



Publication No. TM-2000-1/S1(U)-1E

Service Manual

Service Manual



01

Boom Truck

Model **TM-2000-1**

Applicable Serial No. EX0069~

TM-2000-1/S1(U)-1E

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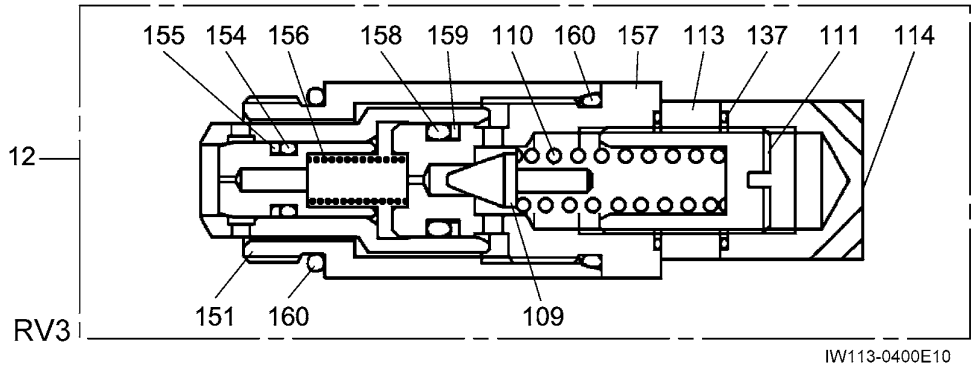
Foreword

5. Contents

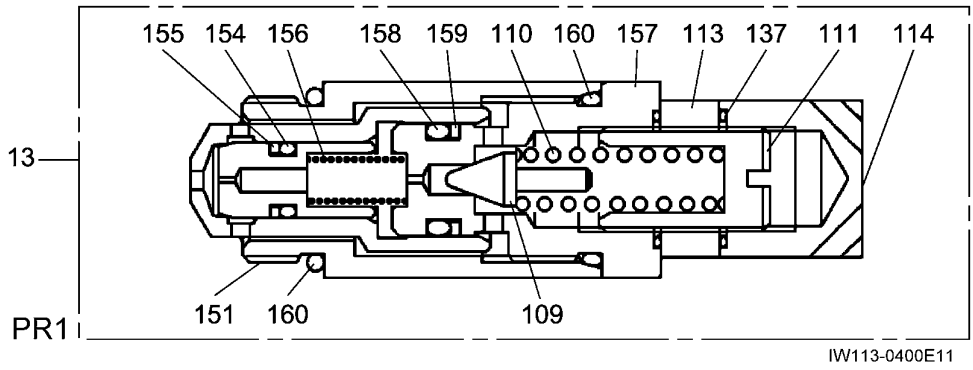
Chapter	Section	Spec. No. TM-2000-1						
		-104	-304	-114	-314	-204	-214	-404
General								
A	General Cautions	Refer to separate manual SA01-01-2E						
Hydraulic Pressure Generating System								
B	Manual Control Valve(Boom elevating, telescoping, swing, outrigger, high / low shift)	B-1						
	Manual Control Valve (Outrigger)	B-2						
	Manual Control Valve (Winch)	B-3						
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Outrigger System								
C	Jack Cylinder (Front and rear stabilizer)	C-1			-			
	Jack Cylinder (Outrigger and front outrigger)	C-2						

Manual Control Valve(Boom elevating, telescoping, swing, outrigger, high/low shift)

Relief valve (RV3)



Relief valve (PR1)



12. Relief valve (RV3)

13. Relief valve (PR1)

109.Regulator valve

110.Spring

111.Screw

113.Nut

114.Cap nut

137.O-ring

151.Body

154.O-ring

155.Backup ring

156.Spring

157.Body

158.O-ring

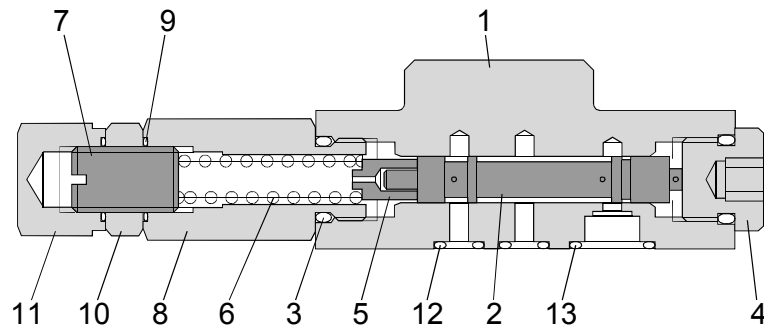
159.Backup ring

160.O-ring

Sequence Valve (Pilot pressure)

Pressure reducing valve

(illustrated as 5 in the cross section along the line A-A)



IW122-011005

- | | | | |
|----------|----------------|------------|-----------|
| 1.Body | 5.Spring seat | 9.O-ring | 13.O-ring |
| 2.Spool | 6.Spring | 10.Nut | |
| 3.O-ring | 7.Adjust screw | 11.Cap nut | |
| 4.Plug | 8.Body | 12.O-ring | |

