WEBM000101

SHOP MANUAL

PC12R-8
PC15R-8

HYDRAULIC EXCAVATOR

SERIAL NUMBER

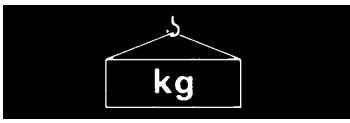
PC12R-8 F22426 in poi

PC15R-8 F31605 in poi

KOMATSU

Utility

HOISTING INSTRUCTIONS



⚠ Heavy parts (25 kg or more) must be lifted with a hoist etc. In the **Disassembly and Assembly** section, every part weighing 25 kg or more is clearly indicated with the symbol kg

1. If a part cannot be smoothly removed from the machine by hoisting, the following checks should be made:
   - Check for removal of all bolts fastening the part to the relative parts.
   - Check for any part causing interference with the part to be removed.

2. Wire ropes

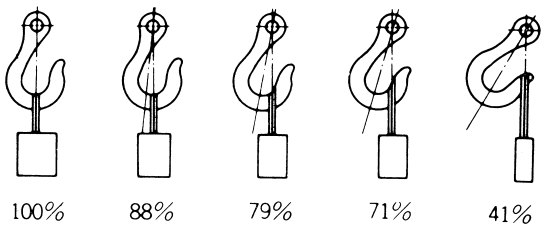
1) Use adequate ropes depending on the weight of parts to be hoisted, referring to the table below:

WIRE ROPES
(Standard «S» or «Z» twist ropes without galvanizing)

Rope diameter (mm)	Allowable load (tons)
10	1.0
11.2	1.4
12.5	1.6
14	2.2
16	2.8
18	3.6
20	4.4
22.4	5.6
30	10.0
40	18.0
50	28.0
60	40.0

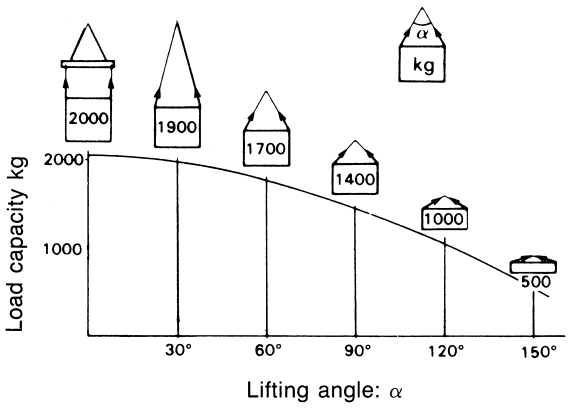
The allowable load value is estimated to be one-sixth or one-seventh of the breaking strength of the rope used.

2) Sling wire ropes from the middle portion of the hook. Slinging near the edge of the hook may cause the rope to slip off the hook during hoisting, and a serious accident can result.
Hooks have maximum strength at the middle portion.



3) Do not sling a heavy load with one rope alone, but sling with two or more ropes symmetrically wound on to the load.
⚠ Slinging with one rope may cause turning of the load during hoisting, untwisting of the rope, or slipping of the rope from its original winding position on the load, which can cause dangerous accidents.

4) Do not sling a heavy load with ropes forming a wide hanging angle from the hook.
When hoisting a load with two or more ropes, the force subjected to each rope will increase with the hanging angles.
The table below shows the variation of allowable load (kg) when hoisting is made with two ropes, each of which is allowed to sling up to 1000 kg vertically, at various handing angles.
When two ropes sling a load vertically, up to 2000 kg of total weight can be suspended.
This weight becomes 1000 kg when two ropes make a 120° hanging angle.
On the other hand, two ropes are subjected to an excessive force as large as 4000 kg if they sling a 2000 kg load at a lifting angle of 150°.



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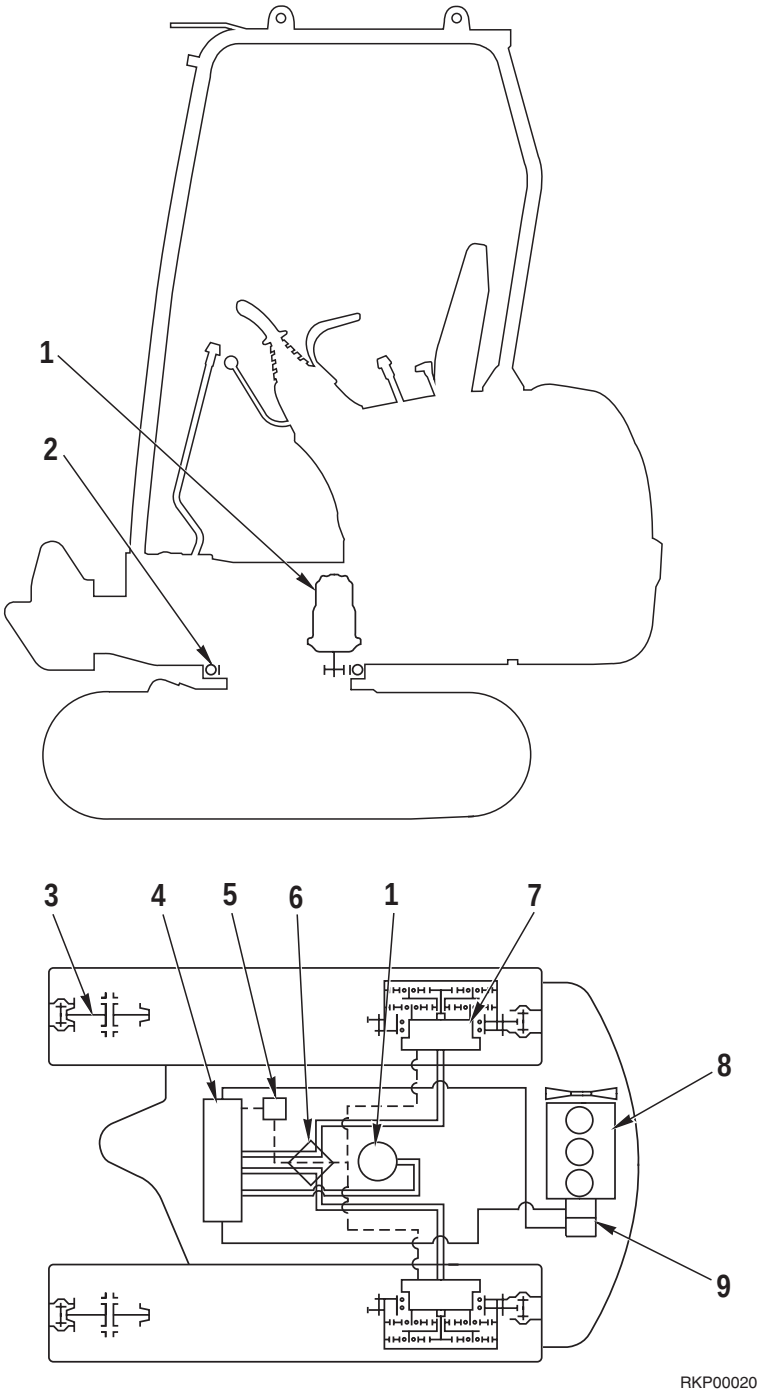
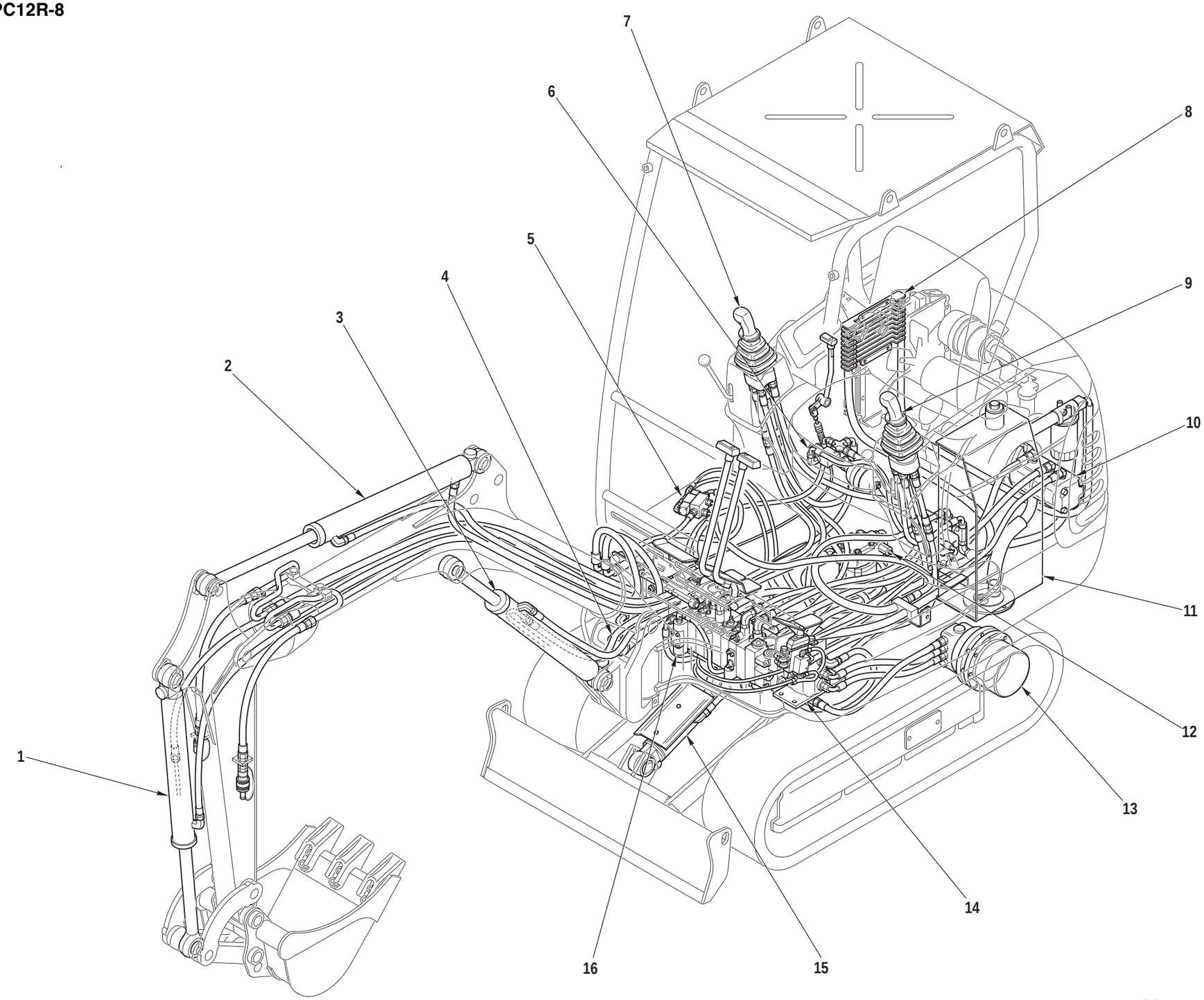


1. Swing motor
2. Swing circle
3. Track shoe idler
4. Control valve
5. Travel increment valve
6. Swivel joint
7. Travel motor
8. Engine
9. Hydraulic pump

