KOBELCO

SERVICE MANUAL

HYDRAULIC EXCAVATOR

SK25SR

SK30SR

SK35SR

S5PW1501E 02

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SHOP MANUAL

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SPECIFICATION

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LOCATION AND WEIGHT OF COMPONENTS

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MAINTENANCE STANDARD AND TEST PROCEDURE

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11. RADIATOR

The radiator assy consists of an engine cooling water radiator and an oil cooler.

11.1 PREPARATION FOR REMOVAL AND INSTALLATION OF RADIATOR ASSY

1) Remove the components around the radiator assy such as covers, counterweight and so on.
2) Remove the battery.

⚠ For the disconnection of battery cables, first disconnect the cable for negative (−) terminal, then positive (+) cable.
Conversely, first reconnect the cable for positive terminal at the reconnection.

3) Open the drain cock (6) to drain water.

11.2 REMOVAL AND INSTALLATION OF RADIATOR ASSY

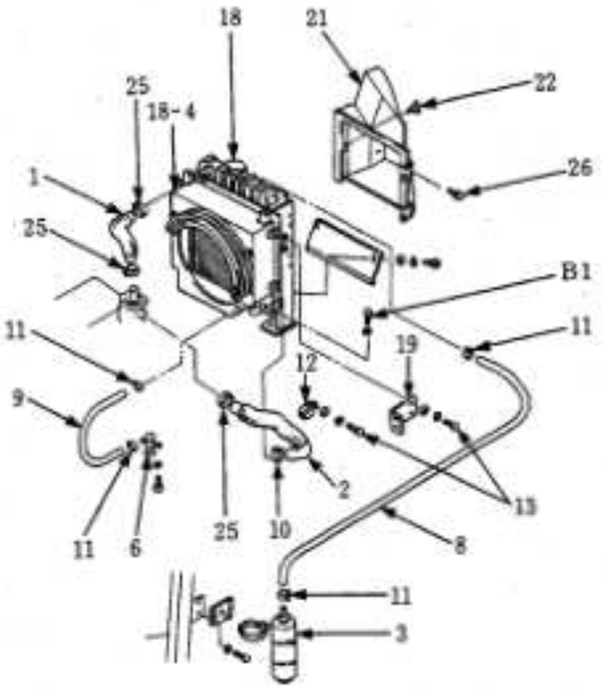
■SK25SR · SK30SR (Fig. 11-1)

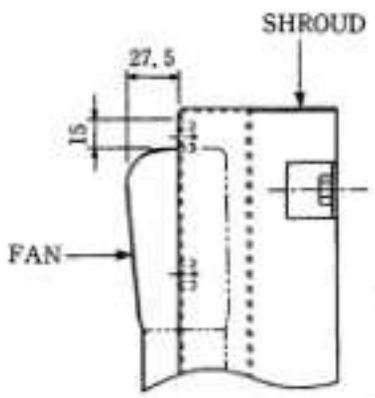
(1) Removal

1) Disconnect the radiator hoses (1) (2), sub-tank hose (8) and the hydraulic oil pipings connected to the oil cooler.
2) Remove the wing bolt (22) and sems bolt (26), then remove the plate assy(21).
   : 13㎜
3) Remove the capscrews (13), then remove the support (19).
   : 17㎜
4) Apply a rope sling to the radiator assy, and give a slight tension on the rope.
5) Remove the capscrews (B1) that are fixing the legs portion, then lift up the radiator assy paying attention not to get touch with the shroud (18-4) and engine fan.
   Weight of radiator assy : Approx . 19kg (42lbs)
   : 17㎜

(2) Installation

1) Lift up the radiator assay to put it to the desired position. Fix it with the capscrews (B1) confirming the evenness for the clearance against the fan and shroud. (Refer to Fig. 11-1)
   : 17㎜
2) Install the support (19) with the capscrews (13).
   : 17㎜
3) Reconnect the connecting hoses for the radiator and oil cooler.





