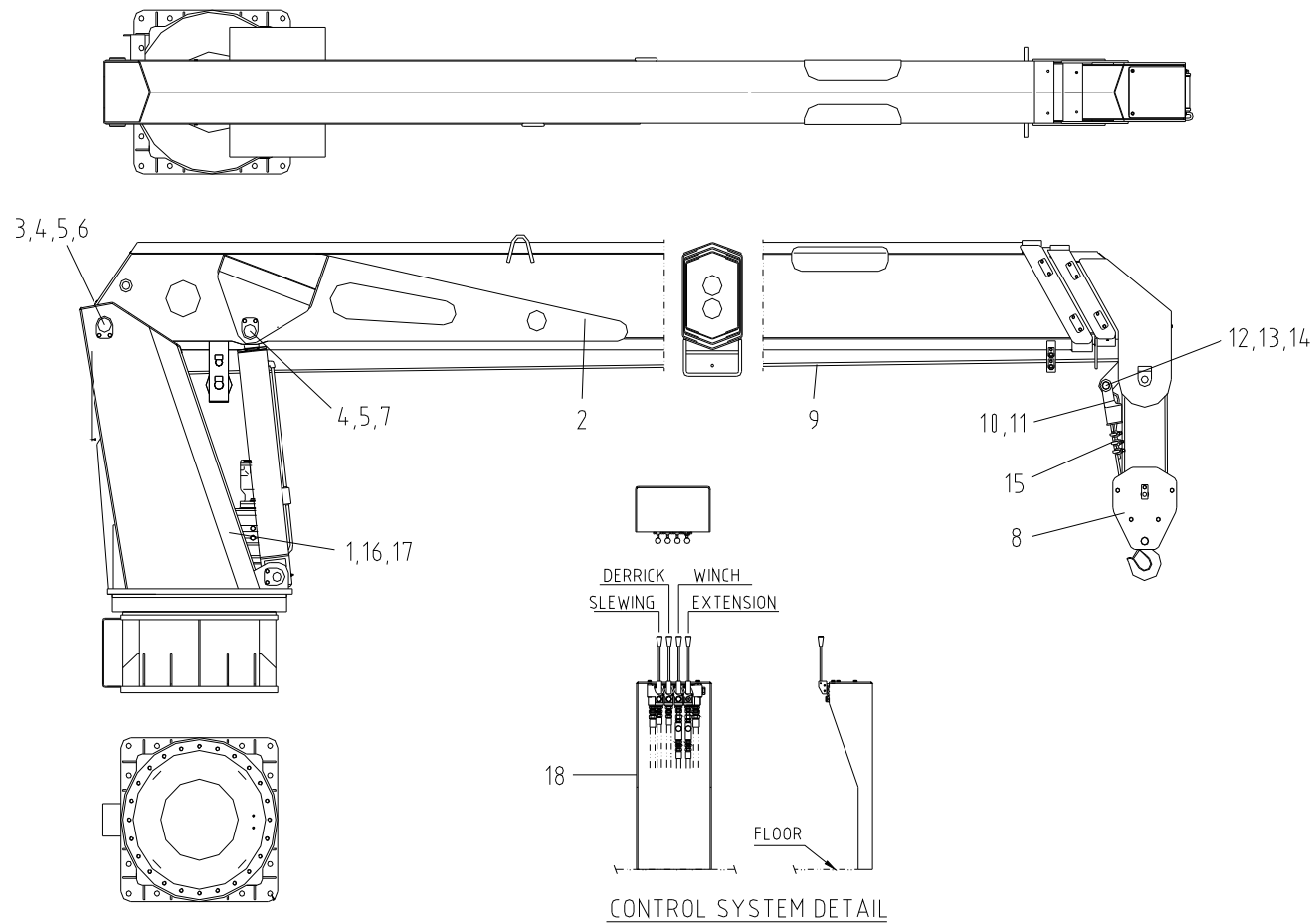
1	크레인 총 결합체 GENERAL ASS'Y, HIAB320T-3	HIAB320T-3 - 1 : 5	12	쉬브 결합체 SHEAVE ASS'Y	HIAB320T-3 - 12 : 0
2	베이스 및 칼럼 결합체 BASE & COLUMN ASS'Y	HIAB320T-3 - 2 : 2	13	베이스 및 칼럼 호스 결합체 BASE & COLUMN HOSE ASS'Y	HIAB320T-3 - 13 : 1
3	선회 구동 장치 SLEWING DRIVES	HIAB320T-3 - 3 : 2	14	제어 장치 CONTROL SYSTEM	HIAB320T-3 - 14 : 0
4	유압 모터 MOTOR, HYDRAULIC	HIAB320T-3 - 4 : 0	15	주 제어 밸브 MAIN CONTROL VALVE	HIAB320T-3 - 15 : 0
5	유압 윈치 WINCH HYDRAULIC	HIAB320T-3 - 5 : 0	16	스티커 배열 ARRANGEMENT, STICKER	HIAB320T-3 - 16 : 1
6	데릭 실린더 DERRICK CYLINDER	HIAB320T-3 - 6 : 1			
7	붐 장치 BOOM SYSTEM	HIAB320T-3 - 7 : 1			
8	신축 실린더 EXTENSION CYLINDER	HIAB320T-3 - 8 : 1			
9	1단 신축 실린더 1st EXTENSION CYLINDER	HIAB320T-3 - 9 : 1			
10	2단 신축 실린더 2nd EXTENSION CYLINDER	HIAB320T-3 - 10 : 1			
11	카운터 발란스 밸브 (B) VALVE, CONTER BALANCE(B)	HIAB320T-3 - 11 : 0			

SPARE PARTS LIST



크레인 총 결합체
GENERAL ASS'Y, HIAB 320T-3

HIAB320T-3 1 : 0
2013. 12.



SPARE PARTS LIST



크레인 총 결합체
GENERAL ASS'Y, HIAB 320T-3

HIAB320T-3 1:0
2013. 12.

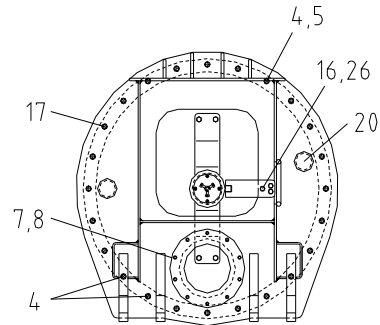
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-	A00-0113	크레인 총 결합체 GENERAL ASS'Y, HIAB320T-3			10	S01-1139	소켓 SOCKET	1	
1	A01-0397	베이스 및 칼럼 결합체 BASE & COLUMN ASS'Y	1		11	S01-1893	웨지 WEDGE	1	
2	A01-0398	붐 장치 BOOM SYSTEM	1		12	S01-1141	핀 PIN	1	Φ30
3	TT-4001	축 SHAFT	1		13	3511301	평 와셔 WASHER, PLAIN	1	WP30
4	2111526	육각볼트 BOLT, HEX. HEAD	6	BA12×30	14	1311341	분할 핀 PIN, SPLIT	1	PW5.9×45
5	3612121	스프링 와셔 WASHER, SPRING	6	WS12	15	S01-1096	와이어 로프 클립 CLIP, WIRE ROPE	3	Φ12.5
6	4610702	그리스 니플 NIPPLE, GREASE	1	PT1/8	16	A01-0399	스티커 배열 ARRANGEMENT, STICKER	1	
7	N01-2715	축 SHAFT	2		17	A01-1464	베이스 및 칼럼 호스 결합체 BASE & COLUMN HOSE ASS'Y	1	
8	A01-1631	쉬브 결합체 SHEAVE ASS'Y	1	11 ton	18	A01-1465	제어 장치 CONTROL SYSTEM	1	V80-4
9	S01-1744	와이어 로프 ROPE, WIRE	1	Φ12.5×80m					

SPARE PARTS LIST

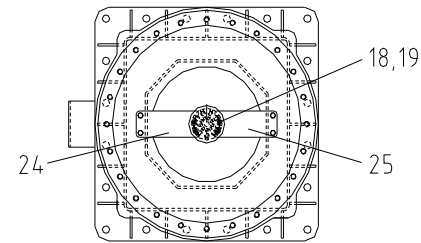


베이스 및 칼럼 결합체
BASE & COLUMN ASS'Y

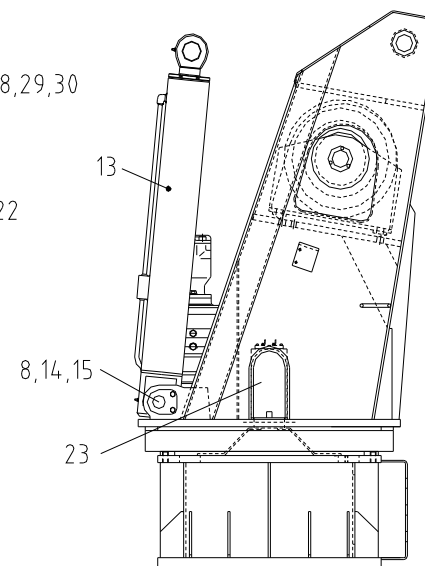
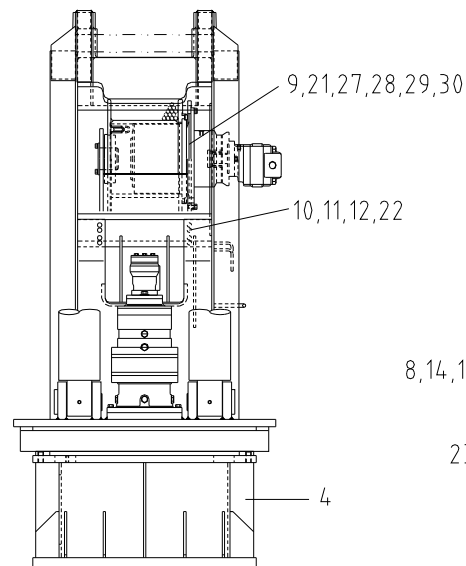
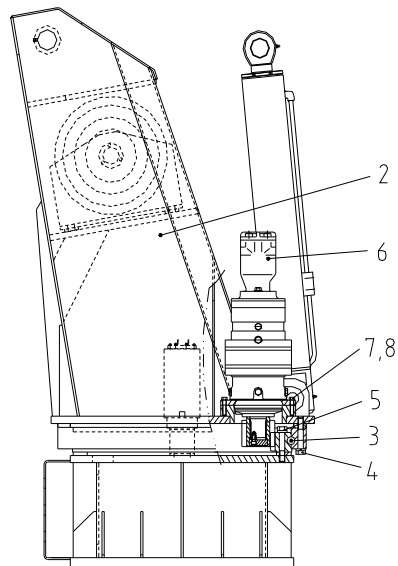
HIAB320T-3 2 : 2
2015. 02.



COLUMN+SLEWING BEARING DETAIL



BASE ASS'Y+SLEWING BEARING DETAIL



SPARE PARTS LIST



베이스 및 칼럼 결합체
BASE & COLUMN ASS'Y

HIAB320T-3 2 : 2
2015. 02.

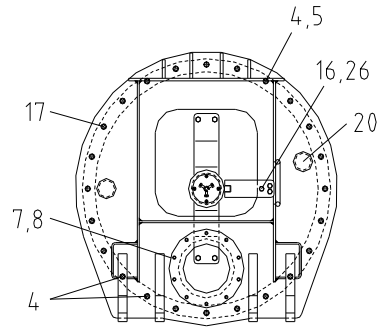
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-	A01-0397	베이스 및 칼럼 결합체 BASE & COLUMN ASS'Y	1		10	3612161	스프링 와셔 WASHER, SPRING	4	WS16
1	A05-1392	베이스 결합체 BASE ASS'Y	1		11	2617206	육각 렌치 볼트 BOLT, HEX. S/HEAD	4	BB16×70
2	A02-1355	칼럼 결합체 COLUMN ASS'Y	1		12	3111167	육각 너트 NUT, HEX.	4	NA16
3	BC-4004	회전 베어링 BEARING, SLEWING	1		13	H01-8728	데릭 실린더 CYLINDER, DERRICK	2	저온용 씰
4	S01-1287	육각 볼트 BOLT, HEX. HEAD	30	BA20×110	14	S01-3102	축 SHAFT	2	
5	S01-1160	스프링 와셔 WASHER, SPRING	48	WS20	15	2111527	육각 볼트 BOLT, HEX. HEAD	4	BA12×30
6	A02-1528	선회 구동 장치 SLEWING DRIVES	1		16	A05-4335	브라켓 BRACKET	1	t=15.2
7	2611567	육각 렌치 볼트 BOLT, HEX. S/HEAD	10	BB12×50	17	S01-1158	육각 볼트 BOLT, HEX. HEAD	18	BA20×120
8	3612121	스프링 와셔 WASHER, SPRING	14	WS12	18	2111237	육각 볼트 BOLT, HEX. HEAD	4	BA10×35
9	H02-0054	메인 윈치 WINCH HYDRAULIC	1	SOOSAN BG8	19	3612101	스프링 와셔 WASHER, SPRING	4	WS10

SPARE PARTS LIST

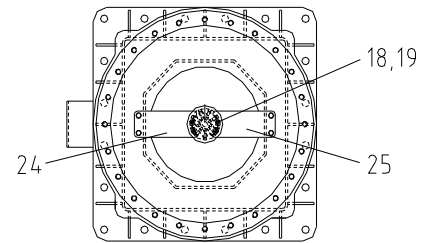


베이스 및 칼럼 결합체
BASE & COLUMN ASS'Y

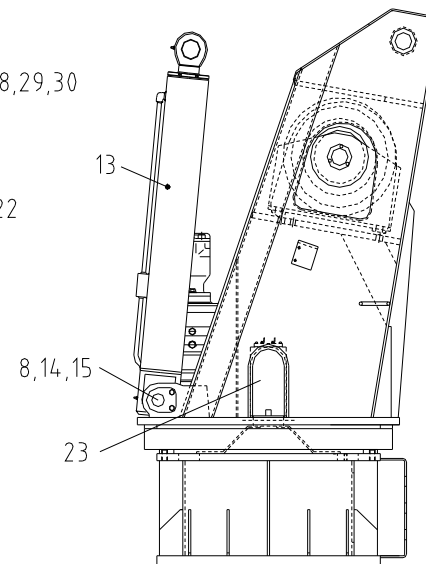
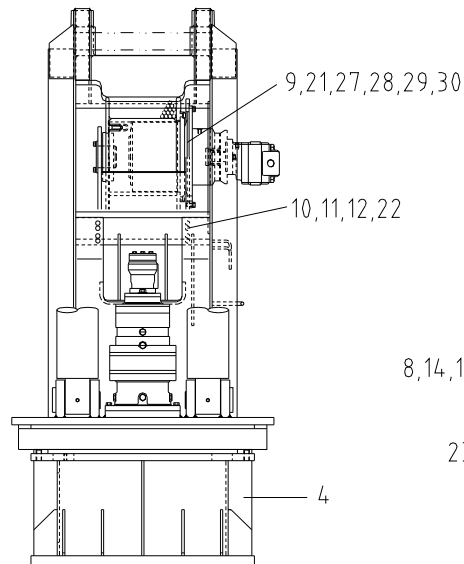
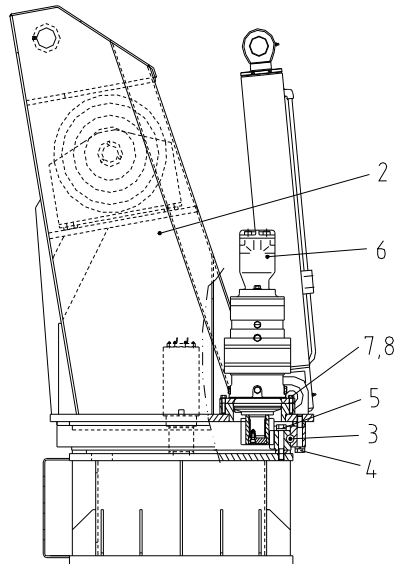
HIAB320T-3 2 : 2
2015. 02.



COLUMN+SLEWING BEARING DETAIL



BASE ASS'Y+SLEWING BEARING DETAIL



SPARE PARTS LIST



베이스 및 칼럼 결합체
BASE & COLUMN ASS'Y

HIAB320T-3 2 : 2
2015. 02.

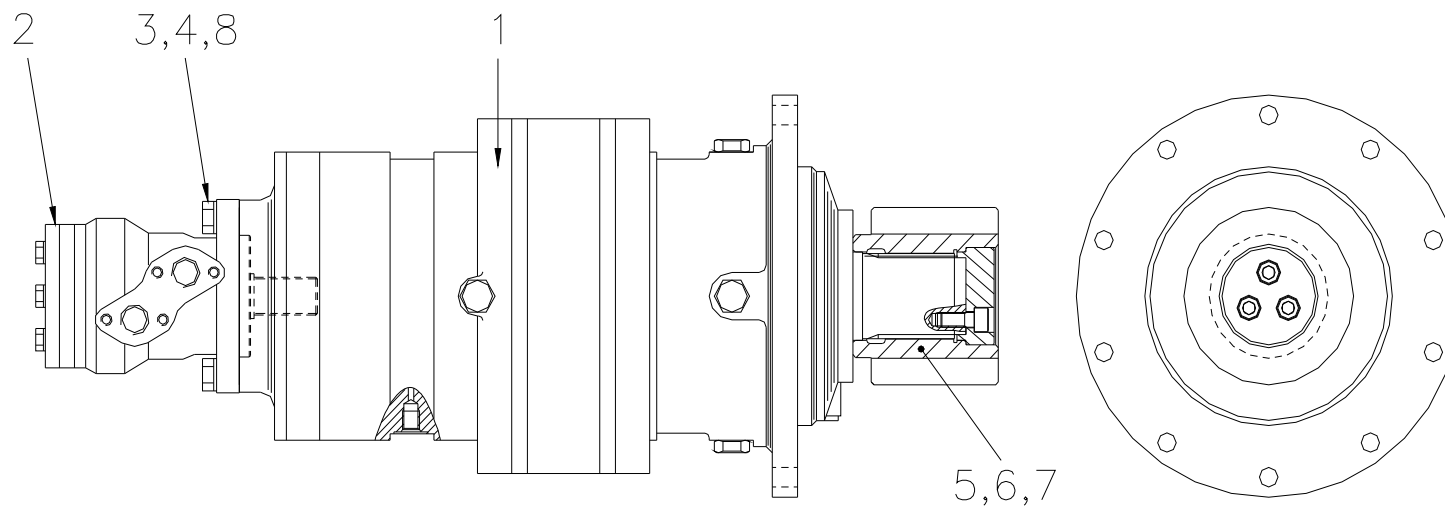
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20	S01-1009	MC커버 COVER, MC	2	Φ70×40L	30	S01-0005	셀프 로킹 너트 NUT, SELF LOCKING	4	M8
21	W01-2056	플레이트 PLATE	1						
22	3511161	평 와셔 WASHER, PLAIN	4	WP16					
23	A02-2090	로타리 조인트 결합체 ROTARY JOINT ASS'Y	1	9 PORT					
24	W01-6380	브라켓 BRACKET (L.H)	1	t=12					
25	W01-6381	브라켓 BRACKET (R.H)	1	t=12					
26	BO-0005	접시 머리 볼트 BOLT, FLAT HEAD	7	M10×35L					
27	W02-1116	플레이트 PLATE	1						
28	S01-2314	접시 머리 볼트 BOLT, FLAT HEAD	2	M8×25					
29	988 0658	접시 머리 볼트 BOLT, FLAT HEAD	2	M8×30					

SPARE PARTS LIST



선회 구동장치
SLEWING DRIVES

HIAB320T-3 3 : 2
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SPARE PARTS LIST



선회 구동장치
SLEWING DRIVES

HIAB320T-3 3:2
2016. 01.

