PART NO. W4FC-E-00

HITACHI

Workshop Manual

ZW

140
150

Wheel Loader

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TO4FC-E
Technical Manual (Troubleshooting)	: Vol. No.TT4FC-E
Workshop Manual	: Vol. No.W4FC-E

MidWestTech | Hitachi ZW140, ZW150 Wheel Loader Workshop Service Manual | Publication W4FC-E-00

Order the manual at mid-west-tech.com >

TORQUE CHART

CAUTION: Use tools appropriate for the work to be done. The make-do tools or parts are dangerous. As the incorrect size tools are slipped or removed, personal injury may be caused.



SA-040

Bolt Types

Tighten the nuts or bolts correctly to the torque specifications.
As the different types and grades of bolt are used, use and tighten the correct bolts correctly when assembling the machine or components.

Specified Tightening Torque

Bolt Dia. (mm)	Hexagon Wrench 4.6						Wrench Size mm
	Standard torque			Allowable torque range			
	N·m	kgf·cm	lbf·ft	N·m	kgf·cm	lbf·ft	
4	1.15	11.7	0.8	0.92 to 1.38	9.4 to 14.1	0.7 to 1	7
5	2.36	24.1	1.7	1.89 to 2.82	19.3 to 28.8	1.4 to 2.1	8
6	3.98	40.6	2.9	3.20 to 4.79	32.6 to 48.8	2.4 to 3.5	10
8	9.81	100	7.2	7.84 to 11.7	79.9 to 119	5.8 to 8.6	13
10	19.5	199	14.5	15.6 to 23.4	159 to 239	11.5 to 17	17
12	34.2	349	25	27.5 to 41.1	280 to 419	20 to 30.5	19
14	55	561	41	43.9 to 65.9	448 to 672	32.5 to 49	22
16	86.9	886	64	69.5 to 104	709 to 1060	51 to 77	24
18	118	1200	87	94.6 to 142	965 to 1450	70 to 105	27
20	171	1740	126	136. to 204	1390 to 2080	100 to 150	30
22	234	2390	175	187 to 281	1910 to 2870	138 to 205	32
24	293	2990	215	234 to 352	2390 to 3590	170 to 260	36
27	436	4450	320	349 to 524	3560 to 5340	260 to 390	41
30	588	6000	430	471 to 706	4800 to 7200	350 to 520	46
33	810	8260	600	648 to 972	6610 to 9910	480 to 720	50
36	1030	10500	760	828 to 1250	8440 to 1270	610 to 920	55
39	1350	13800	1000	1080 to 1620	11000 to 16500	800 to 1200	60

MidWestTech | Hitachi ZW140, ZW150 Wheel Loader Workshop Service Manual | Pub... Order the manual at mid-west-tech.com >

Bolt Dia. (mm)	Hexagon Wrench						Wrench Size mm
	8.8 M4GB-07-122						
	Standard torque			Allowable torque range			
	N·m	kgf·cm	lbf·ft	N·m	kgf·cm	lbf·ft	
4	3.06	31.2	2.3	2.45 to 3.67	25.0 to 37.4	1.8 to 2.7	7
5	6.30	64.2	4.6	5.03 to 7.55	51.3 to 77.0	3.7 to 5.6	8
6	10.6	108	7.8	8.50 to 12.7	86.7 to 130	6.3 to 9.4	10
8	26.1	266	19	20.9 to 31.0	213 to 319	15.5 to 23	13
10	52.1	531	38	41.6 to 62.5	424 to 638	31 to 46	17
12	91.2	930	67	73.1 to 109	745 to 1110	54 to 80	19
14	146	1490	108	117 to 177	1190 to 1800	86 to 131	22
16	232	2370	170	185 to 279	1890 to 2840	136 to 205	24
18	315	3210	230	252 to 379	2570 to 3860	185 to 280	27
20	452	4610	330	362 to 543	3690 to 5540	265 to 400	30
22	624	6360	460	499 to 749	5090 to 7640	370 to 550	32
24	782	7970	580	626 to 938	6380 to 9560	460 to 690	36
27	1160	11800	860	931 to 1400	9490 to 14300	690 to 1030	41
30	1570	16000	1160	1260 to 1880	12800 to 19200	930 to 1390	46
33	2160	22000	1590	1730 to 2590	17600 to 26400	1280 to 1910	50
36	2770	28200	2040	2210 to 3310	22500 to 33800	1630 to 2440	55
39	3600	36700	2660	2880 to 4320	29400 to 44100	2120 to 3190	60

