An Oshkosh Corporation Company

Service and Maintenance Manual

Model

1230ES

3121222

January 31, 2019 - Rev T

ANSI

CE

AS/NZS

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Table 1-1. Operating Specifications (Continued)

Description	Model 1230ES
Maximum Horizontal Manual Side Force: (Platform fully extended with Maximum load)	ANSI/CSA - 100 lb force - (445 N) CE/AUS - Indoor Only - 45 lb. force - 200 N AUS w/CWT - Indoor - 89 lb. force - 400 N AUS w/CWT - Outdoor - 45 lb. force - 200 N
Maximum Hydraulic System Pressure Setting	1600 psi (110 bar) - Lift 1250 psi (86 bar) - Steer
Electrical System Voltage (DC)	24V

1.1 OPERATING SPECIFICATIONS

Platform Capacities

Table 1-2. Platform Capacities

MACHINE MODEL	SPECIFICATION	MAXIMUM PLATFORM CAPACITY	MAXIMUM PERSONS ALLOWED IN PLATFORM	MAX. SIDE FORCE (Platform Fully Extended @ Max. Capacity)	MAXIMUM OPERATING WIND SPEED
1230ES	ANSI/CSA	500 lb. (227 Kg)	Indoor/Outdoor - 2 Persons	100 lb. (445 N)	28 mph (12.5 m/s)
	CE/AUS (Indoor Only)	230 Kg	Indoor - 1 Person + 150 Kg	200 N	0 m/s
	AUS w/CWT	500 lb. (230 Kg)	Indoor - 2 Persons + 70 Kg	400 N	0 m/s
		500 lb. (230 Kg)	Outdoor - 1 Person + 150 Kg	200 N	28 mph (12.5 m/s)

Dimensional Data

Table 1-3. Dimensions

Description	Model 1230ES	
Platform Height - Elevated (Platform base to ground)	12 ft.	3.66m
Platform Height - Stowed (Platform base to ground)	22 in.	56cm
Working Height	18 ft.	5.48m
Overall Stowed Machine Height	65.39 in. (166 cm) 68.6 in. (174.2 cm) - AUS w/CWT	
Rail Height (From platform floor)	43.8 in.	111.2cm
Overall Machine Width	30 in.	76cm
Overall Machine Length	53.5 in.	1.36m
Platform Size - Length	49.4 in.	1.26m
Platform Size - Width	27 in.	69cm
Wheelbase	40.75 in.	103.5cm

Tires

Table 1-4. Tire Specifications

Description	Model 1230ES
Size	12.72 in. x 3.937 in. (323mm x 100mm)
Max Tire Load	2500 lb. (1134 kg)
Wheel Bolt Torque	120 ft lb (163 Nm)

