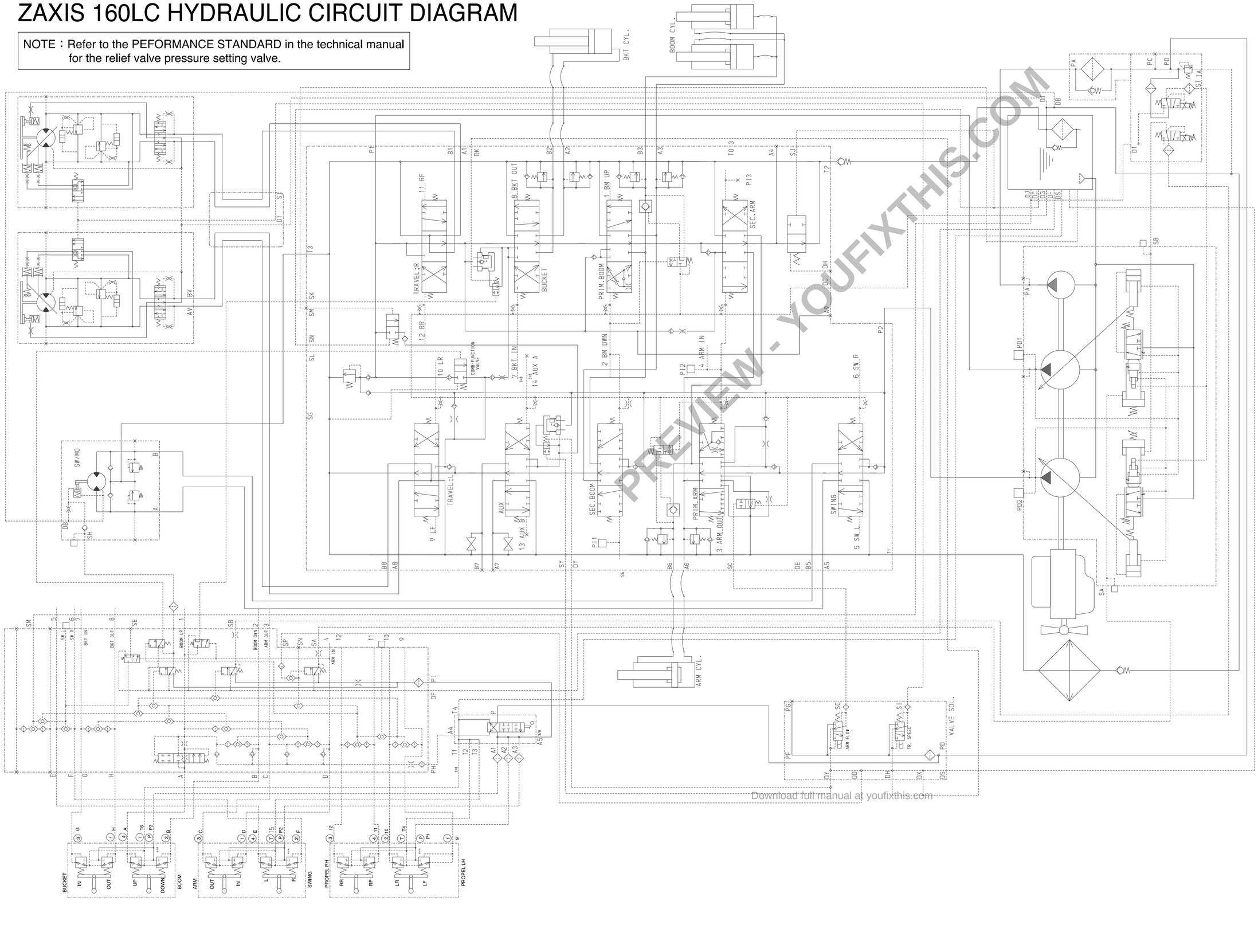
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ZAXIS 160LC HYDRAULIC CIRCUIT DIAGRAM

NOTE : Refer to the PEFORMANCE STANDARD in the technical manual for the relief valve pressure setting valve.