Set-up Criteria for Fan and Shroud

Fig. 11-1 Removal and installation of radiator assy

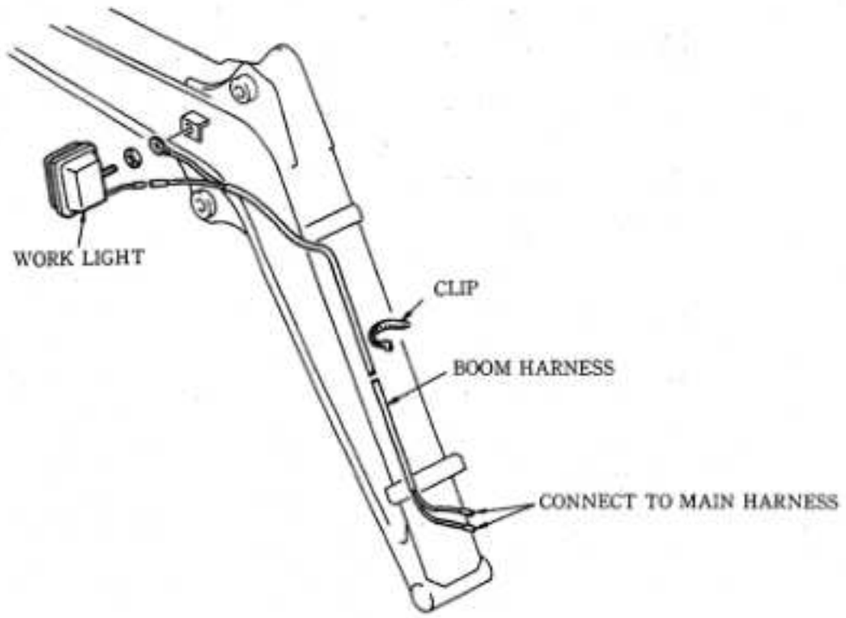
Major component parts

No.	NAME	QTY	No.	NAME	QTY
1	HOSE	1	13	CAPSCREW	5
2	HOSE	1	18	RADIATOR ASSY	1
3	SUB-TANK	1	19	SUPPORT	1
6	DRAIN COCK	1	21	PLATE ASSY	1
8	HOSE	1	22	WING BOLT	1
9	HOSE	1	25	CLIP	3
10	CLIP	1	26	SEMS BOLT	4
11	CLIP	4	B1	CAPSCREW	4
12	CLIP	1			

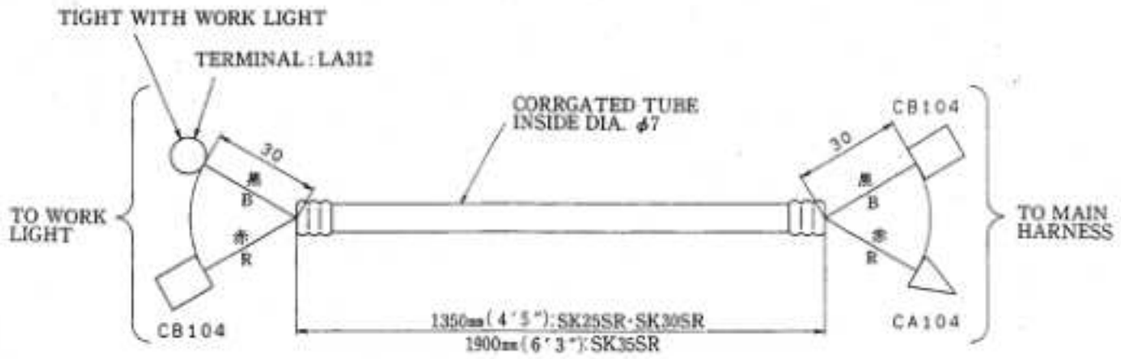
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6. BOOM WORK LIGHT

