

KOBELCO

SERVICE MANUAL

**HYDRAULIC EXCAVATOR
SK60V**

APPLICABLE: LE-17701~
S5LE0006E 09/03

 **WARNING**

SAFETY

 **WARNING**

The proper and safe lubrication and maintenance for this machine, recommended by KOBELCO are outlined in the OPERATORS MANUAL for this machine.

Improper performance of lubrication or maintenance procedures is dangerous and could result in injury or death. Read and understand the OPERATORS MANUAL before performing any lubrication or maintenance.

The serviceman or mechanic may be unfamiliar with many of the systems on this machine. This makes it important to use caution when performing service work. A knowledge of the system and or components is important before the removal or disassembly of any component.

Because of the size of some of the machine components, the serviceman or mechanic should check the weights noted in this Manual. Use proper lifting procedures when removing any components.

Following is a list of basic precautions that should always be observed.

1. Read and understand all Warning plates and decals on the machine before operating, lubricating or repairing this product.
2. Always wear protective glasses and protective shoes when working around machines. In particular, wear protective glasses when pounding on any part of the machine or its attachments with a hammer or sledge. Use welders gloves, hood/goggles, apron and other protective clothing appropriate to the welding job being performed. Do not wear loose-fitting or torn clothing. Remove all rings from fingers when working on machinery.
3. Disconnect battery and discharge any capacitors before starting to work on machine. Hang "Do Not Operate" tag in the Operator's Compartment.
4. If possible, make all repairs with the machine parked on a level, hard surface. Block machine so it does not roll while working on or under machine.
5. Do not work on any machine that is supported only by lift jacks or a hoist. Always use blocks or jack stands to support the machine before performing any disassembly.

 **WARNING**

Do not operate this machine unless you have read and understand the instructions in the OPERATORS MANUAL. Improper machine operation is dangerous and could result in injury or death.

6. Relieve all pressure in air, oil or water systems before any lines, fittings or related items are disconnected or removed. Always make sure all raised components are blocked correctly and be alert for possible pressure when disconnecting any device from a system that utilizes pressure.
7. Lower the bucket, blade, ripper or other implements to the ground before performing any work on the machine. If this cannot be done, make sure the bucket, blade, ripper or other implement is blocked correctly to prevent it from dropping unexpectedly.
8. Use steps and grab handles when mounting or dismounting a machine. Clean any mud or debris from steps, walkways or work platforms before using. Always face machine when using steps, ladders and walkways. When it is not possible to use the designed access system, provide ladders, scaffolds, or work platforms to perform safe repair operations.
9. To avoid back injury, use a hoist when lifting components which weigh 23 kg (50 lbs) or more. Make sure all chains, hooks, slings, etc., are in good condition and are in the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation.
10. To avoid burns, be alert for hot parts on machines which have just been stopped and hot fluids in lines, tubes and compartments.
11. Be careful when removing cover plates. Gradually back off the last two bolts or nuts located at opposite ends of the cover or device and pry cover loose to relieve any spring or other pressure, before removing the last two bolts or nuts completely.
12. Be careful when removing filler caps, breathers and plugs on the machine. Hold a rag over the cap or plug to prevent being sprayed or splashed by liquids under pressure. The danger is even greater if the machine has just been stopped because fluids can be hot.

 **WARNING**

13. Always use tools that are in good condition and be sure you understand how to use them before performing any service work.
 14. Reinstall all fasteners with same part number. Do not use a lesser quality fastener if replacements are necessary.
 15. Repairs which require welding should be performed only with the benefit of the appropriate reference information and by personnel adequately trained and knowledgeable in welding procedures. Determine type of metal being welded and select correct welding procedure and electrodes, rods or wire to provide a weld metal strength equivalent at least to that of parent metal. Always disconnect battery during welding operations to protect sensitive electric equipment.
 16. Do not damage wiring during removal operations. Reinstall the wiring so it is not damaged nor will it be damaged in operation by contacting sharp corners, or by rubbing against some object or hot surface. Do not connect wiring to a line containing fluid.
 17. Be sure all protective devices including guards and shields are properly installed and functioning correctly before starting a repair. If a guard or shield must be removed to perform the repair work, use extra caution.
 18. Loose or damaged fuel, lubricant and hydraulic lines, tubes and hoses can cause fires. Do not bend or strike high pressure lines or install ones which have been bent or damaged. Inspect lines, tubes and hoses carefully. Do not check for leaks with your hands. Pin hole (very small) leaks can result in a high velocity oil stream that will be invisible close to the hose. This oil can penetrate the skin and cause personal injury. Use cardboard or paper to locate pin hole leaks.
 19. Tighten connections to the correct torque. Make sure that all heat shields, clamps and guards are installed correctly to avoid excessive heat, installed correctly to avoid excessive heat, vibration or rubbing against other parts during operation. Shields that protect against oil spray onto hot exhaust components in event of a line, tube or seal failure must be installed correctly.
 20. Do not operate a machine if any rotating part is damaged or contacts any other part during operation. Any high speed rotating component that has been damaged or altered should be checked for balance before reusing.
 21. On track-type machines, be careful when servicing or separating tracks. Chips can fly when removing or installing a track pin. Wear safety glasses and long sleeve shirts. Track can unroll very quickly when separated. Keep away from front and rear of machine. The machine can move unexpectedly when both tracks are disengaged from the sprockets. Block the machine to prevent it from moving.
 22. Caution should be used to avoid breathing dust that may be generated when handling components containing asbestos fibers. If this dust is inhaled, it can be hazardous to your health. Components in KOBELCO products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates and some gaskets. The asbestos used in these components is usually bound in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust which contains asbestos is not generated.
- If dust which may contain asbestos is present, there are several common sense guidelines that should be followed.
- a. Never use compressed air for cleaning.
 - b. Avoid brushing or grinding of asbestos containing materials.
 - c. For clean up, use wet methods or a vacuum equipped with a high efficiency particulate air (HEPA) filter.
 - d. Use exhaust ventilation on permanent machining jobs.
 - e. Wear and approved respirator if there is no other way to control the dust.
 - f. Comply with applicable rules and regulations for the work place.
 - g. Follow environmental rules and regulations for disposal of asbestos.
 - h. Avoid areas where asbestos particles may be in the air.