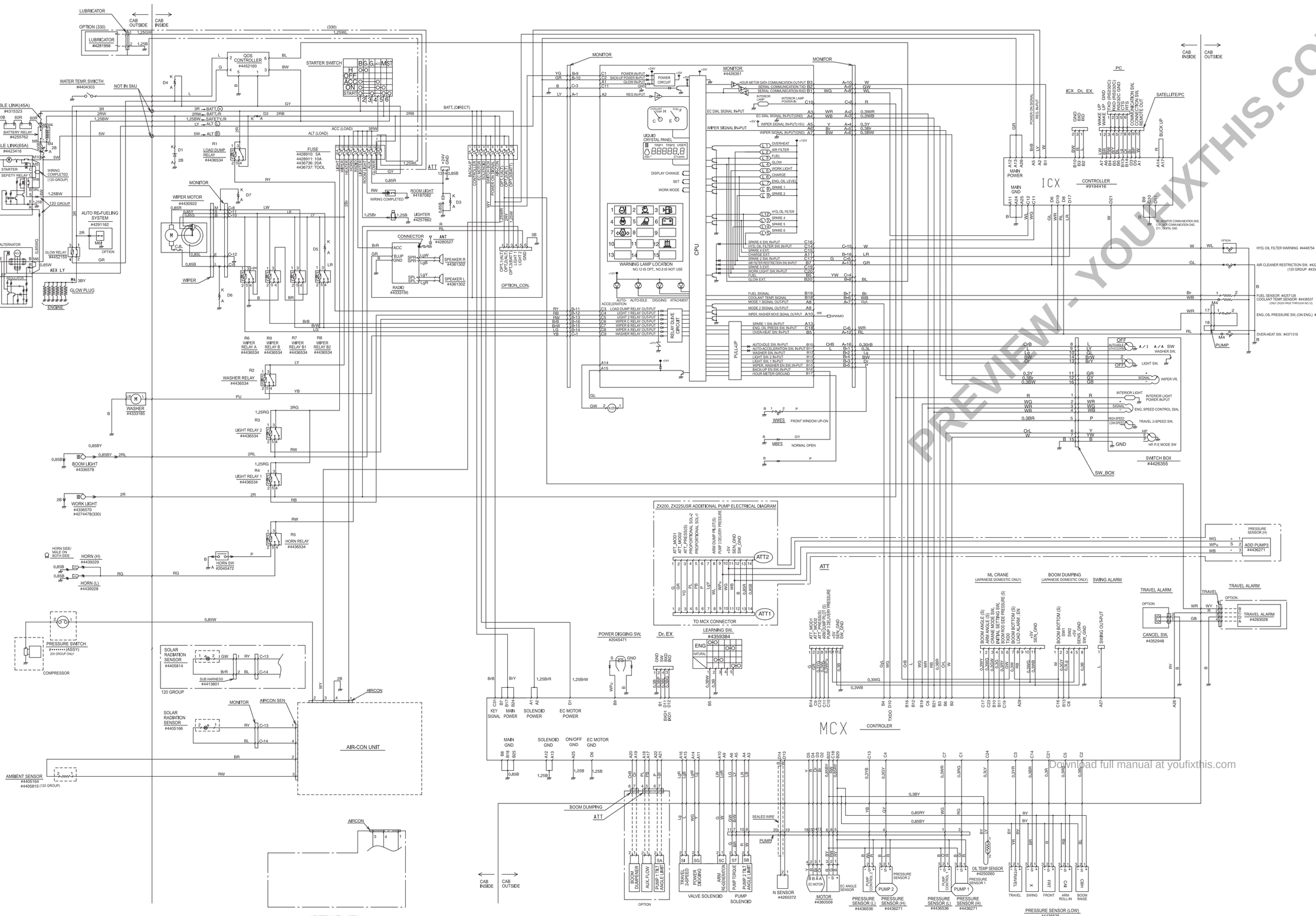
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ZAXIS 160LC/180LC/180LCN ELECTRICAL CIRCUIT DIAGRAM

⚠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.