6.1 COMPONENTS ARRANGEMENT

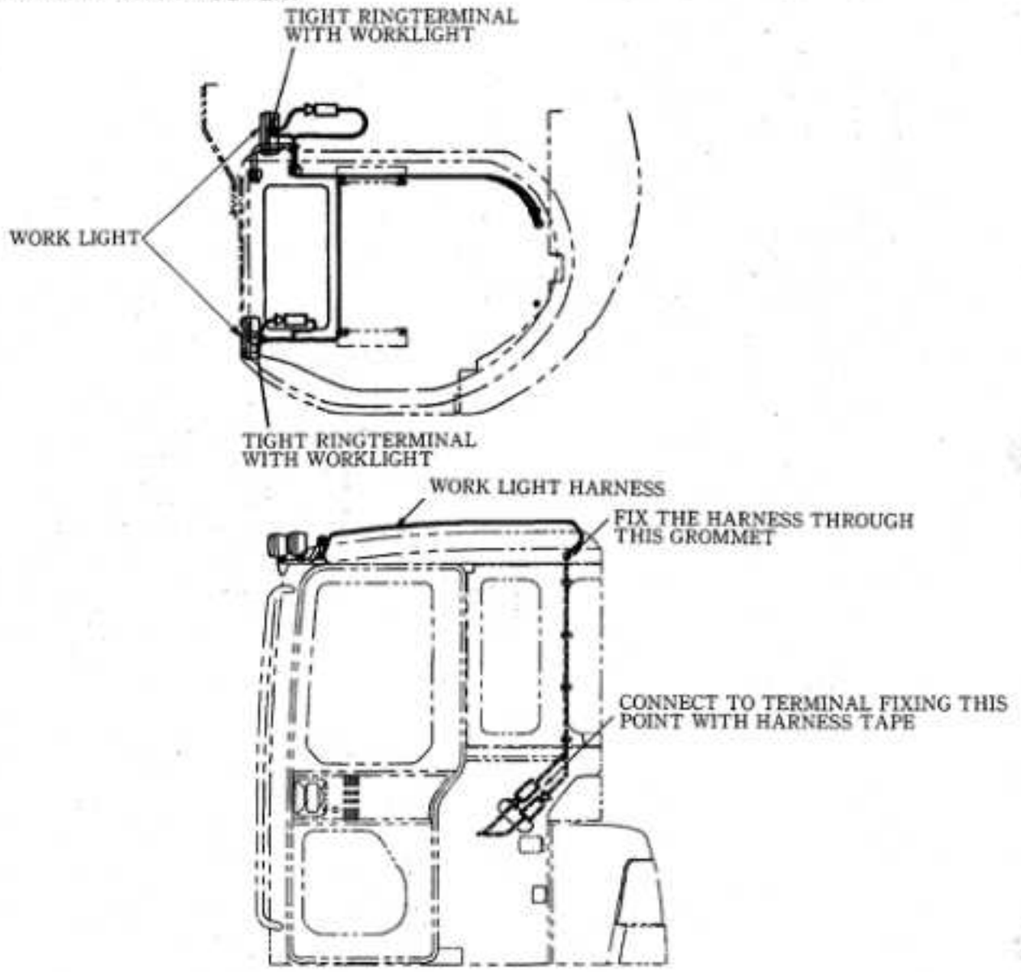


6.2 BOOM HARNESS

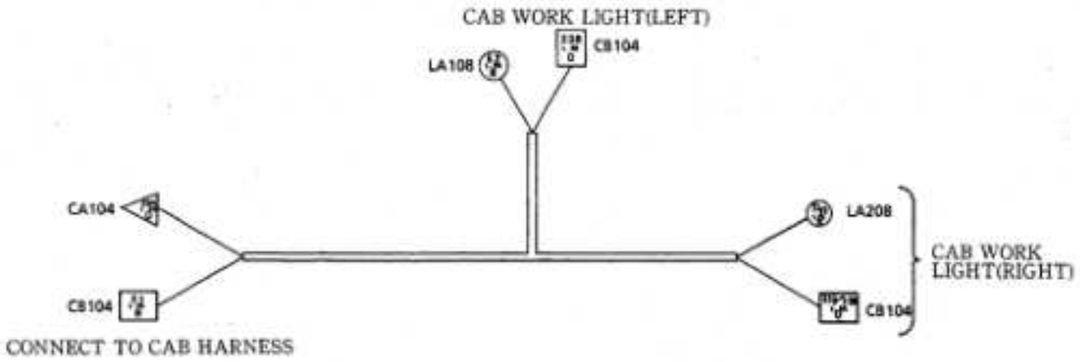


7. CAB WORK LIGHT (OPT)

7.1 COMPONENTS ARRANGEMENT



7.2 WORK LIGHT HARNESS



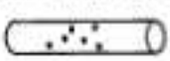
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4. MAINTENANCE STANDARDS

1) HYDRAULIC MOTOR

Parts	Judgment	Replacement criteria	Remedy
Shaft	Abnormal wear of output shaft splines.	Wear depth 0.025mm(0.0010 in) or more	Replace
Cylinder	Contact face with valve plate.	Wear depth 0.020mm(0.0008 in) or more	Replace
Valve plate	Sliding face of cylinder.	Wear depth 0.020mm(0.0008 in) or more	Replace
Piston and shoe	Crimped (caulked) part of shoe. Sliding face of shoe.	Play 0.3mm(0.012 in) or more	Replace
Swash plate	Wear of sliding face of shoe.	Wear depth 0.1mm(0.004 in) or more	Replace
Inside of the body	Damage, rust	—	Replace