HYDRAULIC SYSTEM

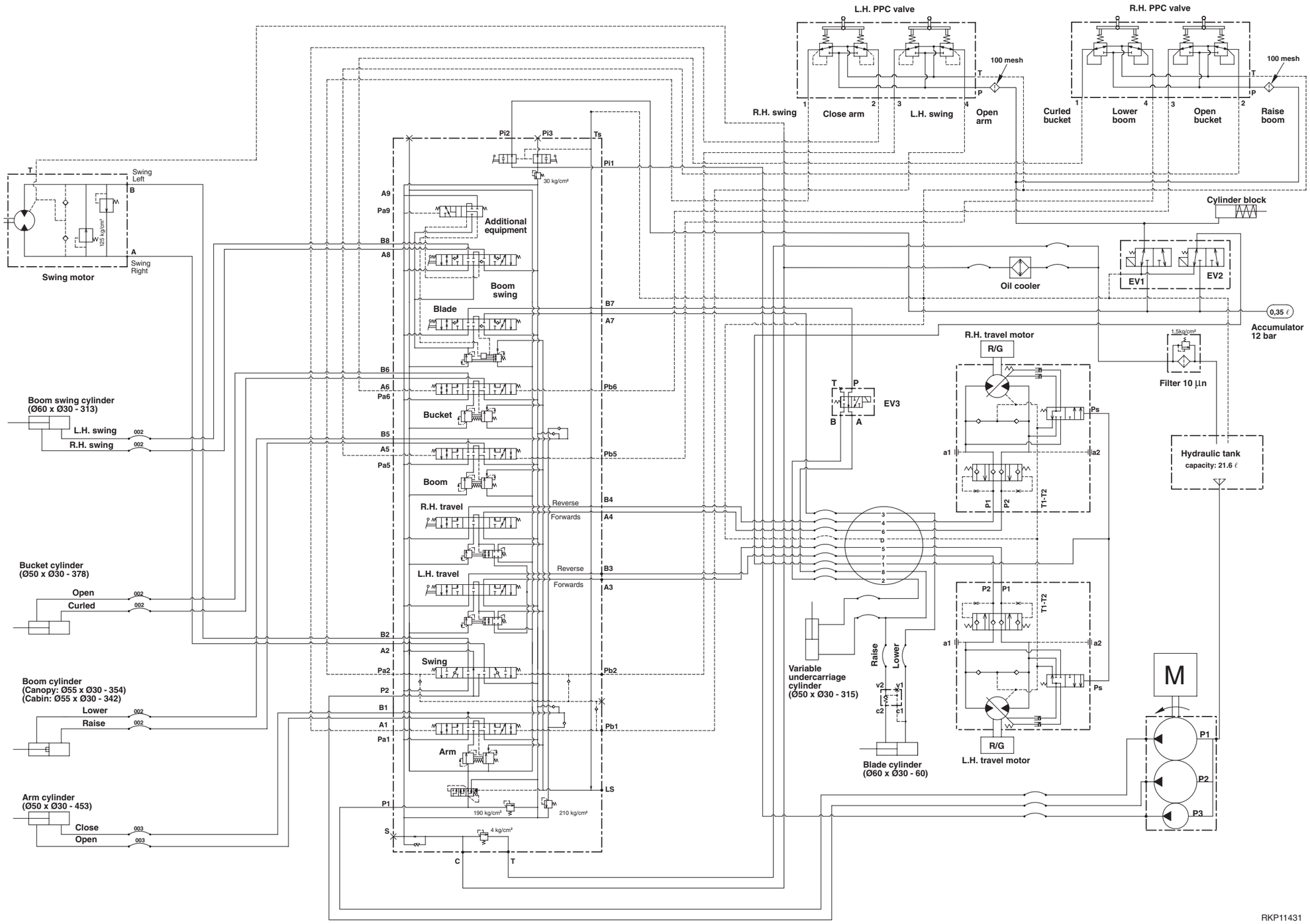
PC12R-8



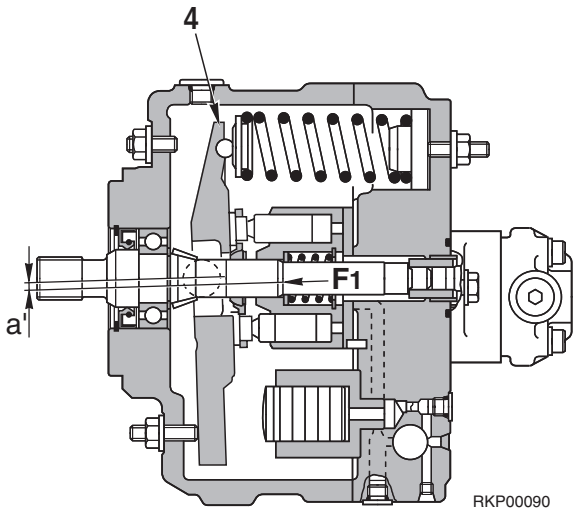
1. Bucket cylinder
2. Arm cylinder
3. Boom cylinder
4. Boom swing cylinder
5. Cutting shovel solenoid valve
6. Servocontrol solenoid valve
7. R.H. PPC valve
8. Oil cooler
9. L.H. PPC valve
10. Hydraulic pump
11. Hydraulic tank
12. Swing motor
13. Final drive
14. Swivel joint
15. Blade cylinder
16. Control valve

HYDRAULIC CIRCUIT DIAGRAM

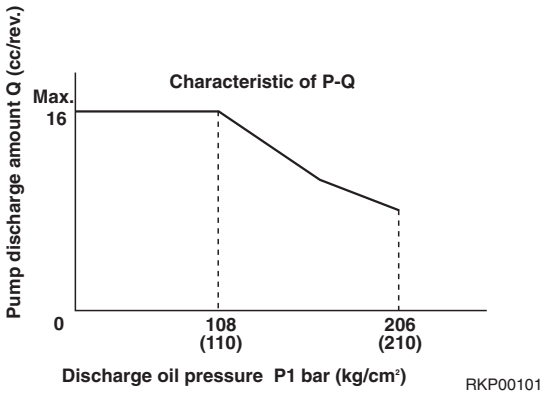
PC12R-8 MISTRAL HS (with variable gauge undercarriage and travel increment)



- If the discharge pressure rises further, the angle of swash plate (4) becomes smaller. When this happens, the length of the arm applying total piston force **F1** is reduced from **a** to **a'**, so a larger force **F1** is needed for the angle of swash plate (4).

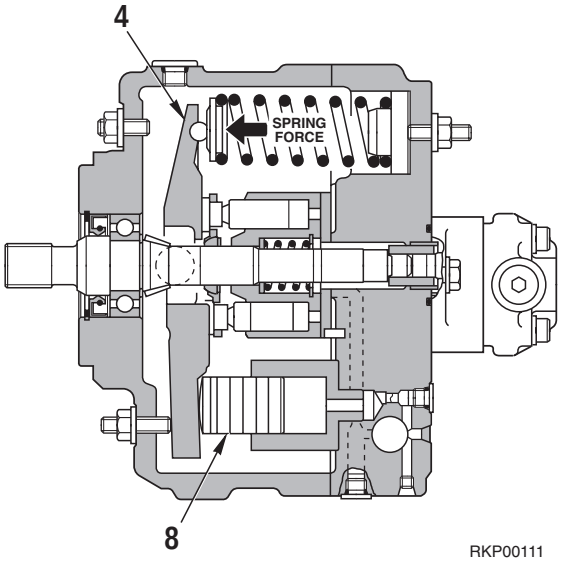


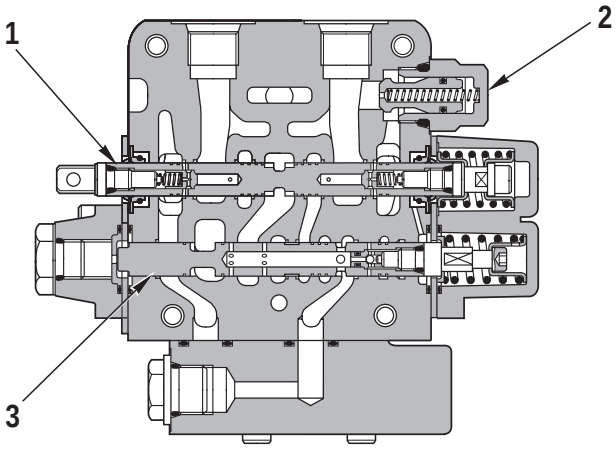
- Is this way, curve **P - Q** becomes a curve (constant horsepower control) which gives effective use of the engine horsepower.



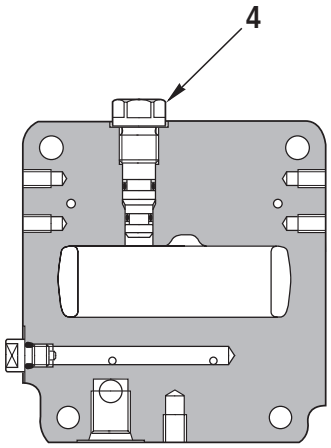
3. Load response control

- When carrying out load response control, the signal pressure from the **LS** valve is transmitted to control piston (8), and control piston (8) pushes swash plate (4). The angle of swash plate (4) changes to a point where this force is balanced with the total force of the spring and piston, so the discharge amount changes.
- Constant horsepower control is carried out with priority over load response control, so the discharge amount changes in the range below the flow at constant horsepower control.

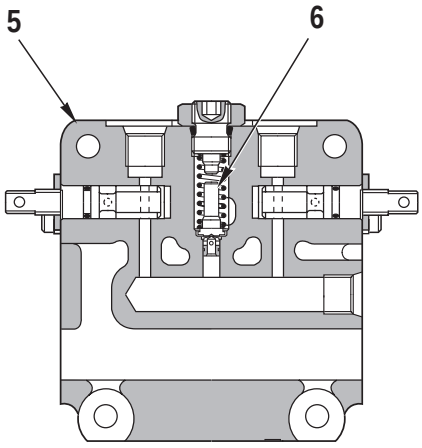




Section M - M



Section N - N

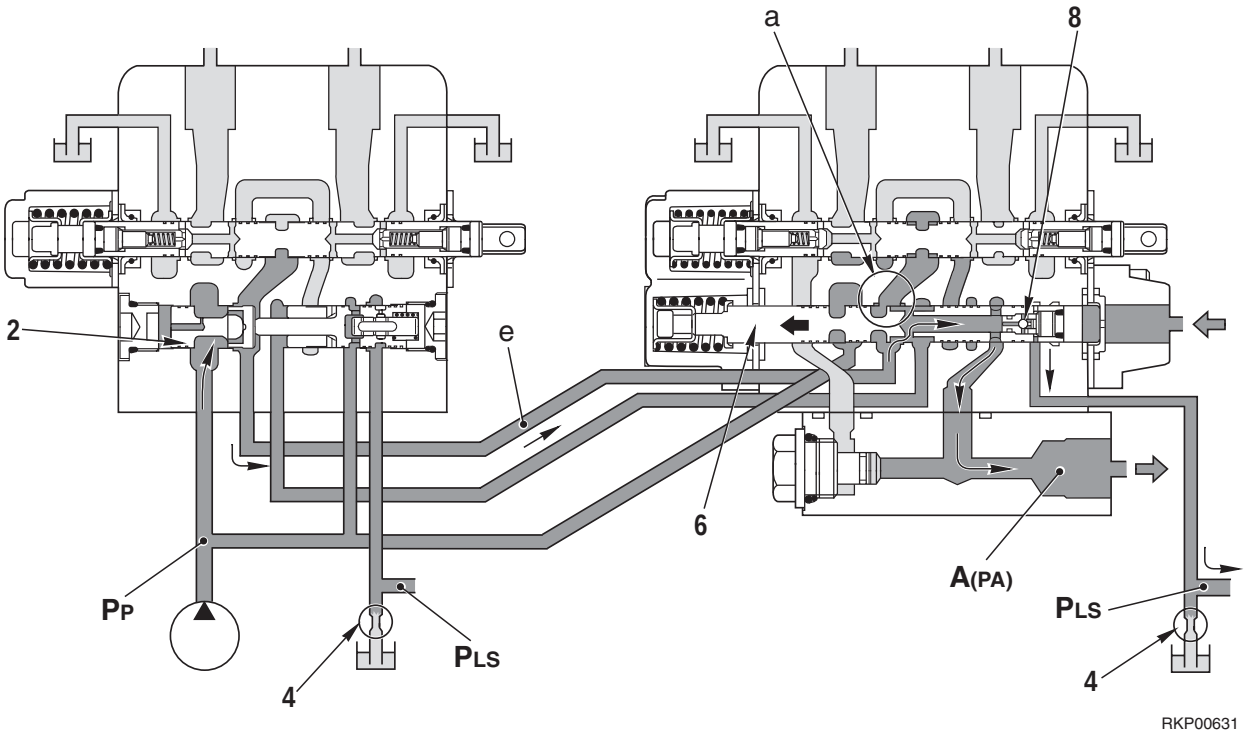


Section O - O

RKP00180

BOOM SWING AND HAMMER VALVE

1. Spool (Boom swing)
2. Suction valve
3. Spool (Hammer)
4. Plug
5. Cover
6. Reducing valve (Servocontrol)



3) Hammer valve

- When hammer spool (6) is operated, pump pressure **PP** flows through flow control valve (2), passage **e**, and notch **a** in hammer spool (6) to actuator circuit **A**.
- At the same time, actuator circuit pressure **PA** passes through check valve (8) and is interconnected with the **LS** circuit **PLS**.

★ The hammer circuit is different from the other circuits: actuator circuit pressure **PA** goes directly to **LS** circuit **PLS**.

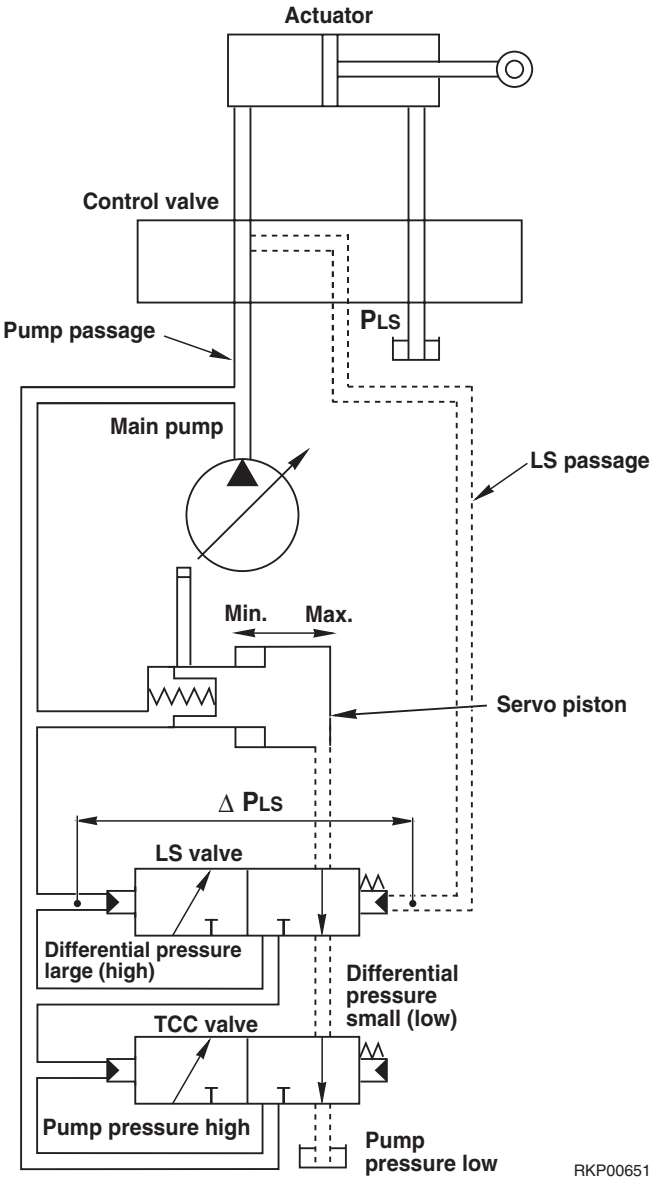
A1 Port - To arm cylinder (Head side)
A2 Port - To swing motor (A Port)
A3 Port - To swivel joint (D Port)
A4 Port - To swivel joint (C Port)
A5 Port - To boom cylinder (Bottom side)
A6 Port - To bucket cylinder (Bottom side)
A7 Port - To swivel joint (F Port)
A8 Port - To boom swing cylinder (Head side)
A9 Port - To attachment
B1 Port - To arm cylinder (Bottom side)
B2 Port - To swing motor (B Port)
B3 Port - To swivel joint (B Port)
B4 Port - To swivel joint (A Port)
B5 Port - To boom cylinder (Head side)
B6 Port - To bucket cylinder (Head side)
B7 Port - To swivel joint (E Port)
B8 Port - To boom swing cylinder (Bottom side)
C Port - To oil cooler
LS Port - To hydraulic pump (PLS Port)
P Port - From hydraulic pump (P1 Port)
Pa1 Port - From L.H. PPC valve (4 Port)
Pa2 Port - From L.H. PPC valve (1 Port)
Pa5 Port - From R.H. PPC valve (2 Port)
Pa6 Port - From R.H. PPC valve (1 Port)
Pa9 Port - From attachment PPC valve
Pb1 Port - From L.H. PPC valve (2 Port)
Pb2 Port - From L.H. PPC valve (3 Port)
Pb5 Port - From R.H. PPC valve (4 Port)
Pb6 Port - From R.H. PPC valve (3 Port)
Pi1 Port - From hydraulic pump (P2 Port)
Pi2 Port - To ST1 solenoid valve (P Port)
T Port - To hydraulic tank
TS Port - To hydraulic tank