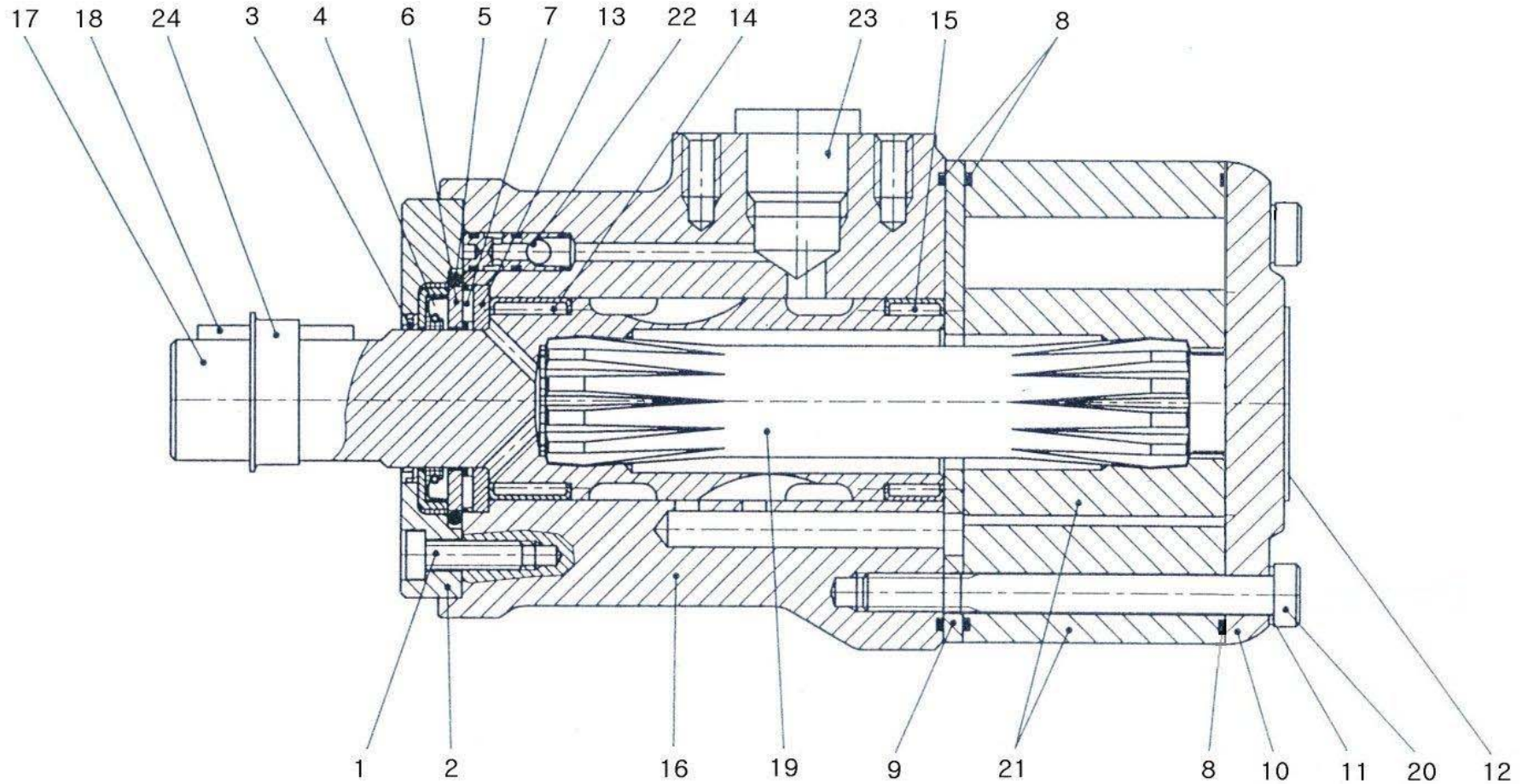
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-	A02-1528	선회 구동장치 SLEWING DRIVES	1						
1	H02-0510	선회 감속기 REDUCER, SLEWING	1	ED2046					
2	RT-0015	유압 모터 MOTOR, HYDRAULIC	1	OMR-160					
3	3612121	스프링 와셔 WASHER, SPRING	2	WS12					
4	2111527	육각머리 볼트 BOLT, HEX. HEAD	2	BA12×30					
5	S01-3101	피니언 기어 GEAR, PINION	1						
6	M01-1434	축 커버 COVER, SHAFT	1						
7	2611207	구멍볼이 육각 볼트 BOLT, HEX. SOCKET HEAD	3	BB10×25					
8	S01-0469	가스켓 GASKET	1						

SPARE PARTS LIST



유압 모터
MOTOR, HYDRAULIC

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2013. 12.



SPARE PARTS LIST



유압 모터
MOTOR, HYDRAULIC

HIAB320T-3 4 : 0
2013. 12.

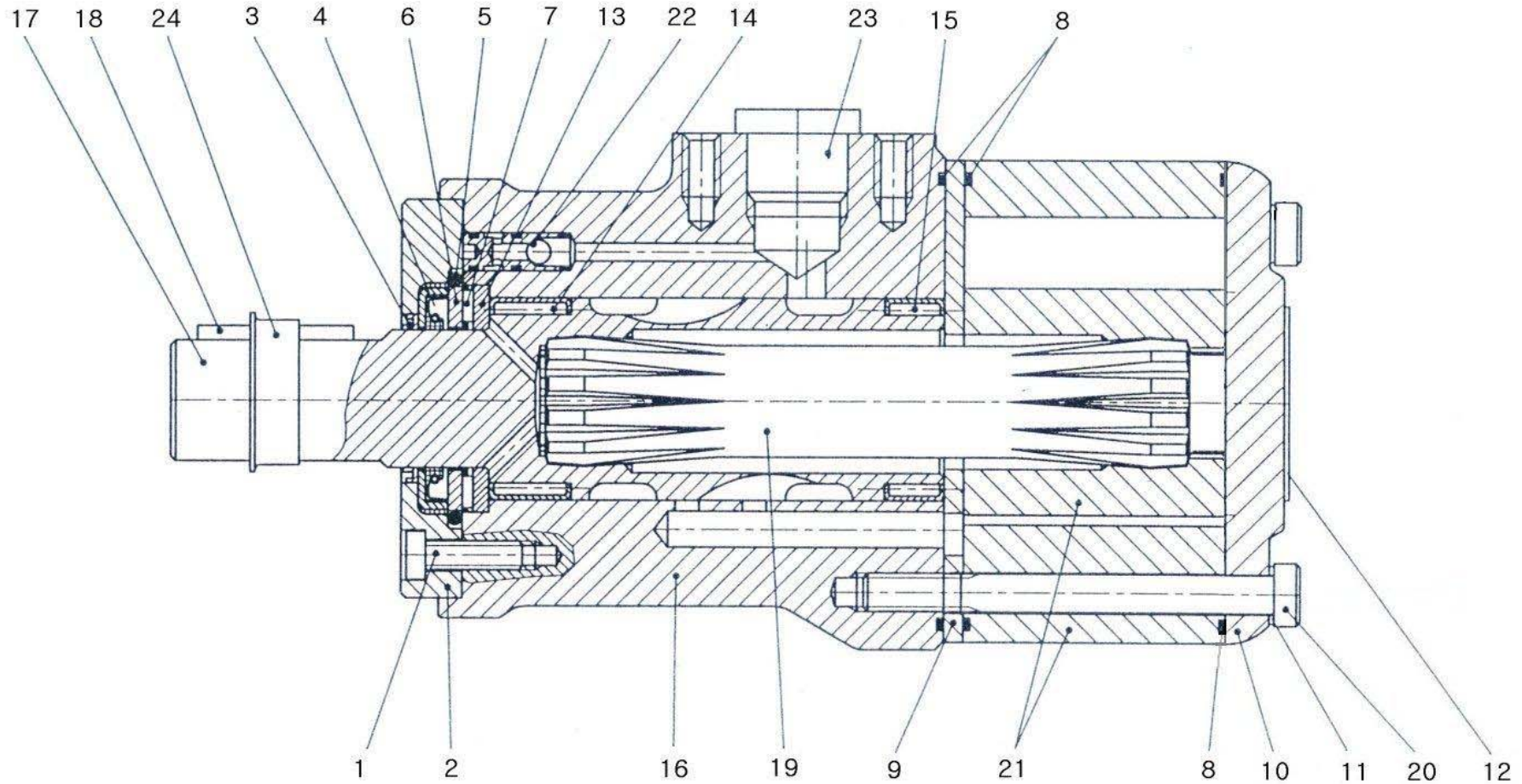
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-	RT-0015	유압 모터 MOTOR, HYDRAULIC	1	OMR160 (151-0404) SPLINE TYPE	10	151-5568	엔드 커버 COVER, END	1	
1	151-5459	스피겟 플렌지 SPIGOT FLANGE	1		11	684X0076	와셔 WASHER	7	
2	681X1989	스크류 SCREWS	6		12	151A0411	네임 플레이트 PLATE, NAME	1	
3	151-1313	더스트 시일 링 SEAL RING, DUST	1		13	151-1940	베어링 레이스 RACE, BEARING	1	
4	633B3385	샤프트 시일 SEAL, SHAFT	1		14	981X0009	니들 부시 BUSH, NEEDLE	1	
5	633B1191	O-링 O-RING	1		15	981X0010	니들 부시 BUSH, NEEDLE	1	
6	151-1931	베어링 레이스 RACE, BEARING	1		16	151-5516	하우징 HOUSING	1	*
7	981X0008	엑셀 니들 베어링 NEEDLE BEARING, AXIAL	1		17	151-5599	아우풋 샤프트 OUTPUT SHAFT (CYLINDERICAL)	1	*
8	633B1301	O-링 O-RING	5		18	682L8036	평행키 PARALLEL KRY	1	
9	151-1702	디스트리뷰터 플레이트 PLATE, DISTRIBUTOR	1		19	151-5593	카단 샤프트 CADAN SHAFT	1	

SPARE PARTS LIST



유압 모터
MOTOR, HYDRAULIC

HIAB320T-3 4:0
2013. 12.



SPARE PARTS LIST



유압 모터
MOTOR, HYDRAULIC

HIAB320T-3 4 : 0
2013. 12.

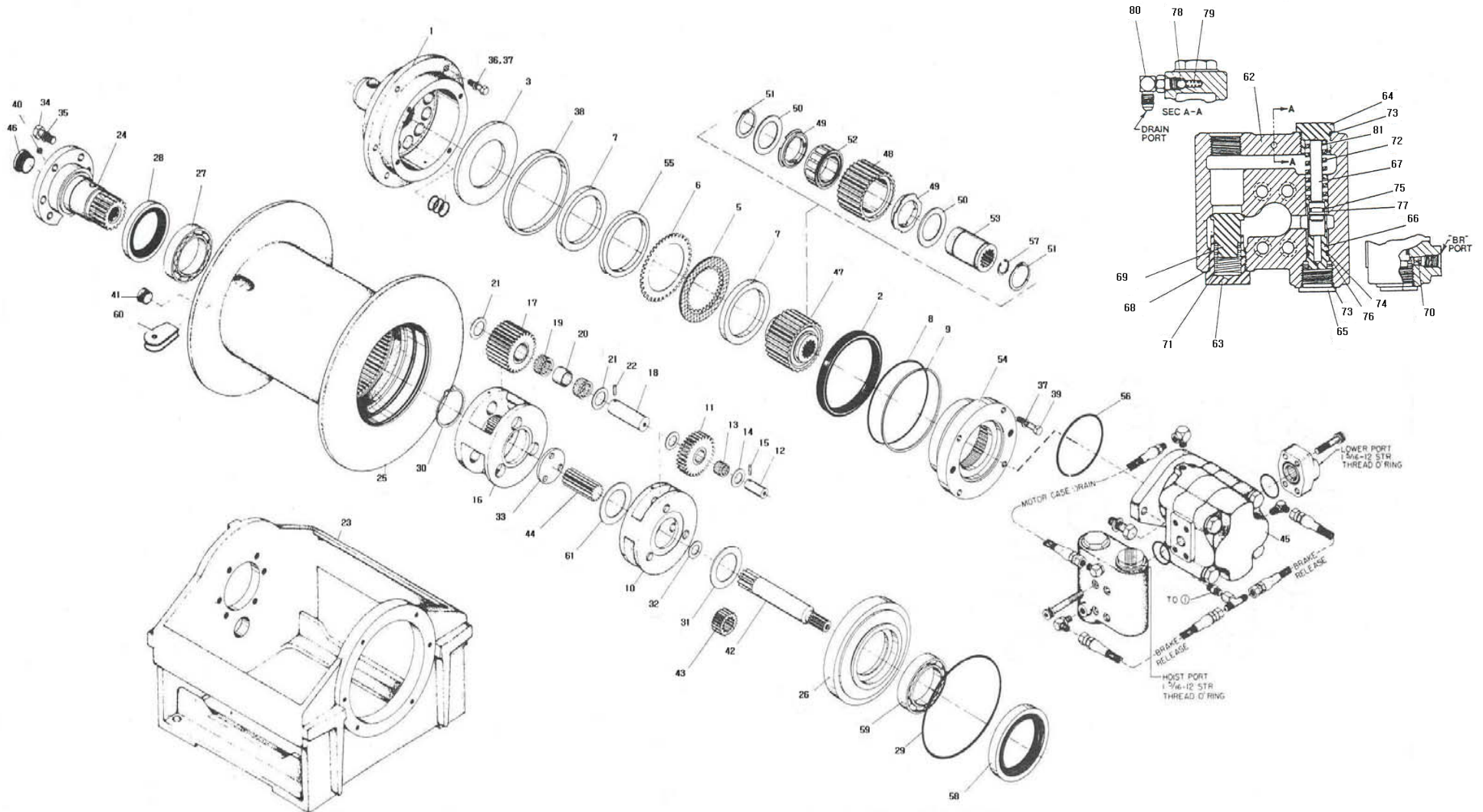
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20	681X0393	스크류 SCREW	7						
21	151-1141	기어 휠 세트 SET, GEAR WHEEL	1						
22	151-1076	체크 밸브 CHECK VALVE	2						
23	633X0017	시일 플러그 PLUG, SEAL	2						
24	151-1651	평행키 안전링 SECURING RING FOR PARALLEL KEY	1						
-	151-1287	시일 키트 KIT, SEAL	1	PARTS MARKED *					

SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

HIAB320T-3 5 : 0
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SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

HIAB320T-3 5:0
2013. 12.

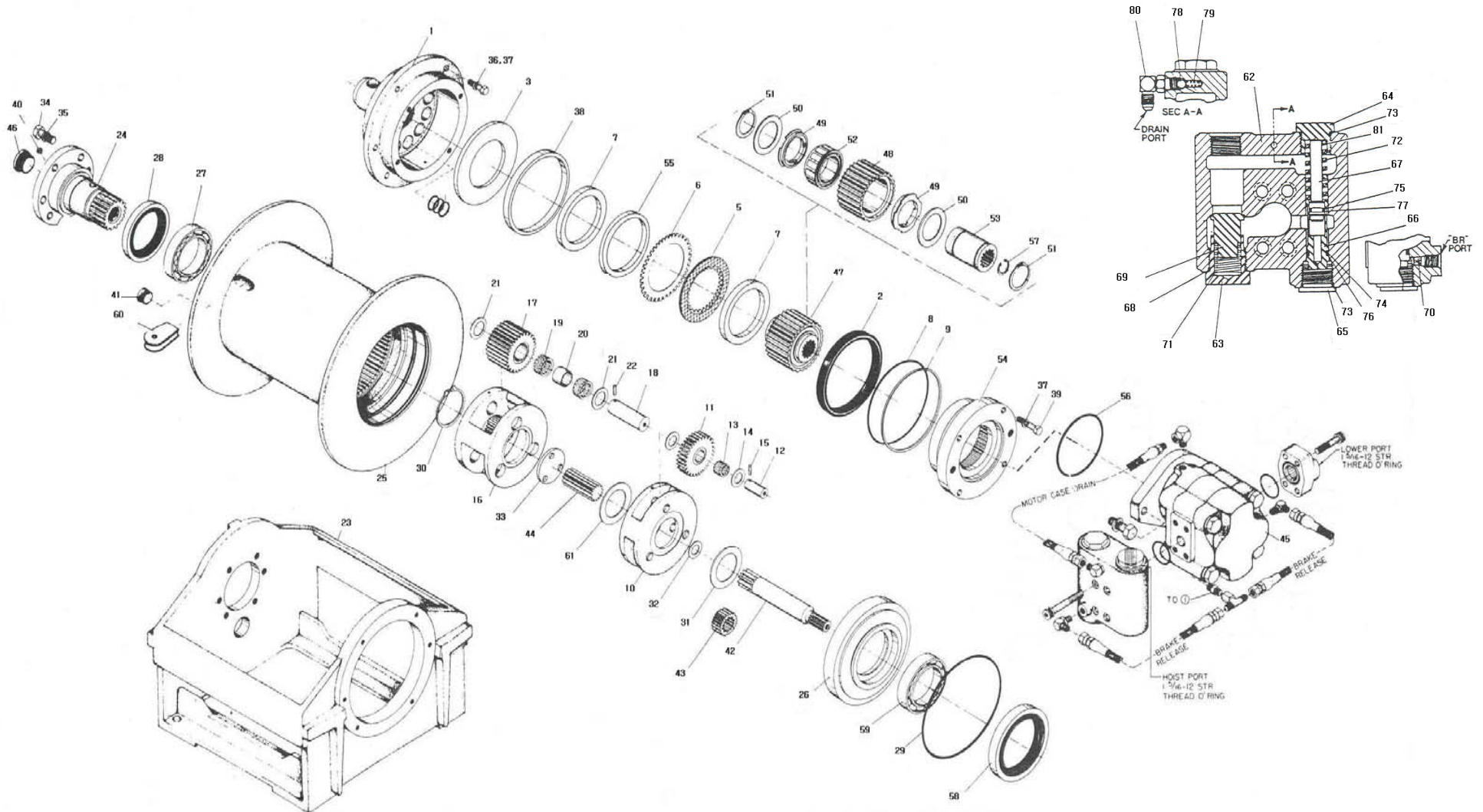
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-	H02-0054	유압 윈치 HYDRAULIC WINCH	1	SOOSAN BG8	10	25513	프라이메리 프렌이트 케리어 CARRIER, PRIMARY PLANET	1	
1	28840	브레이크 실린더 BRAKE CYLINDER	1		11	26275	프라이메리 프렌이트 기어 GEAR, PRIMARY PLANET	3	
2	25642	시일 SEAL	1		12	25332	프라이메리 프렌이트 기어 축 SHAFT, PRIMARY PLANET GEAR	3	
3	25636	압력 플레이트 PLATE, PRESSURE	1		13	25333	롤러 베어링 BEARING, ROLLER	3	
4	25644	스프링 SPRING	12	*	14	24914	스러스트 와셔 WASHER, THRUST	6	
5	21036	프릭션 디스크 DISC, FRICTION	5		15	12026	롤핀 ROLLPIN	3	
6	21029	스틸 디스크 DISC, STEEL	6		16	25514	아우풋 프렌이트 케리어 CARRIER, OUTPUT PLANET	1	
7	25637	스페이서 SPACER	2		17	26274	아우풋 프렌이트 기어 GEAR, OUTPUT PLANET	3	
8	24981	O-링 O-RING	1		18	25666	프렌이트 기어 축 SHAFT, PLANET GEAR	3	
9	25643	백업 링 RING, BACK-UP	1		19	24175	롤러 베어링 BEARING, ROLLER	6	

SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

HIAB320T-3 5 : 0
2013. 12.



SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

HIAB320T-3 5:0
2013. 12.

