PART NO. WNDB-EN-01

HITACHI

Reliable solutions

Workshop Manual

ZW

180-5B
180PL-5B

Wheel Loader

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TONDB-EN
Technical Manual (Troubleshooting)	: Vol. No.TTNDB-EN
Workshop Manual	: Vol. No.WNDB-EN

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Safety Alert Symbol and Headline Notations

In this manual, the following safety alert symbol and signal words are used to alert the reader to the potential for personal injury of machine damage.

⚠ This is the safety alert symbol. When you see this symbol, be alert to the potential for personal injury.
Never fail to follow the safety instructions prescribed along with the safety alert symbol.
The safety alert symbol is also used to draw attention to component/part weights.
To avoid injury and damage, be sure to use appropriate lifting techniques and equipment when lifting heavy parts.

⚠ **CAUTION:**
Indicates potentially hazardous situation which could, if not avoided, result in personal injury or death.

IMPORTANT:
Indicates a situation which, if not conformed to the instructions, could result in damage to the machine.

NOTE:
Indicates supplementary technical information or know-how.

Units Used

SI Units (International System of Units) are used in this manual. MKSA system units and English units are also indicated in parentheses just behind SI units.

Example: 24.5 MPa (250 kgf/cm², 3560 psi)

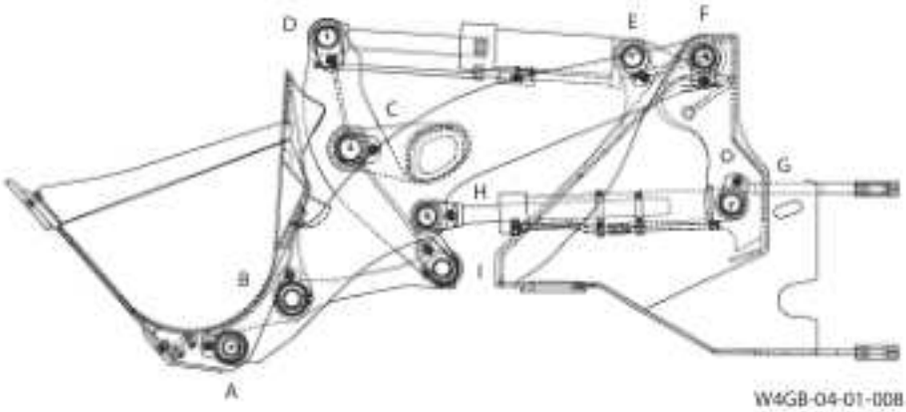
A table for conversion from SI units to other system units is shown below for reference purposes.

Quantity	To Convert From	Into	Multiply By
Length	mm	in	0.03937
	mm	ft	0.003281
Volume	L	US gal	0.2642
	L	US qt	1.057
	m^3	yd^3	1.308
Weight	kg	lb	2.205
Force	N	kgf	0.10197
	N	lbf	0.2248
Torque	N·m	kgf·m	0.10197
Pressure	MPa	kgf/cm^2	10.197
	MPa	psi	145.0
Power	kW	PS	1.360
	kW	HP	1.341
Temperature	°C	°F	°C×1.8+32
Velocity	km/h	mph	0.6214
	min^{-1}	rpm	1.0
Flow rate	L/min	US gpm	0.2642
	mL/rev	cc/rev	1.0

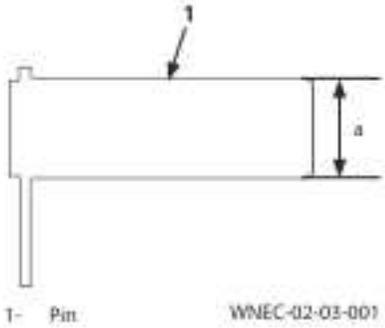
NOTE: The numerical value in this manual might be different from the above-mentioned table.

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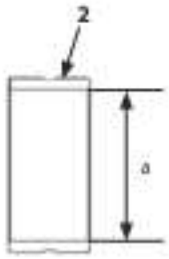
Pin and Bushing