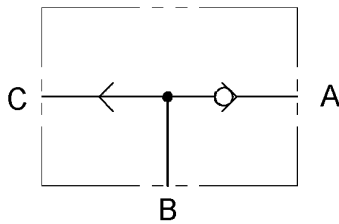
Shuttle Valve

B-12 Shuttle Valve

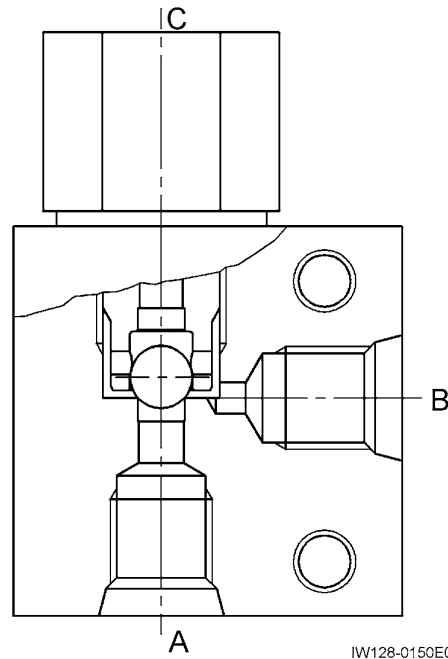
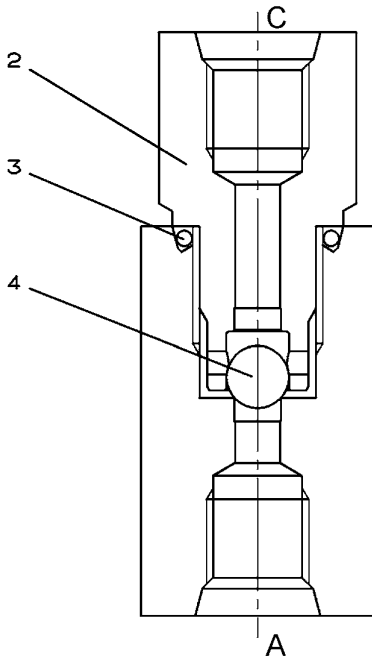
[NOTICE]

◆ There is a case that the appearance and so on differ from the parts for this machine. Although there is not so much difference in functions and disassembly procedures, make sure of the serial number of this machine and the part sales unit described in the parts catalog before starting disassembling operations.

1. Structure



IW128-0150E01



IW128-0150E02

2. Joint

3. O-ring

4. Steel ball

Thread size and tightening torque

Sign / Port	Thread size	Tightening torque	
		N-m	ft-lbf
A, B	G1/4	29.4	22

Pressure Sensor (Front stabilizer)

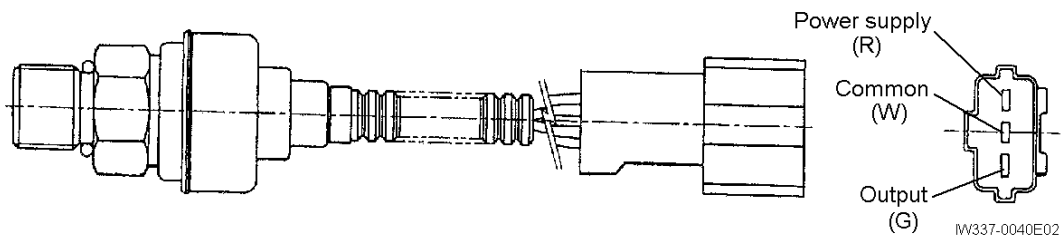
C-8 Pressure Sensor (Front stabilizer)

[NOTICE]

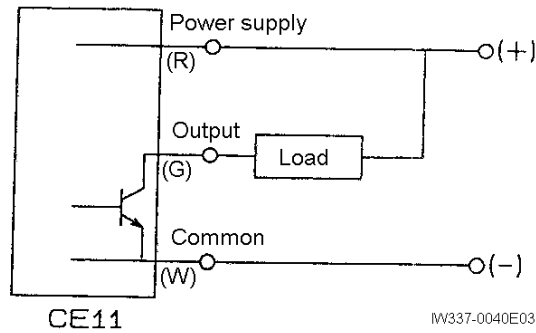
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1. Structure

General View

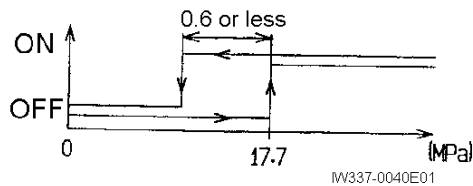


Use example



Specification

Setup value-----17.7MPa (180.5 kgf/cm²)



[NOTE]

◆ The adjustment of pressure detector is unnecessary.