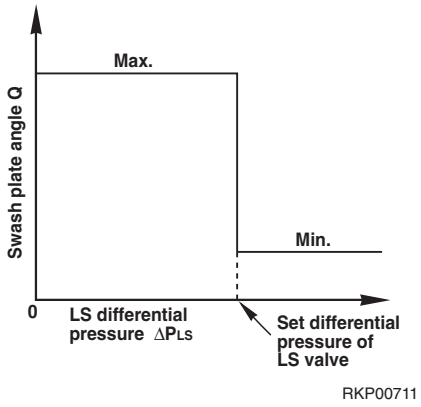
2. BASIC PRINCIPLE

1) Control of pump swash plate angle

- The pump swash plate angle (pump discharge amount) is so controlled that the **LS** differential pressure **ΔPLS**, which is the difference between the pump discharge pressure **PP** and the **LS** pressure **PLS** at the outlet port of the control valve (actuator load pressure), is maintained at a constant level.
  (**LS** differential pressure **ΔPLS** = Pump discharge pressure **PP** − pressure **PLS**).
- If the **LS** differential pressure **ΔPLS** becomes lower than the setting pressure of the **LS** valve, the pump swash plate angle becomes larger, and if it becomes higher, the pump swash plate angle becomes smaller.

★ For the details of this action, refer to the descriptions of «HYDRAULIC PUMP».

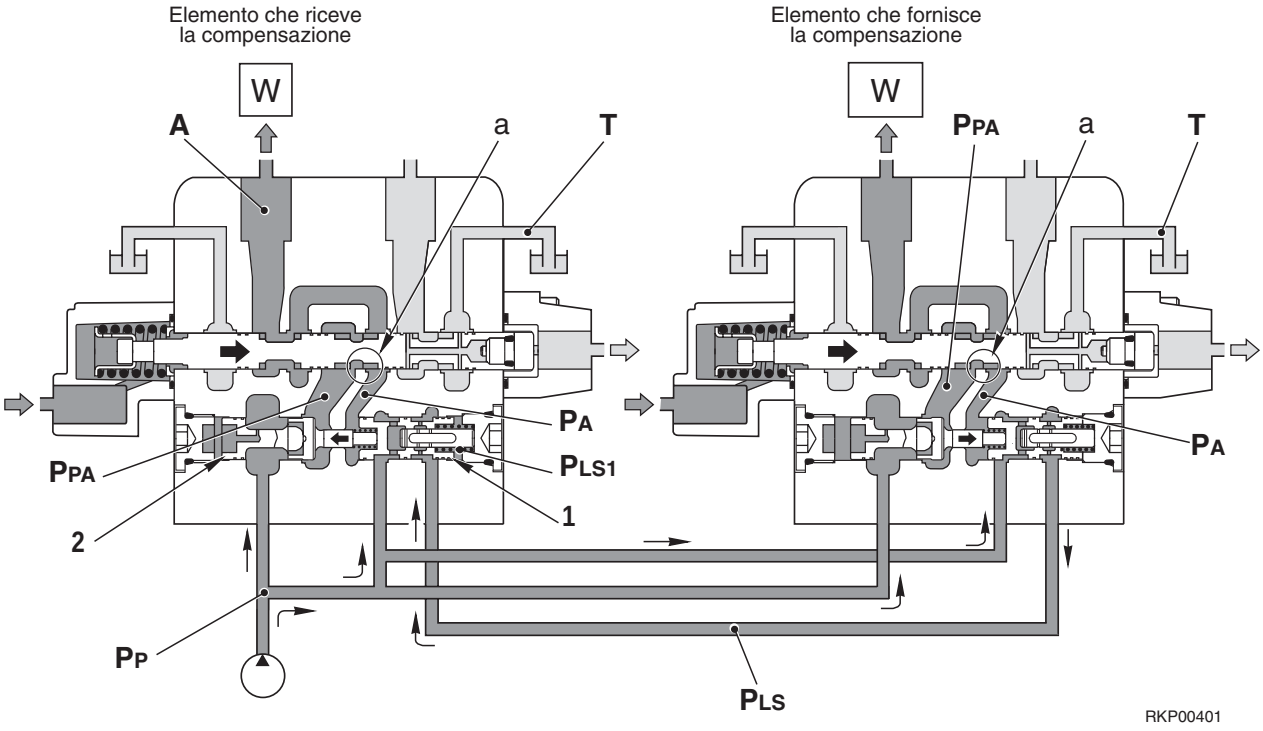




4. Pressure compensation valve

FUNCTION

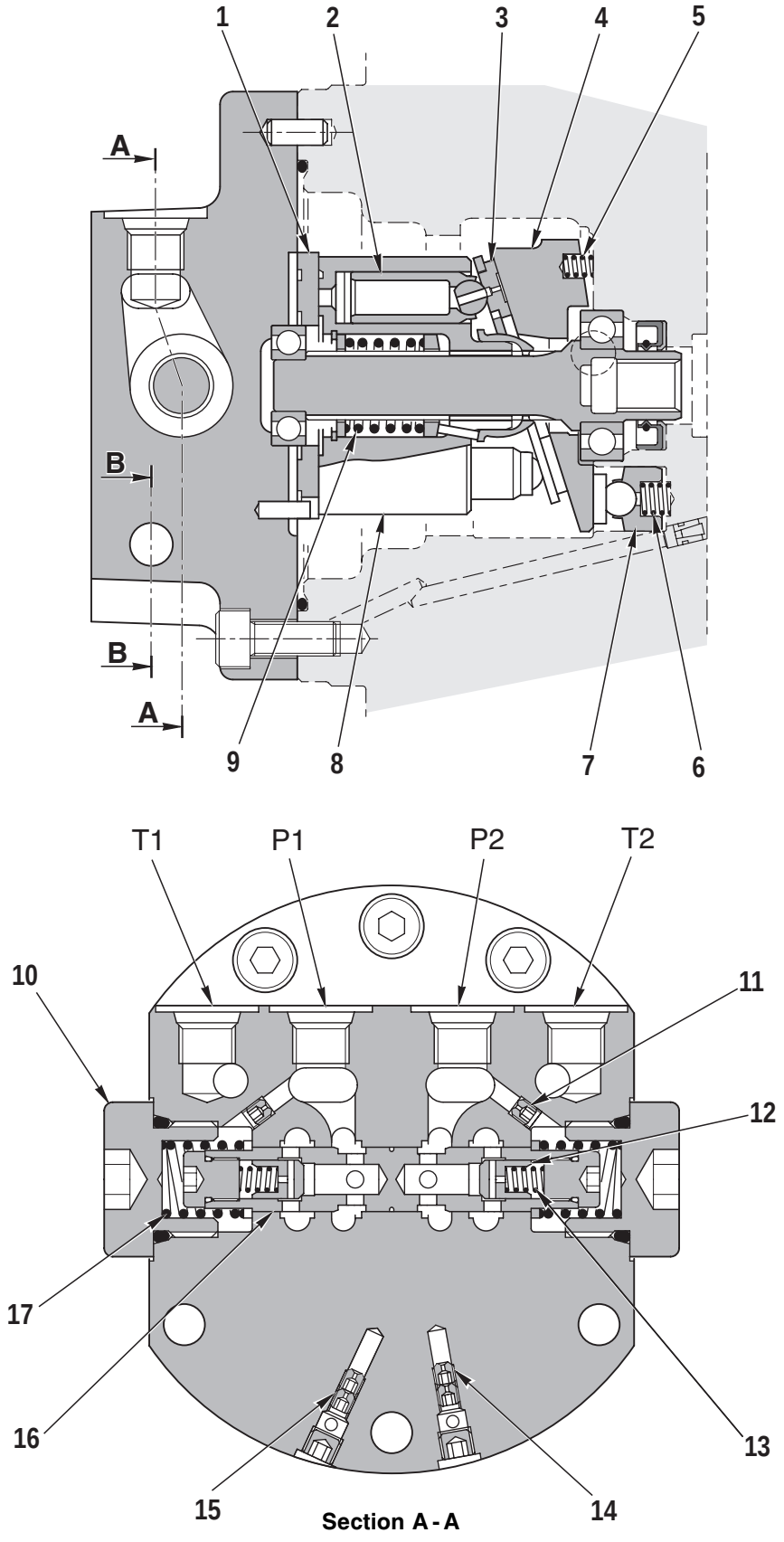
- During compound operations, if the load pressure becomes lower than the other actuator and the oil flow tries to increase, compensation is received. (When this happens, the other actuator being used for compound operation (right side) is at a higher load than the actuator on this side (left side)).



OPERATION

- If the load pressure of the other actuator (right side) becomes higher during compound operations, the oil flow in actuator circuit **A** on this side (left side) tries to increase.
- If this happens, the **LS** pressure P_{LS} of the other actuator acts on spring chamber P_{LS1}, and reducing valve (1) and flow control valve (2) are pushed to the left (←).
- Flow control valve (2) throttles the area of opening between pump circuit P_P and spool upstream P_{PA}, and pressure loss is generated between P_P and P_{PA}.
- Flow control valve (2) and reducing valve (1) are balanced in position where the difference in pressure between P_{LS} and P_A acting on both ends of reducing valve (1) and the pressure loss between P_P and P_{PA} on both sides of flow control valve (2) are the same.
- In this way, the pressure difference between upstream pressure P_{PA} and downstream pressure P_A of both spools used during compound operations is the same, so the pump flow is divided in proportion to the area of opening of notch **a** of each spool.

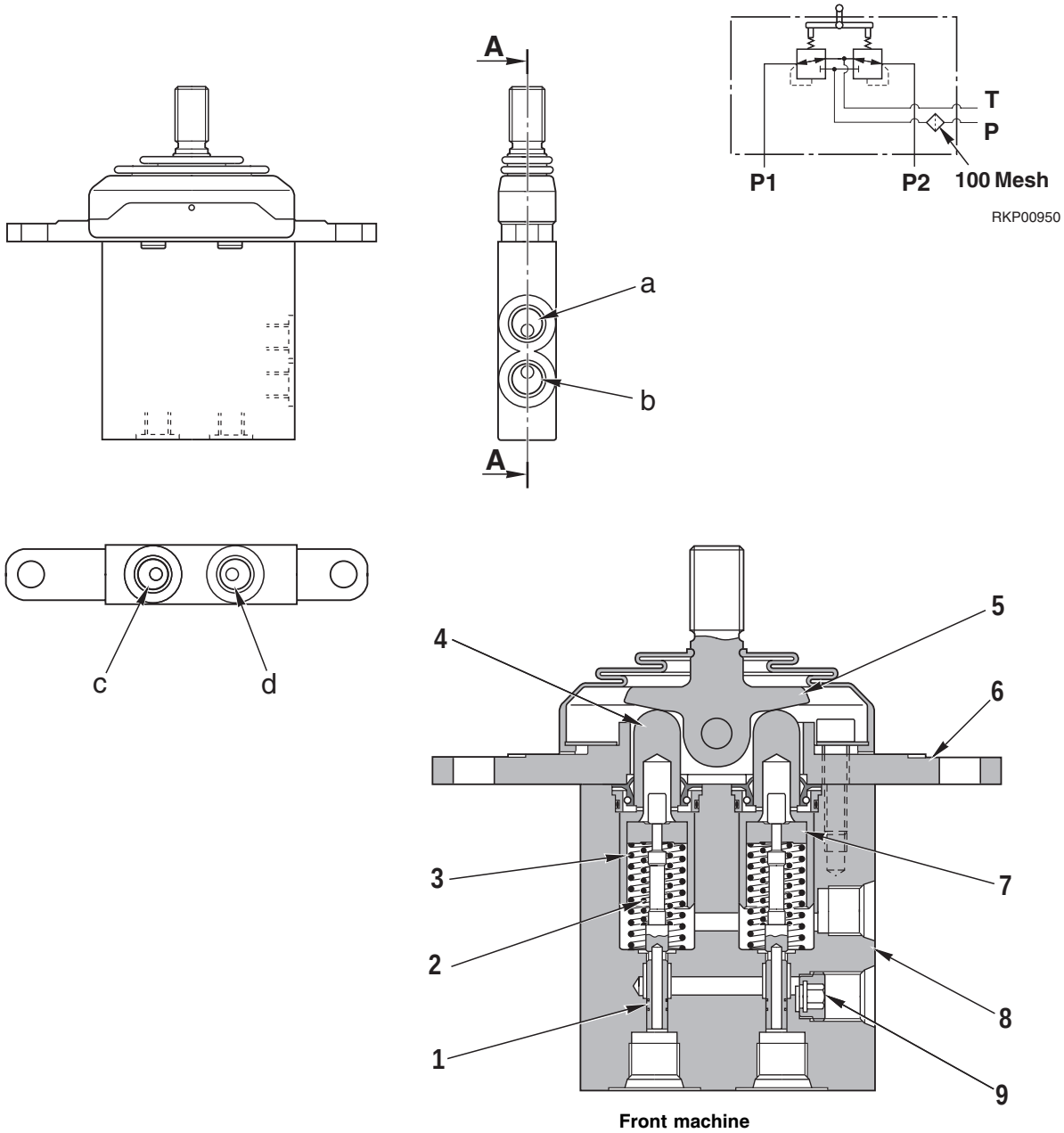
PC12R-8 (with travel increment)
PC15R-8



RKP00872

PPC VALVE

(hammer, cutting shovel)