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SK060
SK70
SK60

List of General Section in Manual

Class	Name	Book code No.		
		Distribution date		
LE01	SPECIFICATION	S5LE0106E 1994-07		
-	OPERATION	S2LE1016E Refer to Operators manual		
LE03	EQUIPMENT LAYOUT AND WEIGHT	S5LE0306E 1994-07		
LE04	MAINTENANCE STANDARDS AND TEST PROCEDURES	S5LE0407E 1994-07		
-	PREVENTIVE MAINTENANCE	S2LE1016E Refer to Operators manual		
LE07	WORK STANDARD	S5LE0703E 1994-07		
LE08	STANDARD FLAT RATE TABLE	S5LE0803E 1994-07		
	Applicable Machine	LE-17701~		

SHOP MANUAL

model SK60V

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1. SPECIFICATION	LE01
2. OPERATION (Refer to Operators Manual)	
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6. PREVENTIVE MAINTENANCE (Refer to Operators Manual)	
7. WORK STANDARD	LE07
8. STANDARD FLAT RATE TABLE	LE08

* How to index sections in this manual

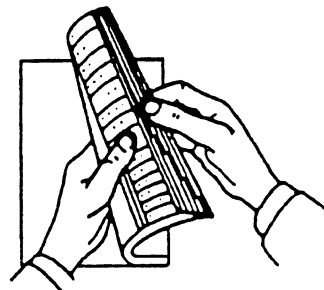
The general section in this manual is composed of 7 chapters as shown above, and every chapter can be indexed easily using the marks on the edge. This is useful for rapid reference.

⚠ WARNING

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KOBELCO

GENERAL

Book code No. S5LE0106E

KOBELCO

SHOP MANUAL

SK60V

SPECIFICATION

LE01

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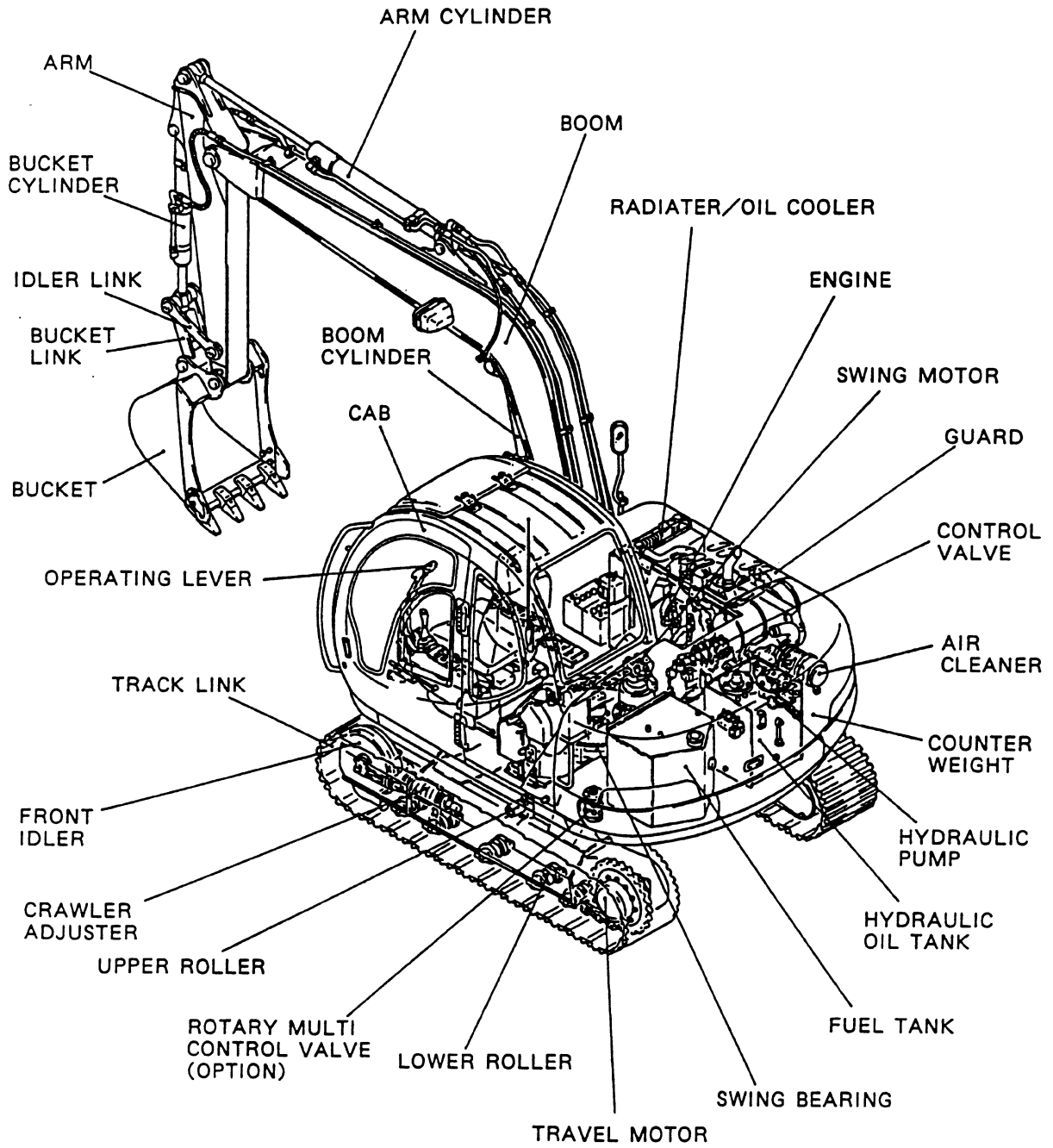
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 **KOBE STEEL, LTD.**