Boom Elevating Cylinder

E-1 Boom Elevating Cylinder

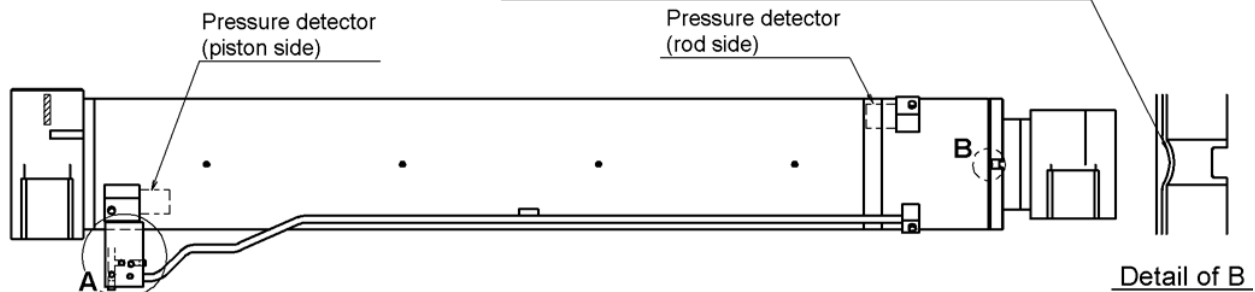
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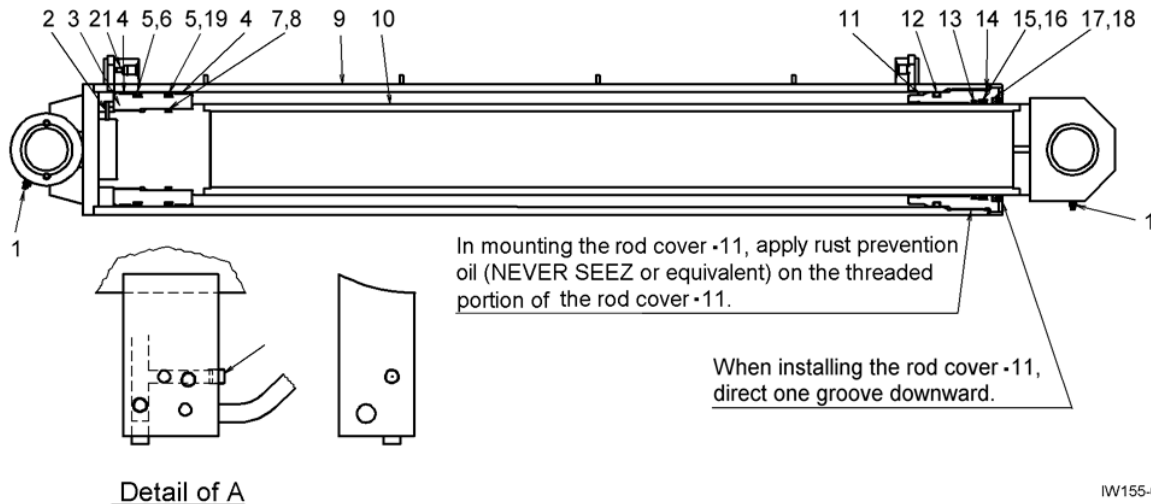
1. Structure

1. Orientation of 13: Face the notch or the lip toward the pressurized side.
2. After installing the dust seal -17 and calking of it, install the retaining ring -18.

To prevent turning of the rod cover -11, bend one end of the cylinder -9 onto a groove of the rod cover -11 (2 places).



Tighten after applying thread locking agent (Three Bond 1401 or equivalent).
Avoid covering orifice (φ0.6) with thread locking agent.