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TIGHTENING TORQUE SPECIFICATION

No.	Descriptions		Bolt Dia mm	Q'ty	Wrench Size (mm)	Torque N·m	Torque (kgf·m)	Torque (lbf·ft)
1	Engine cushion rubber mounting nut		14	4	22	140	(14.3)	(103)
	Engine cushion rubber mounting bolt		16	2	24	235	(24)	(175)
2	Engine bracket mounting bolt		10	7	17	50	(5.1)	(37)
	Engine bracket mounting nut		10	1	17	50	(5.1)	(37)
3	Hydraulic oil tank mounting bolt		16	4	24	210	(21.5)	(155)
4	Fuel tank mounting bolt		16	4	24	210	(21.5)	(155)
5	ORS fittings for hydraulic hoses and piping		$1-\frac{3}{16}$–12UNF $1-\frac{7}{16}$–12UNF		17 19 22 27 32 36 41	24.5 30 40 95 140 175 210	(2.5) (3.1) (4.1) (9.7) (14.3) (18) (21.5)	(18) (22) (30) (70) (105) (130) (155)
6	Pump mounting bolt		10	8	17	50	(5.1)	(37)
7	Control valve mounting bolt		14	6	22	140	(14)	(103)
8	Control valve bracket mounting bolt		16	4	24	210	(21.5)	(155)
9	Swing device mounting bolt		20	12	30	500	(51)	(370)
10	Swing motor mounting bolt		12	8	10	90	(9.2)	(3.7)
11	Battery mounting nut		10	2	17	20	(2.0)	(15)
12	Cab mounting nut		16	4	24	210	(21.5)	(155)
13	Swing bearing mounting bolt to upperstructure		20	32	30	510	(52)	(380)
	Swing bearing mounting bolt to undercarriage		20	36	30	490	(50)	(360)
14	Travel device mounting bolt	ZAXIS160LC	16	32	24	305	(31)	(225)
		ZAXIS180LC, 180LCN	20	28	30	630	(64)	(462)
	Travel reduction device cover mounting bolt		14	12	22	175	(18)	(130)
15	Sprocket mounting bolt		20	32	30	460	(47)	(340)
16	Upper roller mounting bolt		16	16	24	265	(27)	(195)
17	Lower roller mounting bolt		18	56	27	460	(47)	(340)
18	Track shoe bolt	ZAXIS160LC	18	344	27	560	(57)	(410)
		ZAXIS180LC, 180LCN	18	368	27	560	(57)	(410)
19	Track guard mounting bolt		18	8	27	500	(51)	(370)
20	Cover mounting bolt		6 10 12	– – –	10 17 19	10 50 90	(1) (5.1) (9.2)	(7.4) (37) (66)
21	Flexible master coupling of piping		8	4 pairs	13	10.3 to 12.4	(1.05 to 1.26)	(7.59 to 9.11)
22	Coupling and T-bolt clamp of low pressure piping			–	11	6.0	(0.6)	(4.3)

NOTE: 1. Apply lubricant (e.g. white zinc B dissolved into spindle oil) to bolts and nuts to reduce friction coefficient of them.
2. Make sure bolt and nut threads are clean before installing.
3. Apply LOCTITE to threads before installing and tightening swing bearing mounting bolts and lower roller mounting bolts.