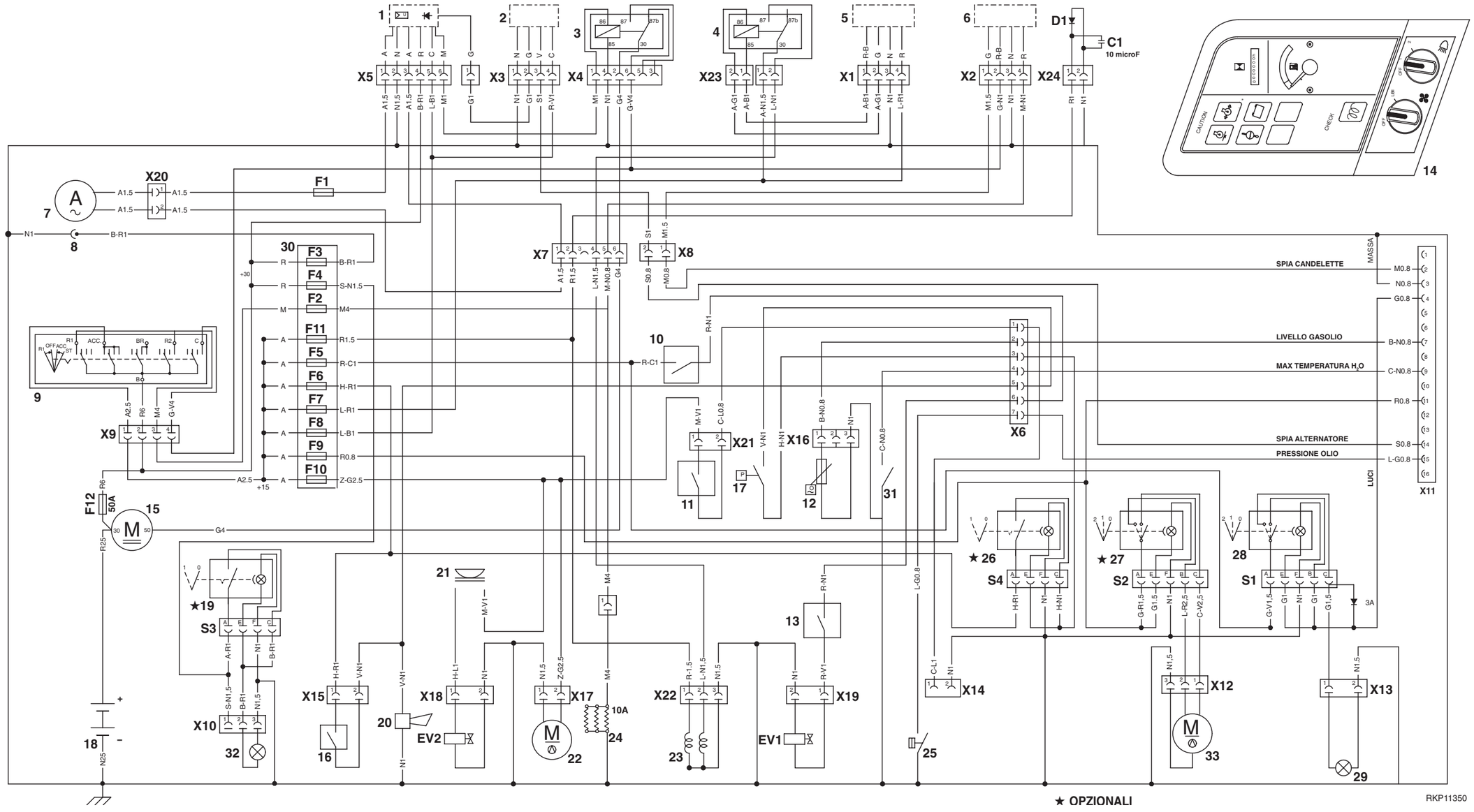


a. T Port - To hydraulic tank
b. P Port - From control valve (Pi2 Port)
c. P1 Port - **Hammer control:** Not used

Cutting shovel control: see hydraulic circuit
d. P2 Port - **Hammer control:**
To control valve (Pa9 Port)
Cutting shovel control:
see hydraulic circuit

1. Spool
2. Adjusting spring (internal)
3. Return spring (external)
4. Plunger
5. Lever
6. Cover
7. Retainer
8. Body
9. Filter (100 mesh)

ELECTRICAL CIRCUIT DIAGRAM



COMPONENTS

1 - Rectfier - Voltage regulator
2 - Battery warning light relay
3 - Starter relay
4 - Stop motor relay
5 - Timer 1" stop motor solenoid
6 - Timer 15" preheather warning light
7 - Alternator (20A)
8 - Electric socket
9 - Starter switch
10 - R.H. Servocontrol push-button
11 - Optional push-button (L.H. PPC valve)
12 - Fuel level
13 - L.H. Servocontrol push-button
14 - Warning lights - Instrument - check box
15 - Starting motor
16 - Horn push-button
17 - Safety pressure switch (TBG)
18 - Battery (12V 45Ah 210A)
19 - Rotating beam switch (optional)
20 - Horn
21 - Travel increment pedal
22 - Fuel pump
23 - Stop motor (instantaneous current 30A - constant current 0.8A)
24 - Preheater (10A)
25 - Engine oil pressure switch
26 - TBG switch (optional)
27 - Fan heating switch (optional)
28 - Working beam and dashboard switch
29 - Working beam
30 - Fuses box
31 - Coolant temperature sensor
32 - Rotating beam
33 - Fan heating
EV1 - Servocontrol solenoid valve
EV2 - Travel increment solenoid valve
D1 - Hold solenoid diode
S1 - Working beam and dashboard switch
S2 - Fan heating switch (optional)
S3 - Rotating beam switch (optional)
S4 - TBG switch (optional)

CONNECTORS

X1 - 4 ways connector stop motor timer, solenoid
X2 - 4 ways connector preheater timer
X3 - 4 ways connector battery warning light relay
X4 - 6 ways connector starter relay
X5 - 6 ways connector voltage regulator relay
X6 - 6 ways connector motor line
X7 - 7 ways connector motor line
X8 - 2 ways connector check box line
X9 - 4 ways connector starter switch line
X10 - 3 ways connector cabin line
X11 - 6 ways connector instrument and warning light line
X12 - 3 ways connector heater line
X13 - 2 ways connector working beam line
X14 - 2 ways connector optional solenoid valve line
X15 - 2 ways connector horn line
X16 - 3 ways connector fuel indicator level line
X17 - 2 ways connector fuel pump line
X18 - 2 ways connector travel increment solenoid valve line
X19 - 2 ways connector servocontrol solenoid valve line
X20 - 2 ways connector alternator line
X21 - 2 ways connector optional push-button line
X22 - 3 ways connector stop motor line
X23 - Connector stop motor relay
X24 - Connector preheater

FUSES

F1 - Alternator
F2 - Preheater
F3 - Electrical socket
F4 - Rotating beam + cabin
F5 - Servocontrol + working beam
F6 - Horn + TBG
F7 - Stop motor relay
F8 - Compound alternator
F9 - Instrument
F10 - Fuel pump + travel increment push-button
F11 - Stop motor solenoid
F12 - General fuse

• FOR THE MACHINE

PC15R-8					
Valore Normale	Valore Ammesso				
2.0	1.7 – 2.3				
2.0	1.7 – 2.3				
2.0	1.7 – 2.3				
2.0	1.7 – 2.3				
6.5	5.5 – 7.5				
3.0	2.5 – 3.5				
2.0	1.7 – 2.3				
7.0	6 – 8				
6.0	5 – 7				
20	20 – 30				
29	26 – 35				
210	210 – 220				
210	210 – 220				
210	210 – 220				
125					
210	210 – 220				
210	210 – 220				
210	210 – 220				
29	26 – 35				
20	20 – 30				
–	–				

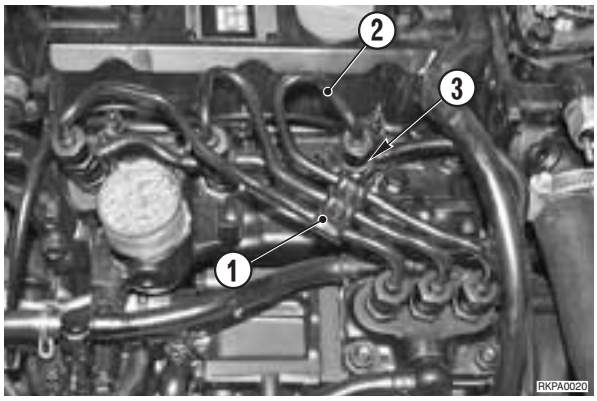
• FOR THE MACHINE

PC15R-8					
Standard value	Permissible value				
Canopy 2.0 Cabin	Canopy 1.6 – 2.4 Cabin				
Canopy 2.0 Cabin	Canopy 1.6 – 2.4 Cabin				
2.5	2.0 – 3.0				
2.5	2.0 – 3.0				
2.6	1.8 – 2.6				
2.0	1.6 – 2.4				
6.2	5.2 – 7.2				
5.8	4.8 – 6.8				
0.9	0.7 – 1.1				
1.1	0.8 – 1.4				

MEASUREMENT OF THE COMPRESSION PRESSURE

⚠
- While measuring the compression, take care not to get entangled in the cooling fan, the alternator belt, or in other rotating parts.
- Check all cylinders.

★ Test conditions:
- Engine: at working temperature.
- Hydraulic oil: 55 – 60 °C.
- Battery: fully charged.
- Valve clearance: adjusted (See «ADJUSTMENT OF VALVE CLEARANCE»).
- Air filter functioning properly.



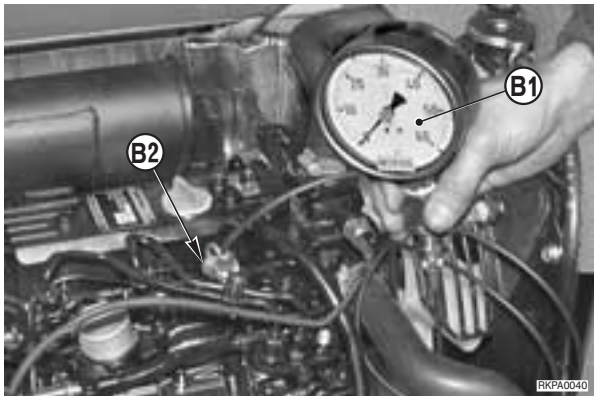
1 - Remove the clamp (1) and disconnect the high-pressure tube (2).

2 - Remove the nozzle holder (3) of the cylinder to be checked.

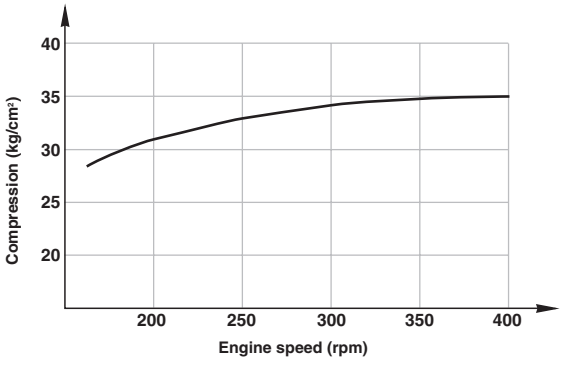
3 - Disconnect the connector (4) of the engine-stopping solenoid.

4 - Turn the engine over a few times, using the starting motor.

5 - Mount the adapter **B2** and connect the test pressure gauge **B1**.
- ★ Check that the seal is mounted in the adapter, and that it is undamaged.