Applicable machine
LE-17701~

Revisions	Print date	Remarks
First edition	July, 1994	S5LE0106E Y.G

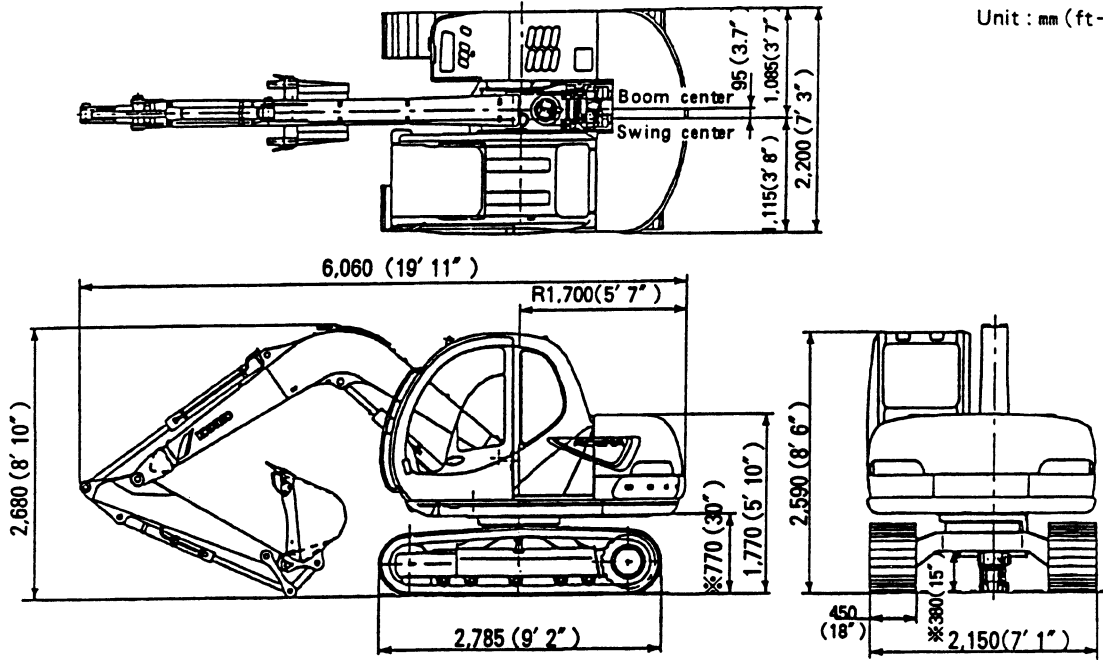
1. DESIGNATION



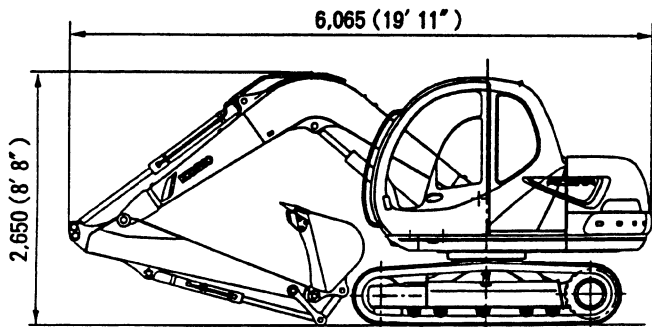
2. GENERAL DIMENSION

- Standard with 3.7m (12' 2") Boom + 1.73m (5' 8") Arm

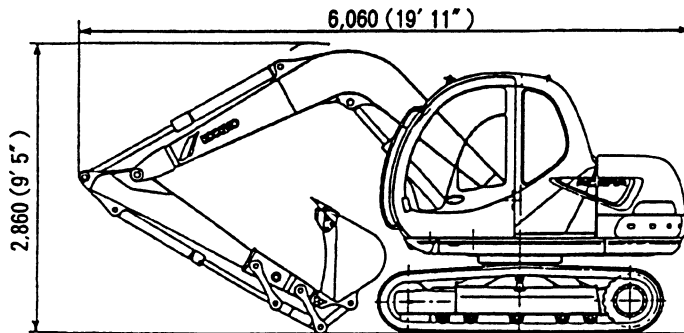
Unit : mm (ft-in)



- With 3.7m (12' 2") Boom + 2.15m (7' 1") Long Arm



- With 3.7m (12' 2") Boom + 1.73m (5' 8") Arm + 0.5m (1' 8") Extension Arm



3. SPECIFICATION AND PERFORMANCE

● SPEED AND GRADABILITY

Item \ Model	SK60
Swing speed (High/Low) rpm	13/6.5
Travel speed (High/Low)	5.5/3.5/ km/h (3.4/2.2/ mph)
Gradability % (degree)	70 (35)

● ENGINE

Item \ Model	SK60
Model	ISUZU 4JB1
Type	4 cycle, Water – cooled direct injection type
Number of cylinder – Bore × Stroke	4 – 93mm × 102mm (4 – 3.66 in × 4.02 in)
Total displacement	2,771 c.c (169.1 cu·in)
Rated output/Revolution	57PS/2,200 rpm
Maximum torque/Revolution	19.2 kgf·m (138.9 ft·lbs)/1,600 rpm

● HYDRAULIC SYSTEM

Item \ Model	SK60
Hydraulic pump	Variable displacement double pump(Axial piston + Gear pump)
Hydraulic motor (Swing)	Axial piston type motor
Hydraulic motor (Travel)	Axial piston type motor
Control valve	6 – spool multiple control valve
Cylinder (Boom, Arm, Bucket)	Double acting cylinders
Return filter	Filter paper with safety valve
Oil cooler	Air – cooled type