W4GB-04-01-008



1- Pin
WNEC-02-03-001

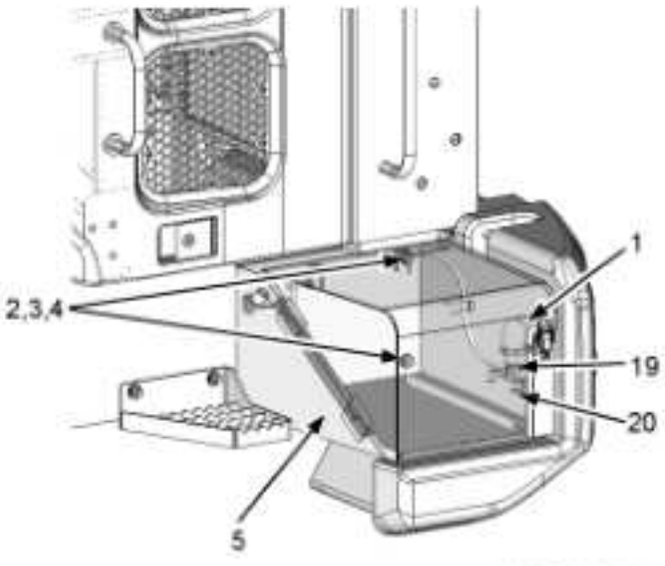


2- Bushing
WNEC-02-03-002

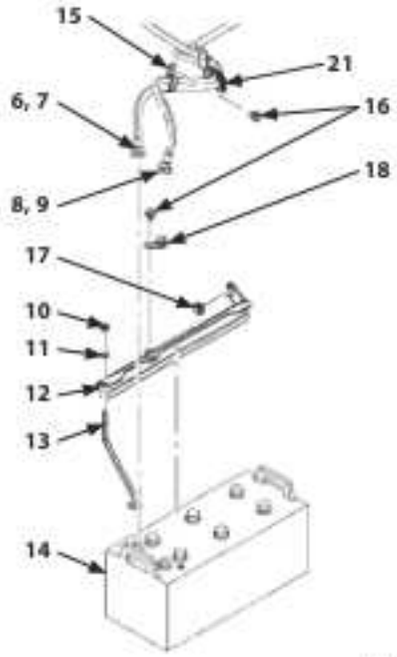
Unit: mm (in)

	Part Name	Standard (a)	Allowable Limit (a)	Remedy
A	Pin	75 (2.95)	74.0 (2.91)	Replace
	Bushing (Lift Arm)	75 (2.95)	76.5 (3.01)	
B	Pin	75 (2.95)	74.0 (2.91)	
	Bushing (Bucket Link)	75 (2.95)	76.5 (3.01)	
C	Pin	115 (4.53)	114.0 (4.49)	
	Bushing (Bell Crank)	115 (4.53)	116.5 (4.59)	
D	Pin	85 (3.35)	84.0 (3.31)	
	Bushing (Bucket Cylinder)	85 (3.35)	86.5 (3.41)	
E	Pin	85 (3.35)	84.0 (3.31)	
	Bushing (Bucket Cylinder)	85 (3.35)	86.5 (3.41)	
F	Pin	100 (3.94)	99.0 (3.90)	
	Bushing (Lift Arm)	100 (3.94)	101.5 (4.00)	
G	Pin	85 (3.35)	84.0 (3.31)	
	Bushing (Lift Arm Cylinder)	85 (3.35)	86.5 (3.41)	
H	Pin	85 (3.35)	84.0 (3.31)	
	Bushing (Lift Arm Cylinder)	85 (3.35)	86.5 (3.41)	
I	Pin	75 (2.95)	74.0 (2.91)	
	Bushing (Bucket Link)	75 (2.95)	76.5 (3.01)	

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WND8-03-02-003



WNEE-03-02-005

Installation

Installation of Battery Box (Left)

⚠ CAUTION: Battery box (5) weight: 27 kg (60 lb)

1. Pass connector (19) and terminals (7, 9) through battery box (5). Install battery box (5) with washers (3, 4) (4 used for each) and nuts (2) (4 used).

   : 19 mm

   : 35 N·m (3.5 kgf·m, 26 lbf·ft)

2. Install rubber bushings (20, 21).
3. Connect connector (19). Install the harnesses to all clips of battery box (5).

⚠ CAUTION: Battery (14) weight: 44 kg (98 lb)

4. Place battery (14) on battery box (5).
5. Install bracket (12) and rod (13) with bolt, washer (17), washer (11), and nut (10).

