	Model	KSS70	KSS80Z
Weight	Front axle, approximate shipping weight	14,330 lbs. (6,500 kg)	15,870 lbs. (7,200 kg)
	Rear axle, approximate shipping weight	13,230 lbs. (6,000 kg)	16,540 lbs. (7,500 kg)
	Total weight	27,560 lbs. (12,500 kg)	32,410 lbs. (14,700 kg)
Axle and wheels	Drive system	4 wheel drive	
	Front axle	Full floating banjo type	
	Standard front tires	17.5–25–12 PR. air pressure 46.9 ~ 49.8 PSI (3.3 ~ 3.5 kg/cm^2)	20.5–25–16 PR. air pressure 46.9 ~ 49.8 PSI (3.3 ~ 3.5 kg/cm^2)
	Front wheel rims	14.00 x 25	17.00 x 25
	Standard front tires	Off the road type.	Rock service type
	tread	Tread : 6′ – 4$\frac{3}{4}$″ (1,950mm)	
	Rear axle	Full floating banjo type.	
	Standard rear tires	17.5–25–12 PR. air pressure 39.8 ~ 42.7 PSI (2.8 ~ 3.0 kg/cm^2)	20.5–25–16PR. air pressure 39.8 ~ 42.7 PSI (2.8 ~ 3.0 kg/cm^2)
	Rear wheel rims	14.00 x 25	17.00 x 25
	Standard rear tires	Off the road type.	Rock service type.
	tread	Tread : 6′ – 4$\frac{3}{4}$″	(1,950mm)
Engine	Make and Model	ISUZU make.	NISSAN make.
	Type	Model: "DA640" Diesel Engine 4 cycle, water cooled, pre-[combustion chamber type with exhaust turbine type supercharger.	Model: "PD604" Diesel Engine 4 cycle, water cooled direct injection type.
	Cylinder Nos. (bore x stroke)	6-(4.02x5.12 in.) 6-(102x130 mm)	6-(4.92x5.51 in.) 6-(125x140mm)
	Total displacement cubic inches	389.0 (6,373 ℓ)	629 (10,308 ℓ)
	Oil consumption		
	Standard	0.074 ~ 0.172 ℓ/H	0.097 ~ 0.226 ℓ/H
	Repair limit	0.245 ~ 0.330 ℓ/H	0.323 ~ 0.437 ℓ/H
	Working time maximum		
	Output	143 HP (145 PS)	158 HP (160 PS)
	rpm	2,300 rpm	2,200 rpm
	Fuel injection pump	Bosch type	
	Governor	All speed mechanical type	
	Lubricating method	Gear pump pressure type	
	Filtering method	Paper filter type	
	Cooling method	Water cooling type	
	Air cleaner	Dry type	
	Cooling type	Pusher type fan, pressurized radiator	
	Dynamo	DC24V0.47 HP (0.35 kW)	AC24V0.54 HP (0.4 kW)
	Starter motor	24V – 4.96 HP (3.7 kW)	24V – 8 HP (6 kW)
	Battery	12V – 110AH, 2-units	12V – 110AN, 2 units
Transmission equipment	Main clutch	Wet hydraulic Multi-disc clutch (built in transmission)	
	torque converter Type	3 elements 1 stage type	
	torque converter Stall torque ratio	3.7 : 1	
	torque converter Cooling method	Forced circulation type	

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A. POWER SYSTEM

Trouble	Cause	Correction
Drop in output	• Torque converter stator slippage • Forward or reverse clutch sticking or slipping • High-speed or low-speed clutch sticking or slipping • Clogged air cleaner element • Engine failure • Clogged fuel filter • Broken axle shaft	• Replace damaged parts. • " • " • Clean or replace the element • Refer to Engine shop manual • Replace the element. • Replace damaged parts.
The machine does not move.	• Pilot valve for parking brake return failure • Worn spline of the pump drive shaft in the torque converter • Remaining pressure between the pilot valve and the power chamber • Shutoff valve plunger return failure • Clogged strainer in the oil pan in the transmission • Broken flexible plate in the torque converter • Stuck regulator valve spool on the torque converter • Clogged orifice of the speed accumulator • Stuck 1st-speed clutch (similar for that of 2nd-speed or more)	• Clean and grease the pilot valve spool. • Replace the coupling. • Replace the pilot valve. • Correct the spool, and replace the spring or valve. • Clean the strainer. (Replace the oil.) • Replace the flexible plate. • Check the spool slide. • Clean the orifice, and remove foreign matter. • Overhaul the transmission.
Clutch oil pressure is at zero or lower.	• Regulator valve spool slide failure, and poor spring effect • Leakage from the piston ring or O ring in the transmission • Fallen check ball from the clutch piston in the transmission • Detached snap ring from the clutch drum • Worn spline of the pump drive shaft in the torque converter • Air sucked	• Correct the spool, and replace the spring • Replace damaged parts. • Overhaul the transmission • Overhaul the transmission. • Replace the coupling • Replenish oil.
T/M clutching time lags are too much.	• Stuck piston in the forward accumulator • Clogged orifice in the speed accumulator • Marked oil leakage from the servo case collar in the transmission • Marked leakage in the clutch drum in the transmission	• Overhaul the accumulator, and replace parts. • Clean the accumulator. • Replace parts. • Overhaul the transmission.
Considerable shock in clutching	• Stuck piston in the forward accumulator	• Disassemble and correct the accumulator, or replace parts.