IW155-0310E01

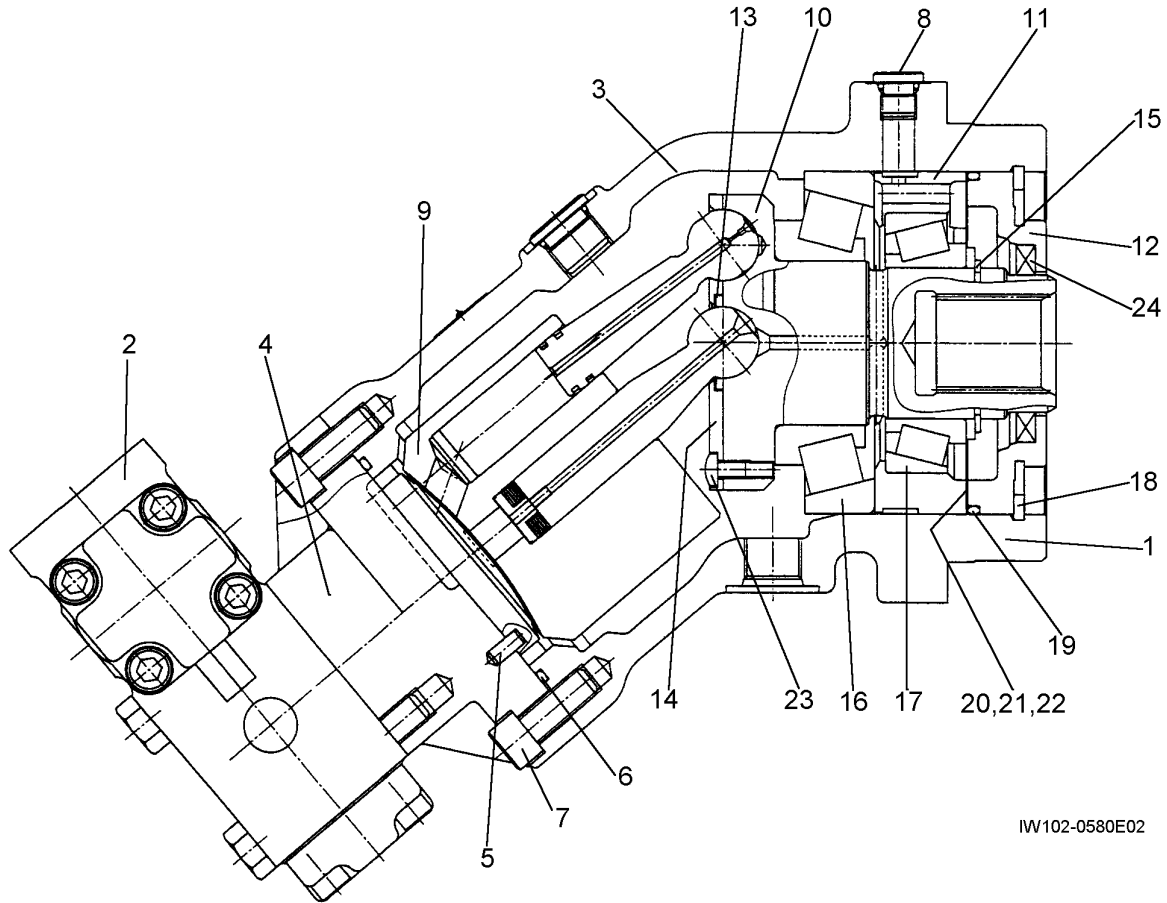
- | | | | |
|------------------|--------------------|--------------------|-----------------|
| 1. Grease nipple | 7. O-ring | 13. Damper ring | 19. Backup ring |
| 2. Spring pin | 8. Backup ring | 14. O-ring | 20. Plug |
| 3. Piston | 9. Cylinder | 15. Packing | 21. Orifice |
| 4. Plain bearing | 10. Rod | 16. Backup ring | |
| 5. Packing | 11. Rod cover assy | 17. Dust seal | |
| 6. Backup ring | 12. O-ring | 18. Retaining ring | |

Hydraulic Motor(Winch)

3. Structure

[NOTICE]

◆ There is a case that the appearance and so on differ from the parts for this machine. Although there is not so much difference in functions and disassembly procedures, make sure of the serial number of this machine and the part sales unit described in the parts catalog before starting disassembling operations.



IW102-0580E02

- | | | | |
|------------------------|----------------------------|-------------------|-------------|
| 1.Piston motor | 7.Hexagon socket head bolt | 13.Shim | 19.O-ring |
| 2.Counterbalance valve | 8.Plug | 14.Plate | 20.Shim |
| 3.Housing | 9.Cylinder block | 15.Retaining ring | 21.Shim |
| 4.Cover | 10.Shaft | 16.Bearing | 22.Shim |
| 5.Parallel pin | 11.Case | 17. Bearing | 23.Screw |
| 6.O-ring | 12.Seal case | 18.Retaining ring | 24.Oil seal |

Thread size and tightening torque

Sign / Port	Thread size	Tightening torque	
		N-m	ft-lbf
7	M12	98-123	72-91
8	G1/4	19-23	14-17

366-630-10000

Boom (Five-section boom)

[NOTICE]

◆ There is a case that the appearance and so on differ from the parts for this machine. Although there is not so much difference in functions and disassembly procedures, make sure of the serial number of this machine and the part sales unit described in the parts catalog before starting disassembling operations.

1. -----	43. Plate	85. Slide plate	127. Bolt
2. -----	44. Roller assembly	86. Plate	128. Plain washer
3. -----	45. Roller assembly	87. Plate	129. Sheave assembly
4. -----	46. Pin	88. Slide plate	130. Pin
5. -----	47. Pin	89. Plate	131. Retaining ring
6. Pin	48. Spacer	90. Support assembly	132. Support
7. Snap pin	49. Pin	91. Hexagon socket head bolt	133. Bolt
8. Pin	50. Snap pin	92. Slide plate	134. Shim
9. Plate	51. Sheave assembly	93. Slide plate	135. Pin
10. Sheave assembly	52. Pin	94. Shim	136. Bolt
11. Spacer	53. Retaining ring	95. Shim	137. Spring washer
12. Spacer	54. Lock washer	96. Bolt	138. Support
13. Pin	55. Nut	97. Plain washer	139. Bolt
14. Plate	56. Sheave assembly	98. Support	140. Bolt
15. Sheave assembly	57. Pin	99. Hexagon socket head bolt	141. Pin
16. Spacer	58. Bolt	100. Bolt	142. Retaining ring
17. Wire rope	59. Support	101. Spring washer	143. Slide plate
18. Nut	60. Bolt	102. Bolt	144. Slide plate
19. Wire rope	61. Sheave assembly	103. Bolt	145. Nut
20. Nut	62. Spacer	104. Bolt	146. Bolt
21. Nut	63. Spacer	105. Bolt	147. Plate
22. Wire rope	64. Button bolt	106. Bolt	148. Plate
23. Wire rope	65. Pin	107. Bolt	149. Plate
24. Wire rope	66. Plate	108. Bolt	150. Plate
25. Hexagon socket head bolt	67. Slide plate	109. Bolt	151. Slide plate
26. Support	68. Machine screw	110. Bolt	152. -----
27. Plug	69. Plain bearing	111. Spring washer	153. -----
28. Nameplate	70. Plate	112. Hexagon socket head bolt	154. -----
29. Tapping screw	71. Retainer	113. Hexagon socket head bolt	155. -----
30. Cap	72. Retainer	114. Bolt	156. Shim
31. Grease nipple	73. Slide plate	115. Spring washer	157. Shim
32. Grease nipple	74. Retainer	116. Pin	158. Plate
33. Pin	75. Retainer	117. Spacer	159. Plate
34. Plate	76. Slide plate	118. -----	160. Bolt
35. Cover	77. Slide plate	119. Sheave assembly	161. Bolt
36. Pin	78. Support	120. Pin	162. Set screw
37. Support	79. Slide plate	121. Retaining ring	163. Cover
38. Sheave assembly	80. Plate	122. Pin	
39. Spacer	81. Plate	123. Retaining ring	
40. Pin	82. Slide plate	124. Adjuster assembly	
41. Spacer	83. Shim	125. Bolt	
42. Guide	84. Shim	126. Spring washer	