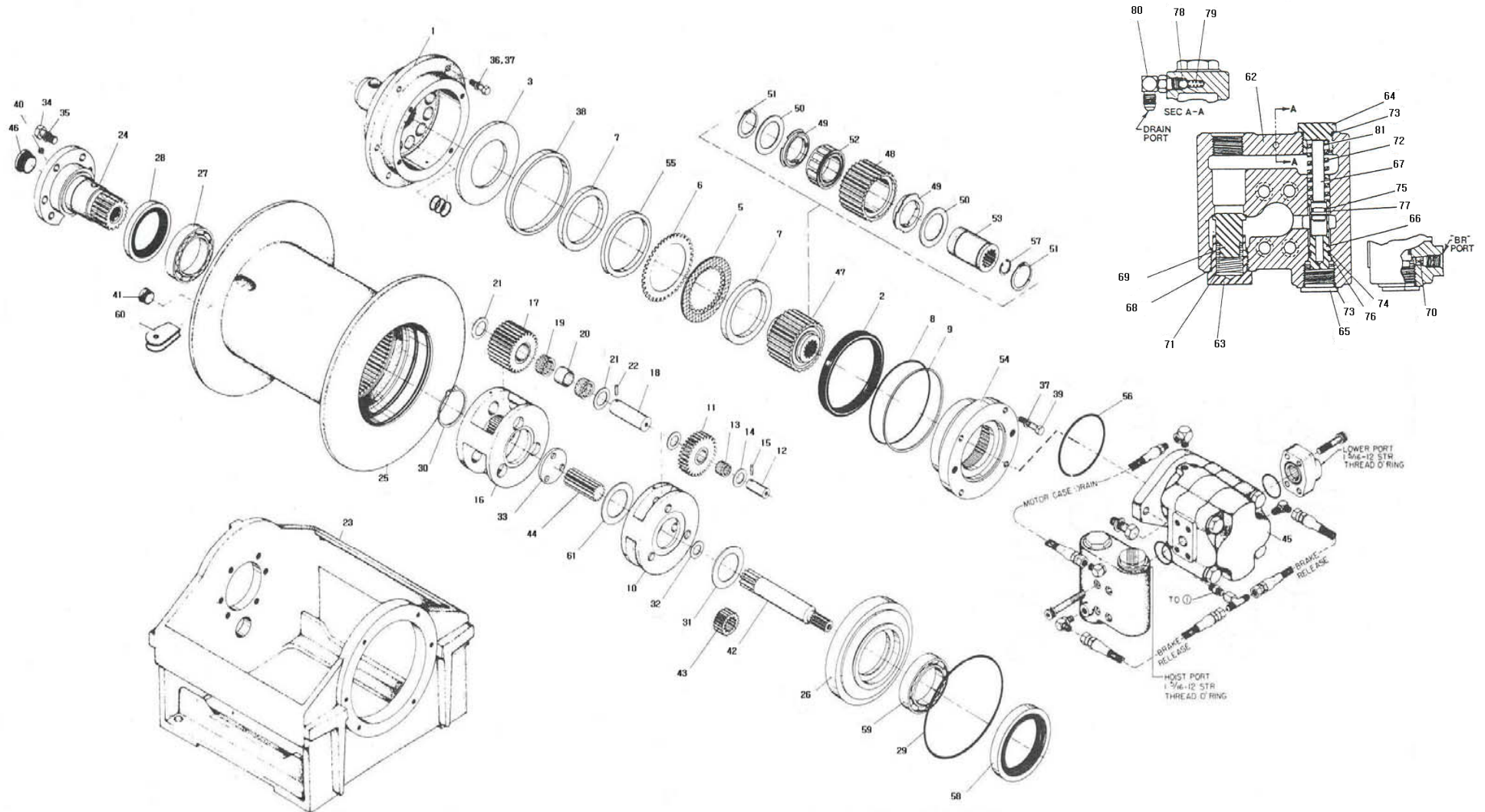
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20	24890	베어링 스페이서 SPACER, BEARING	3		30	25528	스냅 링 RING, SNAP	1	
21	25361	스러스트 와셔 WASHER, THRUST	6		31	25300	스러스트 와셔 WASHER, THRUST	1	
22	21049	롤핀 ROLLPIN	3		32	25942	스러스트 와셔 WASHER, THRUST	1	
23	25977	베이스 BASE	1		33	25542	스러스트 플레이트 PLATE, THRUST	1	
24	28843	베어링 서포트 SUPPORT, BEARING	1		34	13938	캡 스크루 SCREW, CAP	6	
25	28842	케이블 드럼 DRUM, CABLE	1		35	11026	로크 와셔 WASHER, LOCK	6	
26	28841	케이블 드럼 크로저 CLOSURE, CABLE DRUM	1		36	11776	캡 스크루 SCREW, CAP	6	
27	25299	베어링 BEARING	1		37	18003	로크 와셔 WASHER, LOCK	10	
28	28844	오일 시일 SEAL, OIL	1		38	25636	피스톤 백업 링 BACK UP RING, PISTON	1	
29	22358	O-링 O-RING	1		39	22703	캡 스크루 SCREW, CAP	4	

SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

HIAB320T-3 5 : 0
2013. 12.



SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

HIAB320T-3 5:0
2013. 12.

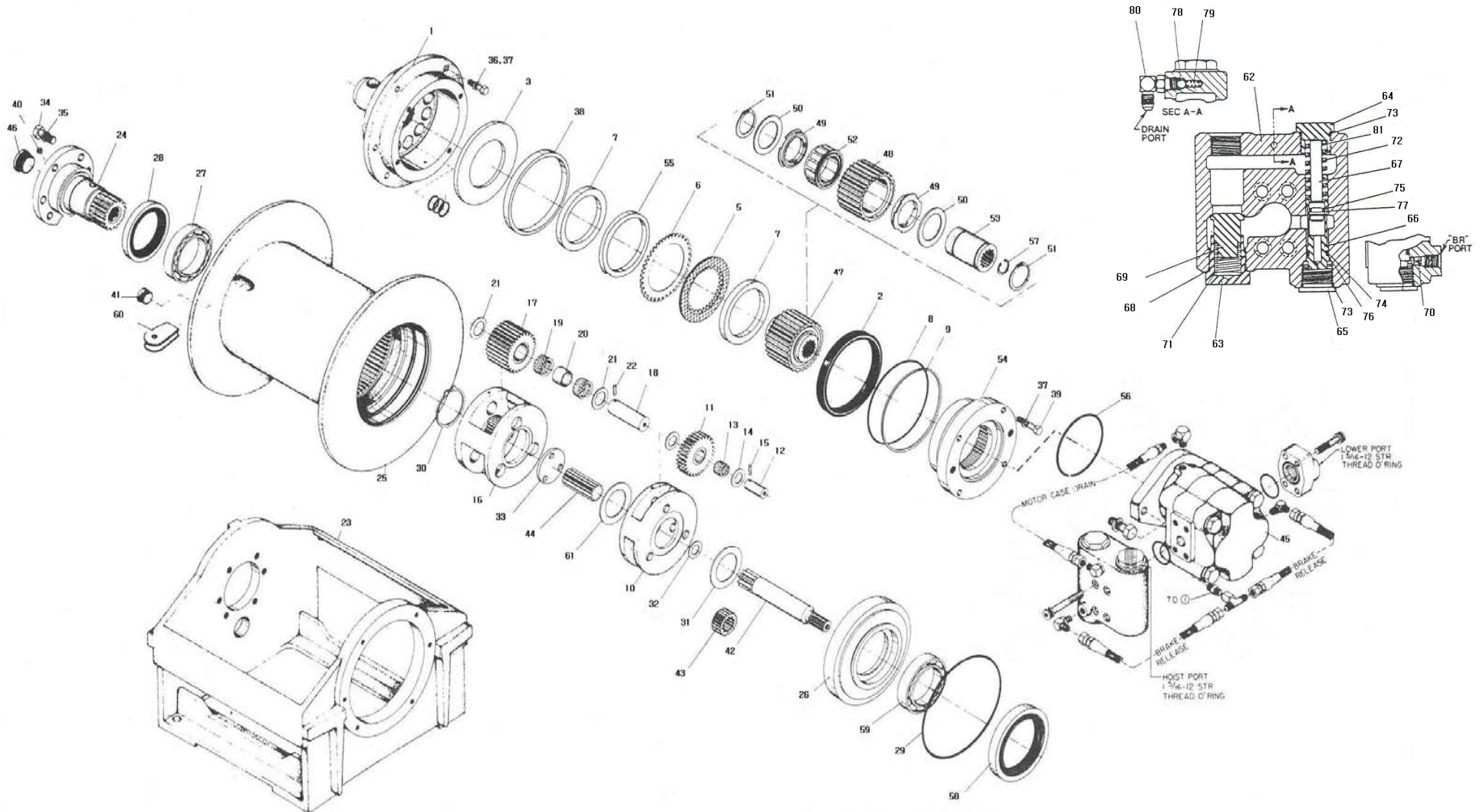
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40	18062	벤트 플러그 PLUG, VENT	1		50	24581	스러스트 베어링 BEARING, THRUST	2	
41	32411	O-링 플러쉬 플러그 PLUG, O-RING FLUSH	1		51	12034	멈춤 링 RING, RETAINING	2	
42	25511	프라이메리 선 기어 SUN GEAR, PRIMARY	1		52	NSS	스프랭 클러치 CLUTCH, SPRAG	1	*
43	25507	프라이메리 선 기어 아답터 ADAPTOR, PRIMARY SUN GEAR	1		53	NSS	이너 브레이크 레이스 RACE, INNER BRAKE	1	*
44	25509	아우풋 선 기어 SUN GEAR, OUTPUT	1		54	25920	모터 서포트 SUPPORT, MOTOR	1	
45	25385	모터 MOTOR	1		55	24892	브레이크 스페이서 SPACER, BRAKE	2	
46	24420	플러그 PLUG	1		56	21063	O-링 O-RING	1	
47	81987	브레이크 클러치 어셈블리 ASSEMBLY, BRAKE CLUTCH	1		57	32115	표준 멈춤링 RETAINING RING, INTERNAL	1	
48	NSS	아우터 브레이크 레이스 RACE, OUTER BRAKE	1	*	58	28994	오일 시일 SEAL, OIL	1	
49	27684	스프랭 베어링 BEARING, SPRAG	2		59	72385	베어링 BEARING	1	

SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

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2013. 12.



SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

HIAB320T-3 5:0
2013. 12.

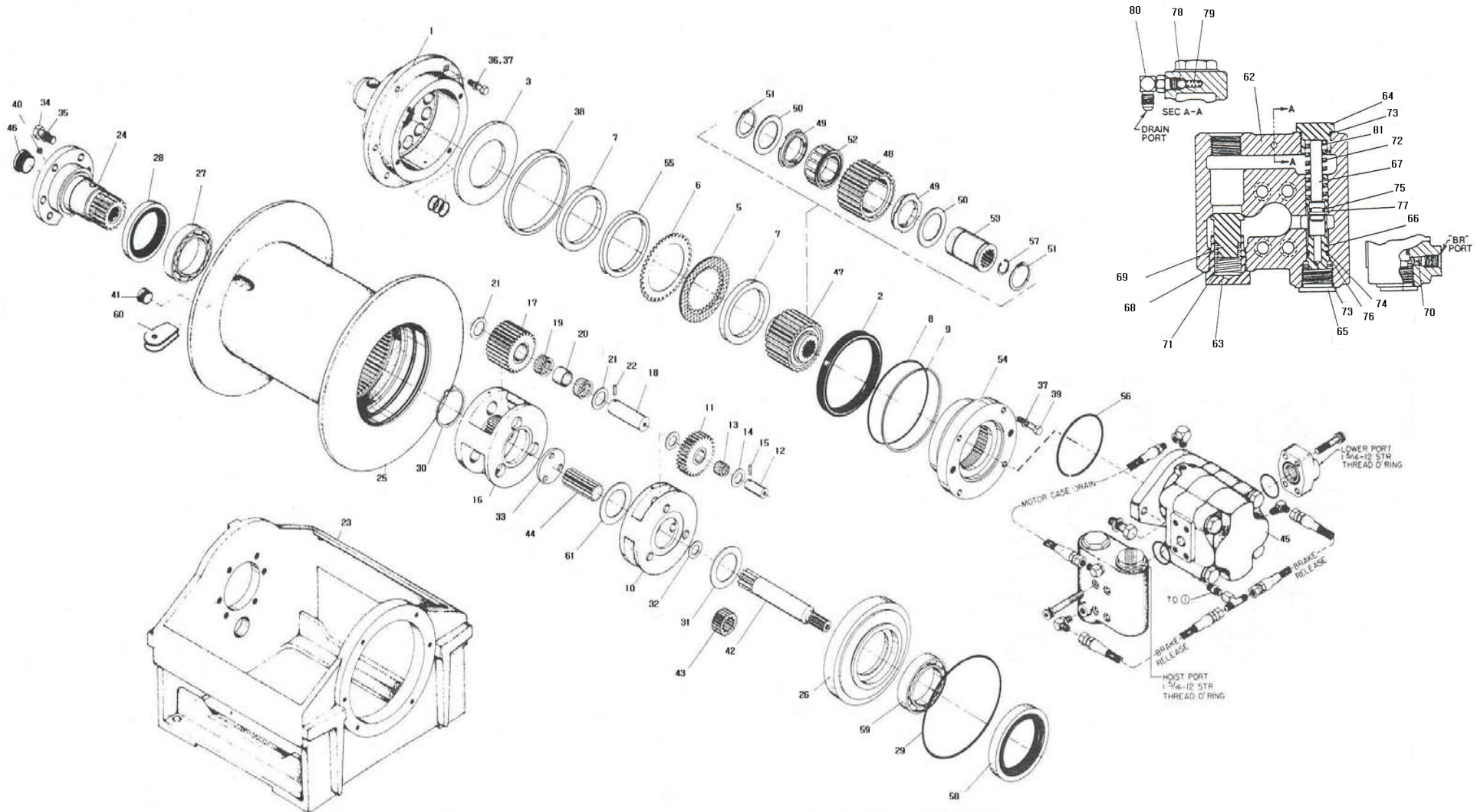
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60	74780	케이블 양카 ANCHOR, CABLE	1		70	24200	파일럿 오리피스 ORIFICE, PILOT	1	
61	76142	스러스트 와셔 WASHER, THRUST	1		71	24190	체크 밸브 스프링 SPRING, CHECK VALVE	1	
62	NSS	밸브 하우스 HOUSING, VALVE	1		72	24192	스풀 스프링 SPRING, SPOOL	2	
63	NSS	스프링 리트레이너 RETAINER, SPRING	1		73	23601	O-링 O-RING	1	*
64	NSS	스프링 리트레이너 RETAINER, SPRING	1		74	24193	O-링 O-RING	1	*
65	NSS	플러그 PLUG	1		75	24194	O-링 O-RING	1	*
66	NSS	스풀 SPOOL	1		76	24195	백업 링 RING, BACK UP	1	*
67	NSS	댐퍼 피스톤 PISTON, DAMPER	1		77	24196	백업 링 RING, BACK UP	1	*
68	24186	O-링 O-RING	1	*	78	21158	체크 볼 BALL, CHECK	1	
69	NSS	체크 밸브 파핏 POPPET, CHECK VALVE	1		79	25480	체크 볼 스프링 SPRING, CHECK BALL	1	

SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

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SPARE PARTS LIST



유압 윈치
HYDRAULIC WINCH

HIAB320T-3 5:0
2013. 12.

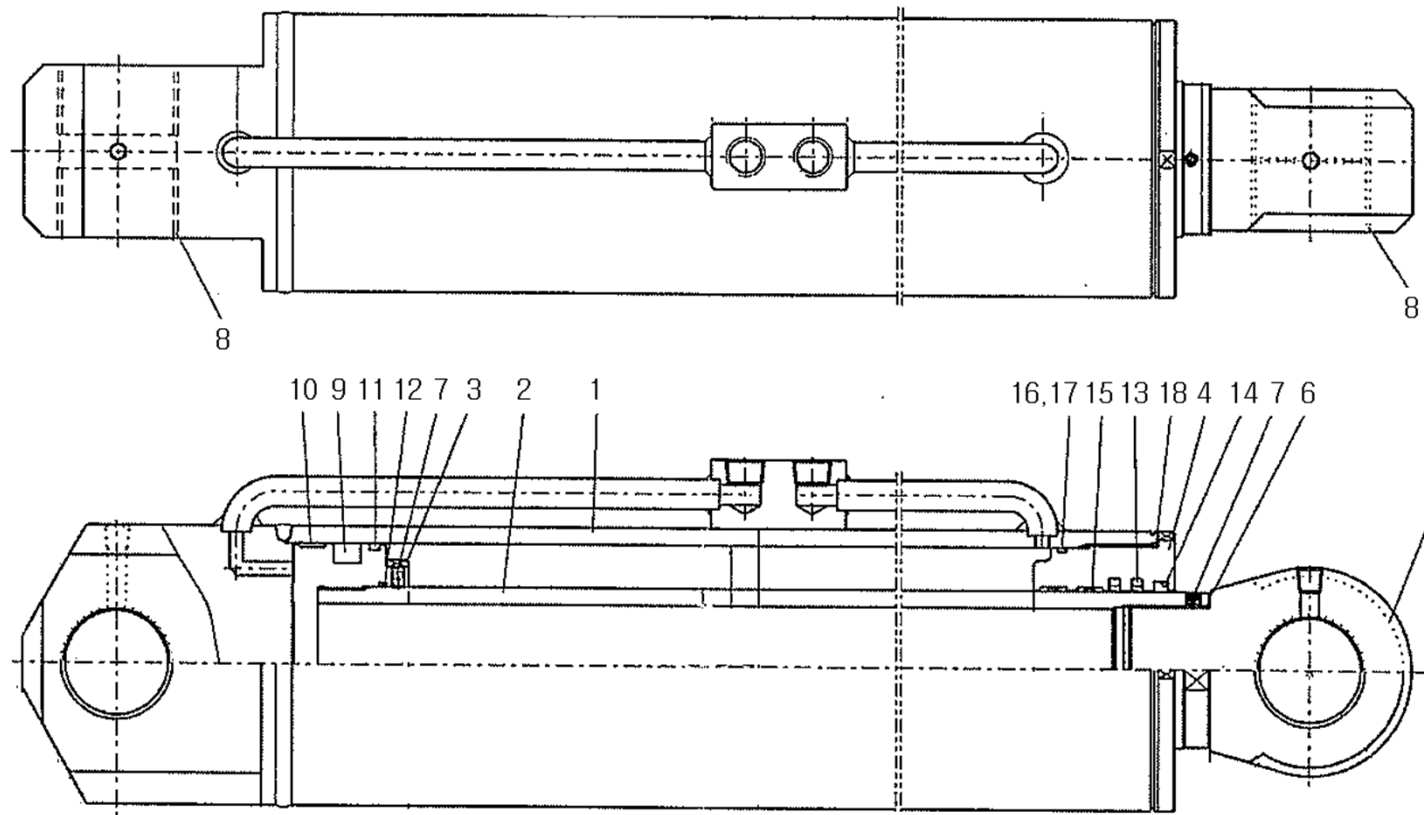
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80	25302	엘보 피팅 FITING, ELBOW	1						
81	25661	밸브 스프링 심 SHIM, VALVE SPRING	1						