Batteries

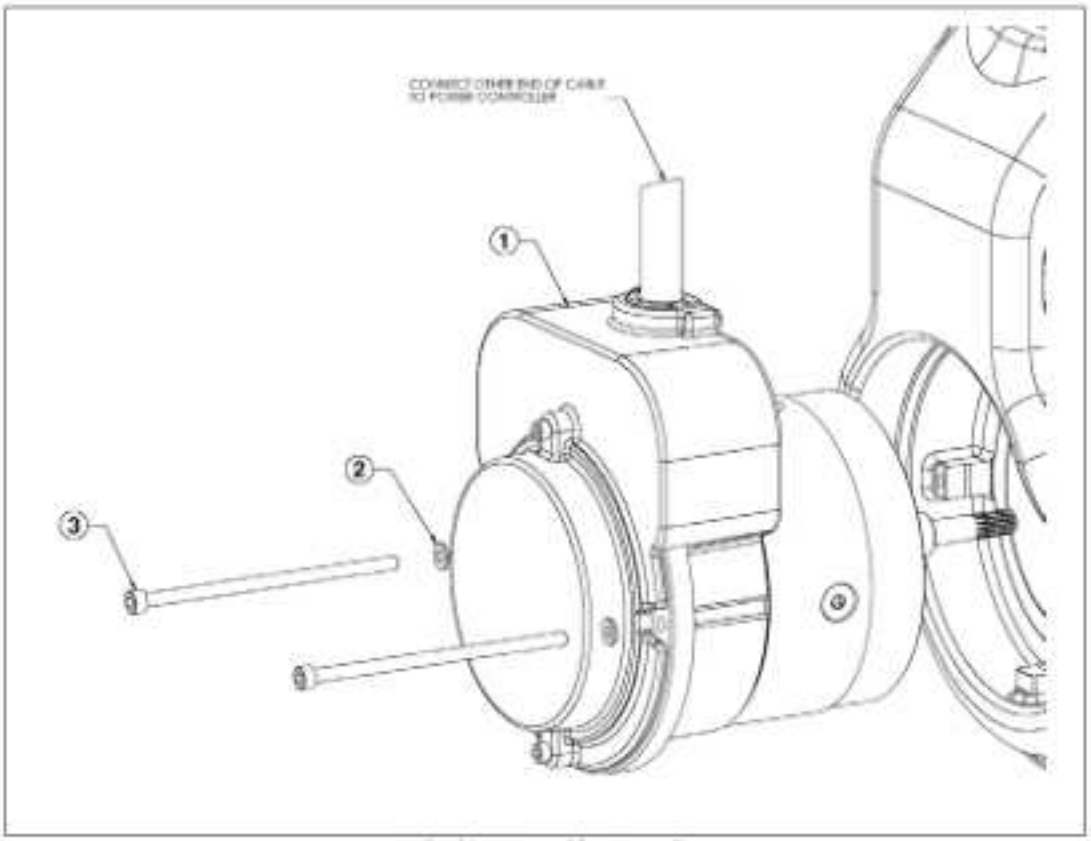
Table 1-5. Battery Specifications

Description	Model 1230ES
Voltage (24V System - Series)	6 V per battery (deep cycle)
Amp Hour - (Std Battery)	220 Amp Hour @ 20 HR. Rate
Reserve Capacity - (Std Battery)	447 Minutes
Amp Hour - (AGM Battery)	213 Amp Hour @ 20 HR. Rate
Reserve Capacity - (AGM Battery)	492 Minutes

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The wheel drive assembly consists of an 24V DC electric motor driving a 45.13:1 ratio gear box, the assembly also included a friction disk parking brake assembly. This brake assembly is mounted on the end of the drive motor assembly.

1. Elevate the machine enough to remove the drive wheel(s).
2. Before disconnecting machine power at the batteries, power up the machine and turn the steering to expose the back of the drive motor to be removed.
3. Now disconnect machine power at the quick-disconnect (short cable) on the machine right side batteries.
4. Remove the drive wheel mounting lugs and remove the wheel(s).
5. Disconnect the power/brake harness to the drive motor to be removed at the power module.
6. Mark the position of and remove the tie straps holding the drive motor power harness to the steering linkage. Pull the harness throught the base frame until free.
7. Before removing the drive motor from the gear box, remove the pipe plugs on the gear box cover (wheel side) and drain the oil from the gear box.
8. Remove the two (2) long cap screws attaching the drive motor to the spindle and gear box.
9. Carefully slide the drive motor assembly out of the gear box/spindle assembly and place on workbench.



Wheel Drive Assembly - Removal

1. Drive Motor Assembly
2. Mounting Bolt Washers
3. Drive Motor Mounting Bolts

NOTE: *Removal same for left and right drive motor.*

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9.10 ELECTRICAL LAYOUT AND SCHEMATICS