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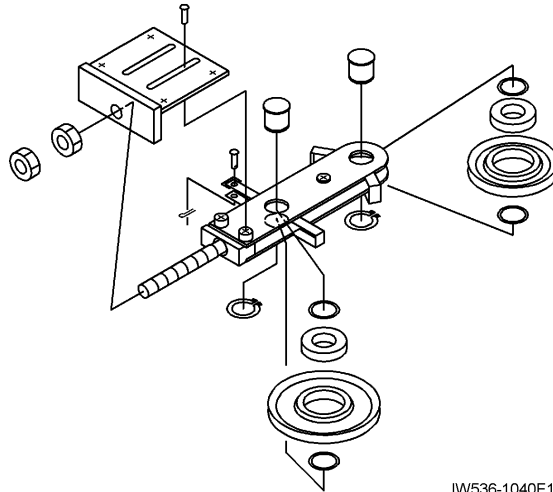
Boom (Five-section boom)

5. Structure of the adjuster assy

[NOTICE]

- ◆ There is a case that the appearance and so on differ from the parts for this machine. Although there is not so much difference in functions and disassembly procedures, make sure of the serial number of this machine and the part sales unit described in the parts catalog before starting disassembling operations.

Use the illustration below for a reference when disassembling the adjuster assy.



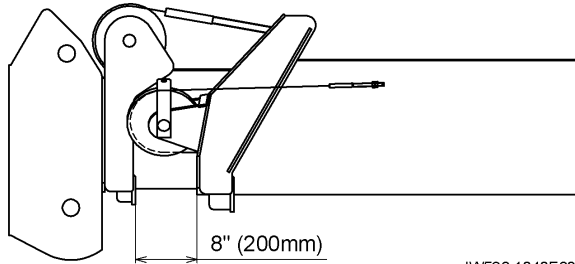
IW536-1040E19

Boom (Five-section boom)

7. Retract the 4th boom section to the point about 200 mm (8 in) before full retraction.

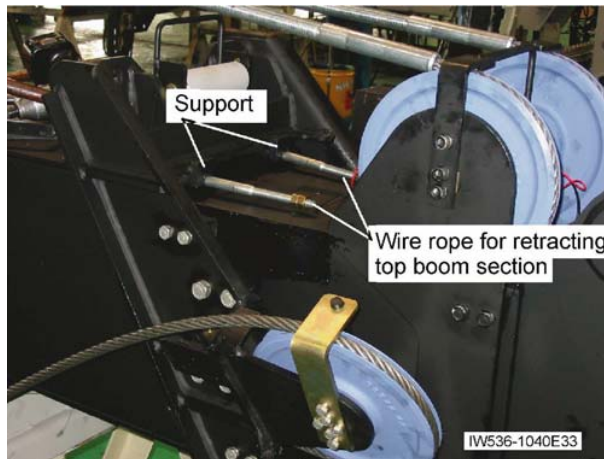
[NOTICE]

- ◆ If the 4th boom section is fully retracted, it becomes impossible to install the boom telescoping cylinder.



IW536-1040E68

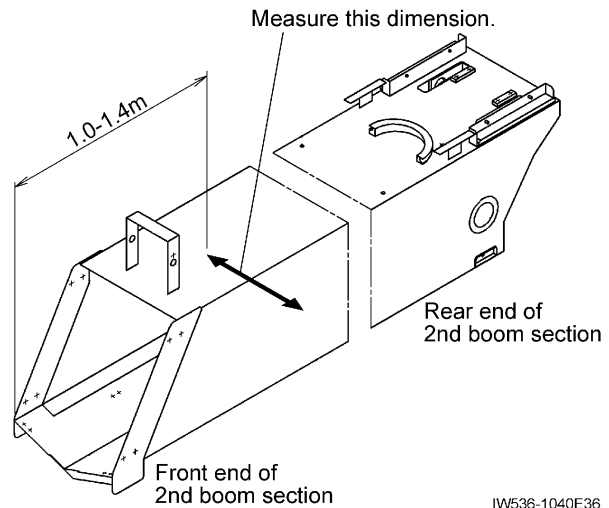
8. Release the wire ropes for retracting the top boom section and pass them through the supports at the front end of the 3rd boom section.