SPARE PARTS LIST



데릭 실린더
DERRICK CYLINDER

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SPARE PARTS LIST



데릭 실린더
DERRICK CYLINDER

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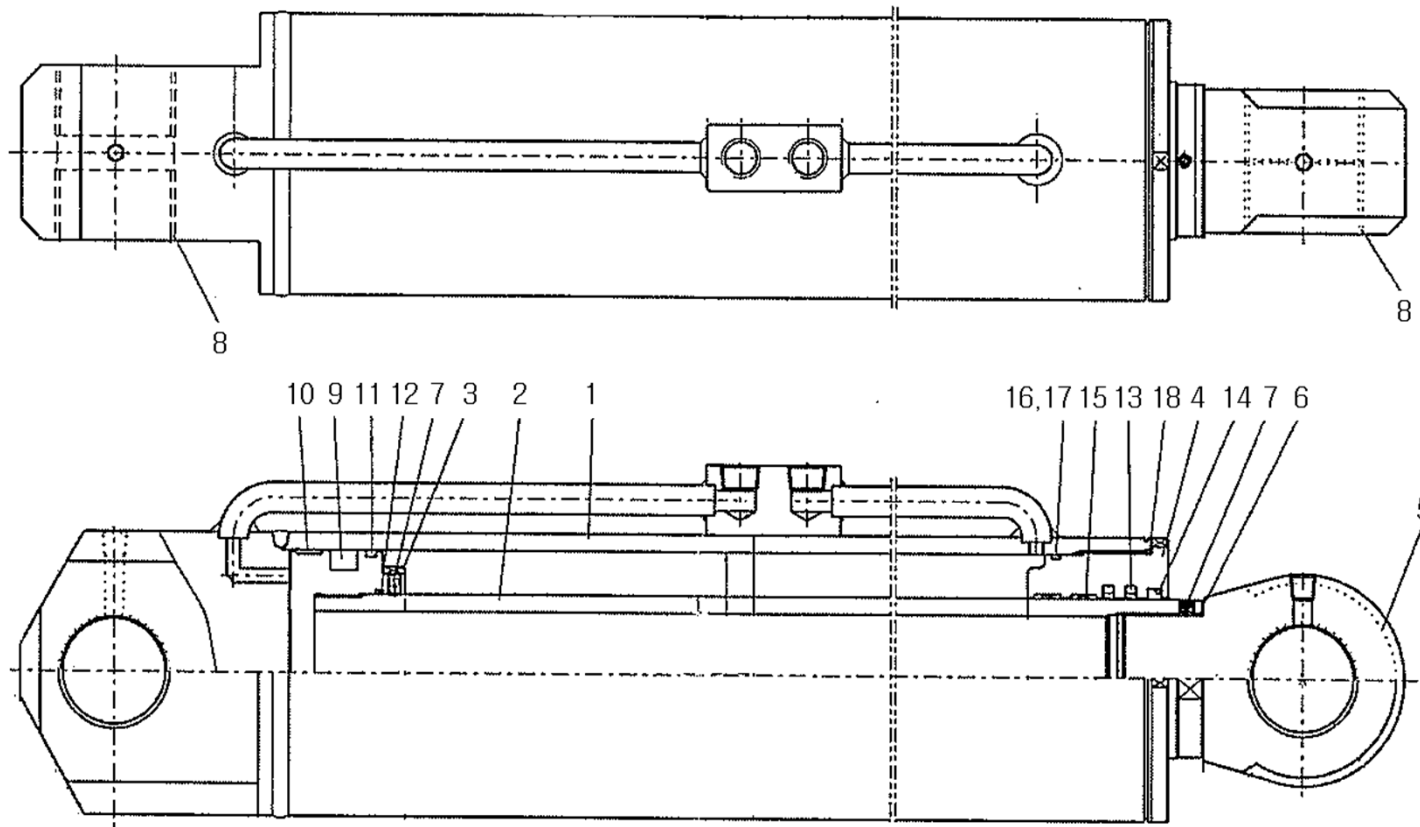
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-	H01-8728 HN92DNA00	데릭 실린더 DERRICK CYLINDER	2		10	S01-4262	웨어 링 RING, WEAR	2	Φ140×Φ135×15W
1	HN04DN010-01	튜브 결합체 TUBE ASS'Y	1		11	-	더스트 링 RING, DUST	1	Φ140×Φ132×6W
2	HN04DN020	로드 결합체 ROD ASS'Y	1		12	6012382	O-링 O-RING	1	1B G90
3	HN92DNA30	피스톤 PISTON	1		13	S01-4260	로드 패킹 PACKING, ROD	2	RS1300900-T46N
4	HN92DNA40	로드 커버 COVER, ROD	1		14	S01-4261	더스트 와이퍼 WIPER, DUST	1	WE5200800-T46N
5	HN04DN040	너클 KNUCKLE	1		15	S01-4263	웨어 링 RING, WEAR	2	Φ90×Φ95×15W
6	HN04DN050	심 SHIM	1	Φ75×Φ85×1t	16	6012472	O-링 O-RING	1	1B G135
7	2350556	세트 스크류 SCREW, SET	1	M8×P1.25×8L	17	6035881	백업 링 RING, BACK-UP	1	T3 G135
8	4325481	DX 부싱 BUSHING, DX	4	PM6540DX	18	-	O-링 O-RING	1	1B G140
9	-	피스톤 패킹 PACKING, PISTON	1	PK0401400-T46NP					

SPARE PARTS LIST



데릭 실린더
DERRICK CYLINDER

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SPARE PARTS LIST



데릭 실린더
DERRICK CYLINDER

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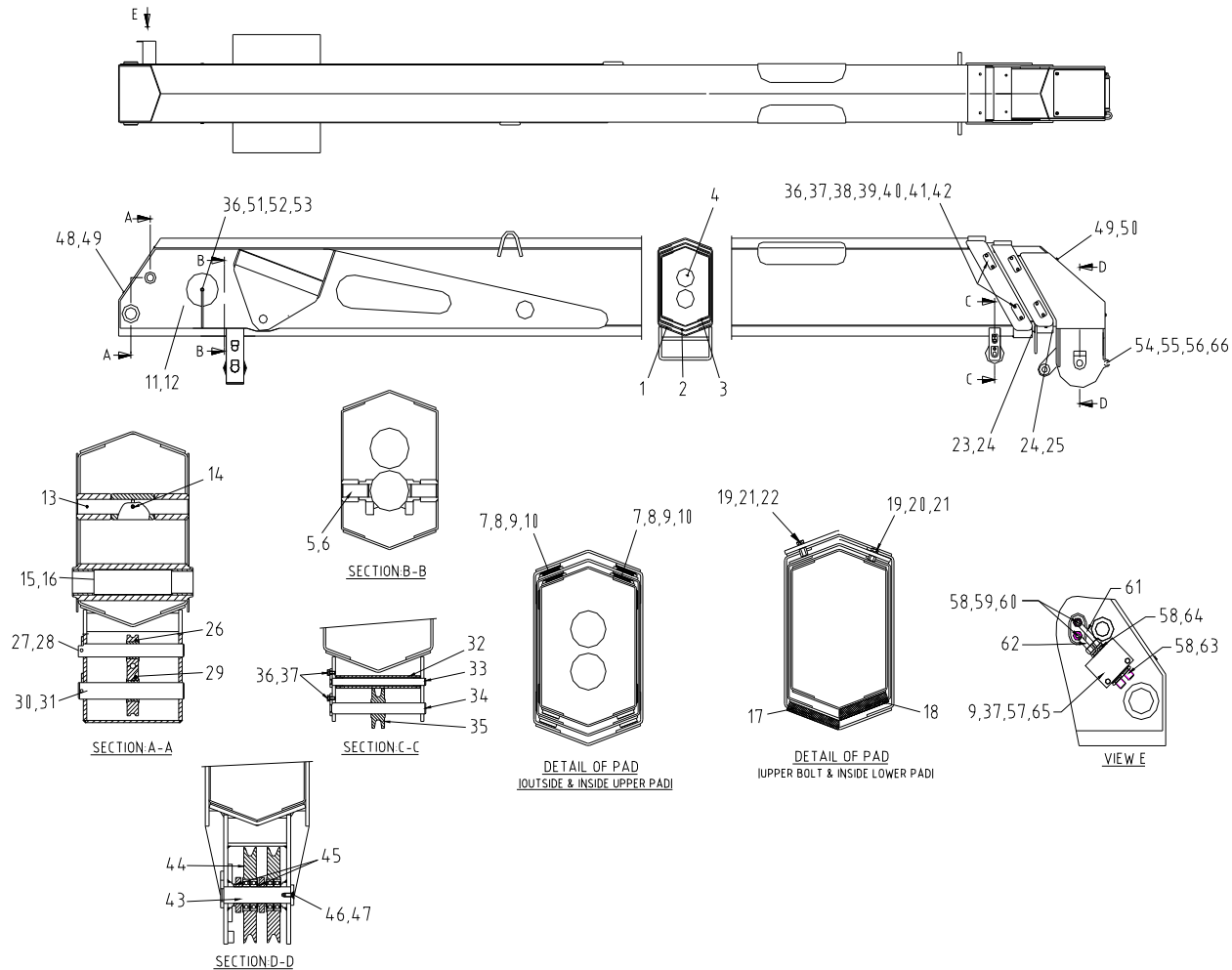
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-	A02-2880	데릭 수리 키트 DERRICK REPAIR KIT	1						
-	A05-3126	데릭 로드 커버 결함체 DERRICK ROD COVER ASS'Y	1						
-	A05-3127	데릭 피스톤 결함체 DERRICK PISTON ASS'Y	1						
-	S01-5841	시일 키트 KIT, SEAL	1						

SPARE PARTS LIST



붐 장치 BOOM SYSTEM

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SPARE PARTS LIST



붐 장치
BOOM SYSTEM

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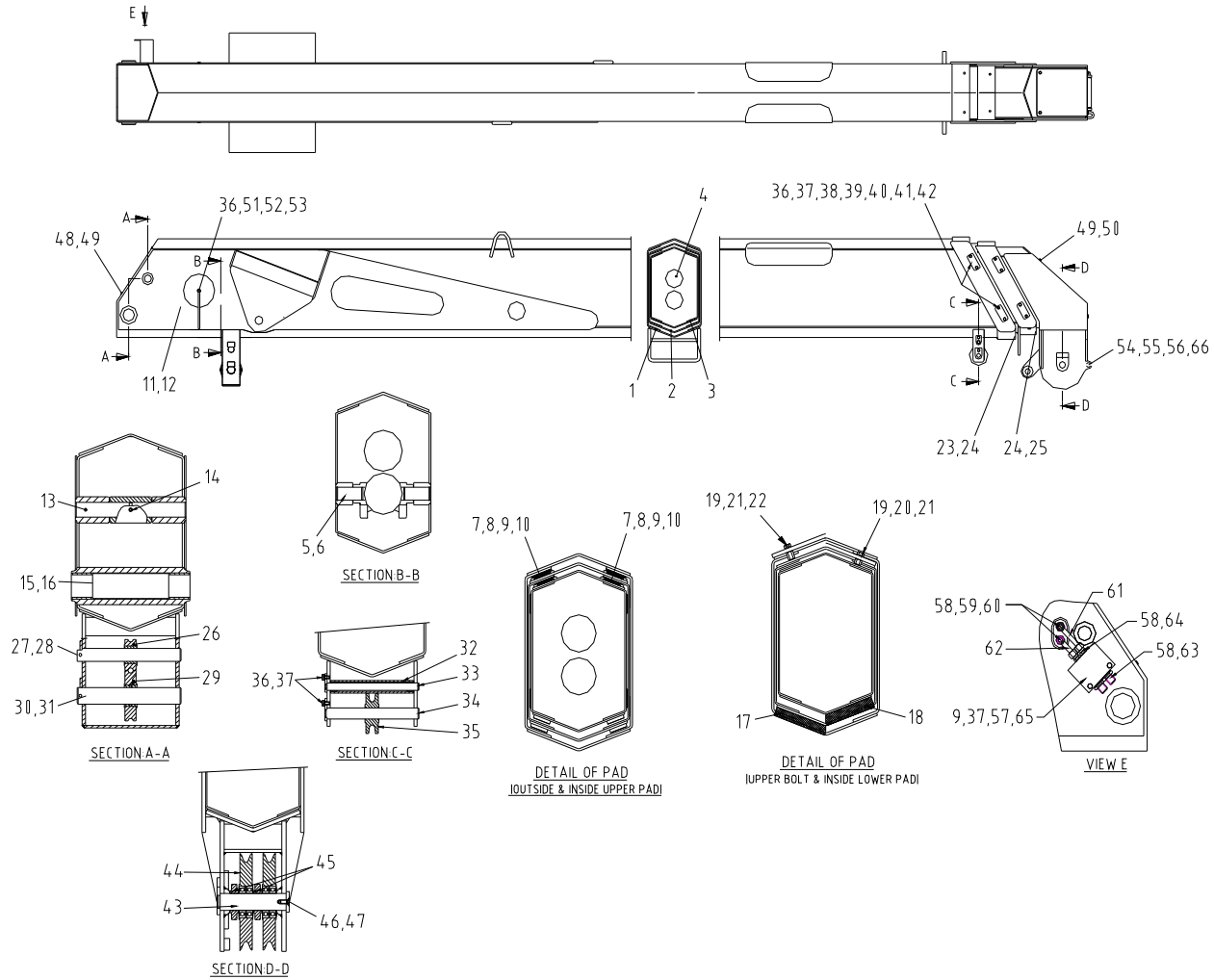
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-	A01-0398	붐 장치 BOOM SYSEM	1		10	BO-4021	슬라이드 패드 PAD, SLIDE	4	
1	A02-1351	1단 붐 결합체 1st BOOM ASS'Y	1		11	BO-4027	축 SHAFT	1	Φ40×280
2	A02-1352	2단 붐 결합체 2nd BOOM ASS'Y	1		12	4525351	멈춤 링 RING, RETAINING	2	RB40
3	A02-1353	3단 붐 결합체 3rd BOOM ASS'Y	1		13	BO-4028	축 SHAFT	1	Φ40×325
4	H01-8716	신축 실린더 CYLINDER, EXTENSION	1		14	2340796	세트 스크루 SCREW, SET (STICK END)	1	BM10×16
5	BO-4025	축 SHAFT	2	Φ35×75	15	M01-0857	스페이서 SPACER	1	
6	4525311	멈춤 링 RING, RETAINING	2	RB35	16	4328491	BI 부싱 BUSHING, BI-METAL	2	657060BI
7	BO-0015	스톱퍼 STOPPER	4		17	S01-2986	슬라이드 패드 PAD, SLIDE	2	
8	2241786	세트 스크루 SCREW, SET (C/SUNK)	4	BC8×20	18	S01-2987	슬라이드 패드 PAD, SLIDE	2	
9	S01-0005	셀프 로킹 너트 NUT, SELF LOCKING	6	M8	19	2111246	육각 볼트 BOLT, HEX, HEAD	4	BA10×40

SPARE PARTS LIST



붐 장치 BOOM SYSTEM

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SPARE PARTS LIST



붐 장치
BOOM SYSTEM

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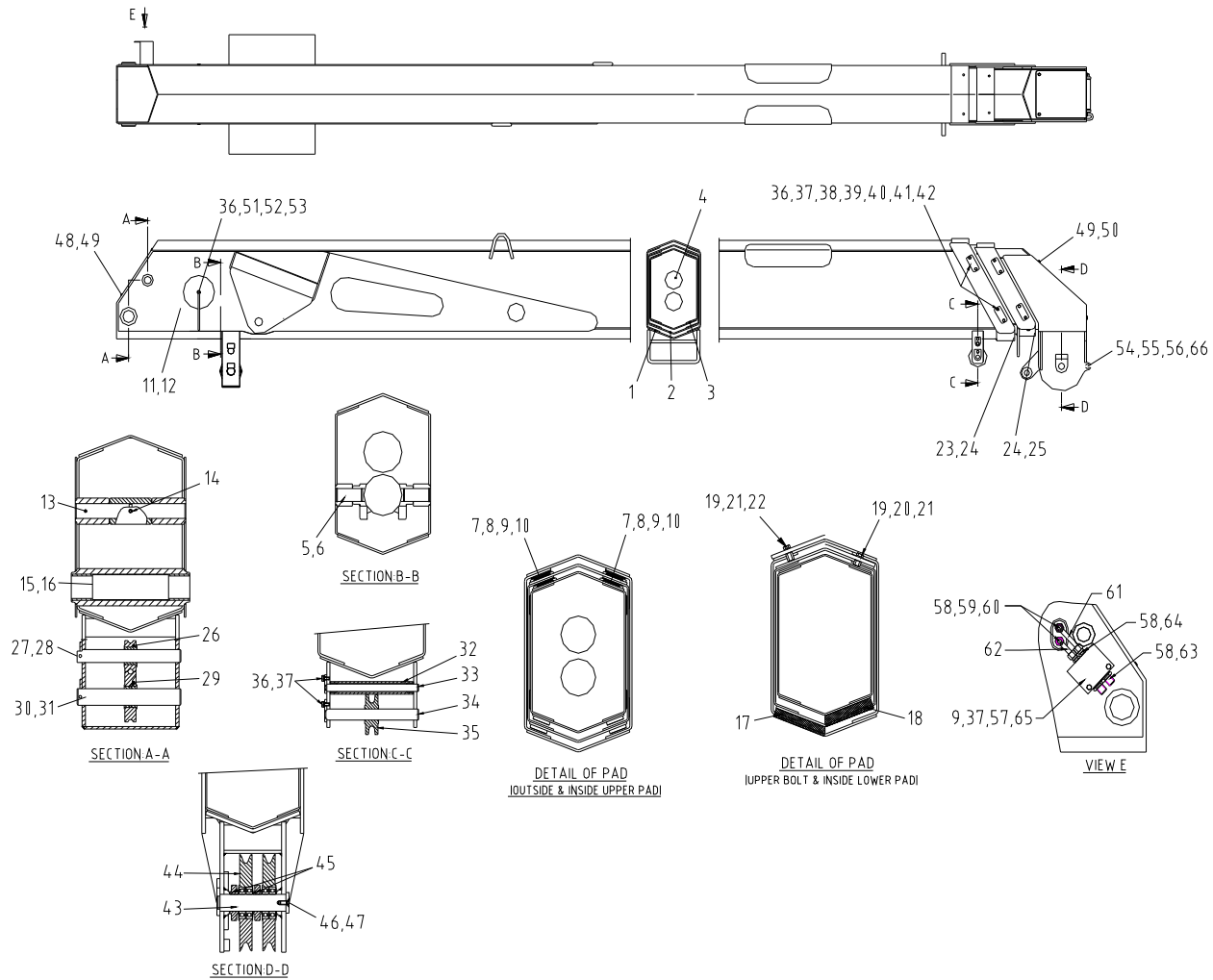
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20	N01-2592	육각 너트 NUT, HEX.	2	M10×45	30	N01-3571	축 SHAFT	1	
21	3612101	스프링 와셔 WASHER, SPRING	4	WS10	31	1311561	분할 핀 PIN, SPLIT	1	PW7.5×50
22	BO-4019	육각 너트 NUT, HEX.	2	M10×20	32	N01-2332	롤러 결합체 ROLLER ASS'Y	1	
23	M05-0846	패드 스톱퍼 STOPPER, PAD	1		33	N01-2331	축 SHAFT	1	
24	BO-0005	접시 머리 볼트 BOLT, FLAT HEAD	4	M10	34	N01-2585	축 SHAFT	1	
25	M05-0847	패드 스톱퍼 STOPPER, PAD	1		35	N01-2335	쉬브 SHEAVE	1	
26	A02-1217	롤러 결합체 ROLLER ASS'Y	1		36	2110886	육각 볼트 BOLT, HEX. HEAD	18	BA8×20
27	N01-3570	축 SHAFT	1		37	3612081	스프링 와셔 WASHER, SPRING	21	WS8
28	1311541	분할 핀 PIN, SPLIT	1	PW7.5×50	38	S01-0766	슬라이드 패드 PAD, SLIDE	8	
29	A02-1218	롤러 결합체 ROLLER ASS'Y	1		39	N01-2053	간격판 SHIM	8	

SPARE PARTS LIST



붐 장치 BOOM SYSTEM

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SPARE PARTS LIST



붐 장치
BOOM SYSTEM

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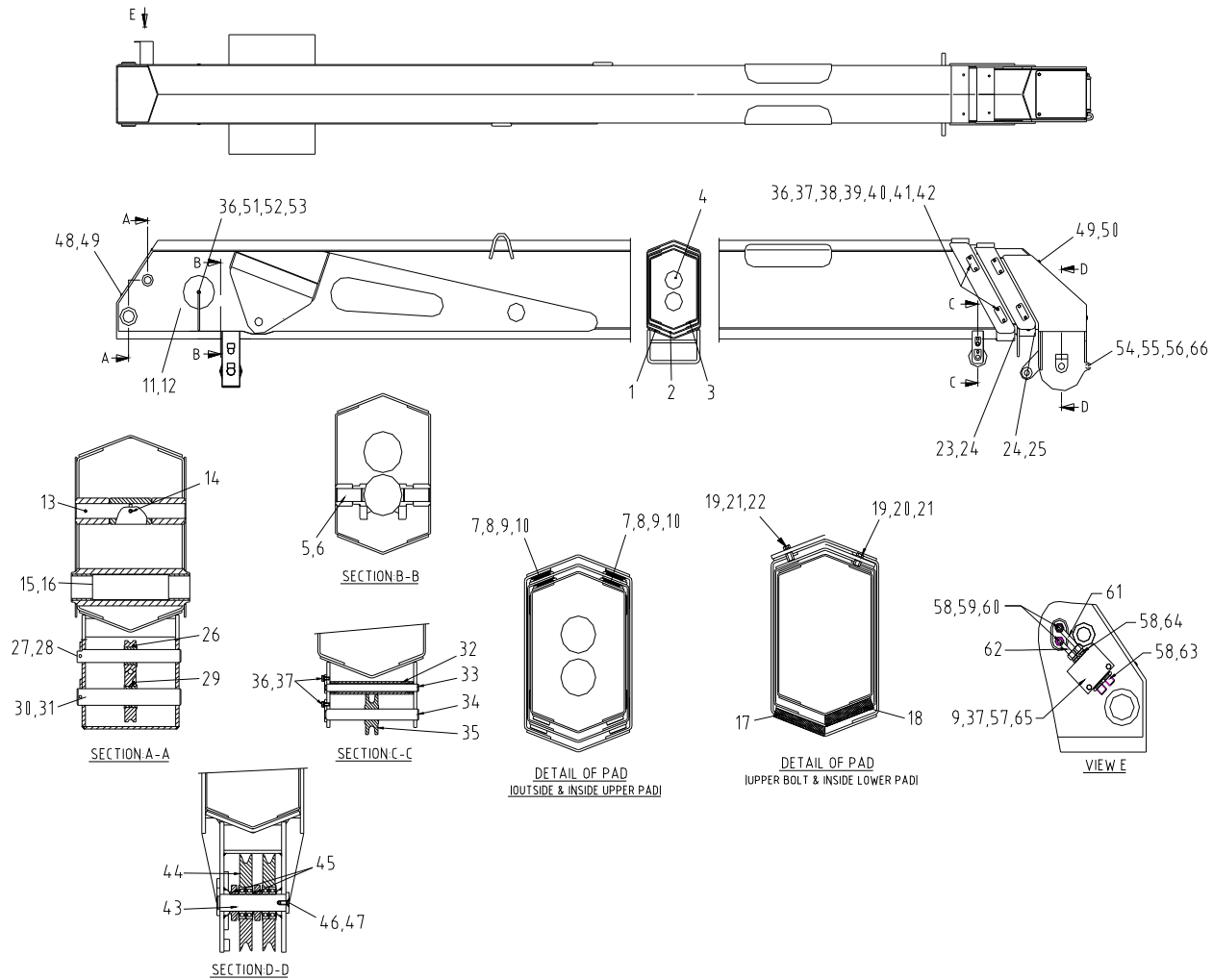
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40	N01-2054	간격판 SHIM	8		50	M05-1545	커버 COVER	1	
41	N01-2055	간격판 SHIM	8		51	N01-2586	로드 지시계 INDICATOR, LOAD	2	
42	N01-3491	플레이트 PLATE	8		52	3511081	평 와셔 WASHER, PLAIN	8	WP8
43	S01-1703	핀 PIN	1		53	3111086	육각 너트 NUT, HEX.	2	NA8
44	196 1268	쉬브 결합체 SHEAVE ASS'Y	2	Φ260	54	123 2665	볼트 BOLT	1	M20
45	M05-4299	스페이서 SPACER	2		55	123 2666	파이프 PIPE	1	Φ34
46	M05-1413	플레이트 PLATE	1		56	3111207	육각 너트 NUT, HEX.	1	NA20
47	S01-1631	접시 머리 볼트 BOLT, FLAT HEAD	1	M12×25	57	2116036	육각 볼트 BOLT, HEX. HEAD	2	BA8×85
48	N01-2595	커버 플레이트 PLATE, COVER	1		58	6010212	오링 O-RING	6	1B P18
49	2180866	플랜지 볼이 육각 볼트 BOLT, HEX. HEAD W/F	8	BWF8×16	59	S01-1695	롱 니플 NIPPLE, LONG	1	Φ16×PF1/2