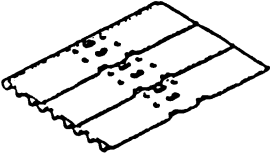
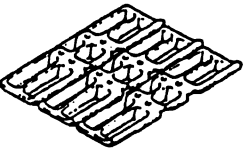
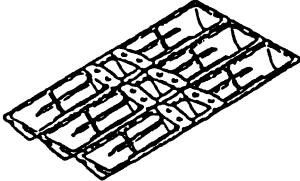

● WEIGHT

Unit: kg (lbs)

Item \ Model	SK60
Working weight	6,500 (14,300)
Upper structure	3,200 (7,050)
Under carriage (with 450mm (18") grouser shoes)	2,250 (4,950)
Attachment 3.7m (12' 2") Boom + 1.73m (5' 8") Arm + 0.25m ³ (0.33cu·yd) Bucket	1,050 (2,300)

4. SHOES

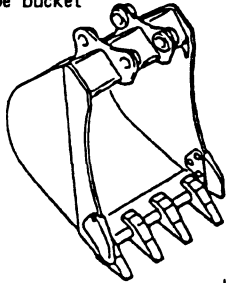
■ TYPE OF SHOES

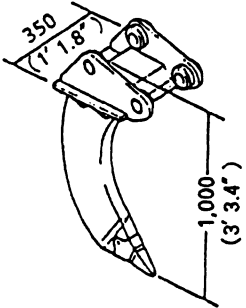
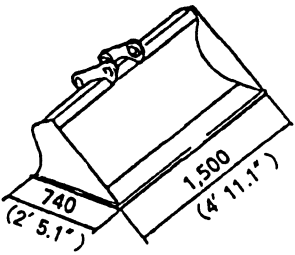
Shape	Width of track shoe mm (in)	Overall width of crawler mm (in)	Ground pressure kg/cm ² (psi)
Grouser shoe  LE-6-4 <div style="text-align: right;">38 links</div>	450 (17.7)	2,150 (7' 0.6")	0.30 (4.27)
	600 (23.6)	2,300 (7' 6.6")	0.23 (3.27)
Flat shoe  LE-6-5 <div style="text-align: right;">38 links</div>	450 (17.7)	2,150 (7' 0.6")	0.31 (4.41)
Triangle shoe  LE-6-6 <div style="text-align: right;">38 links</div>	600 (23.6)	2,300 (7' 6.6")	0.23 (3.27)
	700 (27.6)	2,400 (7' 10.5")	0.20 (2.84)
Rubber shoe  LE-6-7	450 (17.7)	2,150 (7' 0.6")	0.30 (4.27)

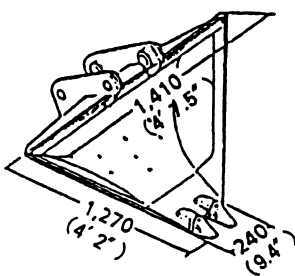
Note:

- Do not use the shoes other than 450 mm (17.7in) grouser shoe in gravel pit or rocky areas. Traveling and digging work in those areas cause the shoe to be bent, and loosening of shoe bolt, etc., and also may damage other undercarriage (link, roller, etc.).

5. BUCKET

Hoe bucket	Heaped capacity m ³ (cu·yd)	Outer width mm (ft-in)		Number of tooth	W or W/O side cutter	Availability of face shovel	Weight kg (lbs)
		With side cutter	Without side cutter				
	0.1(0.13)	—	400(1'3.7")	3	No	Yes	160(350)
	0.13(0.17)	450	—	3	Yes(Welded)	Yes	150(330)
	0.16(0.21)	550	450(1'5.7")	3	Yes	Yes	170(370)
	0.2(0.26)	650	550(1'9.7")	4	Yes	Yes	190(420)
	0.25(STD) (0.33)	750	650(2'1.6")	4	Yes	Yes	200(440)
	0.3(0.39)	850	750(2'5.5")	4	Yes	Yes	220(485)

<p>Ripper</p>  <p>Weight: 210 kg (460 lbs) Face shovel unavailable</p> <p style="text-align: right;">LE-6-8</p>	<p>Slope finishing bucket</p>  <p>Capacity: 0.2m³ (0.26 cu·yd) Weight: 300 kg (660 lbs) Face shovel unavailable</p> <p style="text-align: right;">LE-6-11</p>
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<p>V-shape bucket</p>  <p>Capacity: 0.2m³ (0.26 cu·yd) Weight: 180 kg (400 lbs) Face shovel unavailable</p> <p style="text-align: right;">LE-6-10</p>	
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6. COMBINATION OF ATTACHMENTS

Bucket		Applicable arm		
Type	Heaped capacity m ³ (cu·yd)	1.73 m (5' 8") Standard arm	2.15 m (7' 1") Long arm	1.73 m (5' 8") arm + 0.5 m (1' 8") extension arm
Hoe bucket	0.1 (0.13)	○	○	○
	0.13 (0.17)	○	○	○
	0.16 (0.21)	○	○	○
	0.2 (0.26)	○	⊙	⊙
	0.25STD (0.33)	⊙	△	△
	0.3 (0.39)	△	×	×
Bucket with ejector	0.1 (0.13)	○	○	○
Slope finishing bucket	740 × 1,500 (2' 5.1" × 4' 11")	△	△	△
Ripper	—	○	×	×
V-shape bucket	0.2 (0.26)	△	△	△
Breaker	—	○	×	×

Note: Marks in the above mean the following.

Standard combination

General use Digging and loading of gravel, sand and clayey soil

Light duty Work mainly loading loose gravel or clayey soil

Not usable Not warranted

The genuine or KOBELCO recommended attachments should be used for this machine.

The use of attachments other than the designated ones may cause the abnormality of the machine.

Maker does not compensate for those abnormalities of attachments.

⚠ CAUTION

If a bucket other than the back hoe bucket is turned over and used, the arm and the bucket may be broken.