9. Measure the following internal widthwise dimension of the 2nd boom section.
- At 1.0 to 1.4 m (3.3 to 4.5 ft) from the front end

[NOTICE]

- ◆ The measured dimension will be used when the clearances are adjusted at step 12.



10. Apply grease to the surfaces inside the 2nd boom section on which the slide plates of the 3rd boom section slide.

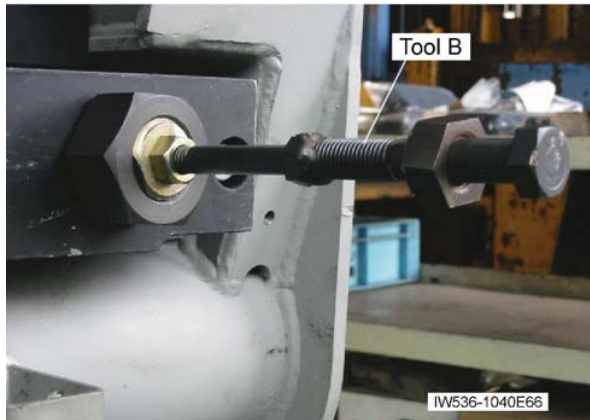
11. Install the slide plates at the rear end of the 3rd boom section.

Boom (Five-section boom)

12. Screw a nut on the wire rope for extending the 3rd boom section.
Then screw the tool B on the wire rope end.

[NOTICE]

- ◆ The figure below is reference only.



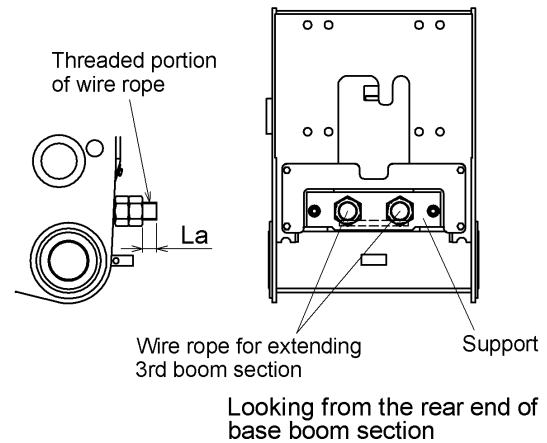
13. While fixing the tool B with a wrench, tighten the nut.



14. Remove the tool B.
Screw a locknut to lock the wire rope for extending the 3rd boom section.

[NOTICE]

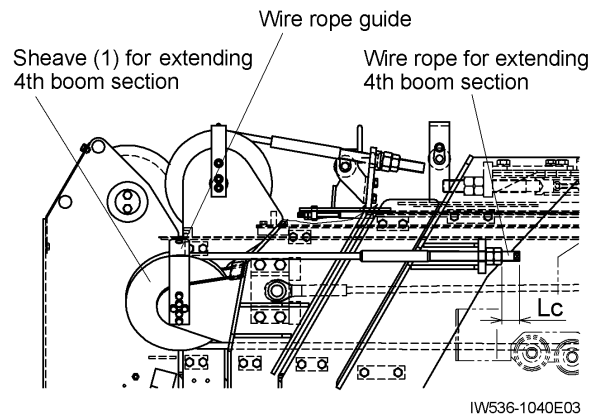
- ◆ The dimension La that was measured during disassembly can be used as the reference target when screwing nuts.



15. Fix the wire ropes for extending the 4th boom section to the front end of the base boom section.

[NOTICE]

- ◆ The dimension Lc that was measured during disassembly can be used as the reference target when screwing nuts.



AMA (Load Moment Indicator)

4. AMA adjustment

AMA stores capacity data for plural models of cranes. After mounting of a crane is completed, you must select the capacity data that correspond to the actual model and confirm accuracy of the data.