SPARE PARTS LIST



붐 장치 BOOM SYSTEM

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붐 장치
BOOM SYSTEM

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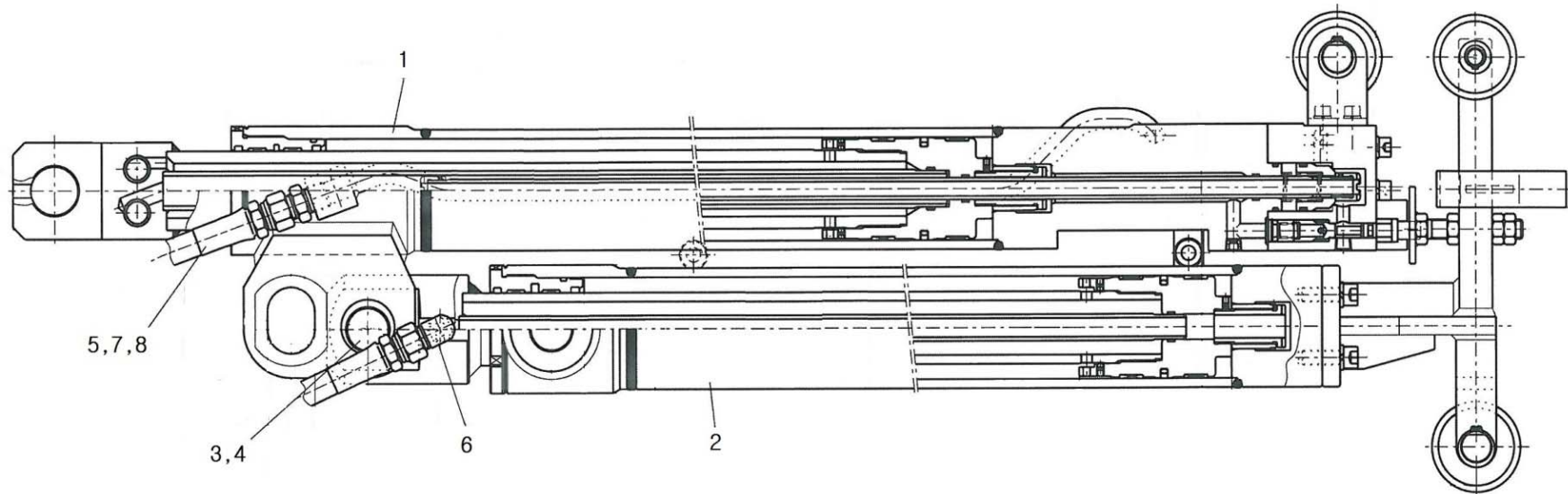
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60	S01-1696	롱 니플 NIPPLE, LONG	1	Φ16×PF1/2					
61	TS-4013	유압 파이프 PIPE, HYDRAULIC	1	Φ16					
62	TS-4014	유압 파이프 PIPE, HYDRAULIC	1	Φ16					
63	9381062	호스 니플 NIPPLE, PF HOSE	2	PF1/2×PF1/2					
64	9003401	파이프 니플 NIPPLE, PF PIPE	2	Φ16×PF1/2					
65	TS-4015	카운터 발란스 밸브 VALVE, COUNTER BALANCE	1	CBEG-LJN					
66	3612201	스프링 와셔 WASHER, SPRING	2	WS20					

SPARE PARTS LIST



신축 실린더
EXTENSION CYLINDER

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SPARE PARTS LIST



신축 실린더
EXTENSION CYLINDER

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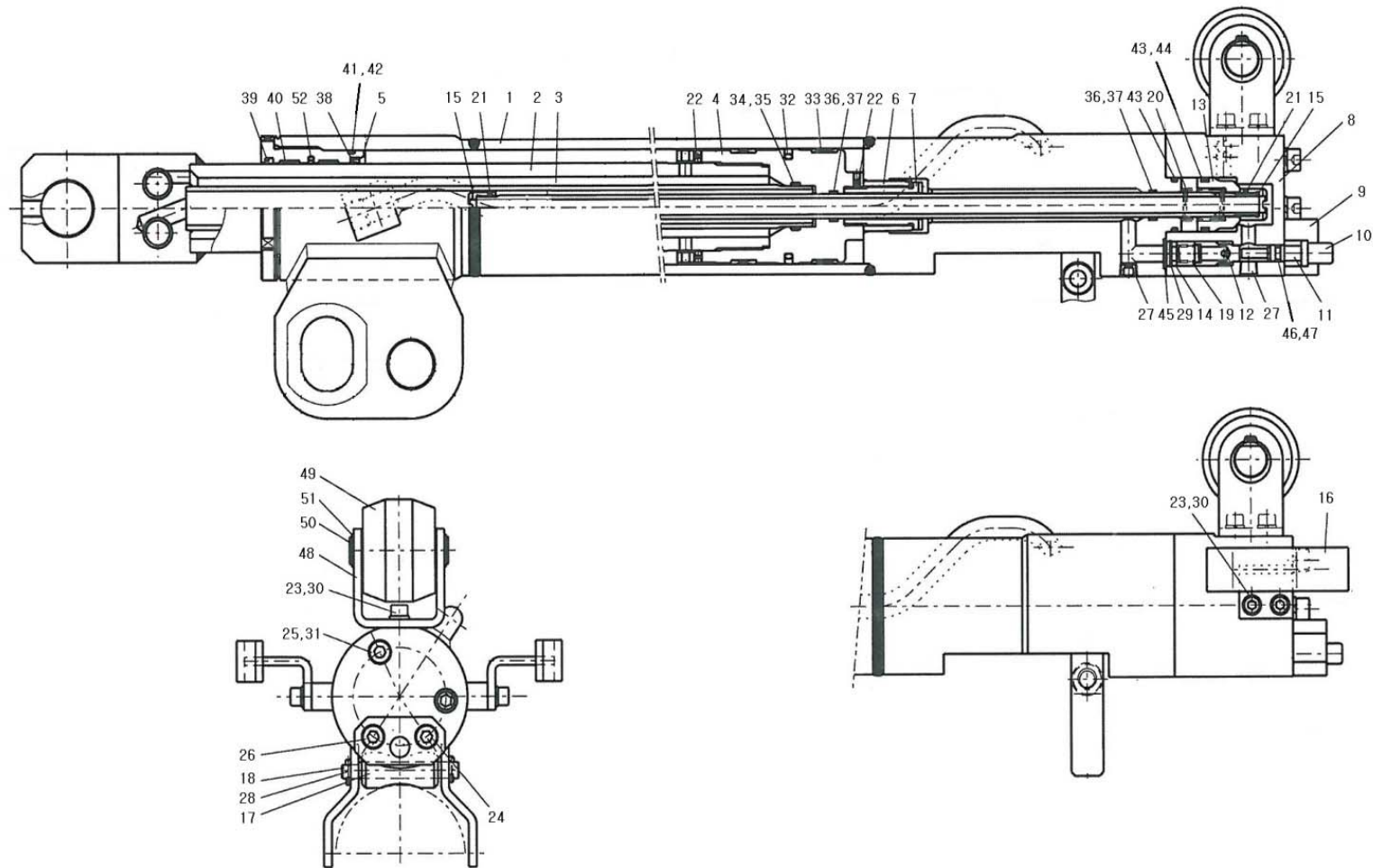
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-	H01-8716 HN92T0A00	신축 실린더 EXTENSION CYLINDER	1						
1	H01-8717 HN92T1000-02	1단 신축 실린더 1st EXTENSION CYL'D	1						
2	H01-8718 HN92T2000-02	2단 신축 실린더 2nd EXTENSION CYL'D	1						
3	HN02T0010	핀 PIN	1						
4	4510321	스냅 링 RING, SNAP	2	FOR SHAFT (D35)					
5	S01-3288	아답터 ADAPTOR	2	110-8-8					
6	S01-3289	아답터 ADAPTOR	2	190-8-8					
7	7119612	고압 호스 HOSE, H.P (HUCF)	1	1/2×520×PF1/2					
8	7119632	고압 호스 HOSE, H.P (HUCF)	1	1/2×560×PF1/2					

SPARE PARTS LIST



1단 신축 실린더
1st EXTENSION CYLINDER

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SPARE PARTS LIST



1단 신축 실린더
1st EXTENSION CYLINDER

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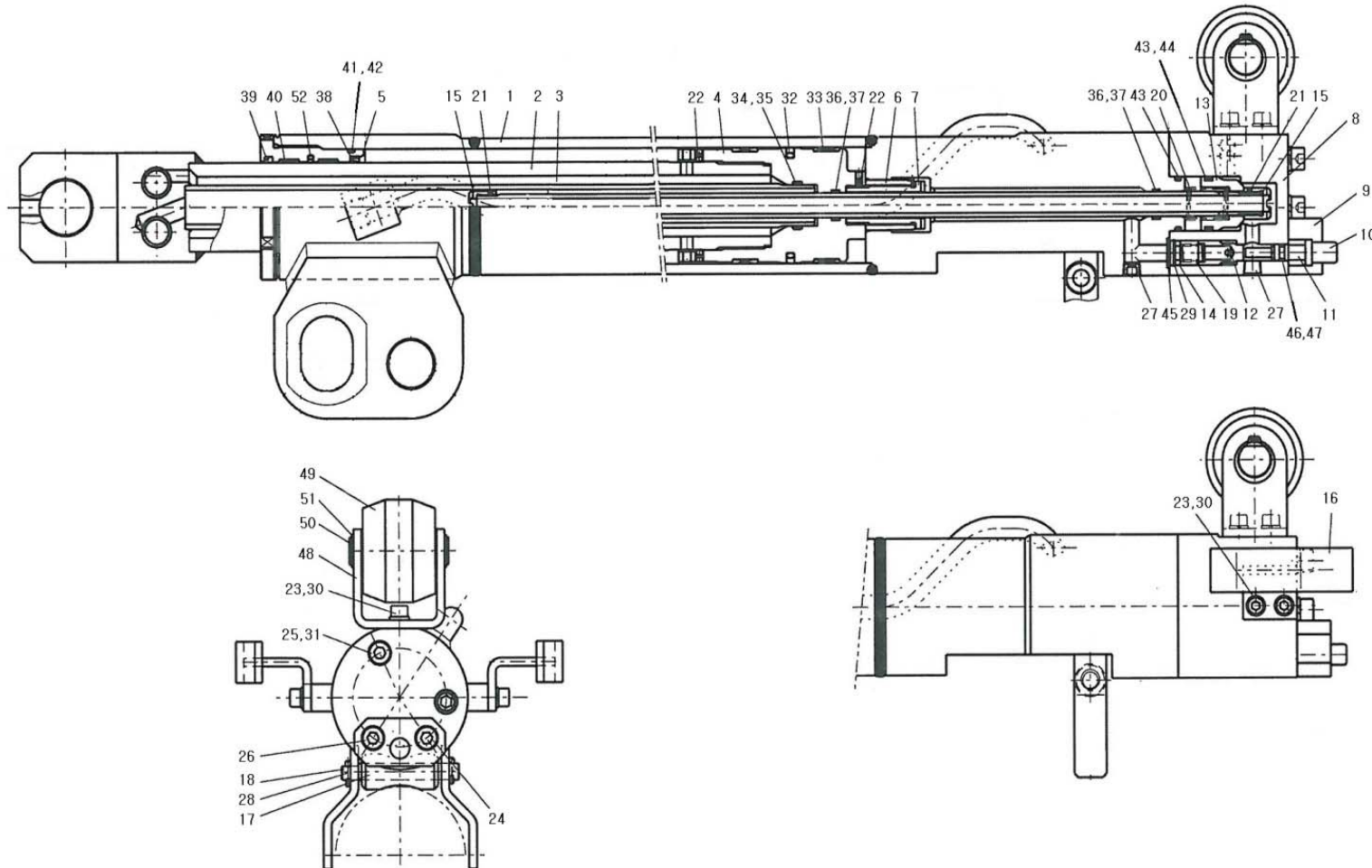
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-	H01-8717 HN92T1A00	1단 신축 실린더 1st EXTENSION CYL'D	1		10	SS33T10A2	스풀 가이드 GUIDE, SPOOL	1	
1	HN04T1A10	튜브 결합체 TUBE ASS'Y	1		11	SH17T1090	스풀 SPOOL	1	
2	HN04T1A20	로드 결합체 ROD ASS'Y	1		12	SH17T10A1	밸브 - A VALVE - A	1	
3	HN02T1030	리트렉터 RETRACTOR	1		13	SH17T10A2	밸브 - B VALVE - B	1	
4	HN04T1A30-01	피스톤 PISTON	1		14	SH17T10A3	와셔 - A WASHER - A	1	
5	HN04T1A40-01	로드 커버 ROD COVER	1		15	HN01T1060	스톱 너트 NUT, STOP	2	
6	SS33T1070	쿠션 링 CUSHION RING	1		16	HN04T1A30-01	브라켓 BRACKET	2	
7	SS33T1080	쿠션 가이드 CUSHION GUIDE	1		17	KL08T20P1	롤러 패드 PAD, ROLLER	1	Φ24×Φ10×62L
8	SH17T1070	밸브 바디 VALVE BODY	1		18	KL05ET190	롤러 샤프트 SHAFT, ROLLER	1	Φ12×84L
9	SH17T1080	브라켓 - A BRACKET - A	1		19	SS33T10S1	스프링 - A SPRING - A	1	

SPARE PARTS LIST



1단 신축 실린더
1st EXTENSION CYLINDER

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SPARE PARTS LIST



1단 신축 실린더
1st EXTENSION CYLINDER

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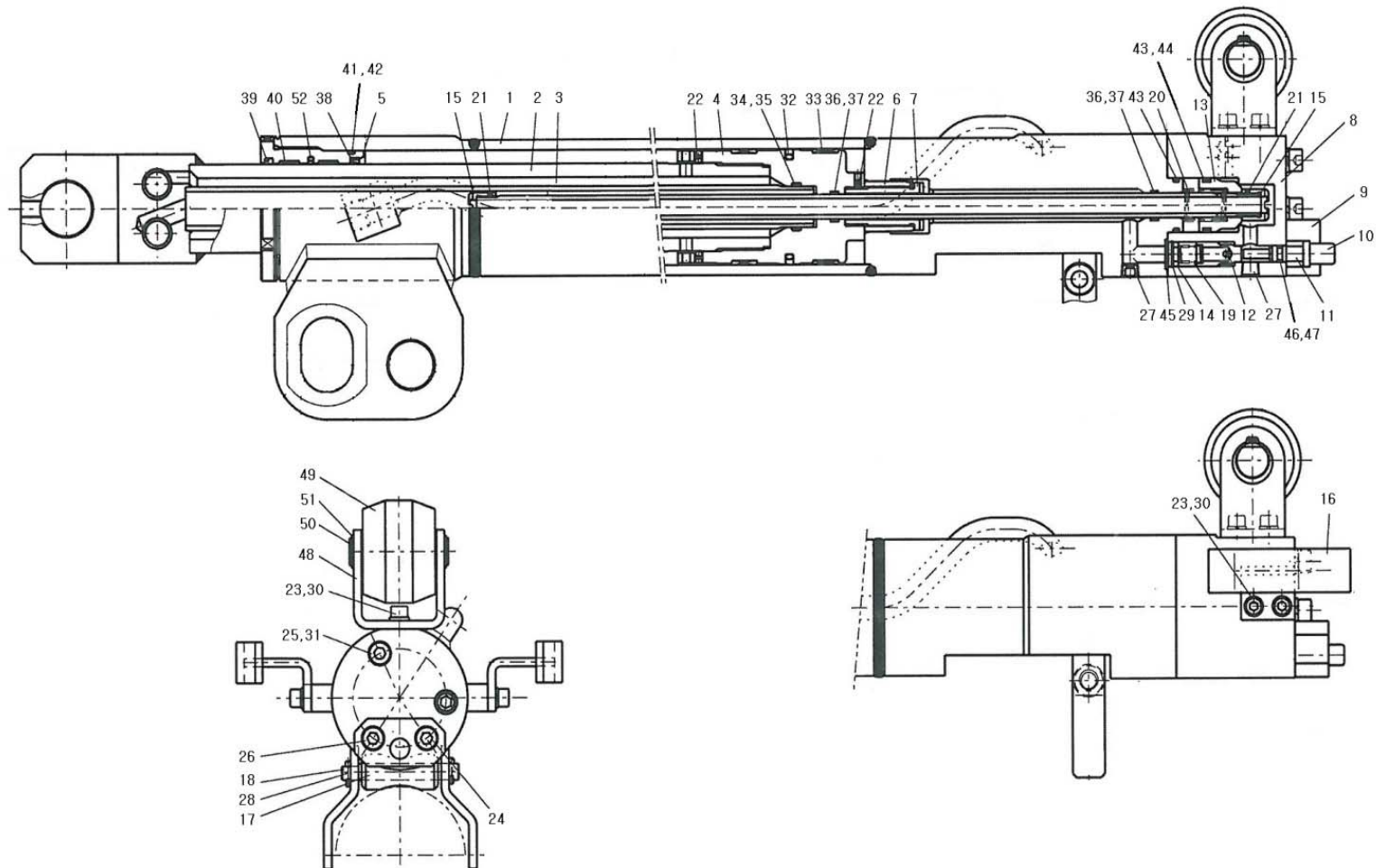
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20	SS33T10S2	스프링 - B SPRING - B	1		30	3612081	스프링 와셔 WASHER, SPRING	6	M8용
21	2320316	세트 스크루 SCREW, SET	2	M3×P0.5×3L	31	3612121	스프링 와셔 WASHER, SPRING	2	M12용
22	2320746	세트 스크루 SCREW, SET	2	M6×P1.0×6L	32	-	피스톤 패킹 PACKING, PISTON	1	CST SEAL PK0200850-T46NP
23	2610866	소켓 볼트 BOLT, SOCKET	6	M8×P1.25×15L	33	S01-0662	웨어 링 RING, WEAR	2	Φ85×Φ79×20W
24	2611536	소켓 볼트 BOLT, SOCKET	1	M12×P1.75×35L	34	6010352	O-링 O-RING	1	1B P30
25	2616687	소켓 볼트 BOLT, SOCKET	2	M12×P1.75×110L	35	6035211	백업 링 RING, BACK-UP	2	T2 G30
26	2616707	소켓 볼트 BOLT, SOCKET	1	M12×P1.75×120L	36	6010212	O-링 O-RING	2	1B P18
27	S01-0398	플러그 PLUG	3	PT1/4	37	6032191	백업 링 RING, BACK-UP	4	T2 P18
28	1310661	분할 핀 PIN, SPLIT	2	Φ3×20L	38	S01-4254	로드 패킹 PACKING, ROD	1	RVA300650-T40S
29	4525191	스냅 링 RING, SNAP	1	Φ18 (구멍용)	39	S01-4255	더스트 와이퍼 DUST WIPER	1	WE5100650-T46N

SPARE PARTS LIST



1단 신축 실린더
1st EXTENSION CYLINDER

HIAB320T-3 9 : 1
2015. 05.