2) REDUCTION UNIT

Parts	Judgment	Replacement criteria		Remedy
Gears in the casing	Abnormal wear of gear.	Pitting extending over 5% or more of tooth surface.	Ratio of pitted area to tooth surface. 	Replace it as a casing kit.
Carrier 1, 2	Deformed or damaged splined part.	Visible damage	More than 0.005mm (0.0002 in) play when checked by hand.	Replace.
	Play of pin b1 (carrier 1) Play of pin b2 (carrier 2)	Eccentric wear of pin bore.		
Sun gear s1, s2 Spur gear b1, b2	Abnormal wear of tooth surface. Damaged tooth.	Pitting, extending over 5% or more of tooth surface.		Replace.
	Wear of rolling face of needle bearing roller (Spur gear b1, b2)	Visible flaking or pitting.		Replace.
Pin b1 Pin b2	Wear of rolling face of needle bearing roller.	Visible flaking or pitting.		Replace it as a carrier kit.
Each bearing	Pitting on roller needle.	Visible flaking or pitting.	ROLLER NEEDLE 	Replace.
Other parts, including socket bolt and thrust washer.	Damage, abnormal rust.	—	—	Replace.

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INSTRUMENT HARNESS CONNECTION TABLE

線番 WIRE NO	線色 WIRE COLOR	線種・サイズ WIRE SIZE	FROM	接続 CONNECTION	TO	機能 FUNCTION
1A	LR	AVSS1.25sq	CN-309F		CN-320F	FUSE BOX ← J/C-GREEN
1B	LR	AVSS1.25sq	CN-336F		CN-320F	RADIO, COOLER ← J/C-GREEN
1C	LR	AVSS0.75sq	F-1		CN-320F	HEATER ← J/C-GREEN
1D	LR	AVSS0.75sq	CN-315M		CN-320F	WIPER WASHER SW ← J/C-GREEN
2A	Y	AVSS1.25sq	CN-309F	DOUBLE SPLICE	CN-320F	FUSE BOX ← J/C-GREEN
2M	Y	AVSS1.25sq	CN-309F		CN-320F	FUSE BOX ← J/C-GREEN
2B	Y	AVSS0.75sq	CN-307F		CN-320F	LIGHT RELAY ← J/C-GREEN
2C	Y	AVSS0.75sq	CN-306F		CN-320F	TRAVEL 2-SPEED RELAY ← J/C-GREEN
2D	Y	AVSS0.75sq	CN-306F		CN-320F	TRAVEL 2-SPEED RELAY ← J/C-GREEN
2E	Y	AVSS0.75sq	CN-334F		CN-320F	DIODE ← J/C-GREEN
2F	Y	AVSS0.75sq	CN-305M		CN-320F	DECEL RELAY ← J/C-GREEN
2G	Y	AVSS0.75sq	CN-101F		CN-320F	CONTROL CUT LR (RIGHT) ← J/C-GREEN
2H	Y	AVSS0.75sq	CN-330F		CN-320F	BUZZER ← J/C-GREEN
2J	Y	AVSS0.75sq	CN-1F		CN-320F	CLUSTER GAUGE ← J/C-GREEN
2K	Y	AVSS0.75sq	CN-3M		CN-320F	CLUSTER GAUGE ← J/C-GREEN
2L	Y	AVSS0.75sq	CN-320F		CN-301M	FUSE BOX → TRAVEL LOCK MOTOR
3A	RW	AVSS1.25sq	CN-309F		CN-321F	FUSE BOX → J/C-ORANGE
3B	RW	AVSS1.25sq	CN-307F		CN-321F	LIGHT RELAY → J/C-ORANGE
3C	RW	AVSS0.75sq	CN-301M		CN-321F	DECEL MOTOR → J/C-ORANGE
4A	R	AVS3sq	CN-336F	DOUBLE SPLICE	CN-310F	COOLER → FUSE BOX
4B	R	AVSS0.75sq	CN-321F		CN-310F	J/C-ORANGE → FUSE BOX
4C	R	AVSS0.75sq	CN-321F		CN-315M	J/C-ORANGE → RADIO
4D	R	AVSS0.75sq	CN-321F		CN-101F	J/C-ORANGE → HORN SW
5	RL	AVS2sq	CN-303M		CN-310F	E/G STOP SOL ECC → FUSE BOX
6A	WG	AVSS0.75sq	CN-309F		CN-321F	FUSE BOX → J/C-ORANGE
6B	WG	AVSS0.75sq	CN-333F	DOUBLE SPLICE	CN-321F	DIODE → J/C-ORANGE
6D	WG	AVSS0.75sq	CN-333F		CN-308F	DIODE → BATTERY RELAY
6C	WG	AVSS0.75sq	CN-301M		CN-321F	SAFETY RELAY ALTERNATER → J/C-ORANGE
7	RB	AVS3sq	CN-310F		CN-313M	FUSE BOX → KEY SW