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2-2 TIGHTENING TORQUE

(1) Bolts

(kgm)

Group	Applicable Part		KSS70	KSS80Z
Center pin	Bearing cover		18 ~ 22	
Engine & Radiator	E/G (Fan side)	E/G Block – Bracket	12 ~ 15	
		Bracket – Mount rubber	26 ~ 31	
	E/G (Flywheel side)	E/G Flywheel housing – Bracket	———	12~15
		Bracket – Mount rubber	26 ~ 31	48~58
	Radiator	Radiator – Stay	18 ~ 22	
		Radiator bracket – Rear chassis	0.9 ~ 1.1	
		Stay – Bracket	18 ~ 22	
		Bracket – Rear chassis	12 ~ 15	
Torque Convertor & Transmission	T/C	Flexible plate – E/G Flywheel	3.5 ~ 4.2	
		T/C Housing – E/G Flywheel housing	3.5 ~ 4.2	
		E/G Flywheel housing – Spacer	———	3.5 ~ 4.2
		Spacer – T/C Housing	———	3.5 ~ 4.2
	T/M	T/M Housing – Bracket	18 ~ 22	
		Bracket – Rear chassis	18 ~ 22	
Axle	Axle assy – Front (Rear) chassis		38 ~ 46	
	Axle housing – Differential		8 ~ 10	
	Planetary gear	Spider – Wheel hub	12 ~ 15	
		Internal gear – Internal gear hub	12 ~ 15	
	Wheel pin	Wheel pin – Disc wheel	60 ~ 70	
		Wheel pin – Wheel hub	40 ~ 50	
	Disc brake	Disc brake – Caliper retainer	53 ~ 63	
		Retainer – Axle housing	18 ~ 22	
Propeller shaft	1st	Flange yoke – T/C Flange	5	
		Flange yoke – T/M Flange	5	
	2nd	2 way joint – T/M Flange	12 ~ 16	
		Flange yoke – Diff. flange	16 ~ 20	
	3rd	Flange yoke – Diff. flange	10 ~ 13	
		Flange yoke – T/M Flange	8 ~ 10	
Bucket	Tooth		71 ~ 85	

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5-1 ELECTICAL CIRCUIT (KSS70 DC)

A. ELECTRICAL CIRCUIT CONNECTION

KEY	Starter switch terminal				
	AC	C	BR	R2	R1
OFF					
AC	○		○		
St		○	○	○	
R1			○		○