Book code No. S5 LE03_{06E}

KOBELCO

SHOP MANUAL

SK60V

————— **EQUIPMENT LAYOUT** —————
AND WEIGHT

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LE03

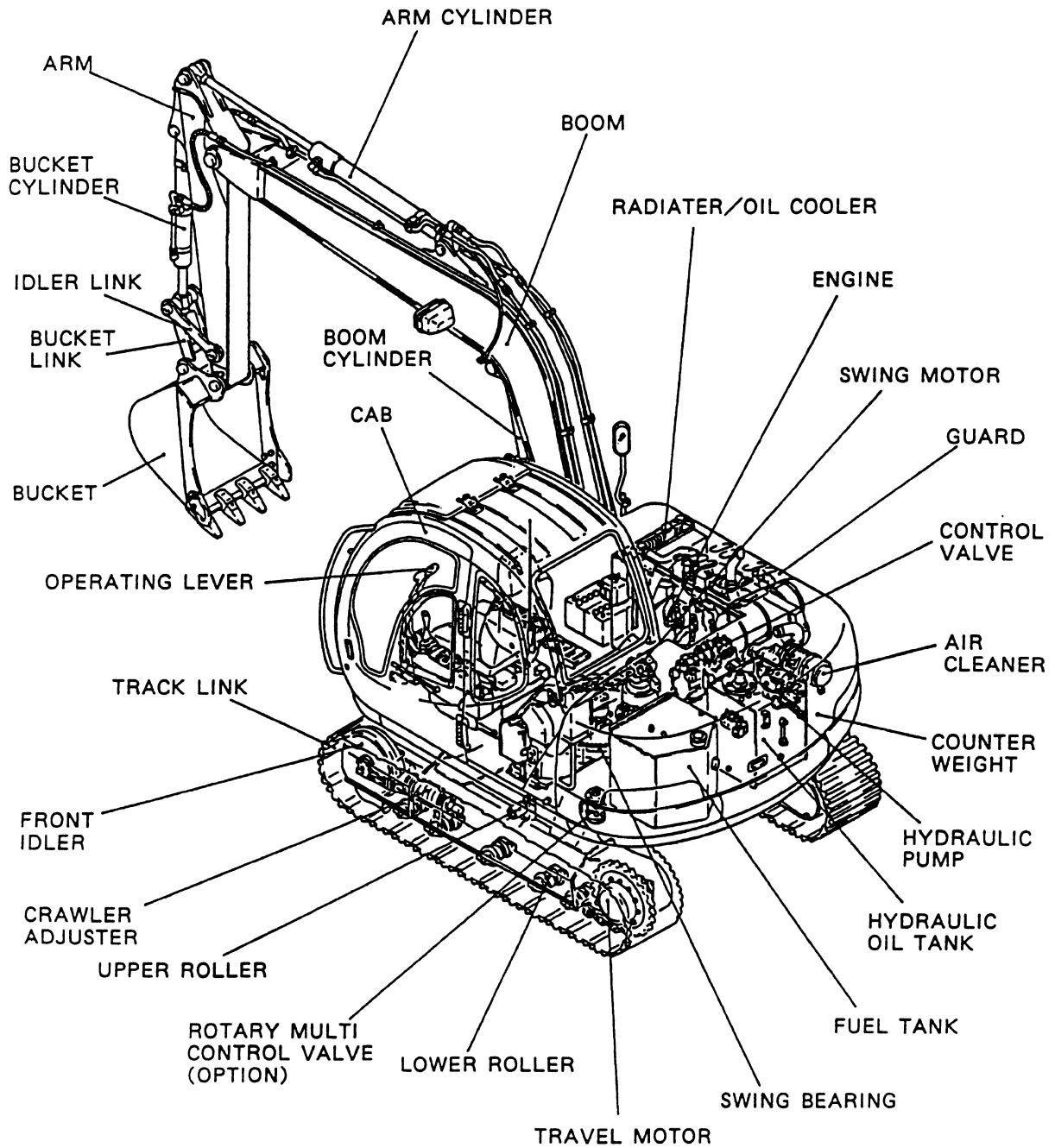
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 **KOBE STEEL, LTD.**

Applicable machine
LE-17701~

Revisions	Print date	Remarks
First edition	July, 1994	S5LE0306E Y.G

1. DESIGNATION



2. UNIT WEIGHT

Unit : kg (lbs)

Model	SK60V
Item	
Working weight [Standard with 450mm (17.7") shoe]	6,500 (14350)
<ul style="list-style-type: none"> ● Upper structure ●● Counterweight ●● Cab ●● Engine ●● Hydraulic oil tank ●● Fuel tank ●● Swing motor, reduction unit ●● Control valve ●● Boom cylinder ●● Pump ●● Radiator 	<ul style="list-style-type: none"> 3,200 (7100) 830 (1830) 250 (550) 240 (530) ※70 (160) ※52 (120) 70 (160) 88 (200) ※83 (180) 43 (100) ※39 (90)
<ul style="list-style-type: none"> ● Undercarriage ●● Swing bearing ●● Travel motor, travel reduction ●● Upper roller ●● Lower roller ●● Front idler ●● Idler adjuster ●● Sprocket ●● Swivel joint ●● Track link ass'y with 450mm(17.7") shoe(STD) ●● Track link ass'y with 600mm(23.6") shoe ●● Track link ass'y with 600mm(23.6") triangle shoe ●●● Track link ass'y 	<ul style="list-style-type: none"> 2,250 (5000) 115 (260) 90 (200) × 2 4 (9) × 2 14 (30) × 10 43 (100) × 2 30 (70) × 2 28 (60) × 2 18 (40) 410 (900) × 2 520 (1150) × 2 430 (950) × 2 150 (330) × 2
<ul style="list-style-type: none"> ● Attachment 3.7m(12' 2") Boom+1.73m(5' 8") Arm+0.25m³(0.33cu·yd) Bucket ●● 0.25m³(0.33cu·yd) Bucket ass'y ●● Standard arm ass'y (including the following) ●●● Standard arm ●●● Bucket cylinder ●●● Idler link ●●● Bucket link ●●● Pin (To mount bucket cylinder and bucket) ●● Boom ass'y (including the following) ●●● Boom ●●● Arm cylinder ●●● Pin (To mount arm) 	<ul style="list-style-type: none"> 1,050 (2,300) 200 (440) 290 (640) 170 (380) ※50 (110) 18 (40) 23 (55) 21 (50) 570 (1260) 400 (900) ※72 (160) 76 (170)
<ul style="list-style-type: none"> ● Grease, water, etc. (including the following) ●● Hydraulic oil, engine oil ●● Fuel ●● Water 	<ul style="list-style-type: none"> 220 (490) 104 (230) 107 (235) 10 (22)