SPARE PARTS LIST



1단 신축 실린더
1st EXTENSION CYLINDER

HIAB320T-3 9 : 1
2015. 05.

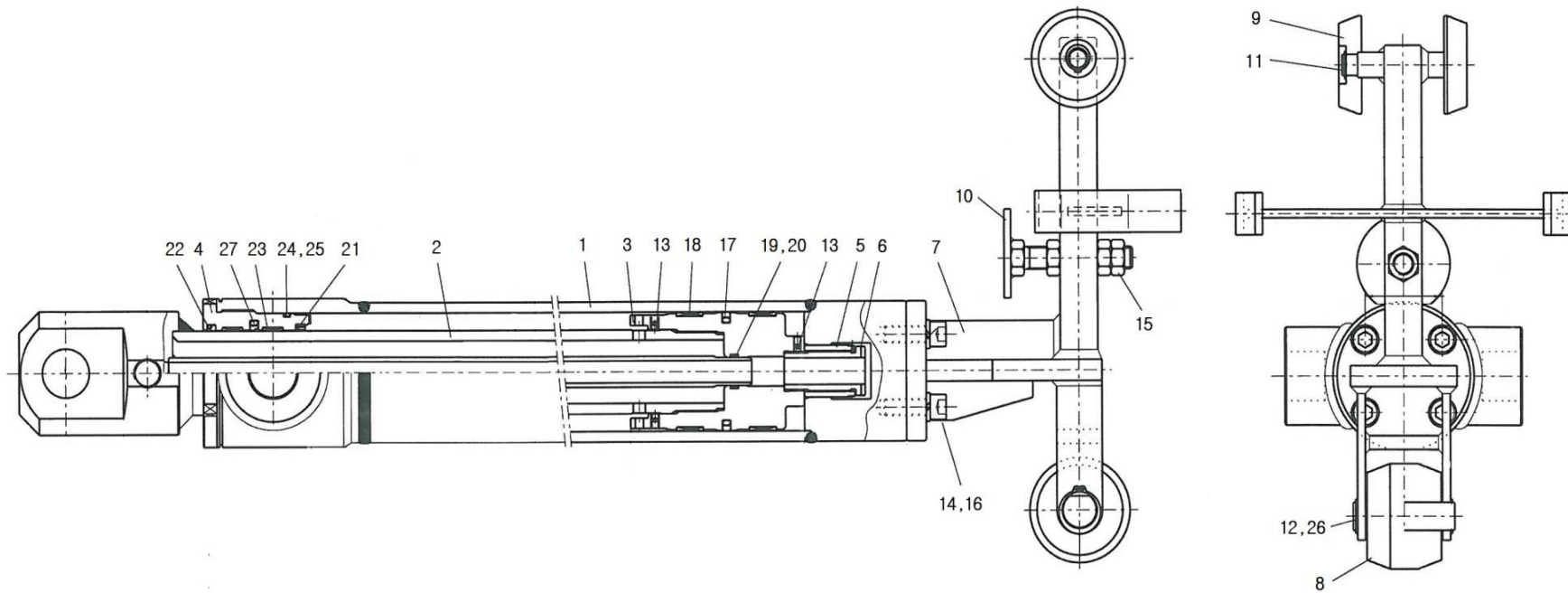
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40	S01-0661	웨어 링 RING, WEAR	2	Φ65×Φ70×15W	50	SH39T2060	베어링 축 SHAFT, BEARING	1	SCS-1515 공용
41	6012362	O-링 O-RING	1	1B G80	51	-	스냅 링 RING, SNAP	2	Φ20 (축용)
42	6035771	백업 링 RING, BACK-UP	1	T3 G80	52	-	로드 패킹 ROD PACKING	1	STEP SEAL RS1500650-T46N
43	6010392	O-링 O-RING	2	1B P34					
44	6034361	백업 링 RING, BACK-UP	2	T3 P34					
45	6010222	O-링 O-RING	2	1B P20	-	A02-2878	1단 신축 수리 키트 1st EXTENSION REPAIR KIT	1	
46	S01-0905	O-링 O-RING	1	4D P9	-	A05-3122	1단 로드 커버 결함체 1st ROD COVER ASS'Y	1	
47	6032091	백업 링 RING, BACK-UP	1	T2 P9	-	A05-3123	1단 피스톤 결함체 1st PISTON ASS'Y	1	
48	HN04T1A60	가이드 브라켓 BRACKET, GUIDE	1		-	S01-5830	시일 키트 KIT, SEAL	1	
49	SH39T2040	가이드 롤러 ROLLER, GUIDE	1	SCS-1515 공용					

SPARE PARTS LIST



2단 신축 실린더
2nd EXTENSION CYLINDER

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2015. 05.



SPARE PARTS LIST



2단 신축 실린더
2nd EXTENSION CYLINDER

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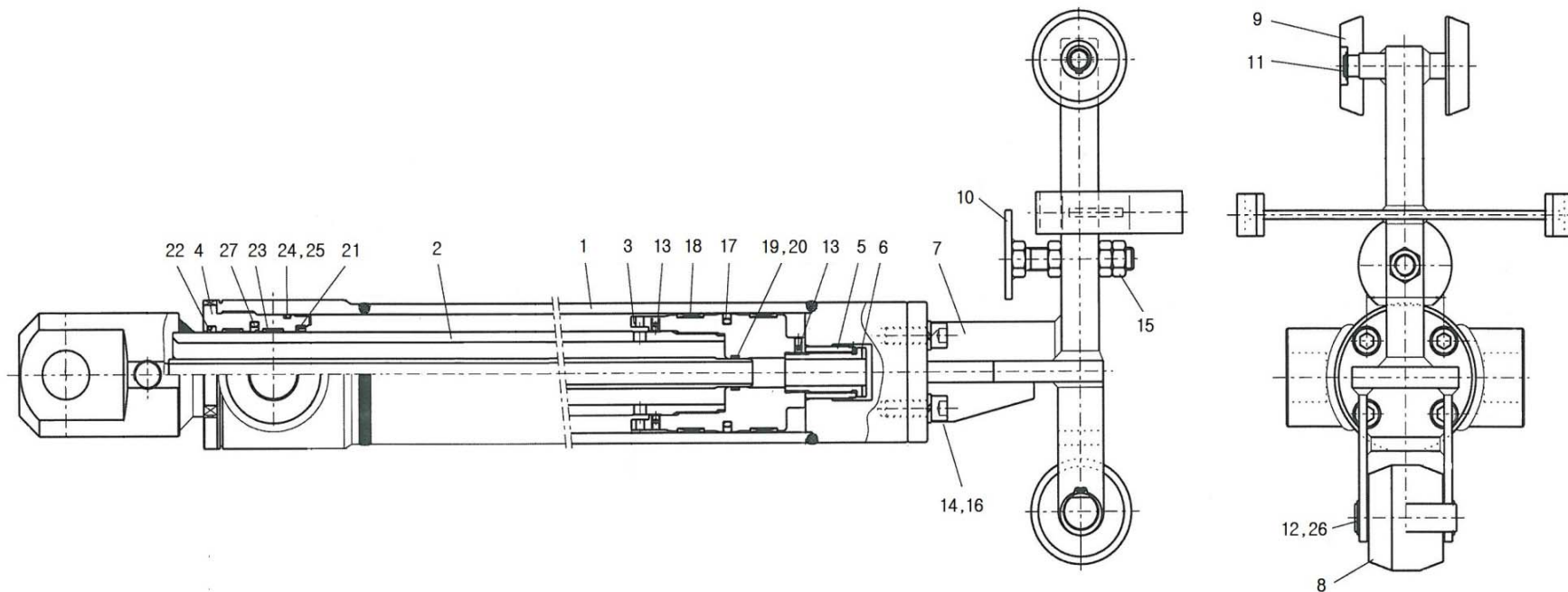
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-	H01-8718 HN92T2A00	2단 신축 실린더 2nd EXTENSION CYL'D	1		10	CS17T20B1	체크 볼트 BOLT, CHECK	1	
1	HN02T2A10	튜브 결합체 TUBE ASS'Y	1		11	4510161	스냅 링 RING, SNAP	2	D15 (축용) FOR SHAFT
2	HN04T2010	로드 결합체 ROD ASS'Y	1		12	4510211	스냅 링 RING, SNAP	2	D20 (축용) FOR SHAFT
3	HN04T2A30-01	피스톤 PISTON	1		13	2350446	세트 스크루 SCREW, SET	2	M6×P1.0×6L
4	HN04T2A40-01	로드 커버 COVER, ROD	1		14	2610927	소켓 볼트 BOLT, SOCKET	4	M8×P1.25×30L
5	SS33T1070	쿠션 CUSHION	1		15	3113161	너트 NUT	3	M16×P2.0×10H
6	SS33T1080	쿠션 링 RING, CUSHION	1		16	3612081	스프링 와셔 WASHER, SPRING	4	M8 용
7	HN04T2A20-01	브라켓 BRACKET	1		17	-	피스톤 패킹 PACKING, PISTON	1	CST SEAL PK0200850-T46NP
8	KL08T3040	가이드 롤러 GUIDE ROLLER	1		18	S01-0662	웨어 링 RING, WEAR	3	Φ85×Φ79×20W
9	KL08T2050	가이드 롤러 GUIDE ROLLER	2		19	6010222	O-링 O-RING	1	1B P20

SPARE PARTS LIST



2단 신축 실린더
2nd EXTENSION CYLINDER

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SPARE PARTS LIST



2단 신축 실린더
2nd EXTENSION CYLINDER

HIAB320T-3 10 : 1
2015. 05.

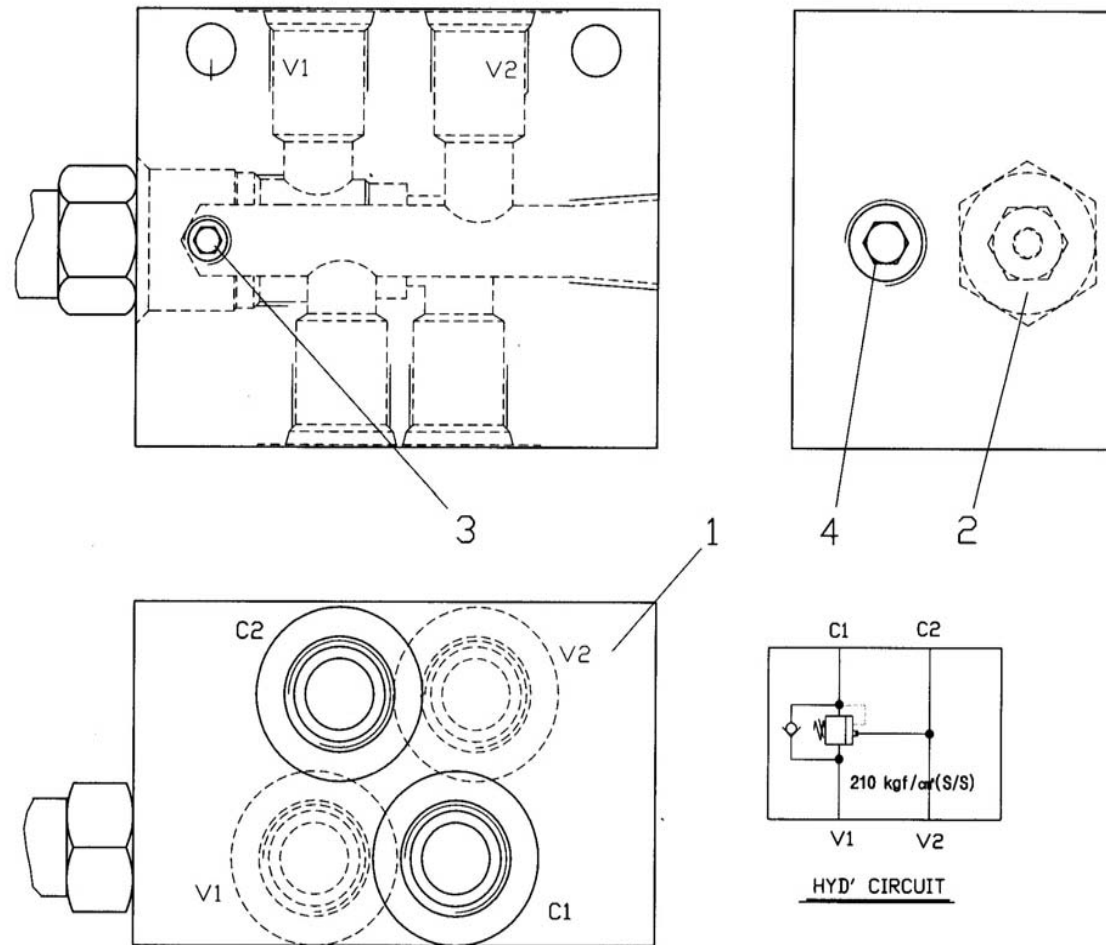
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20	6032201	백업 링 RING, BACK-UP	2	T2 P20					
21	S01-4256	로드 패킹 PACKING, ROD	1	RVA300600-T40S					
22	S01-4257	더스트 와이퍼 WIPER, DUST	1	WE5100600-T46N					
23	S01-0878	웨어 링 RING, WEAR	2	Φ60×Φ65×15W					
24	6012362	O-링 O-RING	1	1B G80					
25	6035771	백업 링 RING, BACK-UP	1	T3 G80	-	A02-2879	2단 신축 수리 키트 2nd EXTENSION REPAIR KIT	1	
26	SH39T2060	롤러 축 SHAFT, ROLLER	1	Φ20×79L	-	A05-3124	2단 로드 커버 결함체 2nd ROD COVER ASS'Y	1	
27	-	로드 패킹 ROD PACKING	1	STEP SEAL RS1300600-T46N	-	A05-3125	2단 피스톤 결함체 2nd PISTON ASS'Y	1	
					-	S01-5831	시일 키트 KIT, SEAL	1	

SPARE PARTS LIST



카운터 발란스 밸브 (B)
VALVE, CONTER BALANCE (B)

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SPARE PARTS LIST



카운터 밸런스 밸브 (B)
VALVE, CONTER BALANCE (B)

HIAB320T-3 11:0
2013. 12.

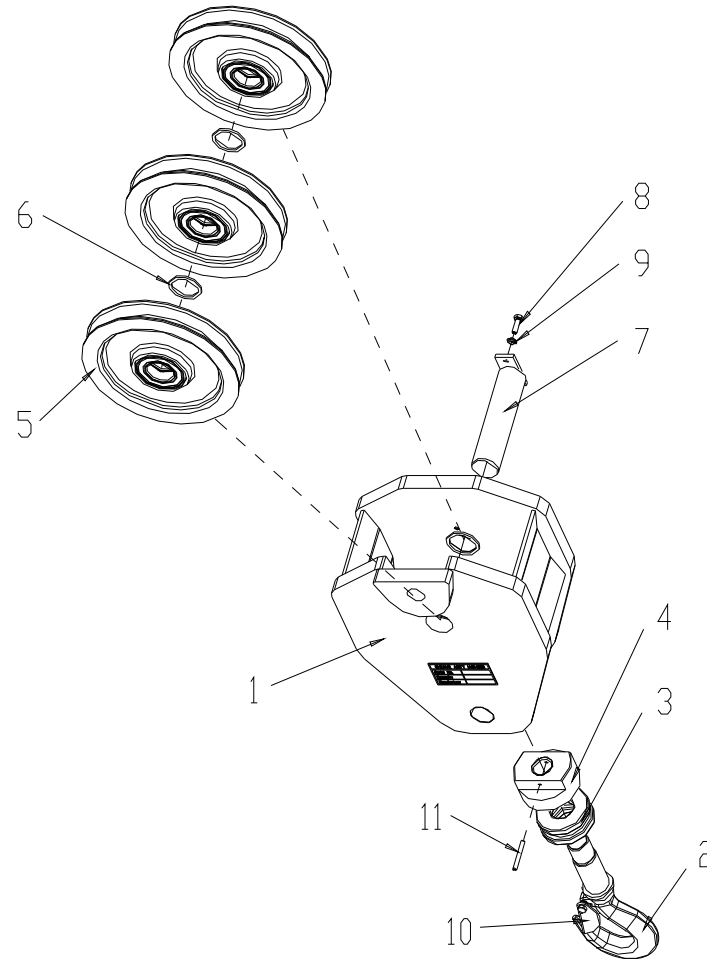
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-	TS-4015	카운터 밸런스 밸브(B) 결합체 VALVE ASSY, COUNTER BALANCE (B)	1	1-A3019-00-1					
1	-	블록 BLOCK	1	67×85×107					
2	-	카운터 밸런스 밸브 VALVE, COUNTER BALANCE	1	9706-04D-P09					
3	-	렌치 플러그 WRENCH PLUG	1	PT1/8					
4	-	렌치 플러그 WRENCH PLUG	1	PT3/8					

SPARE PARTS LIST



쉬브 결합체
SHEAVE ASS'Y

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2013. 12.



SPARE PARTS LIST



쉬브 결합체
SHEAVE ASS'Y

HIAB320T-3 12 : 0
2013. 12.

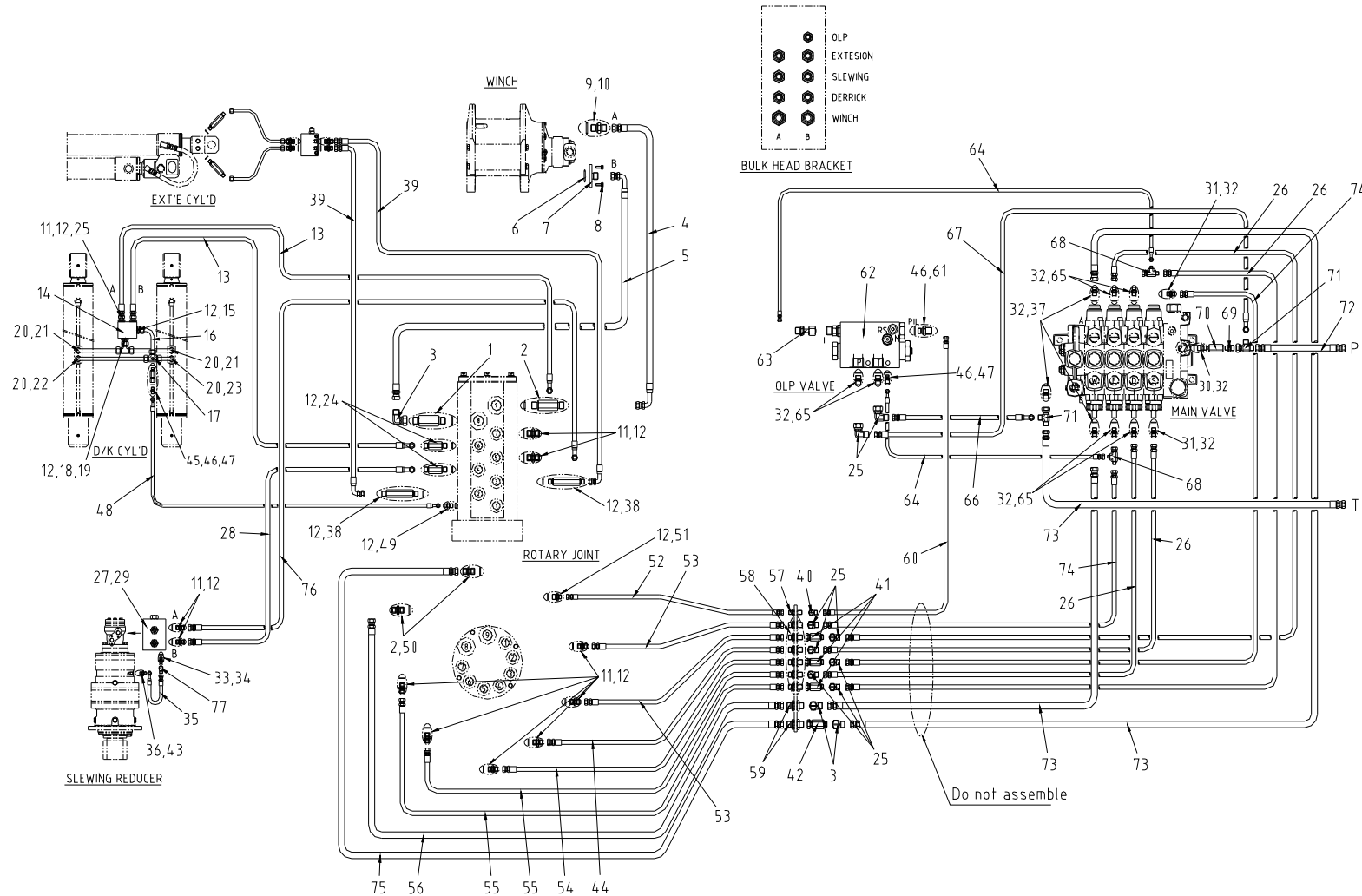
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-	A01-1631	쉬브 결합체 SHEAVE ASS'Y	1		10	S01-1596	안전 클립 결합체 CLIP ASSY, SAFETY	1	
1	A02-1255	바디 BODY	1		11	1211391	스프링 핀 PIN, SPRING	1	PS6×56
2	M01-1780	후크 HOOK	1						
3	N01-0631	스러스트 볼 베어링 BEARING, THRUST BALL	1	#51408					
4	N01-1766	너트 NUT	1						
5	BO-4042	쉬브 SHEAVE	3						
6	M05-0854	스페이서 SPACER	2						
7	N01-0628	축 SHAFT	1						
8	2110907	육각 볼트 BOLT, HEX. HEAD	1	BB8×25					
9	3612081	스프링 와셔 WASHER, SPRING	1	WS8					

SPARE PARTS LIST



베이스 & 칼럼 호스 결합체 BASE & COLUMN HOSE ASS'Y

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베이스 & 칼럼 호스 결합체
BASE & COLUMN HOSE ASS'Y

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2014. 02.