   : 17 mm

   Nut (10):

   : 20 N·m (2 kgf·m, 15 lbf·ft)

   Bolt, Washer (17):

   : 50 N·m (5 kgf·m, 37 lbf·ft)

6. Connect terminal (7). Tighten nut (6).

   : 10 mm

   : 3 to 4 N·m (0.3 to 0.4 kgf·m, 2.2 to3 lbf·ft)

7. Connect terminal (9). Tighten nut (8).

   : 10 mm

   : 3 to 4 N·m (0.3 to 0.4 kgf·m, 2.2 to 3 lbf·ft)

8. Install clips (15, 18) with bolts, washers (16) (2 used).

   : 17 mm

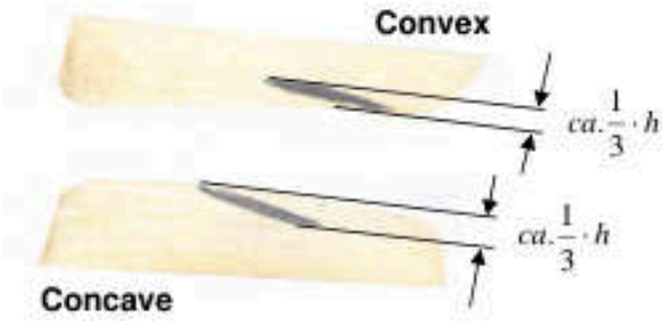
   : 50 N·m (5 kgf·m, 37 lbf·ft)

9. Close cover (1).

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Example 3: "Line" contact pattern

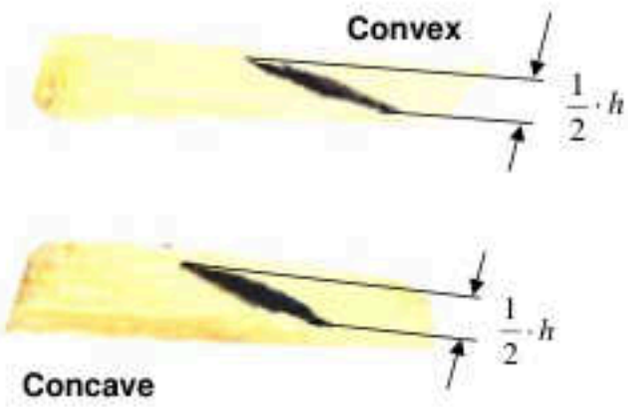
Contact pattern not o.k.



The contact pattern convex and concave is too far up on the crown wheel. The contact pattern is also too small and is not tangent to the flank middle line.
An adjustment is necessary!

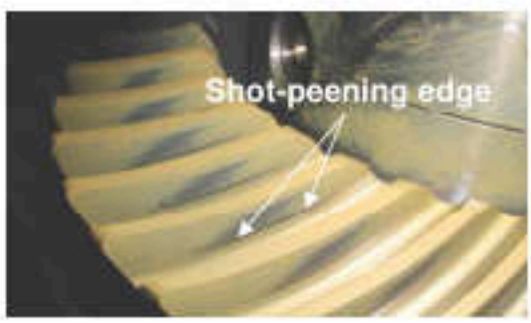
Adjustment: **Add a thicker pinion spacer!**

Contact pattern o.k.



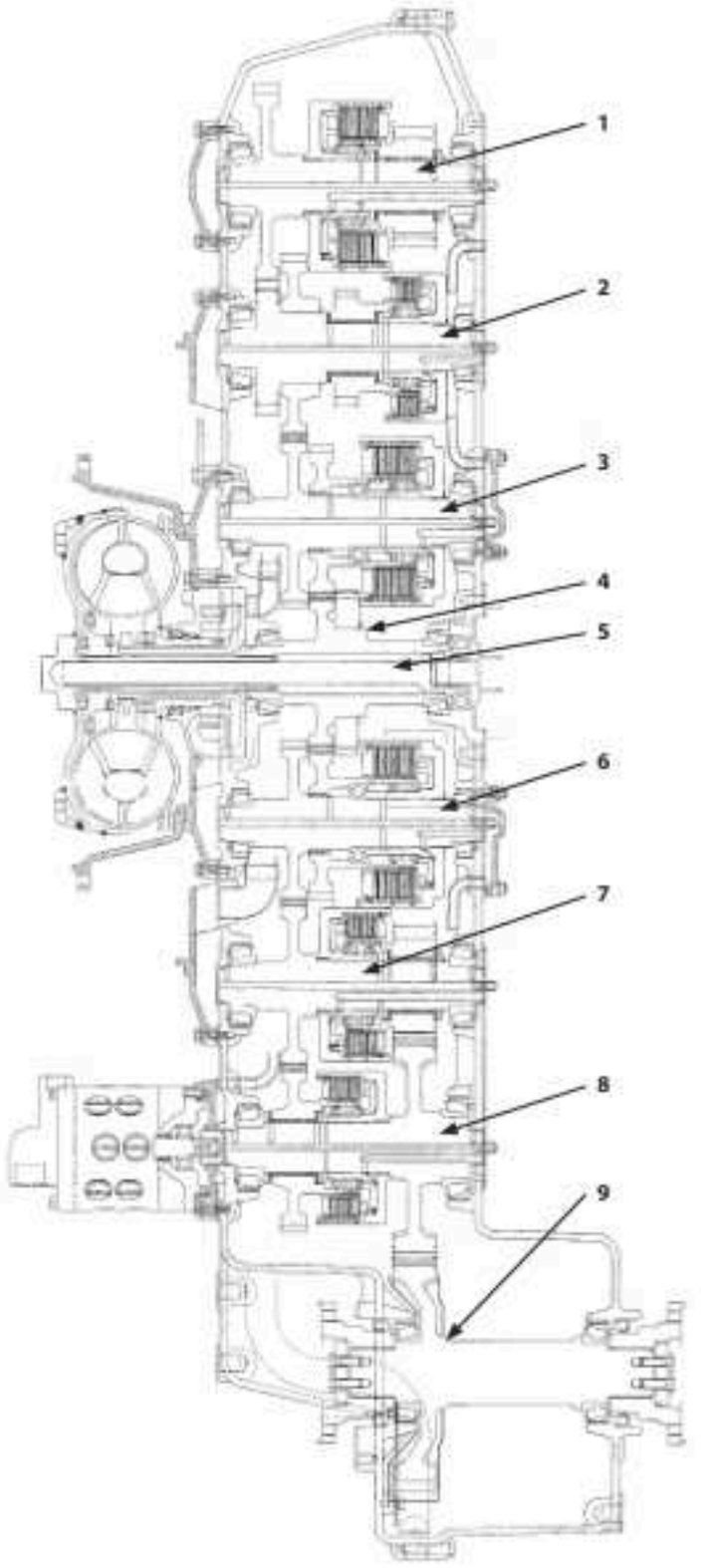
The convex contact pattern must have an impression at the tooth middle line.
A minimum of 50% of the tooth depth (flank) is covered.