6 - Turn the engine using the starting motor and read the compression value.
- ★ Read the compression value when the pressure gauge has stabilised.
- ★ While reading the compression, also check the engine rpm using the stroboscopic tachometer **C2**. If the speed does not correspond with the control value, check it against the diagram.
- ★ Compression value:
  Normal: 33±1 kg/cm^2 at 250 rpm
  Minimum permissible: 26±1 kg/cm^2 at 250 rpm
- ★ Maximum difference between the cylinders: 2 – 3 kg/cm^2



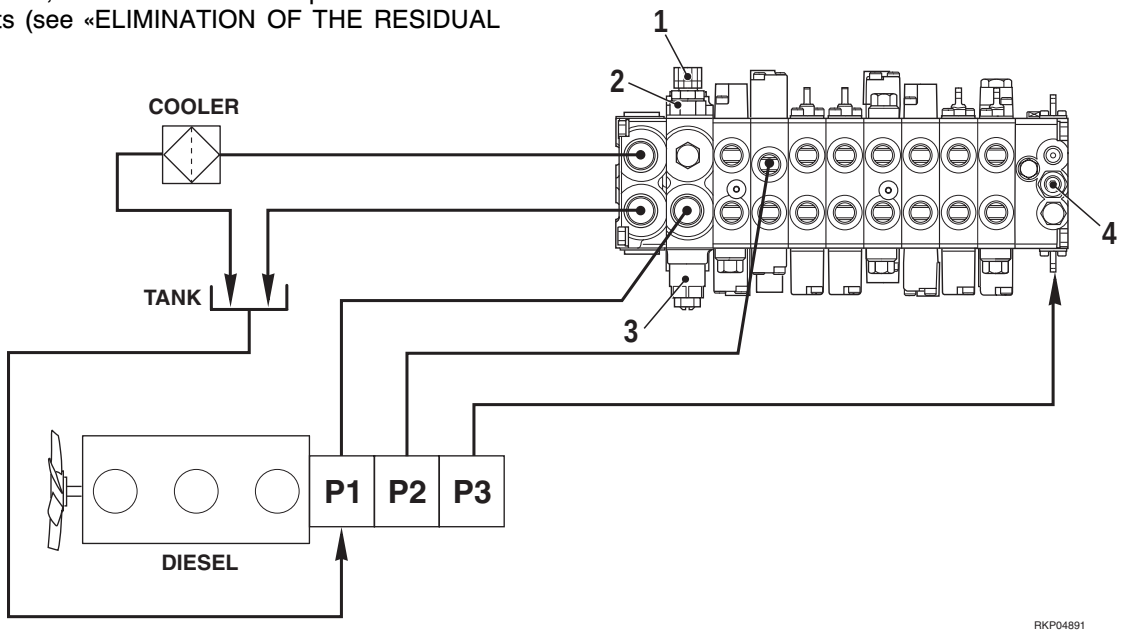
7 - After the reading, re-assemble the nozzle holder (3), and reconnect the high- pressure tube (2) and the connector (4).
- Nm Nut that secures the nozzle: 55 – 59.5 Nm
- Nm High-pressure coupling: 33 – 38.5 Nm

CONTROL AND REGULATION OF PRESSURE IN THE HYDRAULIC CIRCUITS (PC12R)

★ Test conditions:
- Engine: at working temperature.
- MIN and MAX. engine speeds: within permissible limits
- Hydraulic oil: 45 – 55 °C.

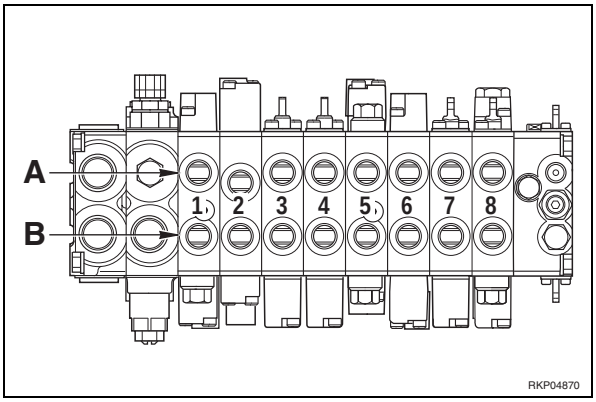
Before removing the plugs in order to measure the pressures, release the residual pressures in the circuits (see «ELIMINATION OF THE RESIDUAL PRESSURES IN THE CIRCUITS AND IN THE TANK») and put the safety-engagement levers into their locked positions.

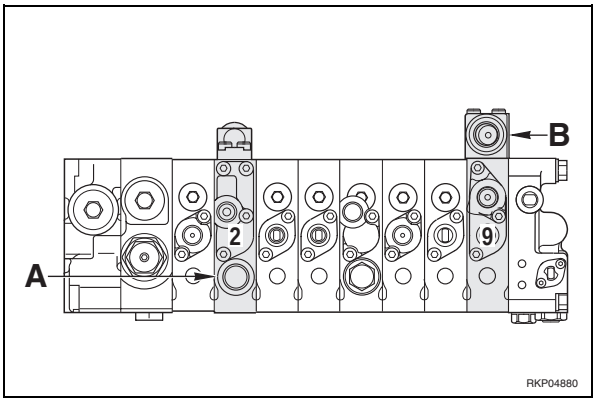
After having connected the pressure gauges, pressurise the tank. For details, see «PRESSURISATION OF THE TANK».



- The control valve consists of the spools that command:

Command	Ports
Arm (Open - Close)	A1 - B1
Swing (Right - Left)	A2 - B2
Engine travel to the left (Backwards and Forwards)	A3 - B3
Engine travel to the right (Backwards and Forwards)	A4 - B4
Boom (Raise - Lower)	A5 - B5
Bucket (Curl - Dump)	A6 - B6
Blade (Lower - Raise)	A7 - B7
Boom swing (Right - Left)	A8 - B8
Hammer (Throw)	B9



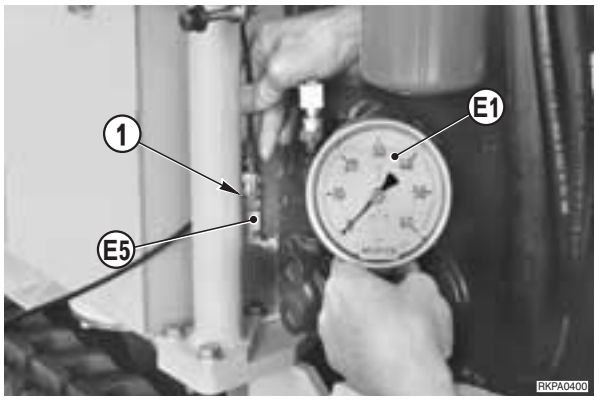


CONTROL AND REGULATION OF THE SERVO-CONTROL POWER SUPPLY (PC15R)

★ Test conditions:
- Engine: at working temperature.
- Hydraulic oil temperature: 45 – 55 °C.

Before removing the cap to measure the pressure, release the residual pressures from the circuits (See «ELIMINATION OF RESIDUAL PRESSURES OF THE CIRCUIT AND THE TANK») and put the safety device engagement levers into their locked position.

After connecting the pressure gauge, pressurise the tank. For details see «PRESSURISATION OF THE TANK».



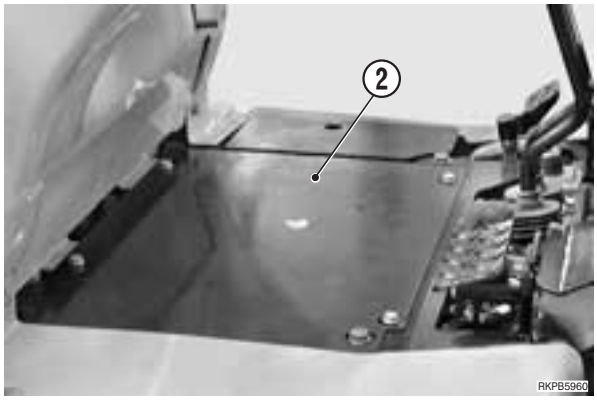
1. Checking the pressure of the servo-controls

1 - Remove the cap (1) of pump P2 and mount elbow **E5** and a pressure adapter.

2 - Connect the pressure gauge **E1** (60 bar).

3 - Start the engine and bring it up to high idling with all leers in neutral position.

4 - Check the pressure.
★ Normal pressure: 29^{+6}_{-3} bar (30^{+6}_{-3} kg/cm²)

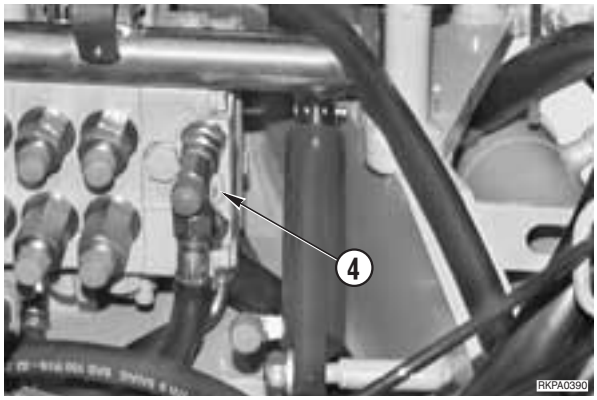


2. Regulating the servo-control valve

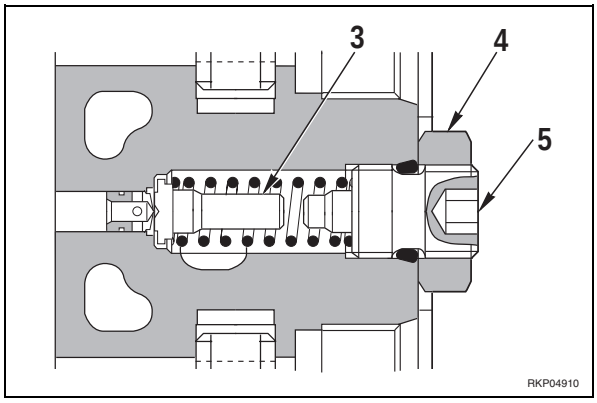
If the pressure value does not fall within the tolerances, regulate the valve (3) as follows:

1 - Take up the flooring (2).

2 - Loosen the lock nut (4) and turn the adjusting screw (5).
- To INCREASE pressure, rotate in a CLOCKWISE direction.
- To DECREASE pressure, rotate in a COUNTER-CLOCKWISE direction.
★ Each turn of the screw (5) varies the pressure by 56 kg/cm² (55 bar).



3 - Lock the nut (4).
Nm Nut: 22±2.5 Nm



CHECKING FOR ANY LEAKAGES INSIDE THE WORKING EQUIPMENT CYLINDERS

★ Test conditions:
- Engine: at working temperature.
- Hydraulic oil: 45 – 55 °C.

1 - Fully extend the rod of the cylinder to be checked and stop the engine.

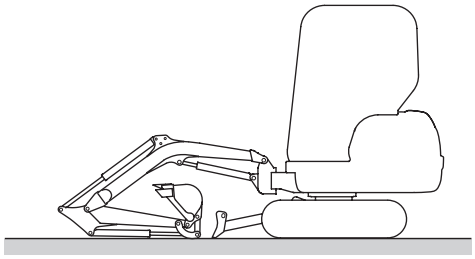
2 - Disconnect the tube (1) from the head side of the cylinder and bind it to the structure.

⚠ Take great care not to disconnect the tube on the base side of the cylinder.

3 - Start the engine, bring it up to high idling and bring the base side of the cylinder up to maximum pressure.

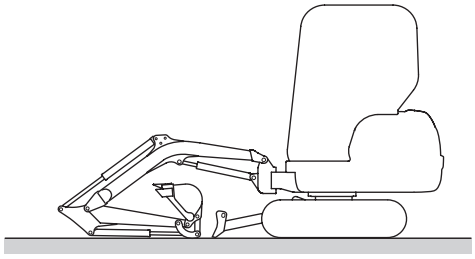
4 - After 30 seconds, wait for a full minute to collect any leakages from the free tube.

POSITION FOR THE BOOM TEST



RKP04710

POSITION FOR THE ARM AND BUCKET TEST



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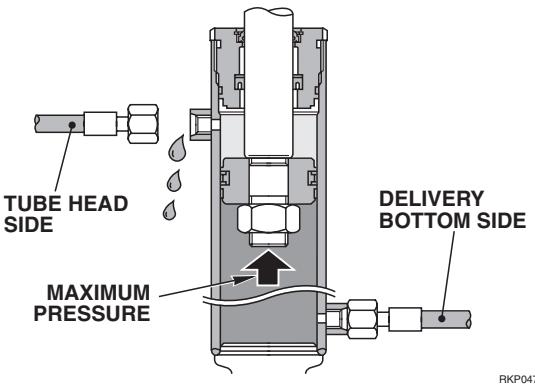


RKP04751

30 REMOVAL AND INSTALLATION

REMOVAL OF THE CYLINDER HEAD

⚠ Disconnect the negative terminal cable (-) from the battery.

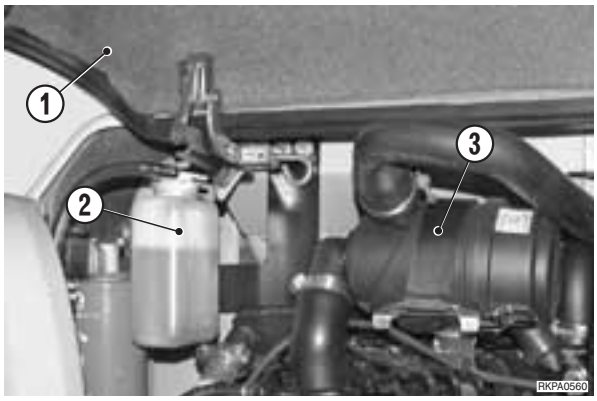
★ Drain the engine coolant.

Coolant: Approx. 3.2 ℓ

※1

1 - Remove the engine hood (1), the expansion chamber (2) and the relative supporting bracket.