MidWestTech | Hitachi ZW140, ZW150 Wheel Loader Workshop Service Manual | Pub... Order the manual at mid-west-tech.com >

Bolt Dia. (mm)	Hexagon Wrench 10.9 M4GB-07-123						Wrench Size mm
	Standard torque			Allowable torque range			
	N·m	kgf·cm	lbf·ft	N·m	kgf·cm	lbf·ft	
4	4.49	45.8	3.3	3.60 to 5.39	36.7 to 55.0	2.7 to 4	7
5	9.24	94.2	6.8	7.40 to 11.1	75.5 to 113	5.5 to 8.2	8
6	15.6	159	11.5	12.6 to 18.7	128 to 191	9.3 to 13.5	10
8	38.3	391	28	30.7 to 46.0	313 to 469	22.5 to 34	13
10	76.5	780	56	61.2 to 91.8	624 to 936	45 to 68	17
12	133	1360	98	108 to 161	1100 to 1640	80 to 119	19
14	216	2200	159	173 to 258	1760 to 2630	128 to 190	22
16	341	3480	250	272 to 409	2770 to 4170	200 to 300	24
18	463	4720	340	370 to555	3770 to 5660	270 to 410	27
20	665	6780	490	534 to 797	5440 to 8130	390 to 590	30
22	918	9360	680	734 to 1100	7480 to 11200	540 to 810	32
24	1150	11700	850	919 to 1380	9370 to 14100	680 to 1020	36
27	1720	17500	1270	1370 to 2050	14000 to 20900	1010 to 1510	41
30	2300	23500	1700	1840 to 2770	18800 to 28200	1360 to 2040	46
33	3170	32300	2340	2540 to 3810	25900 to 38800	1870 to 2810	50
36	4060	41400	2990	3240 to 4860	33000 to 49600	2390 to 3580	55
39	5290	53900	3900	4240 to 6350	43200 to 64800	3130 to 4680	60

MidWestTech | Hitachi ZW140, ZW150 Wheel Loader Workshop Service Manual | Pub... Order the manual at mid-west-tech.com >

Assembly of Joy-Stick Type Pilot Valve for Additional Circuit (Optional)

IMPORTANT: The pilot valve is susceptible hydraulic component to contamination. Keep the parts clean when assembling.

NOTE: The table below shows the relation between each port and component. Do not confuse them when assembling.

Port No.	Spool (19)	Shim (2)	Pushers A, B (9, 10)
1	Same to the original one	Same to the original one	Outer grooves (3 used)
2			Without outer groove
3			Outer grooves (3 used)
4			Without outer groove

Port No.	Return Springs (5, 6)	Balance Springs A, B (3, 4)
1	Short	Short
2	Long	Long
3	Short	Short
4	Long	Long

1. Check the port hole number and insert spools (19) (4 used) into the original port. Install the thinner end of spool (19) into the port hole on casing (18) while slowly rotating.

NOTE: Spool (19) has been selected to match the port hole. Spool (19) and casing (18) must be replaced as an assembly.