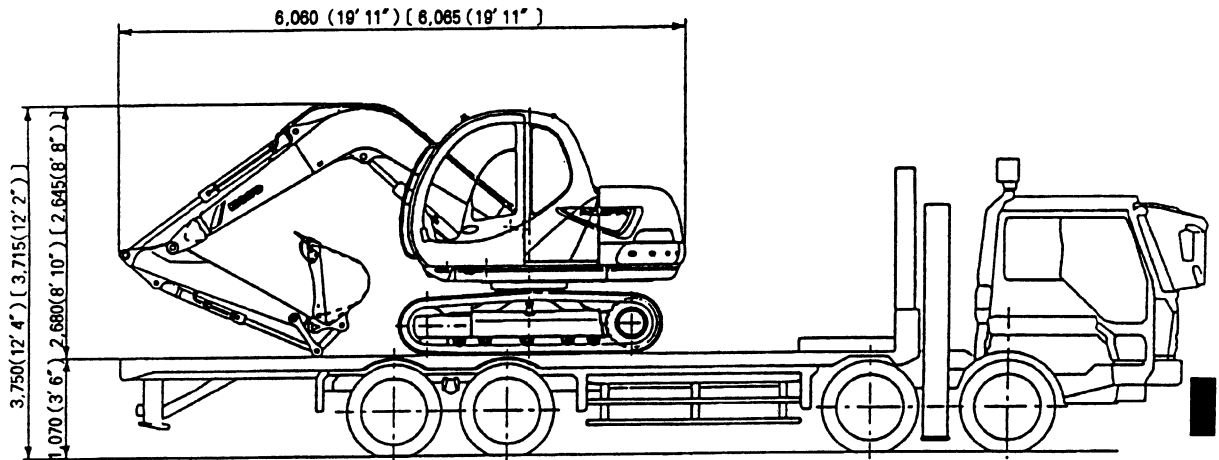
Note:

Figures with ※ mark shows the dry weight.

3. TRANSPORTATION

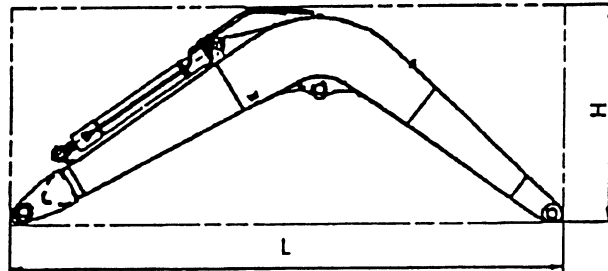
● Specification and performance of all equipment to load on trailer

Model	SK60V	Note : Figures in [] shows the specification of long arm.
Item		
Overall width mm(ft-in)	2,200 (7' 2.6")	
Weight ton(lbs)	6.5 (14350)	



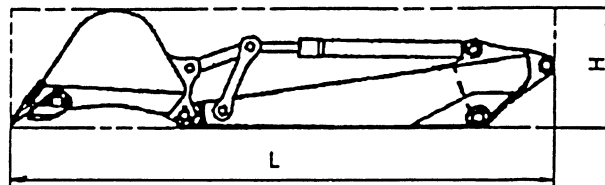
● Boom

	3.7m (12' 2") Boom
Overall L×H×W m(ft·in)	3.84×1.5×0.36 (12' 7" ×4' 11" ×1' 2")
Weight kg (lbs)	530 (1200 lbs)



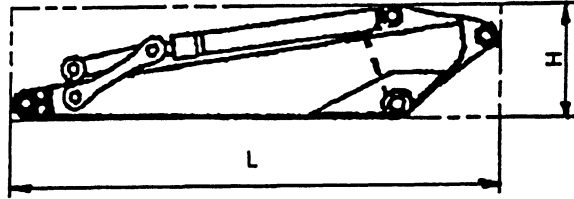
● Arm + Bucket

Combination	1.73m (5' 8") Arm+0.25m ³ (0.33cu·yd) Bucket	2.15m (7' 11") Arm+0.2m ³ (0.26cu·yd) Bucket	1.73m (5' 8") Arm+0.5m (1' 8") Ext. Arm+0.2m ³ (0.26cu·yd) Bucket
Overall L×H×W m(ft·in)	3.23×0.71×0.75 (10' 7" ×2' 4" ×2' 6")	3.62×0.71×0.65 (11' 11" ×2' 4" ×2' 2")	3.74×0.71×0.65 (12' 3" ×2' 4" ×2' 2")
Weight kg (lbs)	480 (1000)	500 (1100)	580 (1280)



●Arm

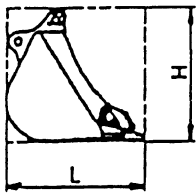
Arm length	1.73m(5' 8")	2.15m(7' 1")
Overall L×H×W m(ft·in)	2.26×0.54×0.36 (7' 5"×1' 9"×1' 2")	2.64×0.54×0.36 (8' 8"×1' 9"×1' 2")
Weight kg(lbs)	280 (620)	310 (680)