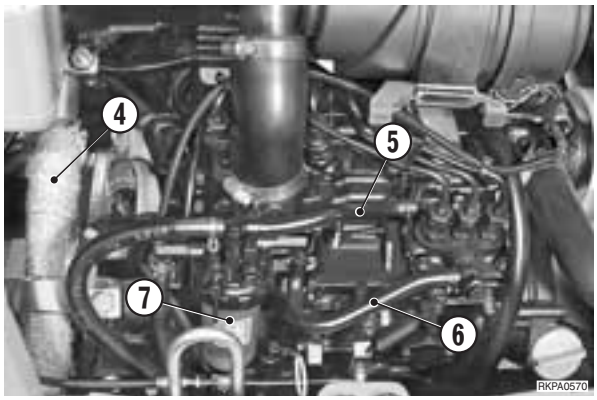
2 - Remove the complete air filter (3) together with its support.



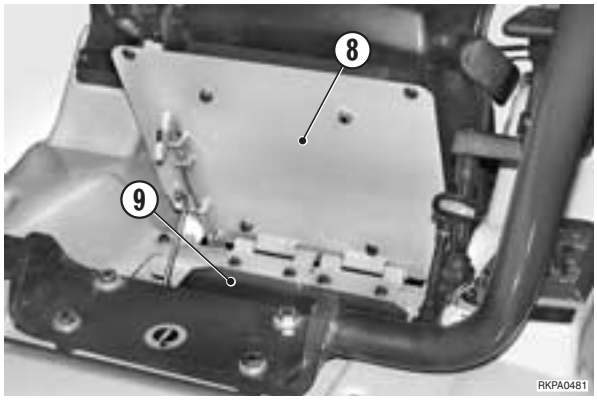
3 - Remove the tail-pipe (4).

4 - Remove the injection pump supply tube (5) and the fuel return tube (6) from the injection nozzles.

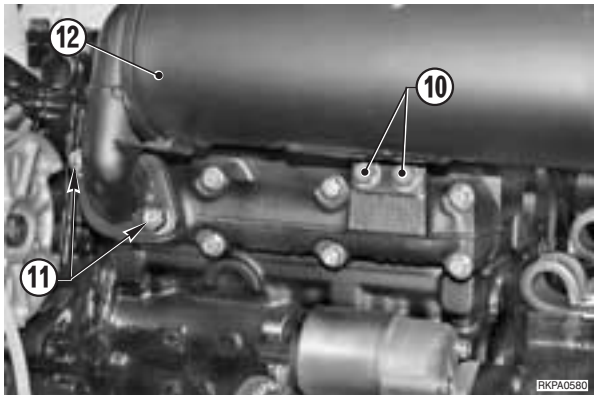
5 - Remove the fuel filter (7) without disconnecting the tank supply and return tubes. Put it to one side.



6 - Tip up the seat (8) and take out the toolbox (9).



7 - Take out the screws (10), the nuts (11), and remove the muffler (12). ※2



REMOVAL OF THE REAR COUNTERWEIGHT

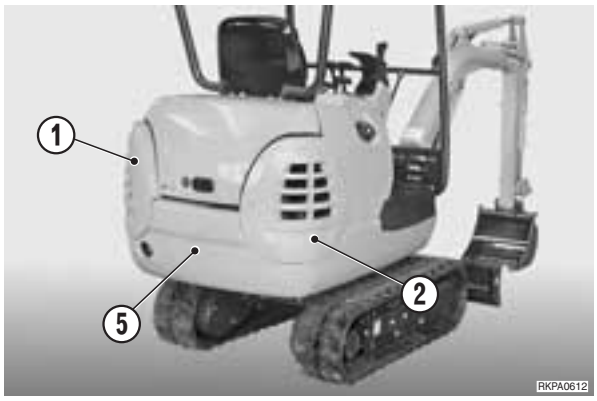
⚠ Completely lower the working equipment until it is resting on the ground and stop the engine.

1 - Remove the rear side grills (1) and (2). ※1

2 - Remove the hood fastener (3).

3 - Loosen the counterweight screws (4) to eliminate the tightening torque. ※2

4 - Attach the counterweight (5) to some hoisting tackle, remove the screws, and pull out the counterweight (5).



INSTALLATION OF THE REAR COUNTERWEIGHT

- To install, reverse the removal procedure.

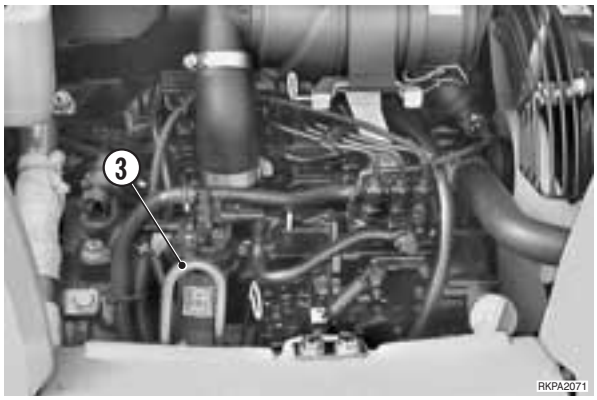
※1

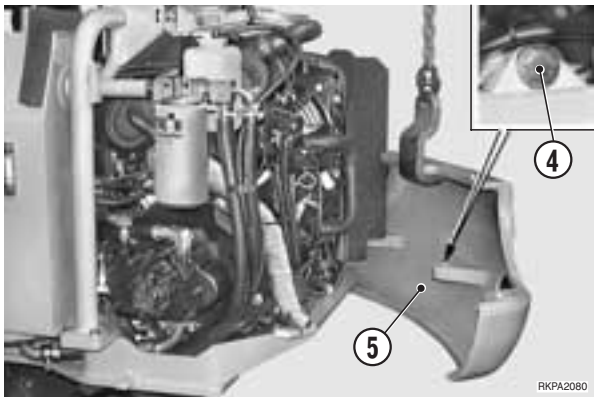
Nm Grill screws: 108±11 Nm

※2

Counterweight screws: Loctite 262

Nm Counterweight screws: 268±29 Nm





REMOVAL OF THE PUMP

Lower the working equipment until it is resting on the ground and stop the engine.

Release all residual pressures from the circuits and the tank. (For details, see «20. CONTROLS AND ADJUSTMENTS»).

★ Drain the hydraulic oil.

Quantity of oil: approx. 22 ℓ

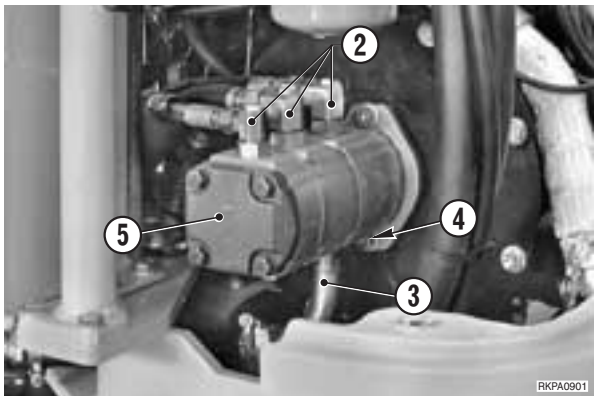
1 - Remove the left-hand side panel (1).

PC12R-8

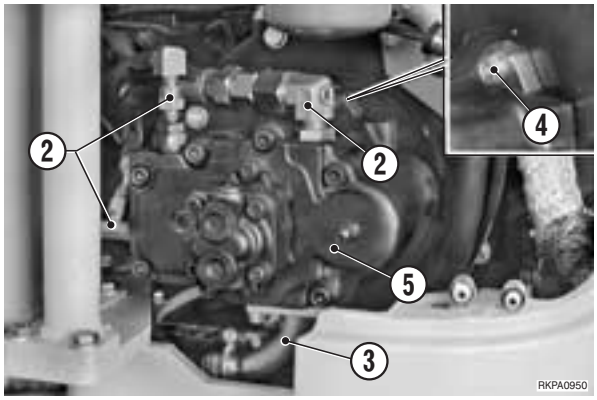
2 - Disconnect the delivery tubes (2) and the suction flange (3) from the pump and plug tubes and flange to prevent entry of impurities. ※1

3 - Remove the two screws (4) and take out the pump (5).

※2



PC15R-8



INSTALLATION OF THE PUMP

- To install, reverse the removal procedure.

※1

★ Before connecting the suction flange (3), check that the seal is undamaged.

Suction flange screws: PC12R: 45±4.9 Nm
PC15R: 63±6.5 Nm

※2

Pump screws: Loctite 262

Pump screws: PC12R: 63±6.5 Nm
PC15R: 108±11 Nm

1 - Fill the tank to its maximum level.

Hydraulic oil required: approx. 22 ℓ

Only for PC15R
Bleed the air from the pump. (For details, see «20. CONTROLS AND ADJUSTMENTS»).

2 - Start the engine to circulate the oil and check that there are no leaks.

3 - Stop the engine, check the oil level and, if necessary, top it up.

4 - Bleed air from the hydraulic circuits and pressurise the tank. (For details, see «20. CONTROLS AND ADJUSTMENTS»).

REMOVAL OF THE REVOLVING FRAME

Lower the working equipment until it is resting on the ground, and stop the engine.

Release all residual pressures from all circuits and from the tank. (For details, see «20. CONTROLS AND ADJUSTMENTS»).

1 - Remove the canopy or the cab. (For details, see «REMOVAL OF THE CANOPY AND CAB»).

2 - Remove the top casing, the side panels, and the engine hood. (For details, see the removal of the individual parts).

3 - Remove the battery (1).

★ First disconnect the negative terminal cable (–) and then the positive terminal cable (+).

4 - Remove the rear grills and the counterweight. (For details, see «REMOVAL OF THE REAR COUNTERWEIGHT»).

5 - Drain the hydraulic oil tank.

Quantity of oil: approx. 22 ℓ

6 - Drain the fuel tank.

Quantity of fuel: max. 20 ℓ

7 - Remove the working equipment. (For details, see «REMOVAL OF THE WORKING EQUIPMENT»).

8 - Remove the boom-raising cylinder. (For details, see REMOVAL OF THE BOOM CYLINDER»).

9 - Disconnect the upper tubes (3) from the swivel joint (2) and plug them (7 tubes for the PC12R and 8 tubes for the PC12R with travel increment - PC15R).

★ Mark the tubes to avoid exchanging them during re-assembly.

10 - Remove the bracket (4) of the joint (2).

11 - Remove the swing motor. (For details, see «REMOVAL OF THE SWING MOTOR»).

12 - Disconnect the swing circle lubrication tubes (5) and remove the couplings (6).

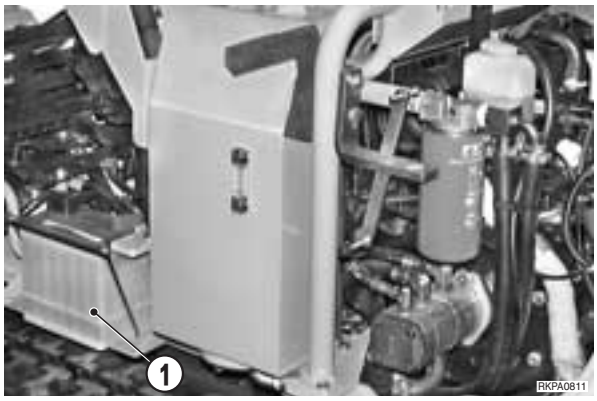
13 - Loosen and remove the screws (7) that secure the revolving frame.

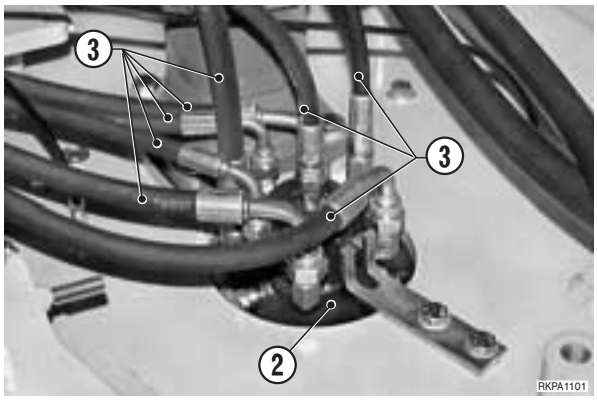
★ Leave two opposite screws in position for safety.

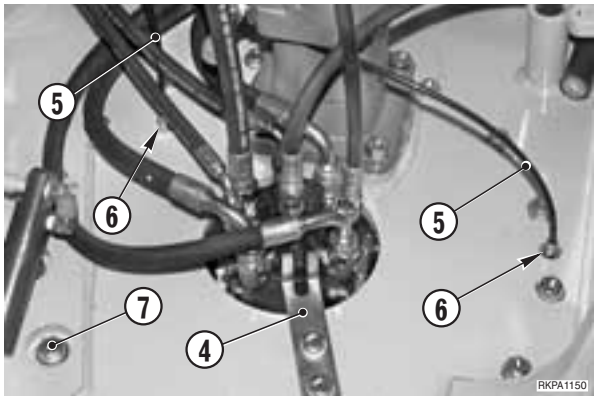
※1

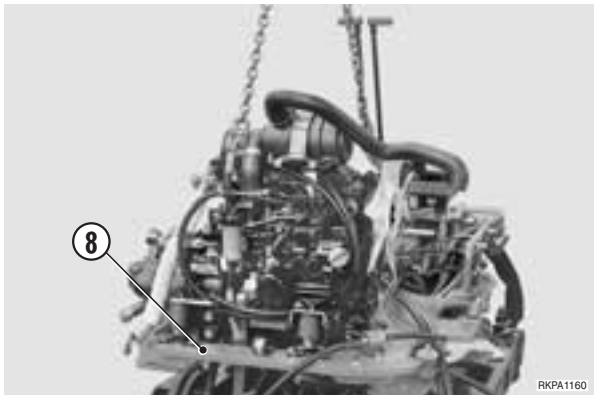
14 - Attach the evolving frame (8) to some hoisting tackle and apply a slight tension to the cables.