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NOTE: 1 mm=0.03937 in

PERFORMANCE TEST DESIGNATION	(Performance Standard)	Remarks	Reference Page
TRAVEL SPEED sec/20 m			T4-4-1
Fast Speed	14.2±1.0	Travel speed isn't shifted to fast speed mode when one sidetrack is jacked up.	
Slow Speed	(23.8±2.0)		
TRACK REVOLUTION SPEED sec/3 rev			T4-4-2
Fast Speed	(16.1±1.0)		
Slow Speed	28.5±2.0		
MISTRACK mm/20 m (With fast and slow travel speed modes)	200 or less		T4-4-3
TRAVEL MOTOR LEAKAGE mm/5 min	0		T4-4-4
SWING SPEED sec/3 rev	13.3±1.0	Bucket empty	T4-4-5
SWING FUNCTION DRIFT CHECK mm /180°	1260 or less	Bucket empty	T4-4-6
SWING MOTOR LEAKAGE mm/5 min	0	Bucket loaded	T4-4-8
MAXIMUM SWINGABLE SLANT ANGLE deg.	22° or possibly more	Bucket loaded	T4-4-10
SWING BEARING PLAY mm	0.2 to 1.25	Allowable limit: 2.0 to 3.05	T4-4-12
HYDRAULIC CYLINDER CYCLE TIME sec		2.58 m arm 0.60 m^3 (PCSA heaped) bucket, bucket empty	T4-4-14
Boom Raise	3.0±0.3		
Boom Lower	2.3±0.3		
Arm Roll-In	3.8±0.3		
Arm Roll-Out	2.8±0.3		
Bucket Roll-In	3.5±0.3		
Bucket Roll-Out	2.0±0.3		
DIG FUNCTION DRIFT CHECK mm/5 min		2.58 m arm 0.60 m^3 (PCSA heaped) bucket	T4-4-16
Boom Cylinder (Maximum Reach Position) (Arm Roll-In position)	 15 or less 5 or less	 Bucket loaded Bucket empty	
Arm Cylinder (Maximum Reach Position) (Arm Roll-In position)	 20 or less 15 or less	 Bucket loaded Bucket empty	
Bucket Cylinder (Maximum Reach Position) (Arm Roll-In position)	 20 or less 5 or less	 Bucket loaded Bucket empty	
Bucket Bottom (Maximum Reach Position) (Arm Roll-In position)	 150 or less 110 or less	 Bucket loaded Bucket empty	

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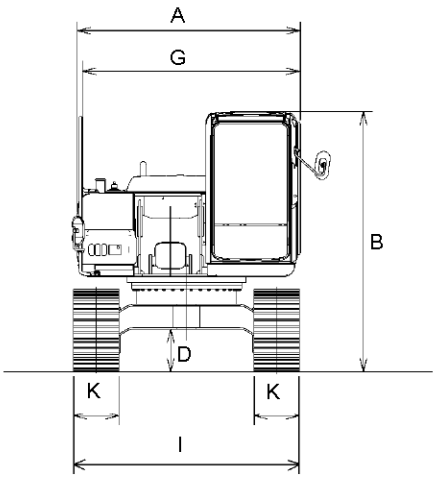
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Major Category	Name of Part	Inspection Item		Nominal Dimension	Assembly Standard Value	Limit	Repair Procedure	Comments
Main Operating Parts	Pistons	Clearance with cylinder: grade position from upper face 82 mm (3.228 in)			Clearance with major axis 0.071 – 0.101 (0.0028 – 0.0040)			
		Piston pin and piston pin hole clearance			0.010 – 0.023 (0.00039 – 0.0009)	0.05 (0.00197)	Replace piston or piston pin	
		Pin wear			35.000 – 35.005 (1.3780 – 1.3781)	34.95 (1.3760)	Replace piston pin	
	Piston Ring	Piston Ring Gap	No. 1 compression ring		0.35 – 0.50 (0.014 – 0.020)	1.5 (0.059)	Replace rings when performing engine disassembly and repair	Gauge inner standard diameter 105 (4.134)
			No. 2 compression ring		0.60 – 0.75 (0.0236 – 0.0295)			
			No. 3 compression ring		0.60 – 0.75 (0.0236 – 0.0295)			
			Oil ring		0.30 – 0.50 (0.014 – 0.020)			
		Tension N (kgf/lb)	No. 1 compression ring		20.4 – 30.6 (2.08 – 3.12/ 4.59 – 6.88)	9.8 (1.0/2.2)	Replace	Measure with ring compressed to standard ring gap.
			No. 2 compression ring		14.1 – 21.2 (1.44 – 2.16/ 3.17 – 4.76)	4.9 (0.5/1.1)		
			No. 3 compression ring		14.1 – 21.2 (1.44 – 2.16/ 3.17 – 4.76)	4.9 (0.5/1.1)		
			Oil ring		36.3 – 55.9 (3.7 – 5.7/ 8.16 – 12.6	31 (3.2/7.05)	Replace	Measure with expander attached