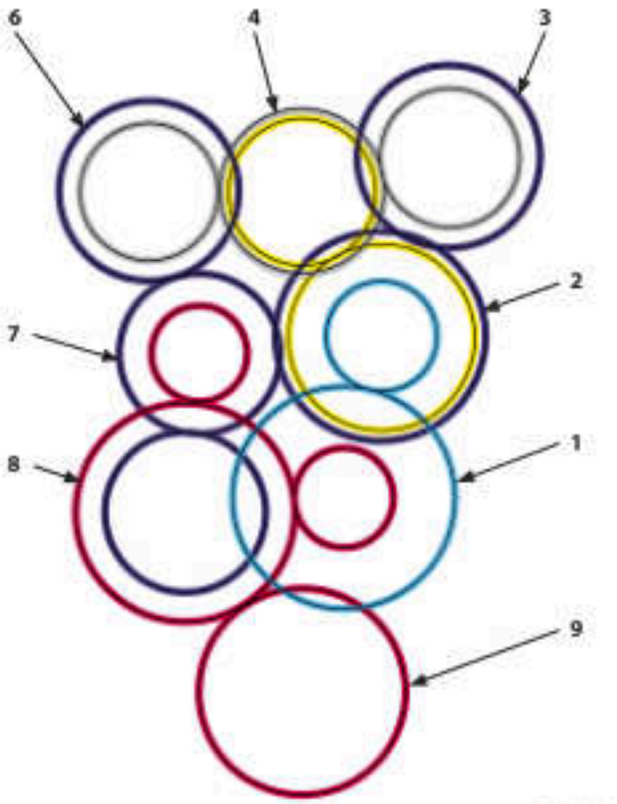
Note:
An edge on the root of the tooth is allowed, this is caused by the shot peening process (see example).



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Detail of Transmission Assembly (2)