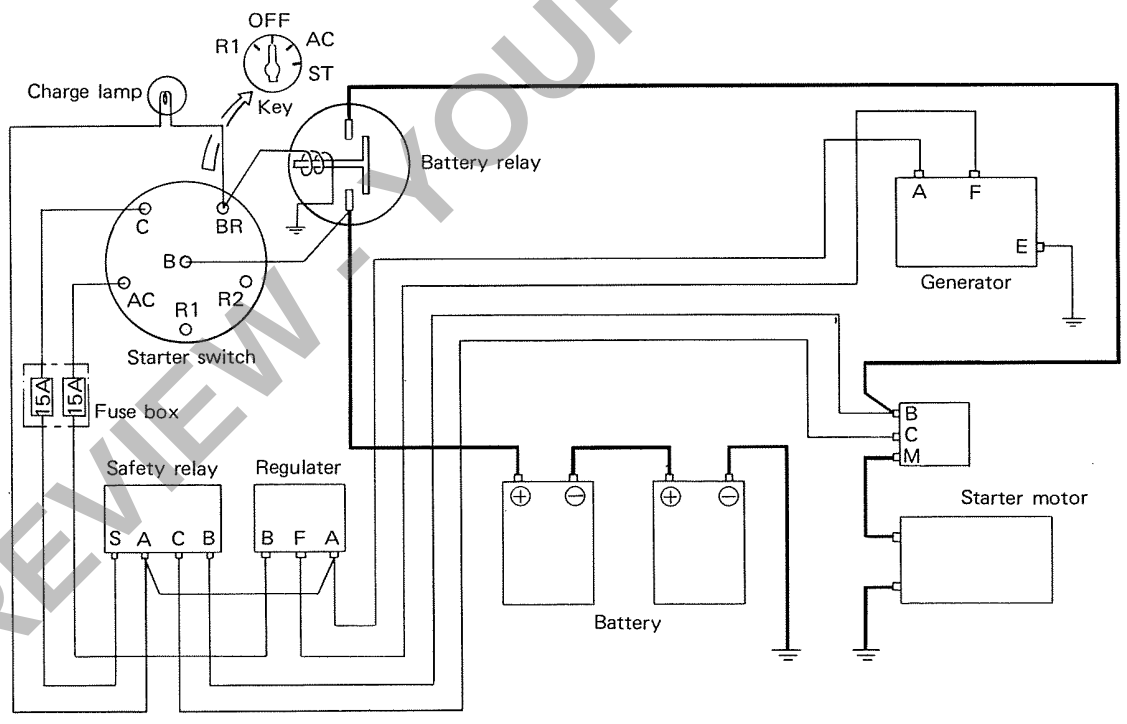


Fig. 5–1 Electrical circuit

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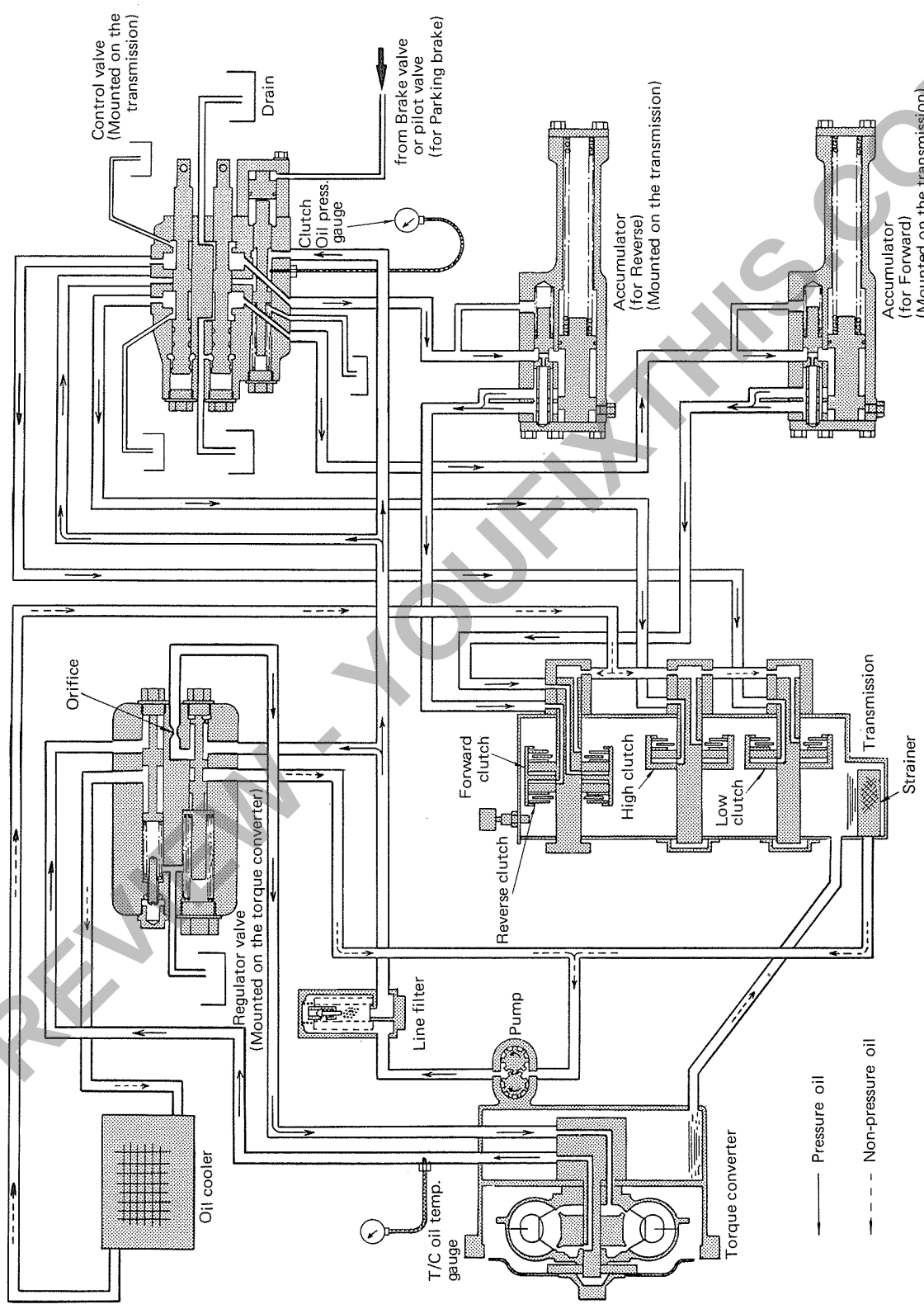


Fig. 6–1 Torque converter & transmission line
Direction selector valve : Neutral
Speed selector valve : Neutral

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(8) After wire is hooked, remove all bolts of T/C housing.