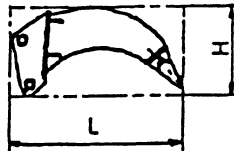
●Bucket

Class	Hoe bucket			
Overall L×H×Wm(ft·in)	1.10×0.60×0.40 (3' 7"×2' 11"×1' 4")	0.98×0.89×0.55 (3' 3"×2' 11"×1' 10")	0.98×0.89×0.65 (3' 3"×2' 11"×2' 2")	0.98×0.89×0.75 (3' 3"×2' 11"×2' 6")
Weight kg (lbs)	160 (350)	170 (375)	190 (420)	200 (440)
Bucket capacity m ³ (cu·yd)	0.1 (0.13)	0.16 (0.21)	0.2 (0.26)	0.25 (0.33)
Combination	Hoe bucket	Ripper	V-shape bucket	Slope finishing bucket
Overall L×H×Wm(ft·in)	0.98×0.89×0.85 (3' 3"×2' 11"×2' 9")	1.11×0.56×0.40 (3' 8"×1' 10"×1' 4")	1.08×0.47×1.41 (3' 7"×1' 7"×4' 8")	0.79×0.62×1.50 (2' 7"×2' 4"×11' 1")
Weight kg (lbs)	220 (485)	210 (460)	180 (400)	300 (660)
Bucket capacity m ³ (cu·yd)	0.3 (0.39)	—	0.2 (0.26)	—

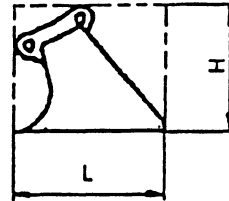
●Hoe bucket



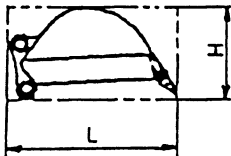
●Ripper



●Slope finishing bucket



●V-shape bucket



KOBELCO

SHOP MANUAL

SK60V

— MAINTENANCE STANDARD — AND TEST PROCEDURE

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LE04

Applicable machine
LE-17701~

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1. HOW TO USE THE MAINTENANCE STANDARD AND CAUTIONS TO BE OBSERVED

(1) Application

- 1) When the machine is new;
Confirm that performances are in accordance with standard specifications as compared to the performance standards.
- 2) At specific self inspection;
Use the data for criterion, for the purpose of repair, adjustment and replacement.
- 3) When performance are deteriorated;
Determine whether it is caused by a fault or end of service life after long hours of operation, to be used for safety and economical considerations.
- 4) When main components are replaced;
For example, use the data to restore performances of pumps and others.

(2) Terminology

- 1) Standard values;
Values to be used to condition or assemble a new machine. Where special notes are not given, these values represent standard specifications (machine with standard attachments and standard shoes).
- 2) Reference values for repair;
Values at which readjustment is required. Adjust immediately if the value is close to the service limit value.
- 3) Service limit value
This is the limit value at which reconditioning is impossible without replacing of parts. If the value is expected to exceed the service limit before next inspection and repair are performed, replace the parts immediately. If the part is used to beyond the limit, chances of trouble increase, ultimately resulting in a breakdown of the machine. Avoid operating the machine beyond this service limit.

(3) Cautions to be observed at judgment

- 1) Evaluation of measured data;
Disagreement of measuring conditions, variations of data peculiar to a new machine, and measuring errors are to be evaluated.
Determine generally at what levels measured values are located instead of determining whether or not values fall within or run out of the reference values.
- 2) Determining repair, adjustment or replacement;
Machine performance deteriorates with time as

parts wear and some deteriorated performances may be restored to brand new levels. Therefore, determine repair, adjustment or replacement, depending upon the operating hours, kind of work and circumstances in which the machine is placed, and condition the machine performances to its most desirable levels.

(4) Other cautions to observed;

- 1) Parts liable to deterioration;
Rubber products, such as, hydraulic hoses, O-ring and oil seals deteriorate with time; replace them at regular intervals or at overhauls.
- 2) Parts requiring regular replacement;
Out of critical hoses that are necessary to secure safety, we designate very important parts (V.I.P) and recommended that they should be replaced regularly.
- 3) Inspection and replacement of oils and greases;
In performing maintenance, it is necessary for the user to familiarize himself with how to handle the machine safety, cautions to be observed and inspection/lubrication procedures.
Refer to the Operator's manuals as well.



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2. MEASURING ENGINE REVOLUTION

2.1 Engine Revolution

(1) Purpose

To measure the engine revolution at low speed, at high speed and in different modes.

(2) Condition

Engine coolant temperature: 60°C-90°C (140°F-194°F) [At the surface of radiator]

(3) Preparation

Install the pickup of diesel revolution counter on any of injection pipes which is easier to install.

(4) Measurement

Measure the following items at no load speed.

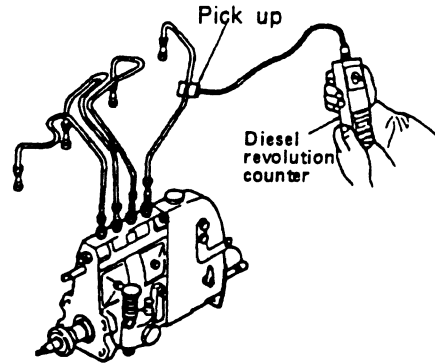


Fig. 1 Measuring engine revolution

Items to be inspected		Reference value	Tolerance		Measuring
Engine revolution	Low idling	900	+50	-50	Low throttle
	High idling	2,350	+50	-50	
	FC mode	1,600	+50	-50	Full throttle (High idling)
	Decel	1,600	+50	-50	

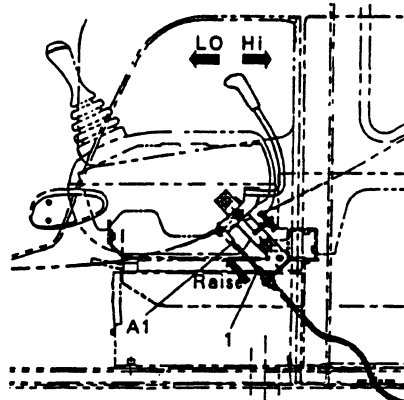


Fig. 2 Details of throttle lever installation

(5) Adjusting engine revolution

1) Adjusting low idling

Loosen control cable installing nut A1 shown in Fig. 2, and A2 in Fig. 3 and adjust it with the length of cable(1).