T106954

T4GB-03-09-004

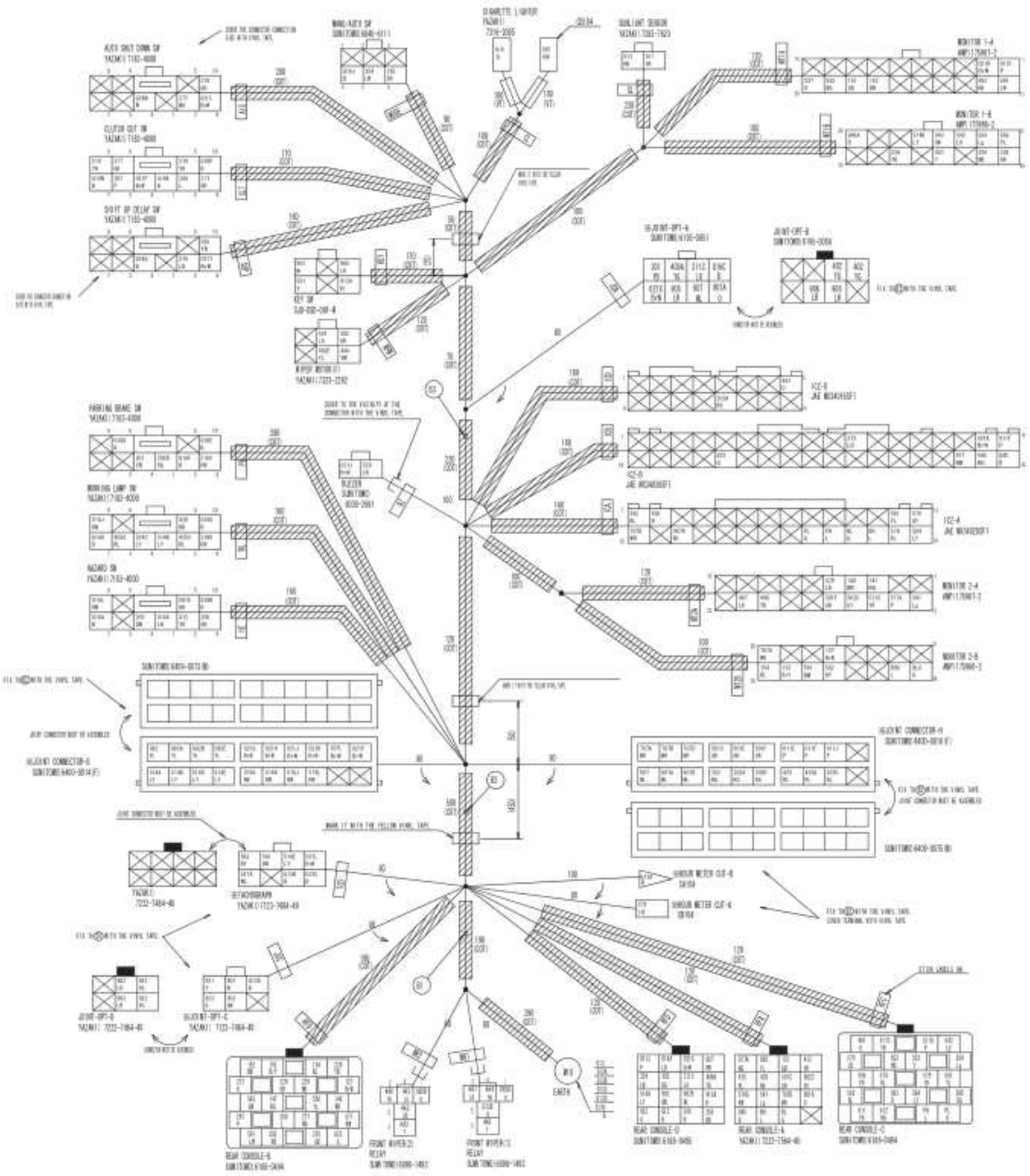
1- First Speed Clutch (K1)
2- Fast-Speed Forward Clutch (K4)
3- Reverse Clutch (KR)
4- Input Shaft (AN)
5- Hydraulic Pump Drive
6- Slow-Speed Forward Clutch (KV)
7- Second Speed Clutch (K2)
8- Third Speed Clutch (K3)
9- Output Shaft (AB)

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ZW180-5B FRONT CONSOLE HARNES

⚠CAUTION: Parts numbers on the drawing are provided only for reference purpose.
To order parts on the drawing, be sure to consult the Parts Catalog.

The Attached Diagram	Technical manual
SMCZ	MC (Main Controller)
T/M Controller	TCU
ICZ	Information Controller
MONITOR	Column Display Controller
A/C	Air Conditioner Controller