Note : Leave a bolt in the upper side, easy to remove, and remove it at last.

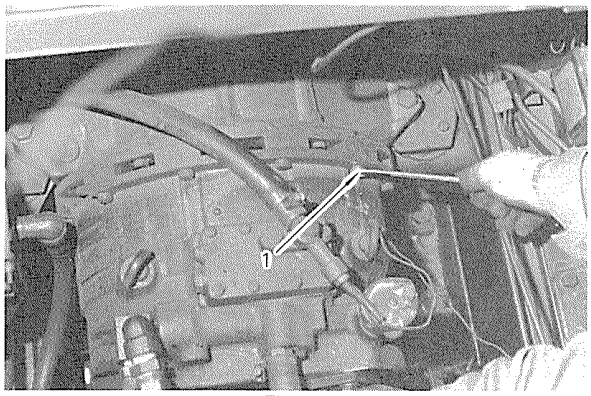


Fig. 6–9

1	Bolt

(9) Pull torque converter ahead of chassis (approx. 100 mm), and then hang it upward.

C. REMOUNTING

Remounting is accomplished in the reverse procedures of removal.

(1). Mount torque converter on engine.

Tightening Torque
Flexible Plate - Flywheel - 2.9-3.6kgm
Torque Converter Housing - Flywheel Housing - 2.9-3.6kgm

(2). Install steering pump.
(3). Install main pump.
(4). Install 1st propeller shaft

Tightening Torque - 5kgm

(5). Install hoses.
(6). Supply oil
(7). After trial driving, check oil leaks.
(8). Install floor plate.

D. DISASSEMBLY

(1). Remove drain plug ① and drain oil.

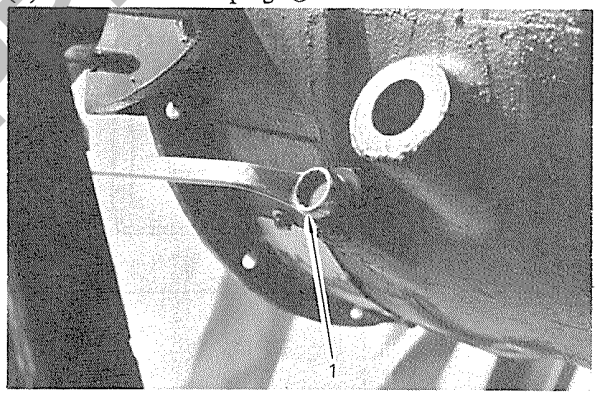


Fig. 6–10

1	Drain plug

(2). Remove inspection hole cover.

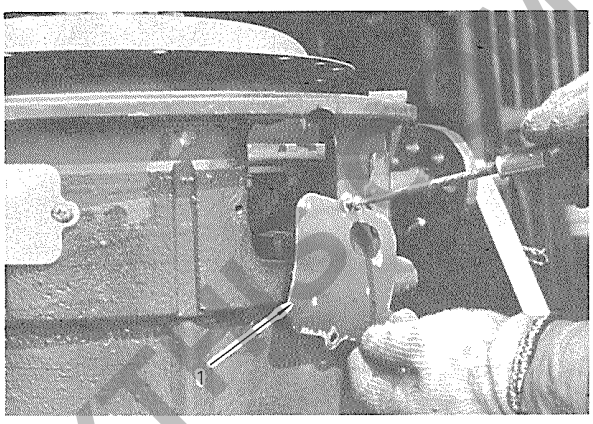


Fig. 6–11

1	Cover

(3). Remove pipe ① and pump ②.