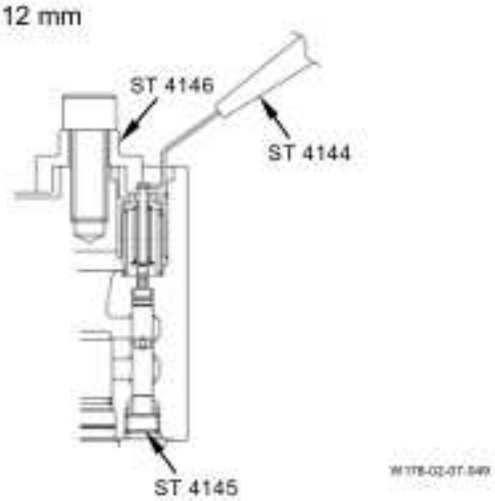
2. Install the special tool (ST 4145) to the port hole on casing (18) in order to prevent spool (19) (4 used) from lowering when pushing spring (3, 4, 5, and 6) (2 used for each).
   : 6 mm

IMPORTANT: Refer to the table on the left in order to carry out assembling correctly.

3. Install spacers (1) (4 used), shim (2) and balance springs (3, 4) (2 used for each) to spools (19) (4 used). Install return springs (5, 6) (2 used for each) to casing (18).

4. Install spring guides (7) (4 used) to return springs (5, 6) (2 used for each) with the protrusion facing upward.

5. Install the special tool (ST 4146) to the pusher (9, 10) hole on casing (18). Push the special tool (ST 4146) and compress the spring. Tighten the special tool (ST 4146) by using a bolt (M14, Pitch 2.0 mm).
   : 12 mm



6. Install retaining ring (8) to the ring holder (ST 4144).

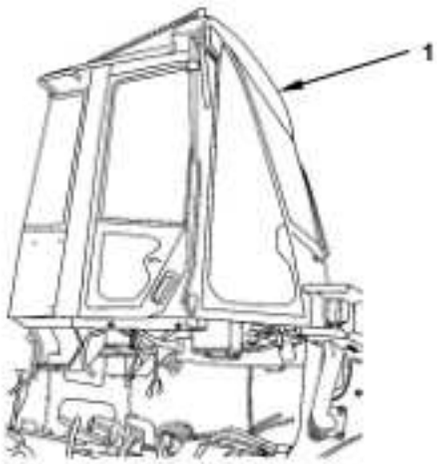
MidWestTech | Hitachi ZW140, ZW150 Wheel Loader Workshop Service Manual | Pub... Order the manual at mid-west-tech.com >

REMOVAL AND INSTALLATION OF TRANSMISSION

Removal

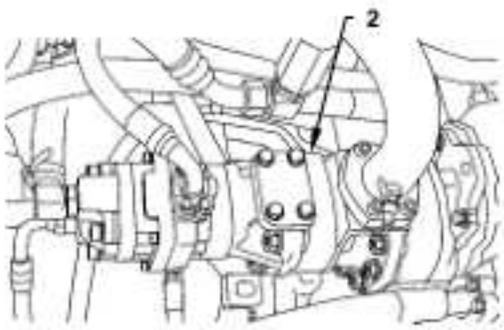
CAUTION: Cab (1) weight: 960 kg (2120 lb)

1. Remove cab (1). (Refer to REMOVAL AND INSTALLATION OF CAB on W2-1-1.)



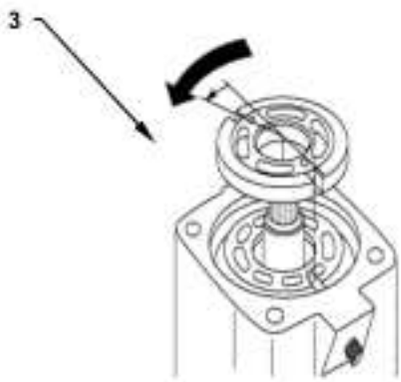
CAUTION: 4-unit pump (2) weight: 31 kg (68 lb)

2. Remove 4-unit pump (2). (Refer to REMOVAL AND INSTALLATION OF 4-UNIT PUMP on W2-5-1.)



CAUTION: HST pump (3) assembly weight: 80 kg (180 lb)