8A	R	AVS3sq	CN-312F		CN-309F	KEY SW → FUSE BOX
8C	R	AVS8sq	P-1		CN-324M	SAFETY RELAY → KEY SW
8D	R	AVS5sq	CN-308F		P-2	BATTERY RELAY → SAFETY RELAY
13	BW	AVSS0.75sq	CN-301M		CN-312F	SAFETY RELAY → KEY SW
17	PB	AVSS0.75sq	CN-301M		CN-101F	HORN → HORN SW
18	LY	AVSS0.75sq	CN-304M		CN-314F	HEATER → HEATER SW
19	LB	AVSS0.75sq	CN-304M		CN-314F	HEATER → HEATER SW
20	G	AVSS0.75sq	CN-311F		CN-315M	WIPER → WIPER WASHER SW
21	WB	AVSS0.75sq	CN-311F		CN-315M	WIPER → WIPER WASHER SW
22	Br	AVSS0.75sq	CN-311F		CN-315M	WIPER → WIPER WASHER SW
33A	O	AVSS1.25sq	CN-307F		CN-320F	LIGHT RELAY → J/C-GREEN
33B	O	AVSS1.25sq	CN-301M		CN-320F	WORK LIGHT → J/C-GREEN
33C	O	AVSS0.75sq	CN-1F		CN-320F	CLUSTER GAUGE → J/C-GREEN
33D	O	AVSS1.25sq	CN-317F		CN-320F	WORK LIGHT (CAB) → J/C-GREEN
38	GW	AVSS0.75sq	CN-101F		CN-102F	CONTROL CUT LR (RIGHT) → CONTROL CUT LR (LEFT)
39	Sb	AVSS0.75sq	CN-301M		CN-102F	CONTROL CUT SOL → CONTROL CUT LR (LEFT)
40A	BR	AVSS0.75sq	CN-334F	DOUBLE SPLICE	CN-2M	DIODE → CLUSTER GAUGE
40B	BR	AVSS0.75sq	CN-334F		CN-307F	DIODE → LIGHT RELAY
41	Brw	AVSS0.75sq	CN-301M		CN-306F	TRAVEL 2-SPEED SOL → TRAVEL 2-SPEED RELAY
43	Lg	AVSS0.75sq	CN-306F		CN-2M	TRAVEL 2-SPEED RELAY → CLUSTER GAUGE
45	BW	AVSS0.75sq	CN-302F		CN-3M	TRAVEL 2-SPEED SW → CLUSTER GAUGE
46	WB	AVSS0.75sq	CN-302F		CN-3M	TRAVEL 2-SPEED SW → CLUSTER GAUGE
47A	L	AVS5sq	CN-303M	DOUBLE SPLICE	CN-324M	AIR HEATER → KEY SW
47B	L	AVSS0.75sq	CN-303M		CN-1F	KEY SW → CLUSTER GAUGE
48	LgB	AVSS0.75sq	CN-302F		CN-2M	ALTERNATER → CLUSTER GAUGE
50	GB	AVSS0.75sq	CN-302F		CN-1F	HYD SW → CLUSTER GAUGE
51	YB	AVSS0.75sq	CN-302F		CN-1F	E/G THERMO SW → CLUSTER GAUGE
52	YR	AVSS0.75sq	CN-302F		CN-1F	E/G THERMO SENSOR → CLUSTER GAUGE
53	RG	AVSS0.75sq	CN-302F		CN-1F	AIR CLEANER ALARM SW → CLUSTER GAUGE
55A	YW	AVSS0.75sq	CN-305M		CN-321F	FUEL SENSOR → J/C-ORANGE
55B	YW	AVSS0.75sq	CN-1F		CN-321F	CLUSTER GAUGE → J/C-ORANGE
55C	YW	AVSS0.75sq	CN-330F		CN-321F	BUZZER → J/C-ORANGE
56	YG	AVSS0.75sq	CN-302F		CN-1F	FUEL SENSOR → CLUSTER GAUGE
61	LB	AVSS0.75sq	CN-302F		CN-2M	DECEL RELAY → CLUSTER GAUGE
71	R	AVS5sq	CN-306F		CN-310F	BATTERY RELAY → FUSE BOX
72	LgR	AVSS1.25sq	CN-309F		CN-312F	FUSE BOX → KEY SW
75	RW	AVSS0.75sq	CN-317F		CN-305M	COOLER → POWER SHIFT SOL
E1	B	AVSS1.25sq	CN-305M		CN-321F	EARTH → J/C-ORANGE
E3	B	AVSS0.75sq	CN-333F	DOUBLE SPLICE	CN-321F	DIODE → J/C-ORANGE
E10	B	AVSS0.75sq	CN-333F		CN-308F	DIODE → BATTERY RELAY
E4	B	AVSS1.25sq	CN-311F		CN-321F	WIPER → J/C-ORANGE
E5	B	AVSS0.75sq	CN-1F		CN-321F	CLUSTER GAUGE → J/C-ORANGE
E6	B	AVSS0.75sq	CN-3M		CN-321F	CLUSTER GAUGE → J/C-ORANGE
E7	B	AVSS0.75sq	CN-314F		CN-321F	HEATER SW → J/C-ORANGE
E8	B	AVSS1.25sq	CN-302F		CN-321F	EARTH → J/C-ORANGE
E9	B	AVSS0.75sq	CN-315M	DOUBLE SPLICE	CN-321F	RADIO → J/C-ORANGE
E11	B	AVSS0.75sq	CN-315M		CN-330F	RADIO → BUZZER
E12	B	AVS3sq	CN-305M		CN-317F	EARTH → COOLER