No.	SIZE	COLOR	TYPE	FROM	TO	
0101E	0.5	P	AVSS	JOINT CONNECTOR-H	MONITOR 1-A (1)	1
0101F	0.5	P	AVSS	JOINT CONNECTOR-H	ICZ-B (1)	2
0101J	0.75	P	AVSS	REAR CONSOLE-B	JOINT CONNECTOR-H	3
0104M	0.5	L-B	AVSS	REAR CONSOLE-B	HAZARD SW	4
0107M	0.5	W-G	AVSS	REAR CONSOLE-A	WASHER SW	5
0107N	0.5	Br-W	AVSS	REAR CONSOLE-B	JOINT CONNECTOR-G	6
0108H	0.5	Br-W	AVSS	JOINT CONNECTOR-G	MONITOR 1-A (2)	7
0201H	0.5	Br-W	AVSS	JOINT CONNECTOR-G	BUZZER (+)	8
0201M	0.5	Br-W	AVSS	JOINT CONNECTOR-G	ICZ-B (17)	9
0201L	0.5	Br-W	AVSS	JOINT CONNECTOR-G	HORNSWAPH	10
0201P	0.5	Br-W	AVSS	JOINT CONNECTOR-G	CLUTCH CUT SW	11
0201Q	0.5	Br-W	AVSS	ICZ-F	AUTO SHIFT DOWN SW	12
0201T	0.5	Br-W	AVSS	ICZ-F	SHIFT UP DELAY SW	13
0201R	0.5	Br-W	AVSS	ICZ-F	JOINT-OPT-A	14
0202	0.75	Y-L	AVSS	REAR CONSOLE-B	JOINT CONNECTOR-G	15
0202H	0.5	Y-L	AVSS	JOINT CONNECTOR-G	FROM WIPER 2 RELAY	16
0202R	0.5	Y-L	AVSS	JOINT CONNECTOR-G	FROM WIPER 2E RELAY	17
0202E	0.75	Y-L	AVSS	JOINT CONNECTOR-G	WIPER MOTOR (1)	18
0211	1.25	R-W	AVSS	REAR CONSOLE-B	CIGARETTE LIGHTER-B	19
0211	0.5	Br-W	AVSS	REAR CONSOLE-B	MONITOR 2-B (2)	20
0217	0.5	R-G	AVSS	MONITOR 2-A (2)	REAR CONSOLE-B	21
0218	0.5	W-R	AVSS	REAR CONSOLE-B	MONITOR 2-A (1)	22
0221	0.3	G-B	AVSS	MONITOR 1-A (19)	REAR CONSOLE-A	23
0223	0.3	Br-W	AVSS	MONITOR 1-A (7)	REAR CONSOLE-B	24
0224	0.5	Br-Y	AVSS	MONITOR 2-A (20)	REAR CONSOLE-B	25
0301	0.5	R-L	AVSS	REAR CONSOLE-B	MONITOR 2-B (20)	26
0301	0.5	Y-B	AVSS	REAR CONSOLE-B	JOINT-OPT-A	27
0302	0.5	R-G	AVSS	REAR CONSOLE-B	JOINT CONNECTOR-H	28
0302M	0.5	R-G	AVSS	JOINT CONNECTOR-H	ICZ-B (2)	29
0302B	0.5	R-G	AVSS	JOINT CONNECTOR-H	PARKING BRAKE SW	30
0303	0.3	G-B	AVSS	HAZARD SW	HAZARD SW	31
0310C	0.5	L-O	AVSS	REAR CONSOLE-B	JOINT-OPT-A	32
0311	0.5	G-R	AVSS	CLUTCH CUT SW	CLUTCH CUT SW	33
0312	0.5	Y-R	AVSS	CLUTCH CUT SW	CLUTCH CUT SW	34
0316	0.5	Y-B	AVSS	MONITOR 1-B (24)	REAR CONSOLE-B	35
0317	0.3	O	AVSS	MONITOR 1-B (2)	REAR CONSOLE-B	36
0318	0.3	G-R	AVSS	MONITOR 1-B (3)	REAR CONSOLE-B	37
0319	0.3	Br-W	AVSS	MONITOR 1-B (4)	REAR CONSOLE-B	38