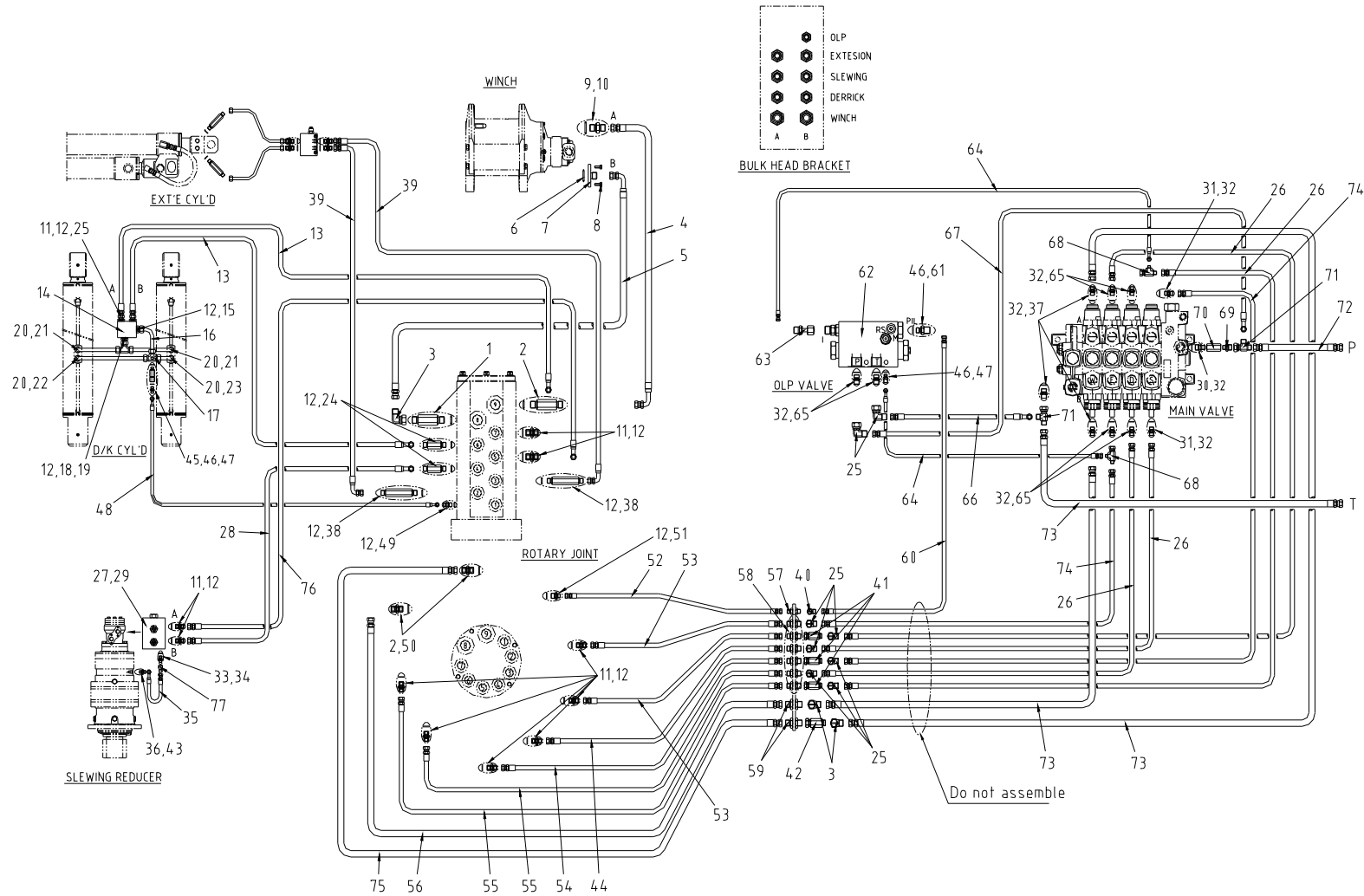
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-	A01-1464	베이스 및 칼럼 결합체 BASE & COLUMN ASS'Y	1		10	6010342	O-링 O-RING	1	1B P29.5
1	S01-2966	롱 니플 NIPPLE, LONG	2	2-PF3/4×225	11	9381062	호스 니플 NIPPLE, PF HOSE	12	NFCO 1/2×1/2
2	6010282	O-링 O-RING	4	1B P24	12	6010212	O-링 O-RING	22	1B P18
3	BP-0014	스위블 엘보 ELBOW, SWIVEL	3	2-PF3/4	13	7173872	고압 호스 HOSE, H.P (HECF)	2	1/2×1180-PF1/2
4	7178162	고압 호스 HOSE, H.P (HECF)	1	3/4×650-PF3/4	14	TS-4005	카운터 발란스 밸브 VALVE, COUNTER BALANCE	1	CBEG-LJN
5	7178142	고압 호스 HOSE, H.P (HECF)	1	3/4×600-PF3/4	15	9003401	파이프 니플 NIPPLE, PF PIPE	1	NTPO16-PF1/2
6	6012272	O-링 O-RING	1	1B G35	16	H01-3900	유압 파이프 PIPE, HYDRAULIC	1	Φ16×t2.0
7	S01-3099	플랜지 FLANGE	1	PF3/4	17	S01-2967	파이프 유니언 티 TEE, PIPE UNION	1	3-Φ16×PF1/4
8	S01-1538	육각 볼트 BOLT, HEX. HEAD	4	UNC 3/8-16×1"	18	9022502	파이프 유니언 티 TEE, PIPE UNION	1	TPU16
9	S01-1019	니플 NIPPLE	1	UNC1 5/16× PF3/4	19	S01-0780	아답터 ADAPTOR, MALE	1	Φ16×PF1/2

SPARE PARTS LIST



베이스 & 칼럼 호스 결합체 BASE & COLUMN HOSE ASS'Y

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베이스 & 칼럼 호스 결합체
BASE & COLUMN HOSE ASS'Y

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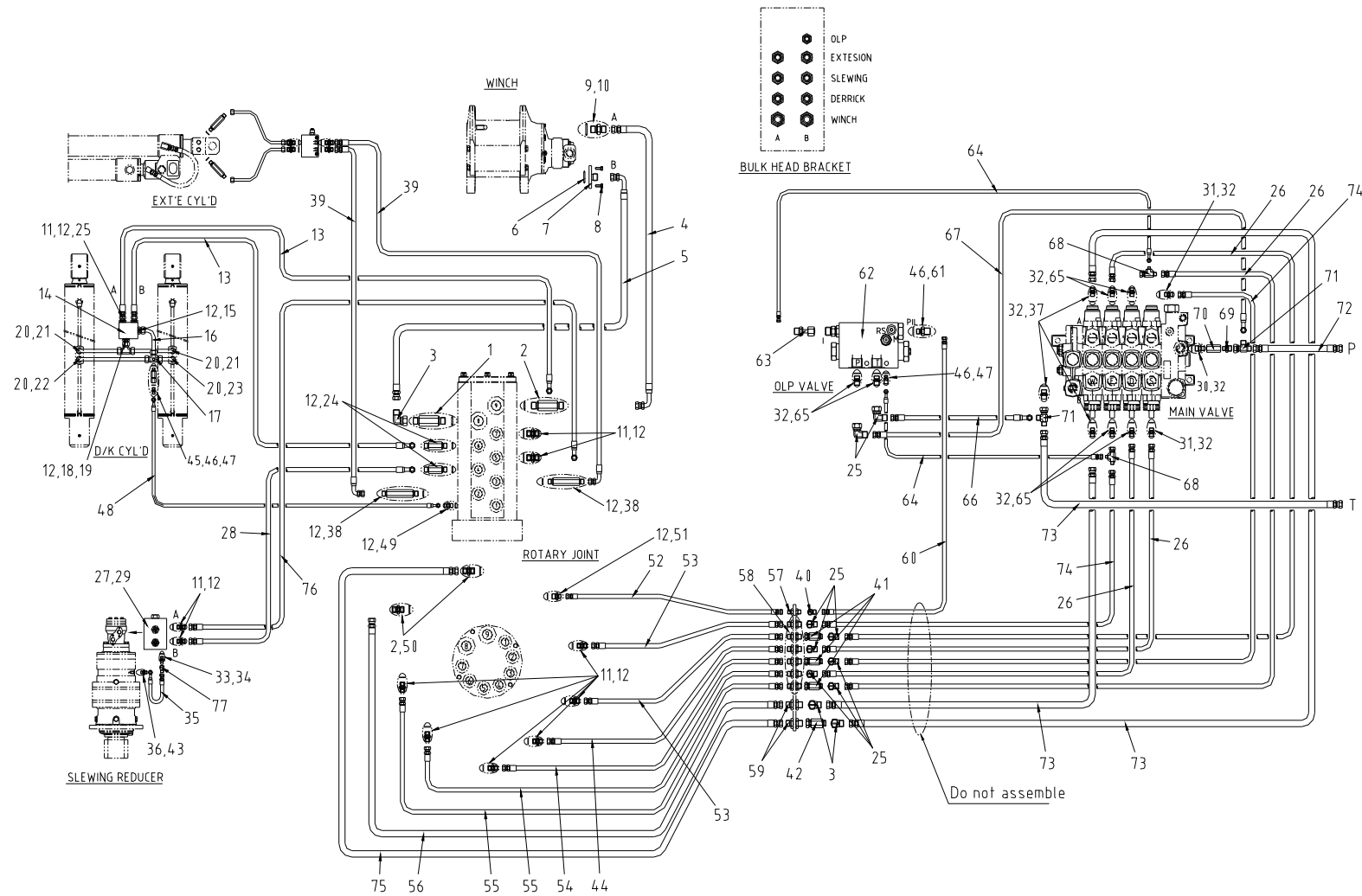
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20	9002592	파이프 니플 NIPPLE, PT PIPE	4	NTP16-PT1/2	30	S01-2923	호스 니플 NIPPLE, PT HOSE	1	PF1/2×PT1/2
21	H01-3898	유압 파이프 PIPE, HYDRAULIC	2	Φ16×t2.0	31	S01-1076	오리피스 니플 NIPPLE, ORIFICE	2	2-PF1/2 (Φ3.0)
22	H01-3897	유압 파이프 PIPE, HYDRAULIC	1	Φ16×t2.0	32	6800081	실링 와셔 WASHER, SEALING	12	NF216-8
23	H01-3899	유압 파이프 PIPE, HYDRAULIC	1	Φ16×t2.0	33	6010122	O-링 O-RING	1	1B P11
24	S01-2968	롱 니플 NIPPLE, LONG	2	2-PF1/2×105	34	9381012	호스 니플 NIPPLE, PF HOSE	1	NFCO1/4×1/4
25	S01-1579	스위블 엘보 ELBOW, SWIVEL	9	2-PF1/2	35	7167563	고압 호스 HOSE, H.P (HECF)	1	1/4×400-PF1/4
26	7120223	고압 호스 HOSE, H.P (HUCF)	4	1/2×2100-PF1/2	36	TS-4020	호스 유니언 UNION, CONICAL	1	M12×PF1/4
27	2616037	구멍 볼이 육각 볼트 BOLT, HEX. SOCKET HEAD	4	BB8×85	37	9270432	호스 유니언 UNION, CONICAL	3	UC3/4×1/2
28	7173682	고압 호스 HOSE, H.P (HUCF)	1	1/2×2700-PF1/2	38	S01-2970	롱 니플 NIPPLE, LONG	2	2-PF1/2×250
29	H02-0535	모션 컨트롤 밸브 VAVLE, MOTION CONTROL	1		39	7174122	고압 호스 HOSE, H.P (HECF)	2	1/2×1800-PF1/2

SPARE PARTS LIST



베이스 & 칼럼 호스 결합체 BASE & COLUMN HOSE ASS'Y

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베이스 & 칼럼 호스 결합체
BASE & COLUMN HOSE ASS'Y

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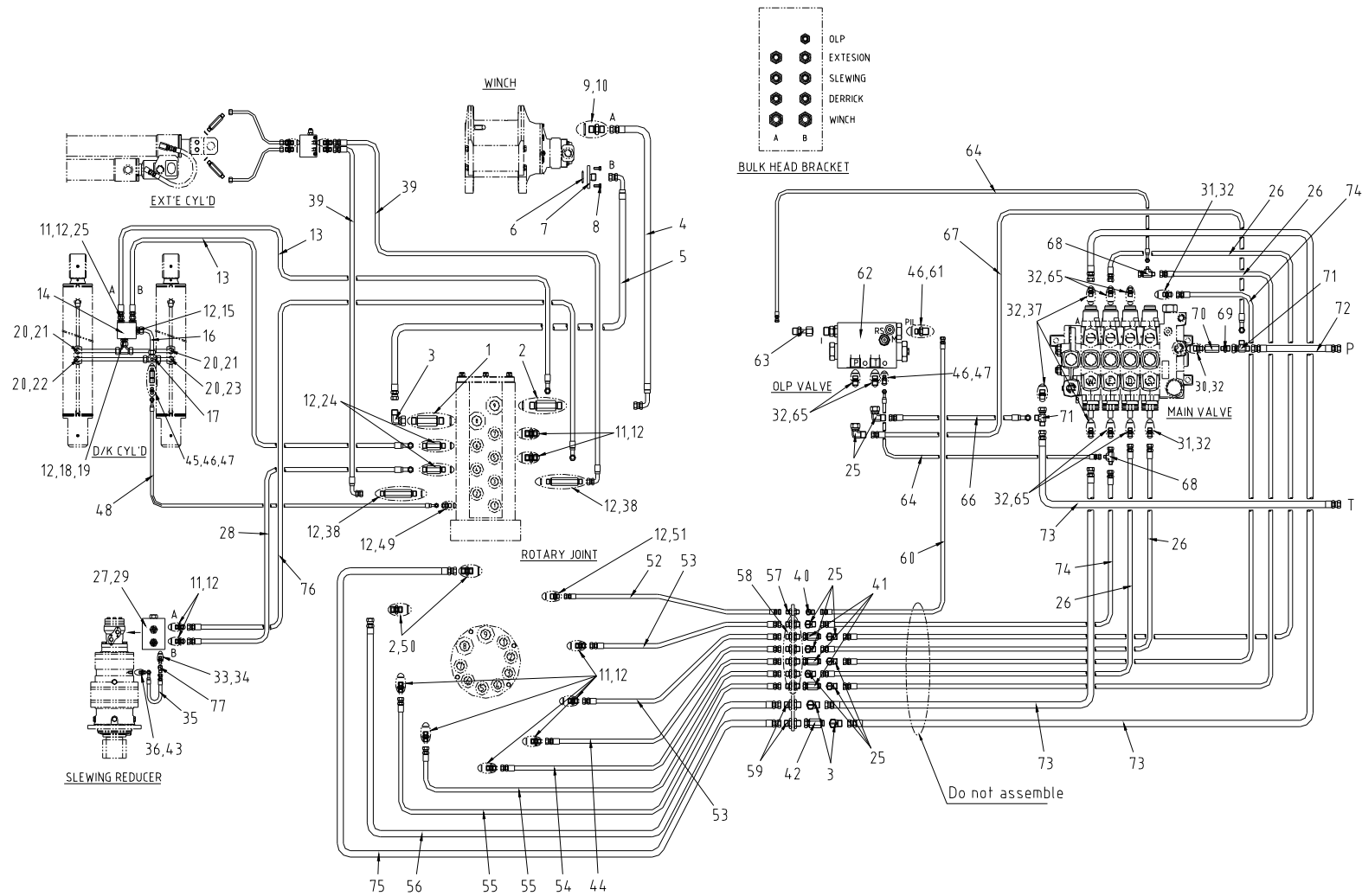
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40	S01-2311	스위블 엘보 ELBOW, SWIVEL	1	2-PF3/8	50	9381092	호스 니플 NIPPLE, PF HOSE	2	NFCO3/4×3/4
41	S01-4372	스위블 니플 NIPPLE, SWIVEL	3	PF1/2×PF1/2	51	S01-3268	호스 니플 NIPPLE, PF HOSE	1	PF1/2×PF3/8
42	S01-4373	스위블 니플 NIPPLE, SWIVEL	1	PF3/4-PF3/4	52	7116662	고압 호스 HOSE, H.P (HUCF)	1	3/8×650-PF3/8
43	993 8397	실링 링 RING, SEALING	1	M12	53	7119642	고압 호스 HOSE, H.P (HUCF)	2	1/2×600-PF1/2
44	7119662	고압 호스 HOSE, H.P (HUCF)	1	1/2×650-PF1/2	54	7119682	고압 호스 HOSE, H.P (HUCF)	1	1/2×700-PF1/2
45	H02-0313	파라슈트 밸브 VALVE, PARACHTUE	1	2-PF1/4	55	7119702	고압 호스 HOSE, H.P (HUCF)	2	1/2×750-PF1/2
46	6800041	실링 와셔 WASHER, SEALING	4	NF216-4	56	7124222	고압 호스 HOSE, H.P (HUCF)	1	3/4×800-PF3/4
47	9270052	호스 유니언 UNION, CONICAL	2	UC1/4×1/4	57	S01-1719	벌크 헤드 호스 유니언 UNION, HOSE BULKHEAD	1	2-PF3/8
48	7167862	고압 호스 HOSE, H.P (HECF)	1	1/4×1150-PF1/4	58	BP-4003	벌크 헤드 호스 유니언 UNION, HOSE BULKHEAD	6	2-PF1/2
49	S01-0931	니플 NIPPE	1	PF1/2×PF1/4	59	BP-0035	벌크 헤드 호스 유니언 UNION, HOSE BULKHEAD	2	2-PF3/4

SPARE PARTS LIST



베이스 & 칼럼 호스 결합체 BASE & COLUMN HOSE ASS'Y

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베이스 & 칼럼 호스 결합체
BASE & COLUMN HOSE ASS'Y

HIAB320T-3 13 : 1
2014. 02.