CONNECTORS SELECTION TABLE

コネクタ名（ピン数） CONNECTOR NAME (PIN NUM.)	メーカー MANUFAC.	品番号 (PART. NUMBER) ハウジング HOUSING	ターミナル TERMINAL	ハーネスシール HARNESS SEAL	リテーナー RETAINER ロックプレート LOCK PLATE	ウメ栓 SEALING PLUG
1PAM-L	YAZAKI	7122-8110	7114-3251		7157-6420-70	
2PAF	YAZAKI	7123-2228	7116-2090 7116-2097			
3PAF	YAZAKI	7123-2237	7116-2090			
3PAM	YAZAKI	7122-2237	7114-2020			
4PAF-312	YAZAKI	7283-3040	7116-6041 7116-6045			
4PAF-BLACK	YAZAKI	7123-3448-30	7116-2090			
4PAF	YAZAKI	7123-2446	7116-2090			
4PAF-P&B	P&B AMP	VCF-1000	280756-4 42281-1			
5PAF-P&B	P&B PACKARD	VCF4-1003	12015884 12015885			
5PAM-MIC(BLACK)	AMP	172504-2	172777-1			
5PAM-MIC	AMP	172504-1	172777-1			
6PAF	YAZAKI	7123-2262	7116-2090			
6PAM	YAZAKI	7122-2262	7114-2041			
8PAM	YAZAKI	7122-2186	7114-2020			
10PAF	YAZAKI	7123-2800	7116-2041			
11PAF-MIC	AMP	172497-1	172773-1			
CB104	YAZAKI	7120-1010	7115-1050			
J/C-GREEN	SUMITOMO	6400-0013 6408-0072	6240-4422			
J/C-ORANGE	SUMITOMO	6400-0015 6408-0071	6240-4422			
2PAM-L(BLACK)	YAZAKI	7122-4123-30	7114-3251 7114-3254		7157-6420-60	
2PAM-L(RED)	YAZAKI	7122-4125-50	7114-3251 7114-3254		7157-6420-90	
2PAF-D	YAZAKI	7123-4026-60	7116-2071		7157-6222-00	

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