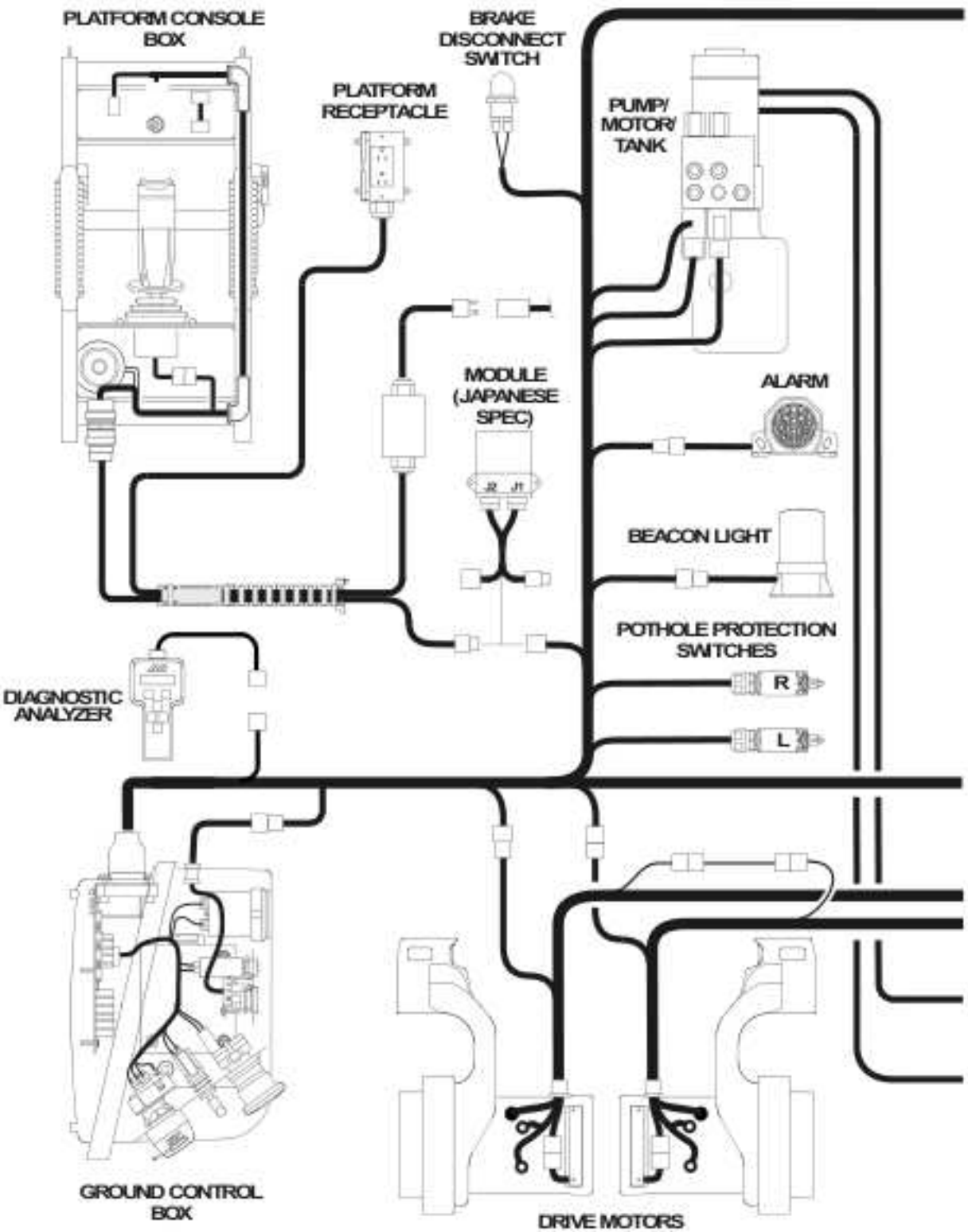


Figure 9-14. 1230ES - Overview of Electrical System Components. (1600346 Drive Module)

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5.6 GROUND CONTROL MODULE - SERVICE PROCEDURE

NOTE: *The Ground Control Station supplied with the ZAPI Power Module P/N-1001092456 (production start mid-year 2010) does not require use of the printed circuit board inside the ground control module.*
However box installation and removal instructions shown are exactly the same as the ground control box which does contain a printed circuit board and is used with previous machines supplied with the SEVCON Power Module.

Ground Control Station

(See Figure 5-6., Ground Control Station Assembly)

NOTICE

DO NOT ATTEMPT TO DISASSEMBLE THE GROUND CONTROL MODULE IF MACHINE IS STILL UNDER WARRANTY. OPENING THE GROUND CONTROL MODULE WHILE THE MACHINE IS UNDER WARRANTY WILL VOID THE WARRANTY. IF UNDER WARRANTY REQUEST A REPLACEMENT MODULE FROM THE FACTORY.

The Ground Control Module allows for field replacement of components internal to the module.

Printed Circuit Board (PCB) Replacement

NOTE: *Anytime the ground control box is removed the tilt sensor must be recalibrated. Refer to Section 7.4, TILT SENSOR CALIBRATION to recalibrate the tilt.*



1. Remove the three bolts at the bottom of the ground control station.



2. Remove the four screws where the control cable enters into the control box.
3. Remove plug and place control box face down on a suitable work bench..



4. Remove the six screws at the back of the ground control and separate.
5. Pull the pin connectors from the printed circuit board.



6. Remove the two screws inside the control box that affix the printed circuit board to the control box.
7. Replace the printed circuit board and reassemble the ground control box.