0354	0.5	L-W	AVSS	REAR CONSOLE-B	WIPER MOTOR SW	39
0355	0.5	Br-W	AVSS	REAR CONSOLE-B	WIPER MOTOR SW	40
0401	0.5	P	AVSS	REAR CONSOLE-B	CLUTCH CUT SW	41
0402	0.5	L	AVSS	REAR CONSOLE-B	CLUTCH CUT SW	42
0410	0.5	L-B	AVSS	REAR CONSOLE-C	SHIFT UP DELAY SW	43
0413	0.5	L-B	AVSS	ICZ-B (11)	WIPER MOTOR CUT-B	44
0417	0.5	W-G	AVSS	REAR CONSOLE-B	AUTO SHIFT DOWN SW	45
0418	0.5	G-B	AVSS	AUTO SHIFT DOWN SW	REAR CONSOLE-B	46
0422	0.5	Y-G	AVSS	JOINT-OPT-B	JOINT-OPT-B	47
0426M	0.5	Y-G	AVSS	REAR CONSOLE-B	JOINT-OPT-A	48
0427	0.5	Y-R	AVSS	HAZARD SW	REAR CONSOLE-A	49
0428	0.5	R-L	AVSS	JOINT CONNECTOR-H	REAR CONSOLE-A	50
0428M	0.5	R-L	AVSS	WORKING LAMP SW	JOINT CONNECTOR-H	51
0428Q	0.5	R-L	AVSS	WORKING LAMP SW	JOINT CONNECTOR-H	52
0429	0.5	W-B	AVSS	WORKING LAMP SW	REAR CONSOLE-A	53
0441	0.75	L-G	AVSS	W.PUMP MOTOR(F) (-)	FROM WIPER 2 RELAY	54
0442	0.75	G-R	AVSS	W.PUMP MOTOR(F) (+)	FROM WIPER 2 RELAY	55
0443	0.75	Y	AVSS	FROM WIPER 2 RELAY	FROM WIPER 2E RELAY	56
0444	0.75	Y-W	AVSS	FROM WIPER 2 RELAY	WIPER MOTOR (1)	57
0447	0.5	L-W	AVSS	FROM WIPER 2 RELAY	MONITOR 2-A (13)	58
0448	0.5	Y-B	AVSS	FROM WIPER 2E RELAY	MONITOR 2-A (13)	59
0451	0.5	O	AVSS	REAR CONSOLE-C	ICZ-B (3)	60
0501C	0.3	O-R	AVSS	REAR CONSOLE-A	JOINT CONNECTOR-B	61
0501F	0.3	G-R	AVSS	JOINT CONNECTOR-B	HAZARD SW	62
0501R	0.3	G-R	AVSS	JOINT CONNECTOR-B	MONITOR 1-A (13)	63
0502C	0.3	G-Y	AVSS	REAR CONSOLE-A	MONITOR 1-A (12)	64
0511C	0.3	Y-W	AVSS	REAR CONSOLE-C	MONITOR 1-A (11)	65
0514A	0.5	L-Y	AVSS	REAR CONSOLE-B	JOINT CONNECTOR-G	66
0514B	0.5	L-Y	AVSS	JOINT CONNECTOR-G	WORKING LAMP SW	67
0514C	0.5	L-Y	AVSS	0.14B	WORKING LAMP SW	68
0514D	0.5	L-Y	AVSS	JOINT CONNECTOR-G	MONITOR 1-B (21)	69
0514E	0.5	L-Y	AVSS	JOINT CONNECTOR-G	TACHOGRAPH	70
0516A	0.5	W-W	AVSS	REAR CONSOLE-B	JOINT CONNECTOR-G	71
0516B	0.3	W-W	AVSS	JOINT CONNECTOR-G	PARKING BRAKE SW	72
0516C	0.3	W-W	AVSS	JOINT CONNECTOR-G	WORKING LAMP SW	73
0516D	0.3	W-W	AVSS	0.14J	WORKING LAMP SW	74
0516L	0.3	W-W	AVSS	JOINT CONNECTOR-G	HAZARD SW	75