4.1 Attention for adjustment work

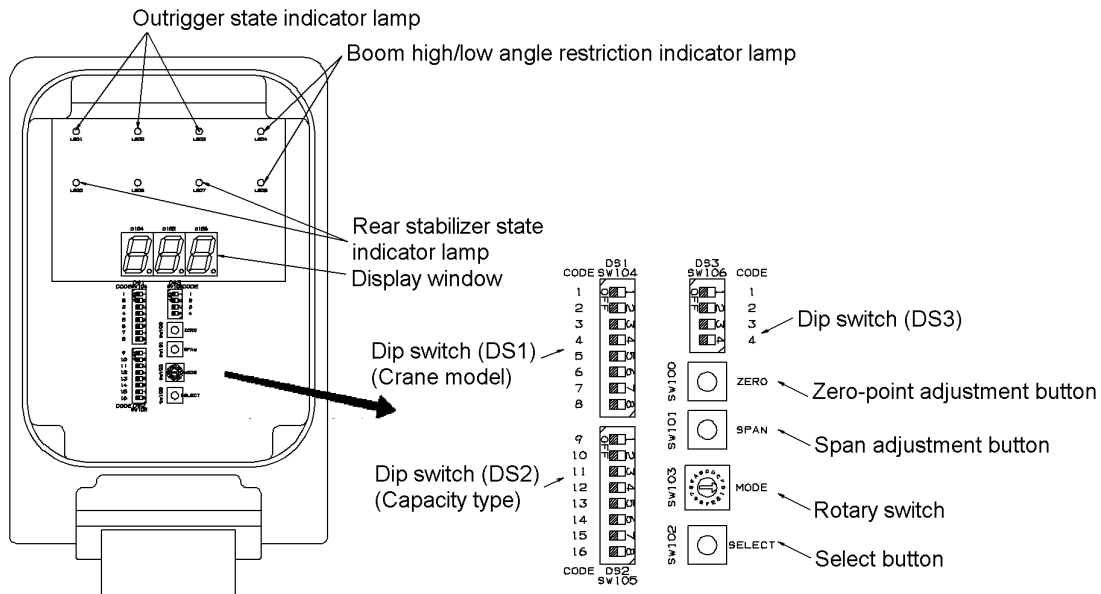
1. Set the machine level on a firm level ground with the outriggers extended as specified. (See the Table 1.on the next page.)
2. Remove the cover from the AMA main unit and select the crane model and the capacity data before confirming accuracy.

3. Run the engine at an idling speed when performing adjustment.
4. Shift the Dip switches and the Rotary switch using an extra thin screwdriver.
5. Do not let water enter inside of the AMA during adjustment.
6. Keep off the buttons other than the specified switches.

[NOTE]

◆ For more information, refer to the next page.

4.2 AMA components



AMA main unit with the cover removed

IW301-0320E01

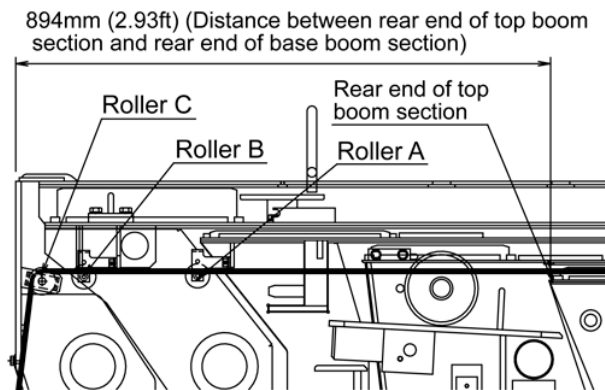
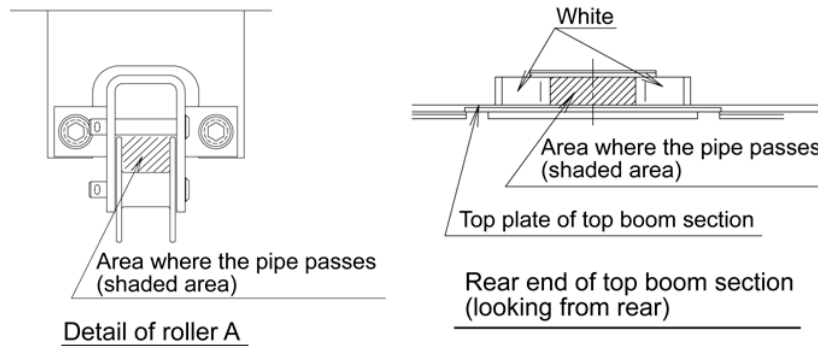
AMA (Load Moment Indicator)

2) Passing a pipe from the boom rear end

1. Pass a pipe from the rear end of the base boom section to the rear end of the top boom section.

Pass the pipe from the rear end of the base boom section, via the roller C and the shaded areas of the rollers B and A, to the support at the rear end of the top boom section. It may be difficult to do this as the inside of the boom is dark.

As the support at the rear end of the top boom section is painted in white, use it as a guide for this operation.



IW301-0320E10

3) Passing a wire from the rear end of the base boom section

Pass a wire through the pipe from the rear end of the boom section to the front end of the top boom section. Try to pass the wire as straight as possible, or it may be caught within the boom.

4) Removing the pipe

Remove only the pipe from the boom rear end while leaving the wire in the boom.