★ Adjust the length of the cables to balance the group.



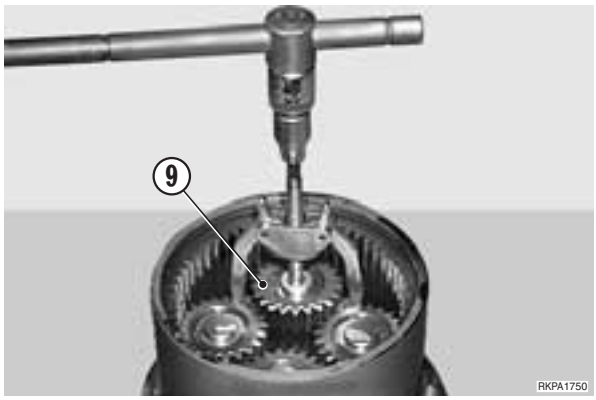




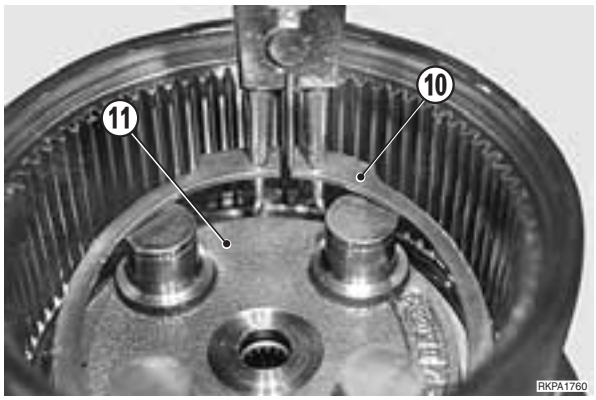


7 - Using a puller, take out the four planetary groups (9) of the no. 2 planetary gear.

NOTE.
Note down the assembly side.

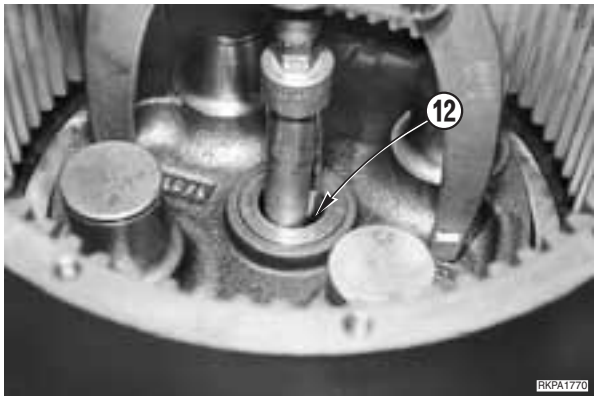


8 - Remove the snap ring (10) from the hydraulic motor seating (11).

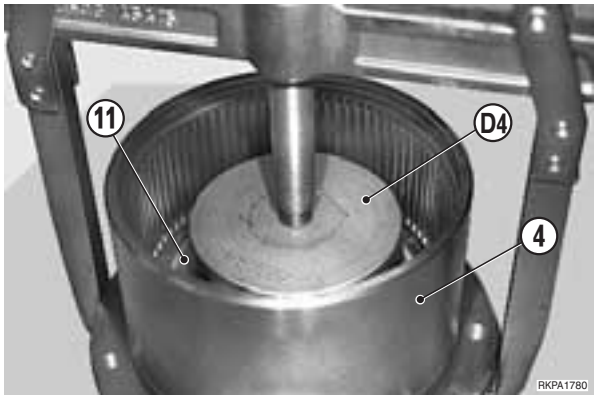


9 - Using an internal puller, remove the centering ring (12).

★ Only remove the centering ring (12) if the hydraulic motor is to be substituted.



10 - Using the tool **D4** and a puller, separate the hydraulic motor (11) from its housing (4).



DISASSEMBLY AND ASSEMBLY OF THE SPRING RECOIL AND THRUST CYLINDER GROUPS

1 - Spring recoil group

★ First inject grease to remove the piston.

Disassembly

1 - Place the group (1) beneath a press on which the tool **B1** is mounted.

⚠ The spring is mounted with a strong pre-loading. Make sure that the group is well-centred and that it is standing perfectly flat.

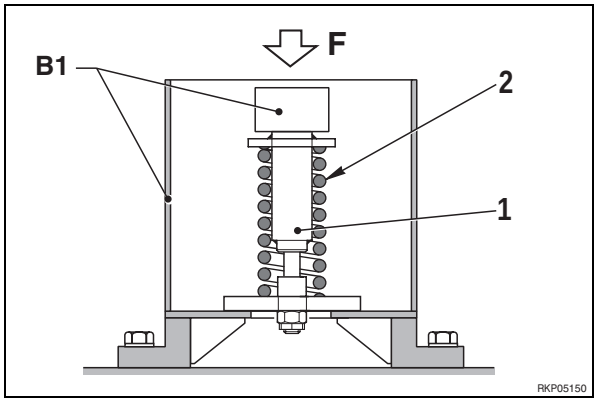
2 - Increase pressure slowly and compress the spring (2).

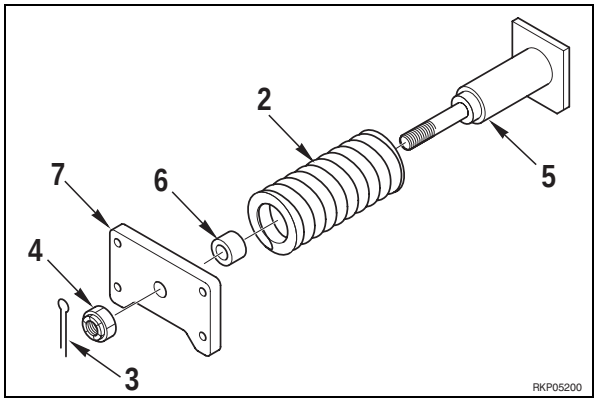
3 - Maintaining pressure, remove the cotter pin (3) and the nut (4).

4 - Slowly release pressure until the spring is completely released.

★ Length of released spring: 200 mm

5 - In sequence remove the cylinder (5), the spring (2), the spacer (6) and the support (7).





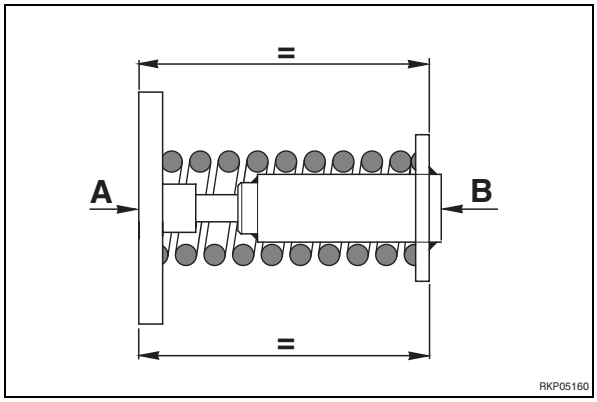
Assembly

- To re-assemble, reverse the dismantling procedure.

※1

★ Tighten the nut (4) up to the indicated length of the spring. (See «40. STANDARD MAINTENANCE»). Mount the cotter pin (3).

★ After assembly, check that the parallelism error between the faces A and B is less than 0.5 mm.



2 - Thrust cylinder

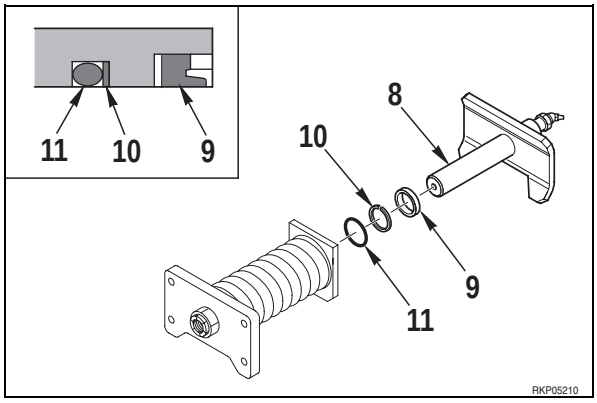
Disassembly

1 - Take the piston rod (8) out of the cylinder.

2 - Take out the guard ring (9), the anti-extrusion ring (10), and the O-ring (11).

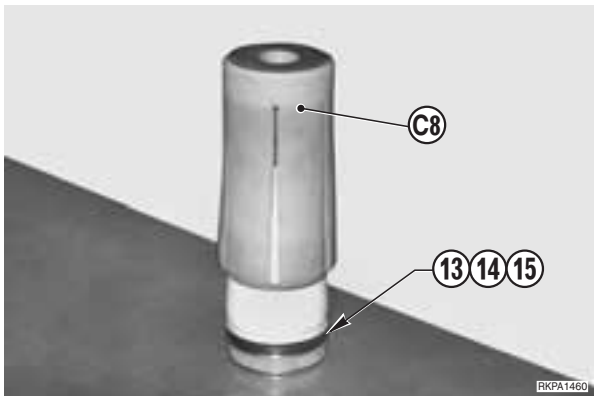
Assembly

- To re-assemble, reverse the dismantling procedure.



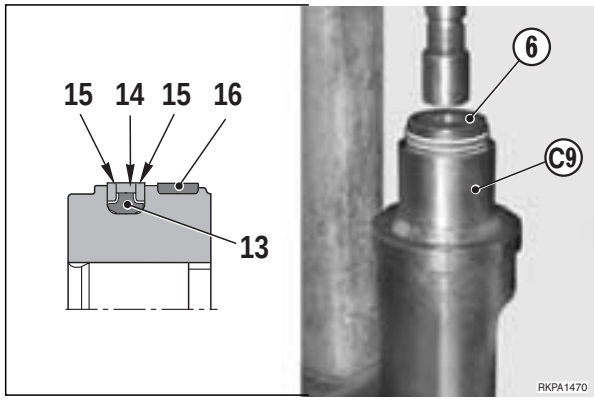
2. Piston assembly

1 - Using the tool **C8**, mount the piston seal. Mount in sequence the rubber ring (13), the outer seal (14) and the anti-extrusion rings (15).



2 - Mount the guide ring (16).

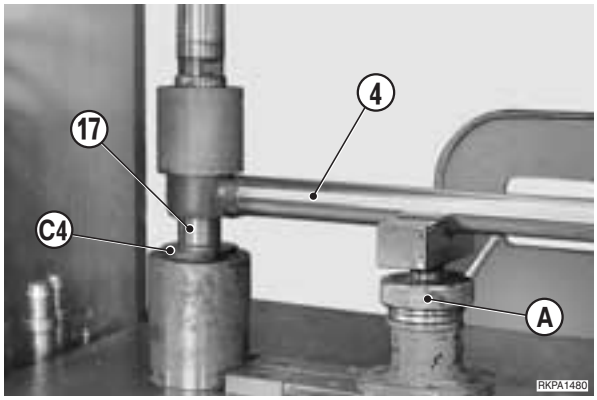
3 - Calibrate the diameter of the gasket (14) of the piston (6), mounting the group beneath the press and using the calibrating ring **C9** adapted to fit the piston diameter.



3. Piston rod group assembly

1 - Using a press and the tool **C4** adapted to the diameter, insert the bushing (17) into the piston rod (4).

2 - Insert the support «A» beneath the piston rod.

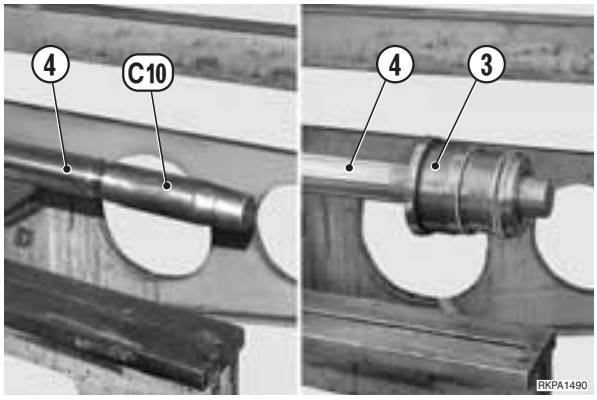


3 - Mount the pilot boss **C10** adapted to the diameter onto the extremity of the piston rod.

4 - Slide the head (3) onto the piston rod (4).

★ **For the PC15R blade cylinder:** slide the spacer (19) complete with its O-ring (20) onto the piston rod (4).

5 - Remove the pilot boss **C10** from the extremity of the piston rod.



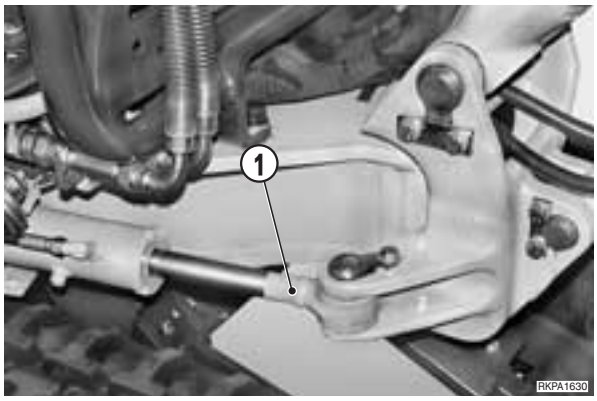
REMOVAL OF THE BOOM SWING SUPPORT

⚠ Extend the working equipment completely and rest it on the ground.