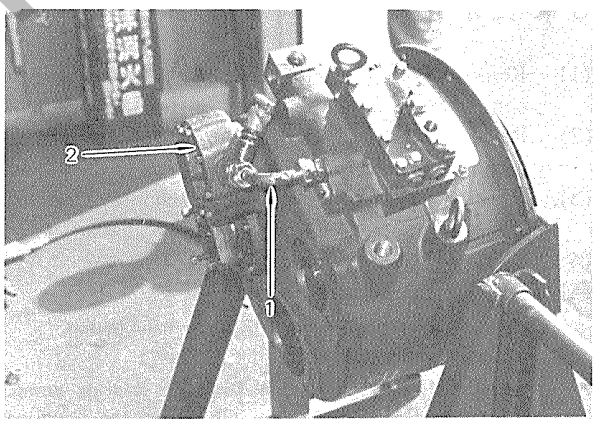


Fig. 6–12

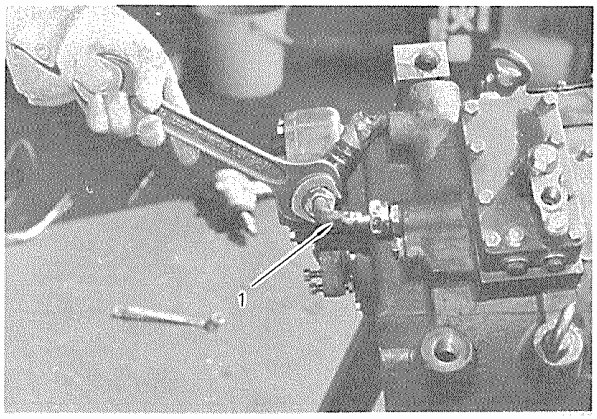


Fig. 6–13

1	Pipe	2	Pump

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6-2 TORQUE CONVERTER

A. CONSTRUCTION AND OPERATION

The flexible plate of the torque converter is being bolted to the engine flywheel. The engine is driven to rotate the pump impeller, which causes oil to flow circumferentially due to centrifugal force and effects rotation of the turbine impeller and the 1st propeller shaft.

The stator has a function to increase turbine torque. The pump impeller effects rotation of 3 kinds of power takeoff shafts, i.e., those for torque converter pump, main pump, and steering pump.

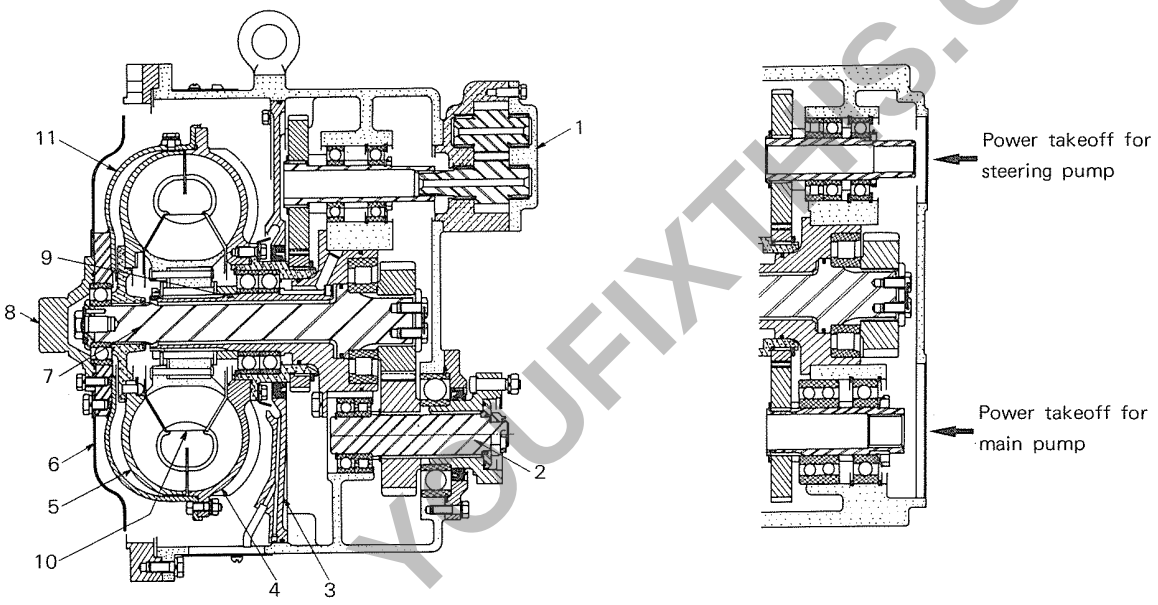


Fig. 6–3 Torque converter

1	Oil pump	5	Turbine impeller	9	Stator shaft
2	Output shaft	6	Flexible plate	10	Stator
3	Seal disc	7	Turbine shaft	11	Drive cover
4	Pump impeller	8	Pilot boss		