🔧 : 8mm

However if the high idling does not rise to the reference value, contact the engine maker for adjustment.

2) Adjusting decel revolution

Loosen cable installing nuts B1 and B2, and adjust it with the length of cable (2).

🔧 : 13mm

3) Adjusting engine stop

Loosen nuts C1 and C2, and rotate rod (3). The rod has right-hand threads and left-hand threads.

🔧 : 10mm

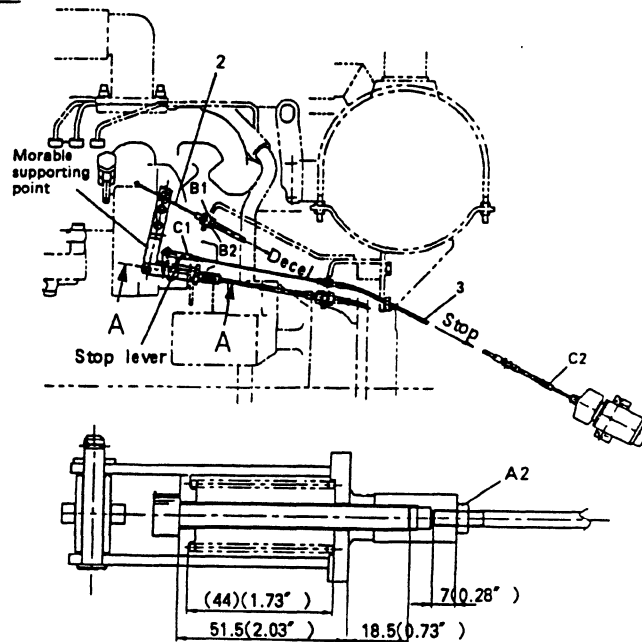


Fig. 3 Engine control on the engine side

3. MEASURING HYDRAULIC PRESSURE

3.1 Equipment to Be Prepared

- 70kgf/cm² (1000psi) pressure gauge 1 pc.
- 500kgf/cm² (7150psi) pressure gauge 2 pcs.
- Pressure measuring set 1 set
- Surface thermometer (with magnet) 1 pc.
- Hydraulic oil analysis apparatus 1 set

3.2 Standard Measuring Condition

(1) Measuring the cleanliness of hydraulic oil

▲ Vent air from the hydraulic oil tank. Sample the oil in the hydraulic oil tank, and measure it with an analysis apparatus. Replace the return filter if the value is more than the reference value.

(2) Rise in hydraulic oil temperature

Fit a thermometer to the surface of the hydraulic oil tank, and increase the temperature so it falls within 45°C to 55°C (113°F to 131°F) by performing boom raising or bucket relief operation.

3.3 Fitting Position of Pressure Gauge

(1) Fitting position of main drive circuit pressure gauge (See Fig. 4.)

- P1 pump circuit a1 plug
- P2 pump circuit a2 plug

(2) Fitting position of pilot circuit pressure gauge (See Fig. 5.)

- Pilot circuit a4 plug

3.4 Procedure for Measuring Pressure

(1) Pilot circuit

1) Measuring pilot relief pressure

Confirm that the pilot pressure falls within the standard range.

(2) Drive circuit

1) Measuring main relief pressure

Measurement		Corrective action
Reference value	Over	Decrease pressure by referring only to the adjusting procedure of main relief valve.
	Within	Omit the measurement of port relief pressure.
	Lower	Fasten the main relief valve by half turn and measure the port relief pressure.

2) Measuring port relief pressure

Measure the pressure according to adjusting procedure of the port relief valve. After adjusting the pressure, return the main relief pressure to the reference value.

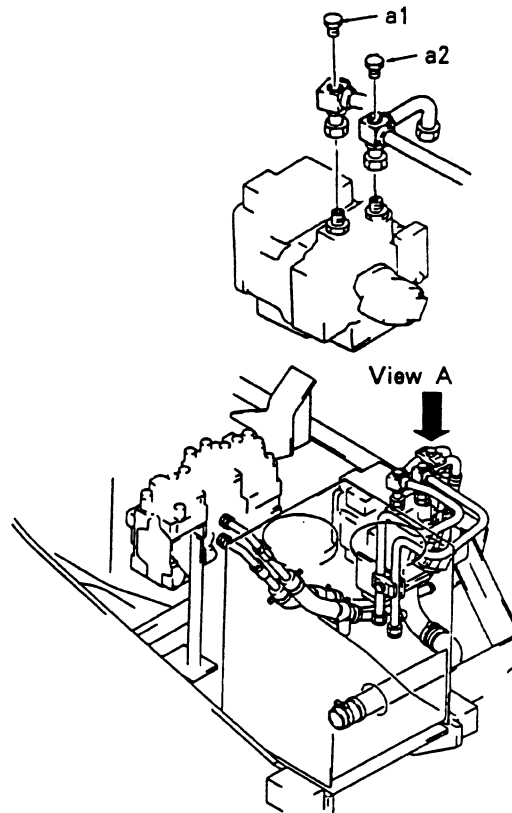


Fig. 4 Fitting position of main circuit pressure gauge

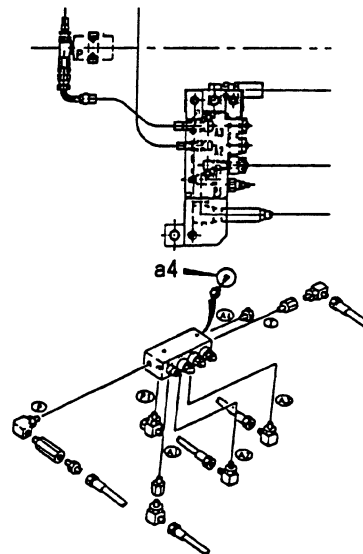


Fig. 5 Fitting position of pilot circuit pressure gauge

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