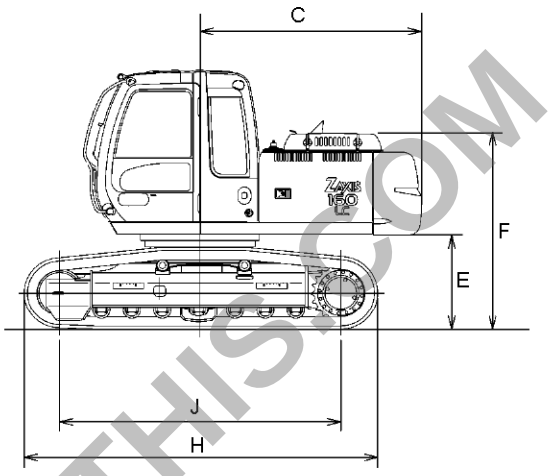
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SPECIFICATION

ZAXIS160LC,180LC,180LCN



T1F1-01-01-001



M1F1-12-002

Model		Std.		
		ZAXIS160LC Hydraulic Excavator	ZAXIS180LC Hydraulic Excavator	ZAXIS180LCN Hydraulic Excavator
Type of Front-End Attachment		2.58 m (8 ft 6 in) Arm	2.70 m (8 ft 10 in) Arm	
Bucket Capacity (Heaped)	m^3 (yd^3)	PCSA 0.60 m^3 (0.80 yd^3), CECE 0.55 m^3	PCSA 0.70 m^3 (0.92 yd^3), CECE 0.60 m^3	
Operating Weight	kg (lb)	15600 (34400)	17800 (39200)	17500 (38300)
Basic Machine Weight	kg (lb)	12100 (26700)	13800 (30400)	13500 (29800)
Engine		ISUZU AA-4BG1TC 74 kW (100 PS)/1950 min^{-1} (rpm) ✷81 kW (110 PS)/2150 min^{-1} (rpm)	ISUZU AA-4BG1TC 87.4 kW (118.8 PS)/2000 min^{-1} (rpm) ✷90.2 kW (123 PS)/2200 min^{-1} (rpm)	
A : Overall Width (Excluding Rearview Mirrors)	mm (ft·in)	2500 (8′ 2″)	2590 (8′ 6″)	
B : Cab Height	mm (ft·in)	2880 (9′ 5″)	2880 (9′ 5″)	
C : Rear End Swing Radius	mm (ft·in)	2440 (8′ 0″)	2440 (8′ 0″)	
D : Minimum Ground Clearance	mm (ft·in)	* 470 (1′ 7″)	* 450 (1′ 6″)	
E : Counterweight Clearance	mm (ft·in)	* 1000 (3′ 3″)	* 1000 (3′ 3″)	
F : Engine Cover Height	mm (ft·in)	* 2141 (7′ 0″)	* 2141 (7′ 0″)	
G : Overall Width of Upperstructure	mm (ft·in)	2460 (8′ 1″)	2460 (8′ 1″)	
H : Undercarriage Length	mm (ft·in)	3920 (12′ 10″)	4170 (13′ 8″)	
I : Undercarriage Width	mm (ft·in)	2490 (8′ 2″)	2800 (9′ 2″)	2490 (8′ 2″)
J : Sprocket Center to Idle Center	mm (ft·in)	3100 (10′ 2″)	3370 (11′ 1″)	
K : Track Shoe Width	mm (ft·in)	500 (Grouser Shoe) (20″)	600 (Grouser Shoe) (24″)	500 (Grouser Shoe) (20″)
Ground Pressure	kPa (kgf/cm^2) (psi)	45 (0.46) (6.5)	39 (0.40) (5.7)	47 (0.48) (6.8)
Swing Speed	min^{-1} (rpm)	13.6 (13.6)	12.9 (12.9)	
Travel Speed (fast/slow)	km/h (mph)	5.3/3.1 (3.3/1.9)	5.0/3.0 (3.1/1.9)	
Gradeability	degree (%)	35 (70)	35 (70)	

NOTE: ✷ *H/P mode*

* *The dimensions do not include the height of the shoe lug.*

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