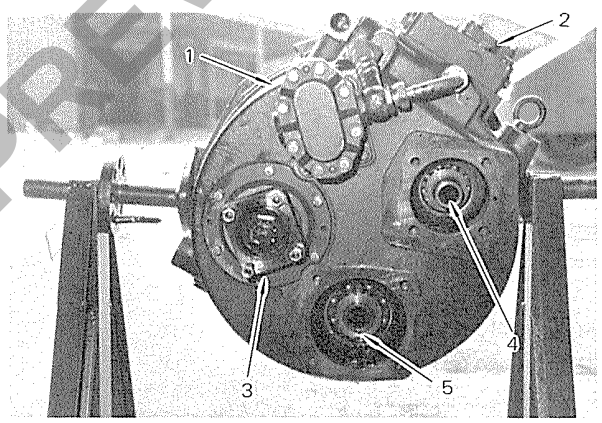


Fig. 6–4

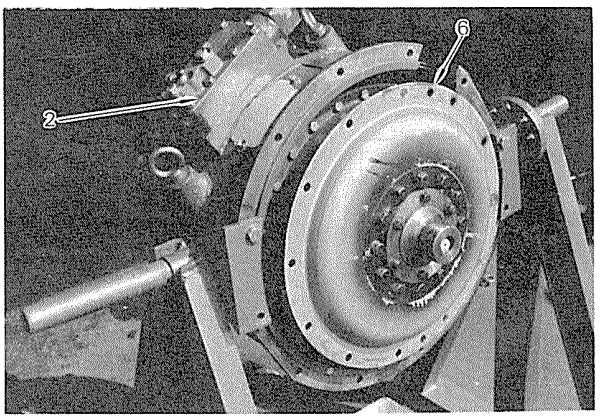


Fig. 6–5

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KAWASAKI
SUPER SHOVEL

SHOP MANUAL

KSS 70
KSS 80Z

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PREFACE

This manual provides description on the construction and repair of KSS70 and KSS80Z. Any repair work must be carried out in the correct procedures as described herein. Any description in the manual is applied to both KSS70 and KSS80Z. In case of the application to only one model, the model name is specified without fail. For engine, refer to the engine shop manual separately.

1-1 DETAILED SPECIFICATIONS

The specifications are based on a machine equipped with a general purpose bucket without teeth.

Subject to change without notice

	Model		KSS70	KSS80Z
Bucket (Standard)	Capacity heaped (SAE rated)		2.7 cu. yds. (2.1m^3)	3.1 cu. yds. (2.4m^3)
	Operating load		8,380 lbs. (3,800 kg)	9,480 lbs. (4,300 kg)
	Lifting time (Full load)		6.4 seconds	6.5 seconds
	Lowering time		3.8 seconds	4.4 seconds
	Bucket dumping time		1.8 seconds	1.5 seconds
	Max. dumping height at 45° angle		8′ – 9″ (2,665mm)	9′ – 1¼″ (2,775mm)
	Bucket tiltback angle (at ground)		46°	55°
	Bucket dumping angle (Fully raised)		45°	
	Outside bucket width		8′ – 6¾″ (2,610mm)	8′ – 10¼″ (2,700mm)
Power train	Torque converter		3 element 1 stage type, 3.7 to 1 stall torque ratio	
	Transmission		Power shift, 4 speeds, full reversing type 4 wheel drive	
	Travel speeds	Forward (MPH) 1st	0 ~ 4.47 (0 ~ 7.2 km/h)	0 ~ 4.72 (0 ~ 7.6 km/h)
		Forward (MPH) 2nd	0 ~ 8.45 (0 ~ 13.6 km/h)	0 ~ 8.58 (0 ~ 13.8 km/h)
		Forward (MPH) 3rd	0 ~ 14.92 (0 ~ 24 km/h)	0 ~ 14.0 (0 ~ 22.5 km/h)
		Forward (MPH) 4th	0 ~ 23.6 (0 ~ 38 km/h)	0 ~ 23.0 (0 ~ 37.0 km/h)
		Reverse (MPH) 1st	0 ~ 4.47 (0 ~ 7.2 km/h)	0 ~ 4.72 (0 ~ 7.6 km/h)
		Reverse (MPH) 2nd	0 ~ 8.45 (0 ~ 13.6 km/h)	0 ~ 8.58 (0 ~ 13.8 km/h)
		Reverse (MPH) 3rd	0 ~ 14.92 (0 ~ 24 km/h)	0 ~ 14.0 (0 ~ 22.5 km/h)
		Reverse (MPH) 4th	0 ~ 23.6 (0 ~ 38 km/h)	0 ~ 23.0 (0 ~ 37.0 km/h)
	Climbing ability		25°	
	Max. tractive effort		26,400 lbs. (12,000 kg)	28,880 lbs. (13,100 kg)
Overall measurements	Overall length (bucket on ground)		22′ – 5¾″ (6,850mm)	23′ – 9⅞″ (7,260mm)
	Maximum outside width without bucket		8′ – ¼″ (2,445mm)	8′ – 1½″ (2,475mm)
	Overall height (Up to upper end of driver's seat cover)		10′ – 6¾″ (3,220mm)	11′ – 2⅝″ (3,420mm)
	(Bucket above)		15′ – 10⅝″ (4,840mm)	16′ – 7⅝″ (5,070mm)
	Wheel base :		9′ – 6⅛″ (2,900mm)	9′ –9⅜″ (2,980mm)
	Minimum ground clearance (Up to the bottom axle housing)		1′ – 1½″ (335mm)	1′ – 4⅜″ (415mm)
	Bucket hinge pin height		11′ – 11⅞″ (3,655mm)	12′ – 6″ (3,810mm)
	Digging depth : below ground at 10° angle		11⅝″ (295mm)	11⅜″ (290mm)
	Minimum turning radius center of outside wheel		17′ – 2¾″ (5,250mm)	18′ – 10⅜″ (5,750mm)

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(10) Install the flange yoke, lock plate, and lock washer, and tighten the flange nut.