1 - Remove the front working equipment. (For details, see «REMOVAL OF THE UPPER WORKING EQUIPMENT»).

2 - Remove the boom cylinder. (For details, see «REMOVAL OF THE BOOM»).

3 - Disconnect the boom swing cylinder (1). (For details, see «REMOVAL OF THE BOOM SWING CYLINDER»).

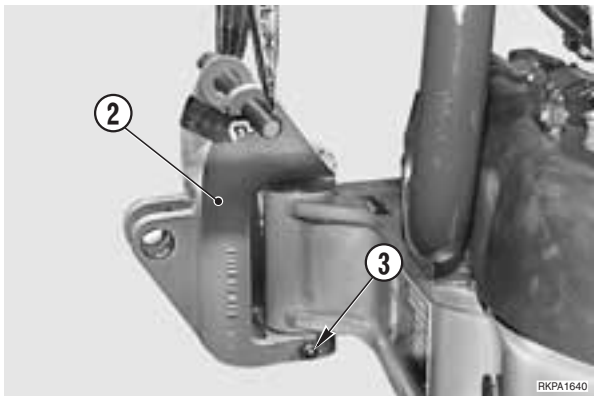


4 - Attach the boom swing support (2) to some hoisting tackle and apply a slight tension to the cable.

5 - Take out the screw (3) and remove the swing support (2). ※1 ※2

★ Make a note of the position of the spacer (4) and the quantity of shims (5).

kg Boom swing support: PC12R: 22 kg
PC15R: 22 kg



INSTALLATION OF THE BOOM SWING SUPPORT

- To install, reverse the removal procedure.

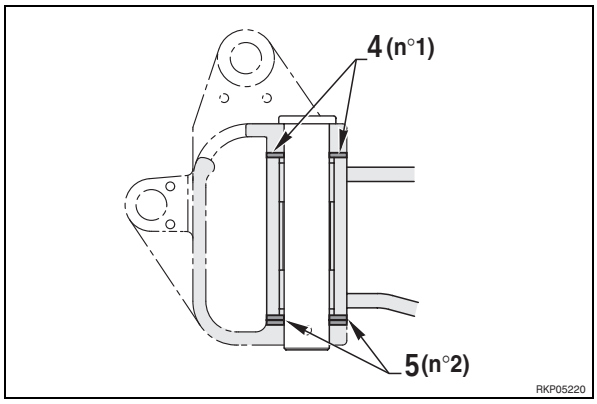
※1

Pins: ASL800040

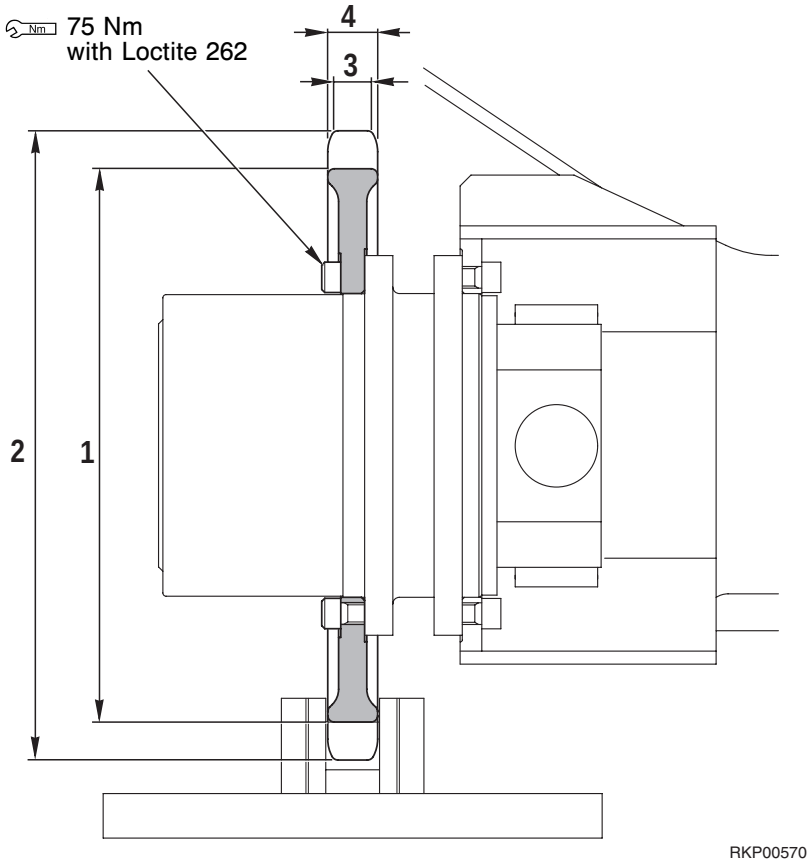
※2

★ Insert the spacer (4) and the shims (5) between the frame and the support.

Supporting surfaces and shims: ASL800040

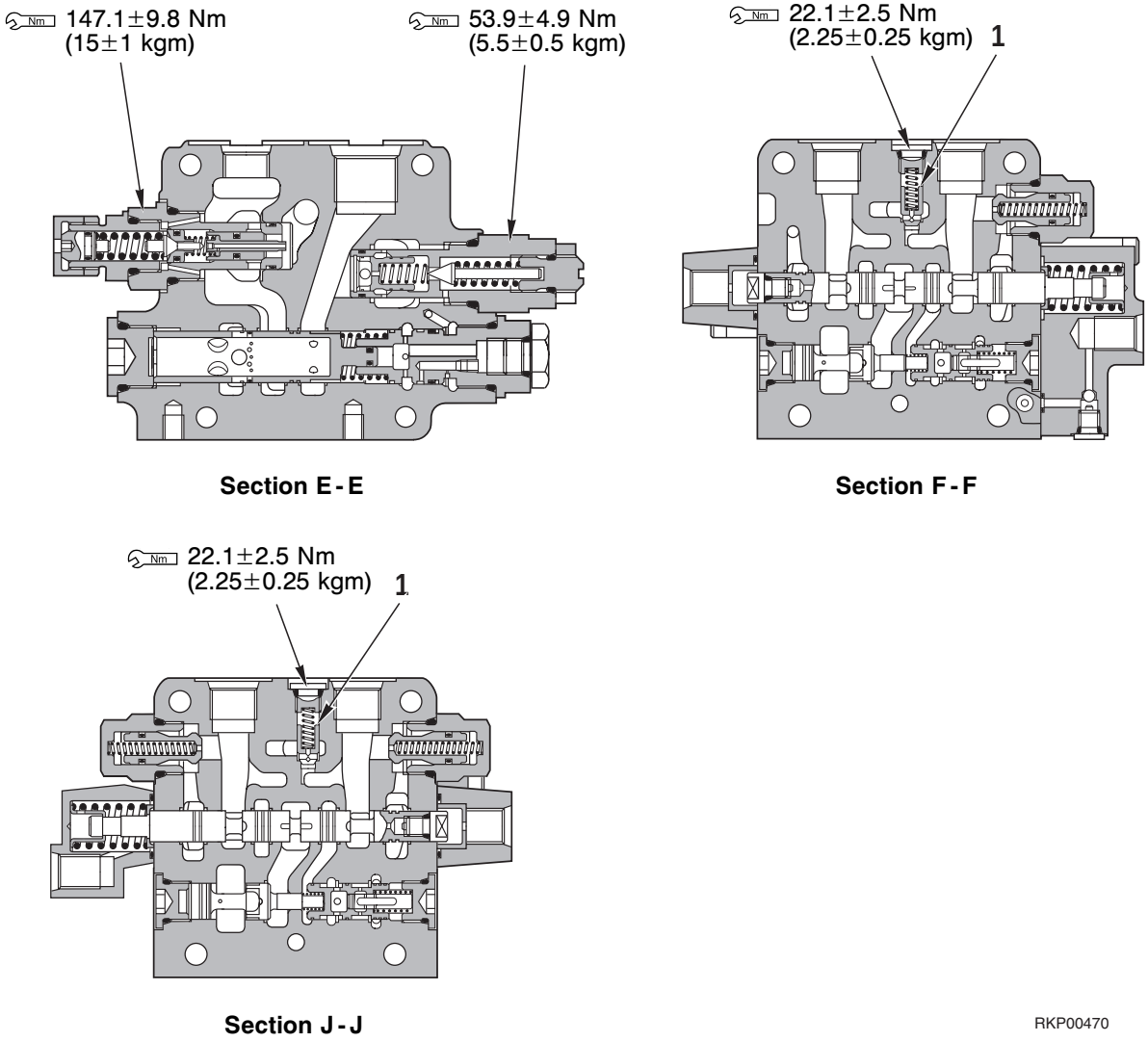


SPROCKET



Unit: mm

No.	Check item	Criteria			Remedy
		Standard size	Tolerance	Repair limit	
1	Wear at roots of sprocket teeth	255	+1 −2	245	Build up by solder or replace
2	Wear at tips of sprocket teeth	290	±1.5	278	
3	Face width at tips of sprocket teeth	17	—	12	
4	Face width at base of sprocket teeth	23	+1 −2	18	



Section E - E

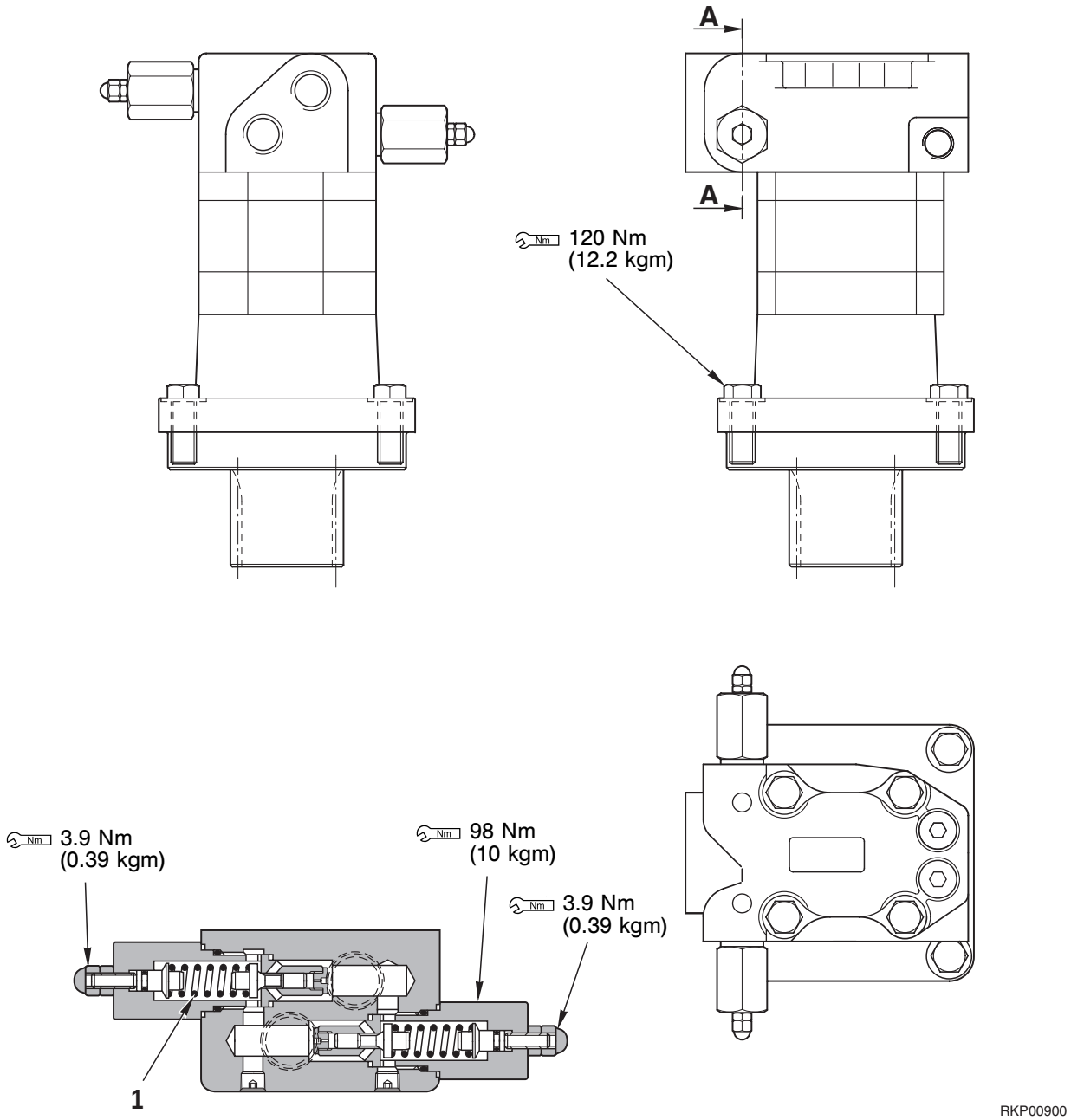
Section F - F

Section J - J

RKP00470

Unit: mm

No.	Check item	Criteria					Remedy
		Standard size			Repair limit		
1	Check valve spring (arm, boom)	Free length x Ø.D.	Installed length	Installed load	Free length	Installed load	When damage or deformation is found, replace the spring
		21.9x5	15.8	1.96 N (0.2 kg)	—	1.57 N (0.16 kg)	



Section A - A

Unit: mm

No.	Check item	Criteria					Remedy
1	Suction valve spring	Standard size			Repair limit		When damage or deformation is found, replace the spring
		Free length x Ø.D.	Installed length	Installed load	Free length	Installed load	
		36.1x14.2	32.9	332 N	31.9	429 N	