3. Remove the HST pump (3) assembly. (Refer to REMOVAL AND INSTALLATION OF HST PUMP on W3-2-1.)



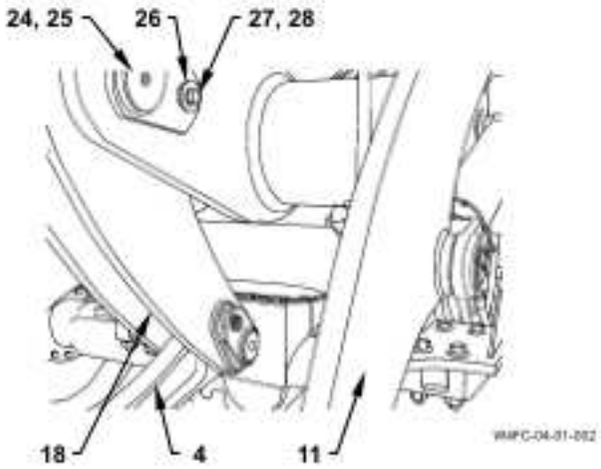
MidWestTech | Hitachi ZW140, ZW150 Wheel Loader Workshop Service Manual | Pub... Order the manual at mid-west-tech.com >

CAUTION: Bell crank (18) weight:
ZW140: 120 kg (270 lb)
ZW150: 170 kg (380 lb)

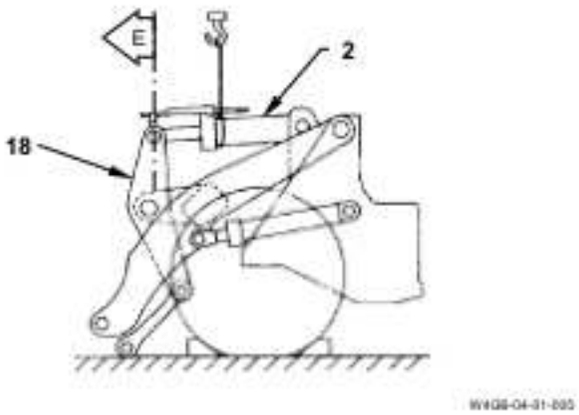
CAUTION: Bucket link (4) weight:
ZW140: 40 kg (88 lb)
ZW150: 50 kg (110 lb)

8. Install spacers (25) (2 used) to the pin (24) hole on bell crank (18).

9. Install bell crank (18) to lift arm (11) with pin (24), washer (26), spring washer (28), and bolt (27).
   : 24 mm
   : 86.9 N·m (9 kgf·m, 64 lbf·ft)

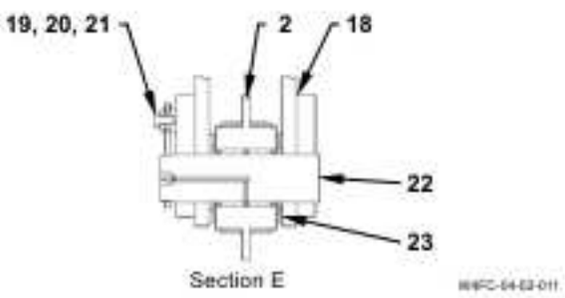


10. Attach a nylon sling onto bucket cylinder (2). Hoist bucket cylinder (2). Fit bucket cylinder (2) with the mounting hole on bell crank (18).



11. Install spacers (23) (2 used) to the pin (22) hole on bucket cylinder (2).

12. Install bucket cylinder (2) to bell crank (18) with pin (22), washer (21), spring washer (20), and bolt (19).
   : 17 mm
   : 50 N·m (5 kgf·m, 37 lbf·ft)



MidWestTech | Hitachi ZW140, ZW150 Wheel Loader Workshop Service Manual | Pub... Order the manual at mid-west-tech.com >