Tightening Torque-
35-40kgm(KSS70 Rear)
50-55kgm(KSS70 Front.KSS80Z)

(11). Install ring gear ② to differential cage ① , and tighten it by bolt ③ on which a liquid tightener has been applied. Start with the torque of 18 to 21kgm, and then take the subsequent torque.

Tightening Torque-
19-23kgm(KSS70 Rear)
31-35kgm(KSS70 Front.KSS80Z)

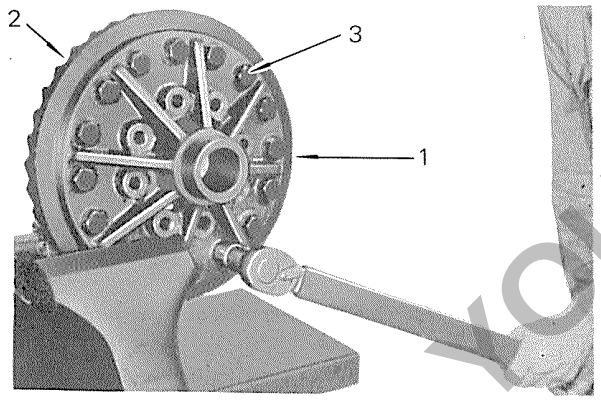


Fig. 7–39

1	Differential cage	2	Ring gear

(12). Insert thrust washer ② in two differential cages ① .

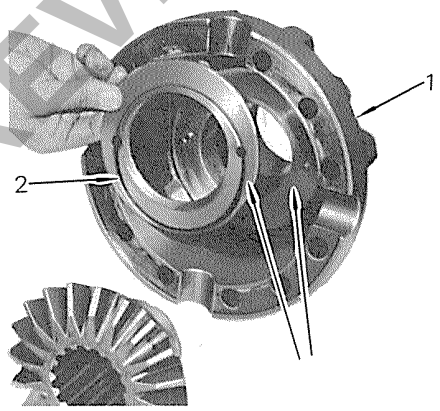


Fig. 7–40

1	Differential cage	2	Thrust washer

(13). Fix differential gear ② to spider ① , and fix it to differential cage ③ . Then, mount differential cage ④.

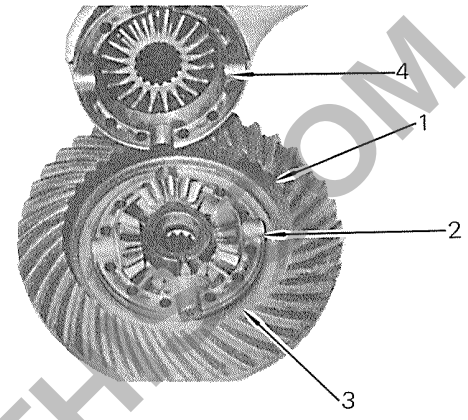


Fig. 7–41

1	Spider	2	Differential gear
3	Differential cage	4	Differential cage

(14). Temporarily tightening differential cage bolt ① , measure clearance between the side gear and the thrust washer. When it differs from the standard, change the thrust washer.

Item	KSS70 Rear	KSS70 Front KSS80Z
Clearance between side gear and thrust washer	0.15~ 0.20 mm	0.21~ 0.26 mm

* Thrust Washers

Thrust washer Thickness (mm)	KSS70 Rear	KSS70 Front KSS80Z
2.8	YZ1415610170	YZ1415620250
3.0	YZ1415610180	YZ1415620260
3.2	YZ1415610190	YZ1415620270
3.4	YZ1415610200	YZ1415620280

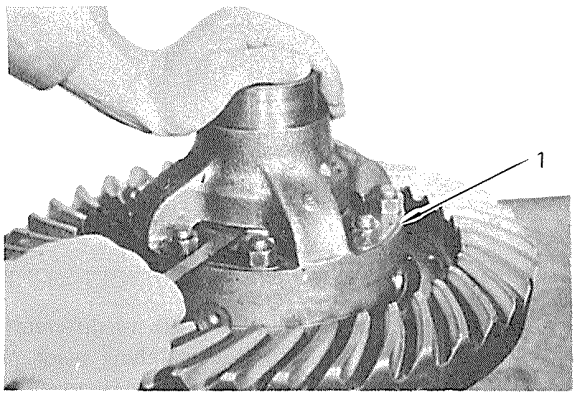


Fig. 7–42

1	Differential cage bolt

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(4). Remove spring ① and felt ring ②.

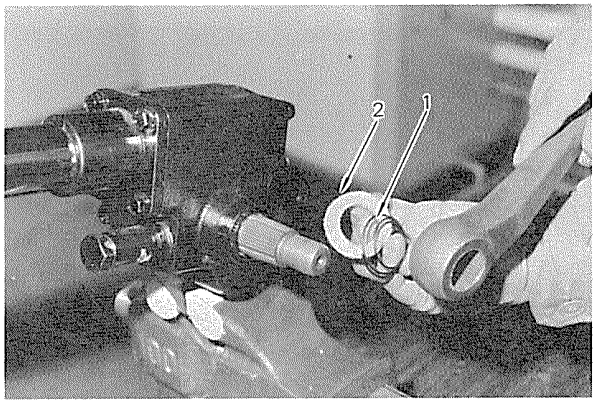


Fig. 9–63

1	Spring	2	Felt ring

(5). Remove front cover ② by removing bolts ①.