No.	SIZE	COLOR	TYPE	FROM	TO	
0517A	0.3	P	AVSS	REAR CONSOLE-C	MONITOR 2-A (3)	76
0519	0.3	L-G	AVSS	BUZZER (-)	MONITOR 2-A (5)	77
0521	0.3	L-B	AVSS	MONITOR 2-A (15)	REAR CONSOLE-A	78
0521	0.3	L-O	AVSS	MONITOR 1-B (23)	REAR CONSOLE-C	79
0521	0.3	G-W	AVSS	MONITOR 1-B (16)	REAR CONSOLE-C	80
0522	0.3	W-G	AVSS	MONITOR 1-A (18)	REAR CONSOLE-C	81
0523	0.3	P	AVSS	MONITOR 1-B (22)	REAR CONSOLE-C	82
0524	0.3	L-W	AVSS	MONITOR 1-B (17)	REAR CONSOLE-C	83
0526	0.3	P-L	AVSS	MONITOR 1-B (23)	REAR CONSOLE-B	84
0601	0.5	B-W	AVSS	MONITOR 2-B (24)	HORNSWAPH	85
0602	0.5	B-Y	AVSS	MONITOR 2-B (23)	HORNSWAPH	86
0701	0.5	R-W	AVSS	122-B (30)	REAR CONSOLE-B	87
0702	0.5	R-L	AVSS	122-B (27)	REAR CONSOLE-C	88
0703	0.5	G-Y	AVSS	122-B (10)	REAR CONSOLE-C	89
0801	0.5	Y-L	AVSS	122-B (15)	REAR CONSOLE-C	90
0802	0.5	B-L	AVSS	REAR CONSOLE-C	122-A (1)	91
0803	0.5	W	AVSS	122-B (2)	REAR CONSOLE-C	92
0804	0.5	L-Y	AVSS	122-A (29)	REAR CONSOLE-C	93
0805	0.5	R-G	AVSS	122-B (35)	REAR CONSOLE-C	94
0901	0.5	L-W	AVSS	REAR CONSOLE-B	MONITOR 1-A (11)	95
0902	0.5	W-B	AVSS	REAR CONSOLE-A	MONITOR 1-A (12)	96
0903	0.5	Y-B	AVSS	SHIFT UP DELAY SW	REAR CONSOLE-C	97
0911	0.5	Y-B	AVSS	REAR CONSOLE-C	SIGNAL LIGHT SENSOR	98
0912	0.5	R-B	AVSS	SIGNAL LIGHT SENSOR	REAR CONSOLE-B	99
0913A	0.5	W-W	AVSS	JOINT CONNECTOR-H	MONITOR 2-B (25)	100
0913B	0.5	W-W	AVSS	REAR CONSOLE-A	JOINT CONNECTOR-H	101
0913C	0.5	W-W	AVSS	JOINT CONNECTOR-H	ICZ-A (15)	102
0914A	0.5	G	AVSS	REAR CONSOLE-A	JOINT-OPT-H	103
0914	0.5	W	AVSS	KEY SW (ACC)	JOINT-OPT-C	104
0915	0.5	L-W	AVSS	JOINT-OPT-C	JOINT-OPT-B	105
0916	0.5	B-W	AVSS	JOINT-OPT-C	REAR CONSOLE-D	106
0917	0.5	L-W	AVSS	KEY SW (START)	JOINT-OPT-H	107
0918	0.75	L-W	AVSS	JOINT-OPT-B	JOINT-OPT-H	108
0919	0.75	W-L	AVSS	JOINT-OPT-H	JOINT CONNECTOR-H	110
0920A	0.5	W-L	AVSS	JOINT CONNECTOR-H	ICZ-A (17)	111
0920B	0.75	W-L	AVSS	JOINT CONNECTOR-H	REAR CONSOLE-B	112
0921A	1.25	R	AVSS	REAR CONSOLE-B	KEY SW (B)	113
0921	1.25	F	AVSS	KEY SW (B)	JOINT-OPT-C	114
0922	1.25	F-G	AVSS	JOINT-OPT-C	JOINT-OPT-B	115
0923	1.25	G	AVSS	JOINT-OPT-C	REAR CONSOLE-B	116
0931	0.5	B	AVSS	STARTER	REAR CONSOLE-B	117
0931A	0.5	B	AVSS	HOUR METER CLST-B	STARTER	118
0931B	0.5	B	AVSS	TACHOGRAPH	STARTER	119
0931C	0.5	B	AVSS	TACHOGRAPH	STARTER	120
0931D	0.5	B	AVSS	JOINT-OPT-C	STARTER	121
0931E	0.5	B	AVSS	FUSE BOX(F1) RELAY	STARTER	122
0936	1.25	B	AVSS	CIGARETTE LIGHTER-B	REAR CONSOLE-B	123
0941A	0.5	B	AVSS	HAZARD SW	ECM	124
0941B	0.5	B	AVSS	WASHER SW	ECM	125
0941C	0.5	B	AVSS	JOINT-OPT-A	ECM	126
0941D	0.5	B	AVSS	PARKING BRAKE SW	ECM	127
0941E	0.5	B	AVSS	PARKING BRAKE SW	ECM	128
0941F	0.5	B	AVSS	PARKING BRAKE SW	ECM	129
0946A	0.5	B	AVSS	WORKING LAMP SW	ECM	130
0946B	0.5	B	AVSS	WORKING LAMP SW	ECM	131
0946J	0.5	B	AVSS	MANUAL VALVE SW	ECM	132
0946K	0.5	B	AVSS	SOLENOID CUT SW	ECM	133
0946M	0.5	B	AVSS	AUTO SHIFT DOWN SW	ECM	134
0946N	0.5	B	AVSS	SOLENOID CUT SW	ECM	135
0946P	0.5	B	AVSS	SOLENOID CUT SW	ECM	136
0946R	0.5	B	AVSS	SHIFT UP DELAY SW	ECM	137
0951	0.75	B	AVSS	122-B (34)	REAR CONSOLE-B	138
0951A	0.5	B	AVSS	MONITOR 1-B (25)	GND	139
0961	0.5	L	AVSS	122-A (24)	REAR CONSOLE-C	140
0962	0.5	G	AVSS	122-A (22)	REAR CONSOLE-C	141
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