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Values for Magni Coating Fasteners (Ref 4150701)

Size	TPI	Bolt Dia	Tensile Stress Area	Clamp Load	Torque (Dry) K=0.17	Torque (Loctite® 242™ or Vibra-TITE™ 111 or 140) K=0.16	Torque (Loctite® 262™ or Vibra-TITE™ 131) K=0.15	Clamp Load	Torque (Dry or Loctite® 263) K=0.17	Torque (Loctite® 242™ or 271™ OR Vibra-TITE™ 111 or 140) K=.16	Torque (Loctite® 262™ or Vibra-TITE™ 131) K=0.15
		in.	Sq in	LB	IN-LB [N-m]	IN-LB [N-m]	IN-LB [N-m]	LB	IN-LB [N-m]	IN-LB [N-m]	IN-LB [N-m]
#	80	0.1120	0.00604	280	7 0.8						
	48	0.1120	0.00661	430	8 0.9						
6	32	0.1380	0.00909	590	14 1.5						
	40	0.1380	0.01015	610	14 1.6						
8	32	0.1640	0.01400	900	25 2.8						
	36	0.1640	0.01474	940	26 2.9			1335	37 4		
10	24	0.1900	0.01750	1120	36 4.1			1560	51 6		
	32	0.1900	0.02000	1285	42 4.7			1800	58 7		
1/4	20	0.2500	0.0318	2320	80 9			2660	122 14	114 13	
	28	0.2500	0.0364	2320	95 11			3260	139 16	131 15	
		in	Sq in	LB	FT-LB [N-m]	FT-LB [N-m]	FT-LB [N-m]	LB	FT-LB [N-m]	FT-LB [N-m]	FT-LB [N-m]
5/16	18	0.3125	0.0524	3340	15 20	14 19	13 18	4720	20 27	20 27	20 27
	24	0.3125	0.0580	3700	15 20	15 21	13 18	5200	22 30	22 30	20 27
3/8	16	0.3750	0.0775	4940	25 35	25 34	23 31	7000	30 40	30 40	28 38
	24	0.3750	0.0878	5600	28 38	25 34	23 31	7900	40 55	40 55	35 50
7/16	14	0.4375	0.1063	6850	45 60	40 54	35 48	9550	60 80	55 75	50 70
	20	0.4375	0.1187	7550	45 60	44 60	46 54	10700	65 90	60 80	60 80
1/2	13	0.5000	0.1419	9050	65 80	60 82	55 75	12750	90 120	85 115	80 110
	20	0.5000	0.1599	10700	75 100	71 97	65 88	14400	100 135	95 130	90 120
9/16	12	0.5625	0.1820	11600	95 120	87 118	80 109	16400	130 175	125 170	115 155
	18	0.5625	0.2000	12900	105 145	97 132	90 122	18200	145 195	135 185	130 175
5/8	11	0.6250	0.2260	14400	130 175	120 163	115 156	20300	180 245	170 230	160 220
	18	0.6250	0.2440	15600	145 195	135 185	125 170	22000	200 270	190 260	180 245
3/4	10	0.7500	0.3340	21300	225 305	213 290	200 272	30100	330 435	305 410	280 380
	16	0.7500	0.3730	23800	255 345	238 324	225 306	33600	355 485	335 455	315 430
7/8	9	0.8750	0.4620	29400	385 495	343 466	320 435	41600	515 700	485 660	455 620
	14	0.8750	0.5090	32400	400 545	375 514	355 483	45800	570 775	535 730	500 680
1	8	1.0000	0.6090	38900	545 740	515 700	480 653	51500	730 995	685 930	645 875
	12	1.0000	0.6630	42200	600 815	563 765	530 721	59700	845 1150	795 1080	745 1010
1 1/8	7	1.1250	0.7520	47200	675 920	631 858	596 809	66700	1095 1490	1030 1400	965 1310
	12	1.1250	0.8560	47900	765 1035	713 966	670 911	75300	1225 1665	1155 1570	1085 1475
1 1/4	7	1.2500	0.9490	53800	995 1350	937 1275	880 1197	87200	1545 2100	1455 1980	1365 1855
	12	1.2500	1.0730	59600	1055 1435	993 1351	930 1265	99300	1710 2325	1610 2190	1510 2055
1 3/8	6	1.3750	1.1563	64100	1250 1700	1175 1598	1100 1496	104000	2025 2755	1905 2590	1785 2430
	12	1.3750	1.3150	73000	1420 1930	1338 1820	1255 1707	118100	2300 3130	2165 2945	2030 2760
1 1/2	6	1.5000	1.4050	78000	1660 2260	1563 2122	1465 1992	126500	2690 3660	2530 3445	2370 3225
	12	1.5000	1.5800	87700	1855 2525	1754 2385	1645 2237	142200	3020 4105	2845 3870	2665 3625

NOTES:
1. THESE TORQUE VALUES DO NOT APPLY TO CADMIUM PLATED FASTENERS
2. ALL TORQUE VALUES ARE STATIC TORQUE MEASURED PER STANDARD AUDIT METHODS TOLERANCE = ±10%
3. * ASSEMBLY USES HARDENED WASHER

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Figure 1-3. Torque Chart (SAE Fasteners - Sheet 2 of 5)

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