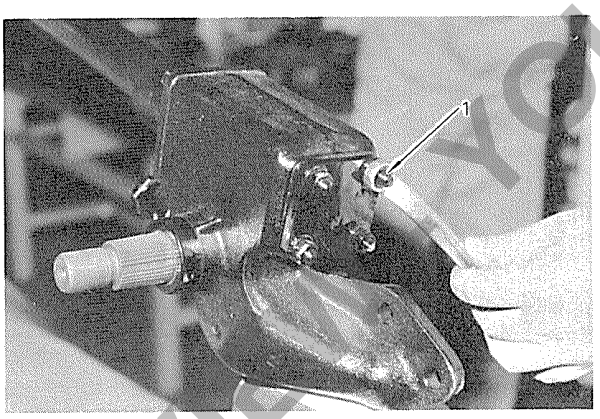


Fig. 9–64

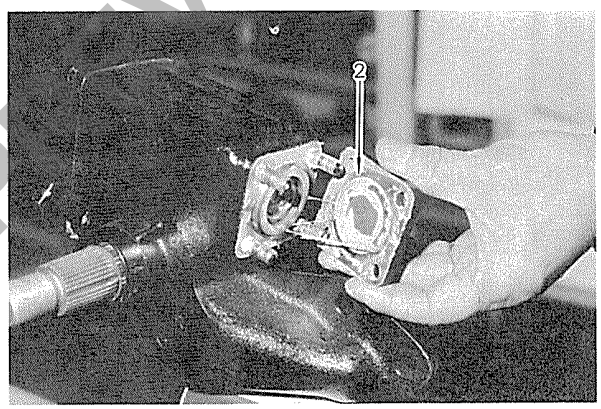


Fig. 9–65

1	Bolt	2	Cover

(6). Remove lock nut ①.

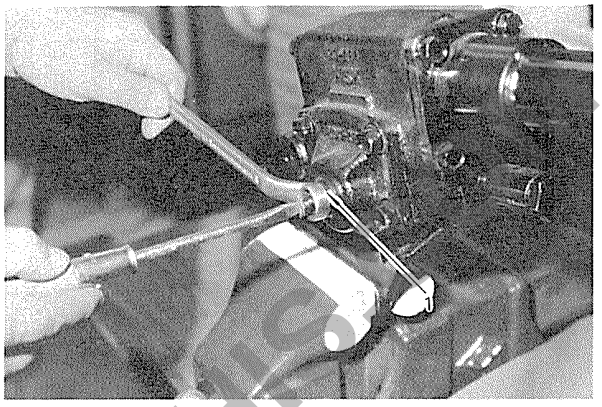


Fig. 9–66

1	Lock nut

(7). Remove bolts ① and remove slide cover ③ by screwing adjusting screw ②.

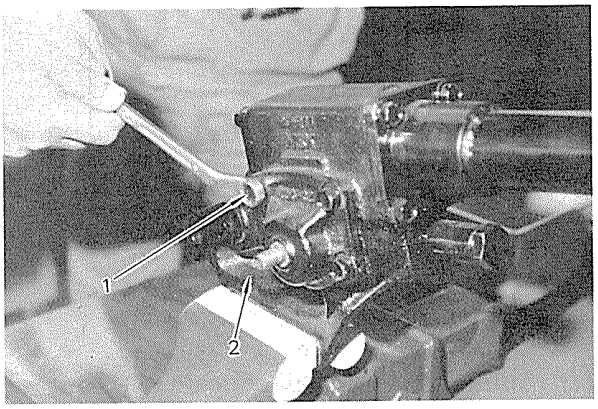


Fig. 9–67

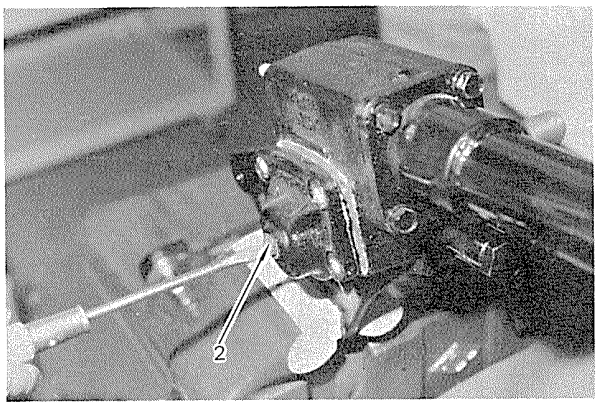


Fig. 9–68

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