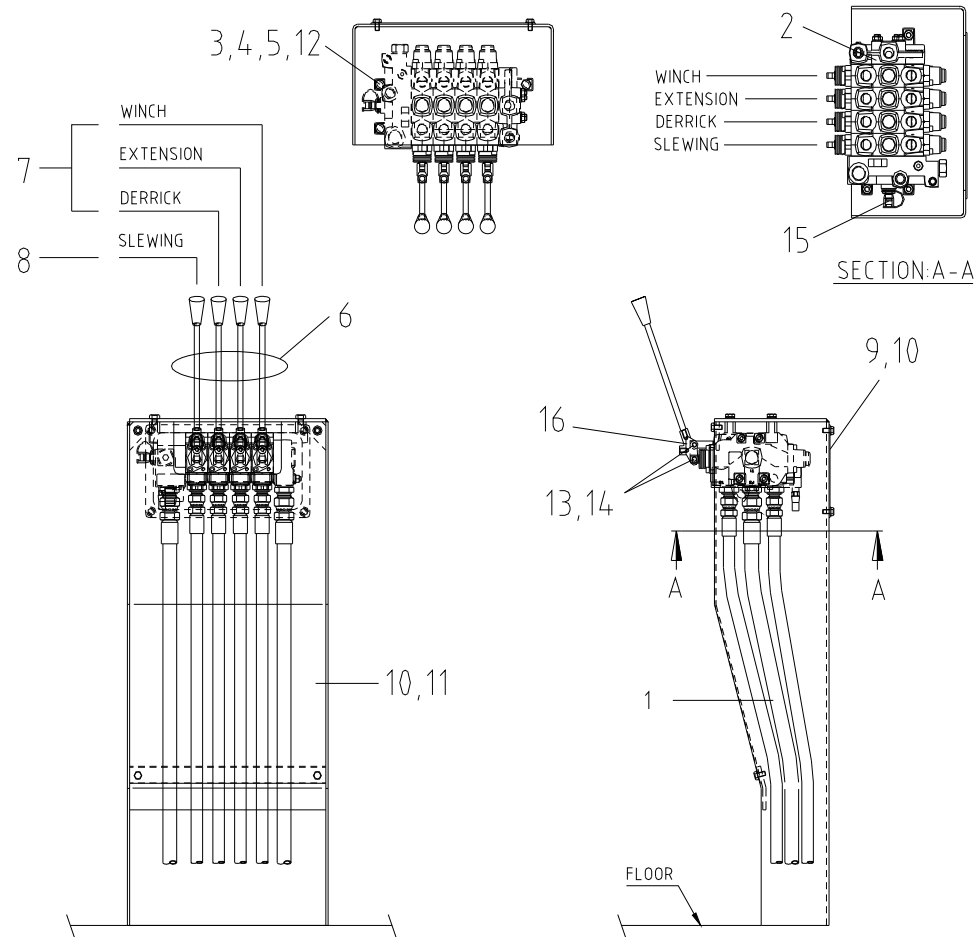
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60	7117202	고압 호스 HOSE, H.P (HUCF)	1	3/8×2000-PF3/8	70	H02-0236	체크 밸브 VALVE, CHECK	1	
61	9270372	호스 유니언 UNION, CONICAL	1	UC3/8×1/4	71	S01-2973	호스 스위블 티 TEE, HOSE SWIVEL	2	2-PF3/4×PF1/2
62	H02-0234	OLP 밸브 VALVE, OLP	1		72	7124703	고압 호스 HOSE, H.P (HUCF)	1	3/4×2000-PF3/4
63	S01-2262	호스 파이프 니플 NIPPLE, HOSE PIPE	1	Φ8×PF1/4	73	7124723	고압 호스 HOSE, H.P (HUCF)	3	3/4×2100-PF3/4
64	7167573	고압 호스 HOSE, H.P (HECF)	2	1/4×420-PF1/4	74	7120203	고압 호스 HOSE, H.P (HUCF)	2	1/2×2000-PF1/2
65	9270072	호스 유니언 UNION, CONICAL	6	UC1/2×1/2	75	7124202	고압 호스 HOSE, H.P (HUCF)	1	3/4×750-PF3/4
66	7173723	고압 호스 HOSE, H.P (HECF)	1	1/2×800-PF1/2	76	7173702	고압 호스 HOSE, H.P (HECF)	1	1/2×750-PF1/2
67	7173803	고압 호스 HOSE, H.P (HECF)	1	1/2×1000-PF1/2	77	S01-2291	스위블 엘보 ELBOW, SWIVEL	1	2-PF1/4
68	S01-1608	호스 스위블 티 TEE, HOSE SWIVEL	2	2-PF1/2×PF1/4					
69	S01-2972	호스 니플 NIPPLE, PT HOSE	1	PT1/2×PF3/4					

SPARE PARTS LIST



제어 장치 CONTROL SYSTEM

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SPARE PARTS LIST



제어 장치
CONTROL SYSTEM

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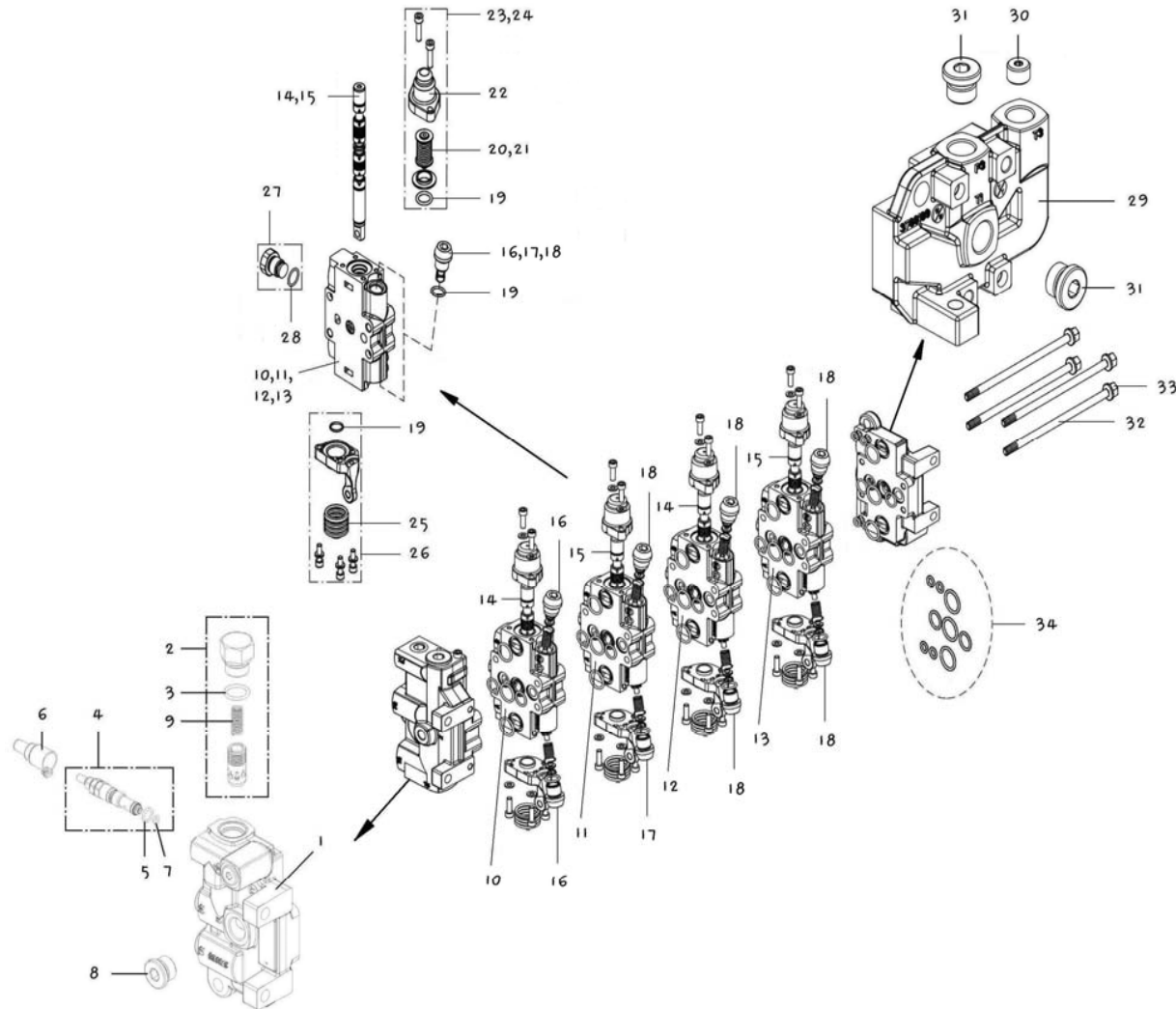
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-	A01-1465	제어 장치 CONTROL SYSTEM	1		10	2180866	플랜지 볼이 육각 볼트 BOLT, HEX. HEAD W/F	8	BWF8×16
1	A05-2767	브라켓 결합체 BRACKET ASS'Y	1		11	W01-7050	커버 COVER	1	
2	987 6537	제어 밸브 VALVE, CONTROL	1	V80-4	12	M01-1481	스페이서 SPACER	3	
3	2116285	육각 볼트 BOLT, HEX. HEAD	3	BA10×60	13	S01-3178	핀 PIN	8	
4	S01-0006	셀프 로킹 너트 NUT, SELF LOCKING	3	M10	14	S01-3179	써클립 CIRCLIP	8	
5	3612101	스프링 와셔 WASHER, SPRING	3	WS10	15	998 9676	게이지 니플 NIPPLE, GAUGE	1	
6	S01-1834	레버 LEVER	4		16	676 0465	레버 링크 LINK, LEVER	4	
7	S01-0047	손잡이 KNOB	3	BLACK					
8	S01-0048	손잡이 KNOB	1	RED					
9	M05-1556	커버 COVER	1						

SPARE PARTS LIST



주 제어 밸브
MAIN CONTROL VALVE

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SPARE PARTS LIST



주 제어 밸브
MAIN CONTROL VALVE

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2013. 12.

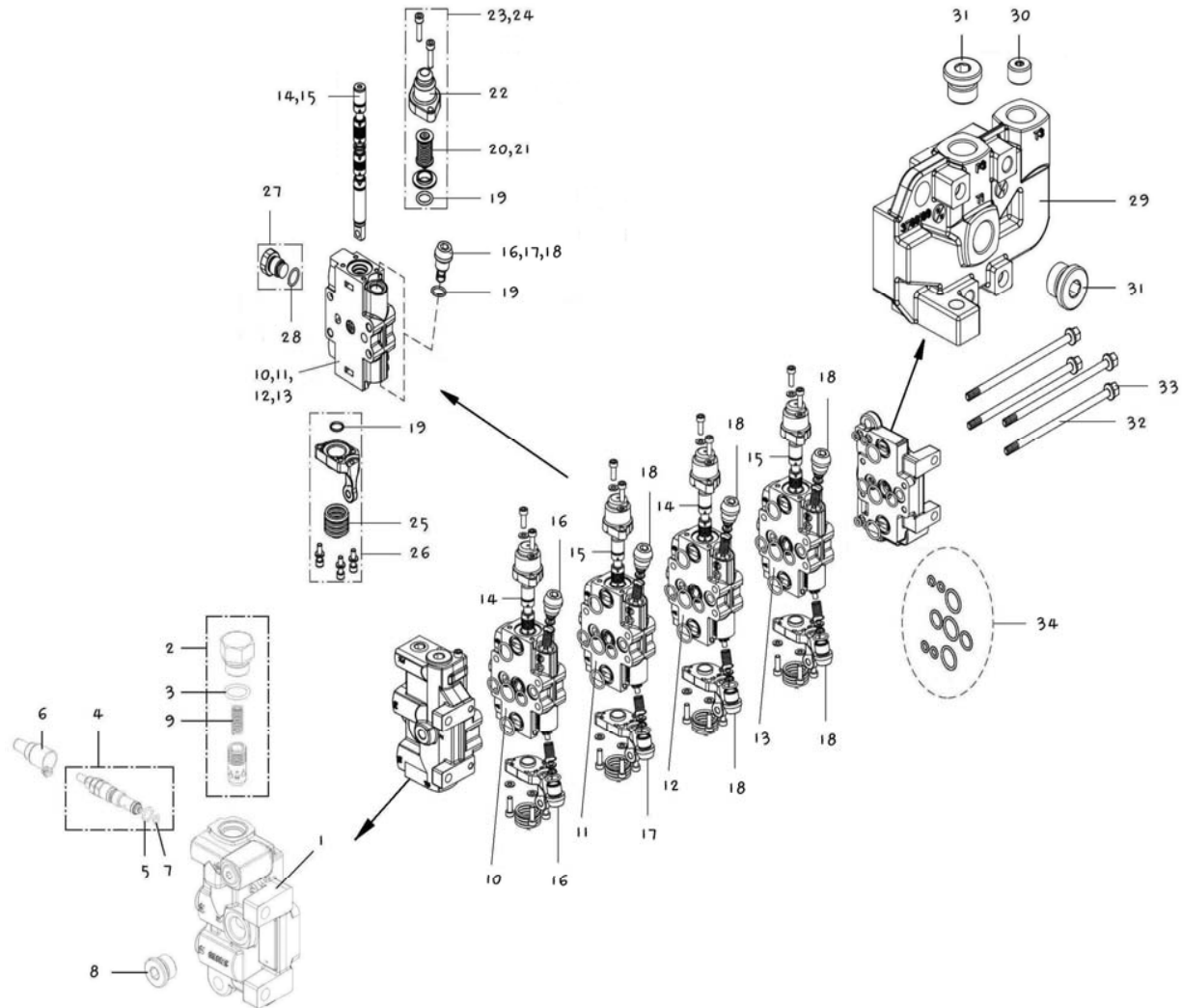
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-	987 6537	제어 밸브 CONTROL VALVE	1	V80	10	986 2757	워킹 섹션 WORKING SECTION	1	
1	986 0134	인렛 섹션 INLET SECTION	1		11	986 2765	워킹 섹션 WORKING SECTION	1	
2	986 3214	릴리프 밸브 VALVE, RELIEF	1		12	986 2781	워킹 섹션 WORKING SECTION	1	
3	982 0329	O-링 O-RING	1		13	986 2790	워킹 섹션 WORKING SECTION	1	
4	986 2129	릴리프 밸브 VALVE, RELIEF	1		14	986 1343	스풀 SPOOL	2	BKM
5	995 6352	O-링 O-RING	1		15	986 0690	스풀 SPOOL	2	
6	986 1874	후드 HOOD (PLOMBERING)	1		16	986 0355	릴리프 밸브 VALVE, RELIEF	2	16 MPA
7	992 1184	O-링 O-RING	1		17	986 0363	릴리프 밸브 VALVE, RELIEF	1	17.5 MPA
8	991 7217	플러그 PLUG	1		18	986 0070	플러그 PLUG	5	
9	986 0185	스프링 SPRING	1		19	993 3328	O-링 O-RING	12	

SPARE PARTS LIST



주 제어 밸브
MAIN CONTROL VALVE

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주 제어 밸브
MAIN CONTROL VALVE

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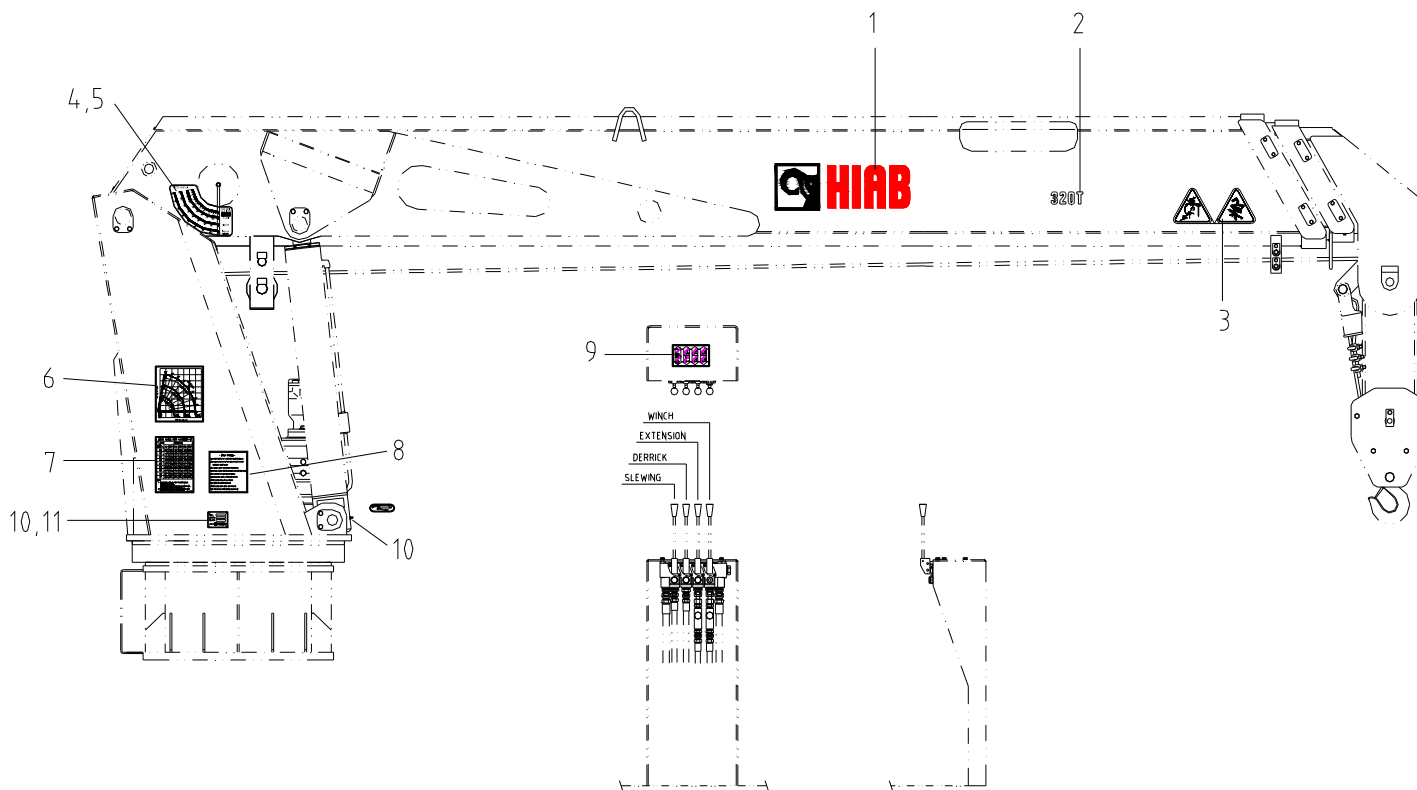
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20	986 2102	스프링 유니트 SPRING UNIT	4		30	986 2617	플러그 PLUG	1	
21	986 2111	스프링 유니트 SPRING UNIT	4		31	991 7217	플러그 PLUG	1	
22	986 2625	커버 COVER	4		32	986 2188	마운팅 키트 MOUNTING KIT	1	
23	986 2081	스풀 컨트롤 SPOOL CONTROL	4		33	986 2072	너트 키트 NUT KIT	1	
24	986 2099	스풀 컨트롤 SPOOL CONTROL	4		34	986 2030	시일 키트 SEAL KIT	5	
25	986 0061	레버 유니트 CONTROL LEVER UNIT	4						
26	986 1394	케이터 GAITERS	4						
27	986 0231	체크 밸브 CHECK VALVE	4						
28	986 0240	O-링 O-RING	4						
29	986 0126	앤드 섹션 END SECTION	1						

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스티커 배열
ARRANGEMENT, STICKER

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2016. 01.



SPARE PARTS LIST



스티커 배열
ARRANGEMENT, STICKER

HIAB320T-3 16 : 1
2016. 01.

번호 No.	부품 번호 Part No.	품명 Description	수량 Q`ty	비고 Remarks	번호 No.	부품 번호 Part No.	품명 Description	수량 Q`ty	비고 Remarks
-	A01-0399	스티커 배열 ARRANGEMENT STICKER	1		10	SK-5007	네임 플레이트 PLATE, NAME	1	
1	P01-3014	로고 라벨 LABEL, LOGO	2	HIAB	11	S01-0182	리빗 RIVET, BLIND	1	
2	P01-3058	모델명 라벨 LABEL, MODEL NAME	2	320T	12	P01-0159	그리스 니플 NIPPLE, GREASE	1	
3	P01-0124	경고 플레이트 PLATE, WARNING	2	낙하주의					
4	P01-0270	붐 각도 플레이트 PLATE, BOOM ANGLE	1						
5	P01-0271	붐 각도 플레이트 PLATE, BOOM ANGLE	1						
6	P01-0268	작업 반경 WORKING RADIUS	1						
7	P01-0272	하중 도표 LOAD CHART	1						
8	P01-0142	경고 라벨 LABEL, WARNING	1						
9	P01-0273	제어 플레이트 PLATE, CONTROL	1						

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