Remote Control System

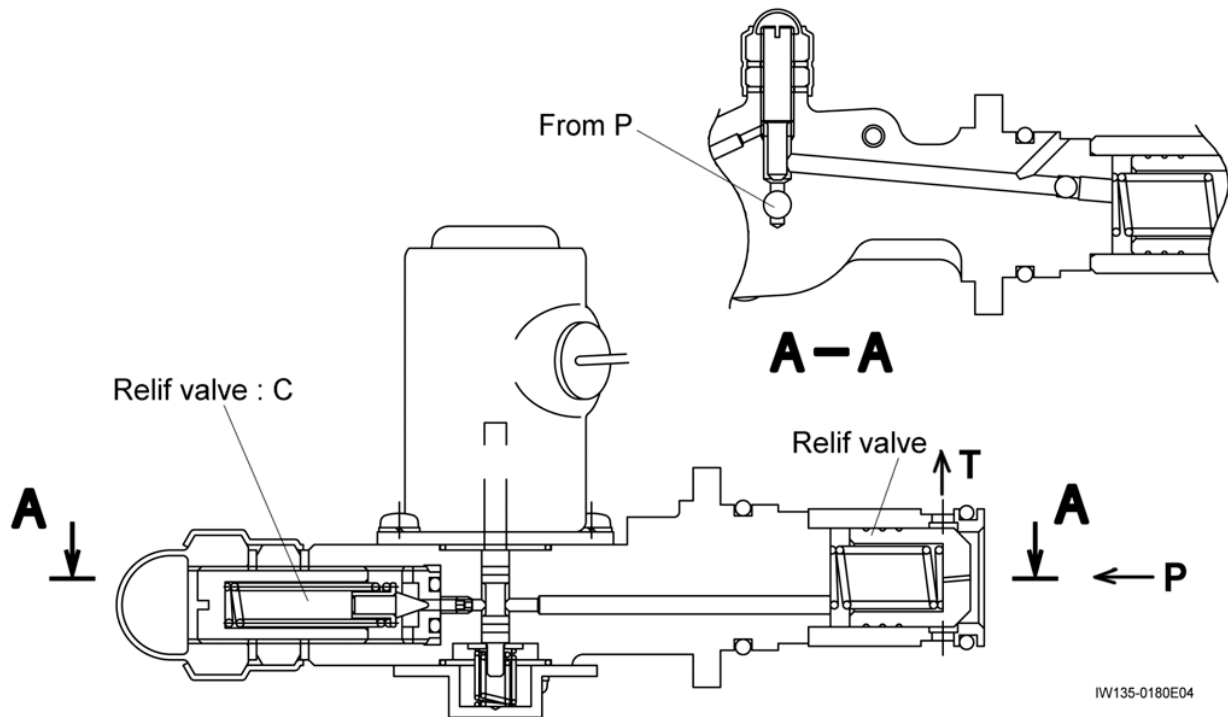
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Radio Control Valve

1.5 Unloading valve



IW135-0180E04

Relif valve :C 19.61- 20.10 Mpa (2843.45- 2914.45 psi) at 60L/min

Relif valve :F 2.06 - 2.65 Mpa (298.70 - 384.30 psi) at 1.5L/min

Reducing valve :E 1.86 - 1.96 Mpa (270 - 284.5 psi) P : at 5L/min

Pilot : at 0.4L/min

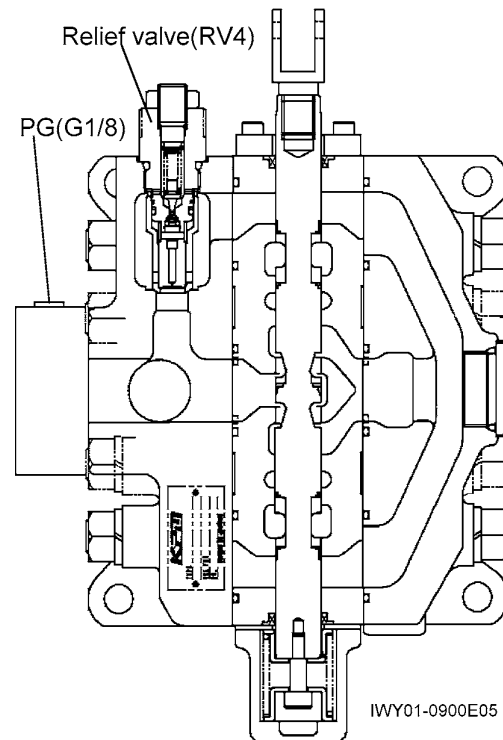
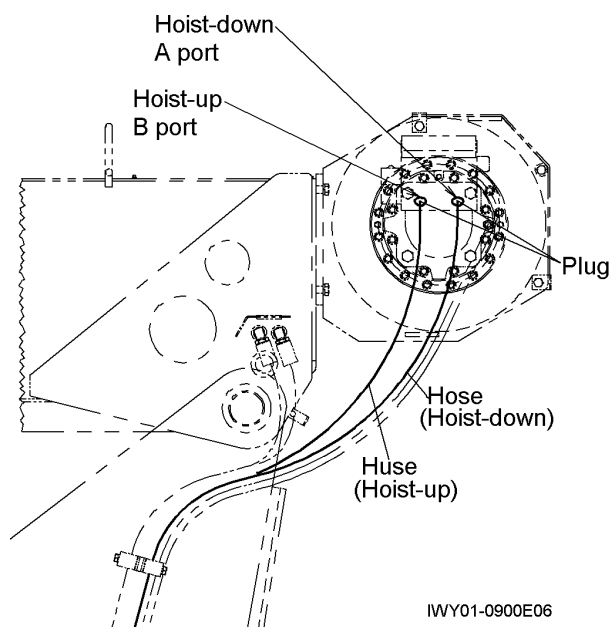
Service Data

1.3 Manual Control Valve(Winch)

[NOTE]

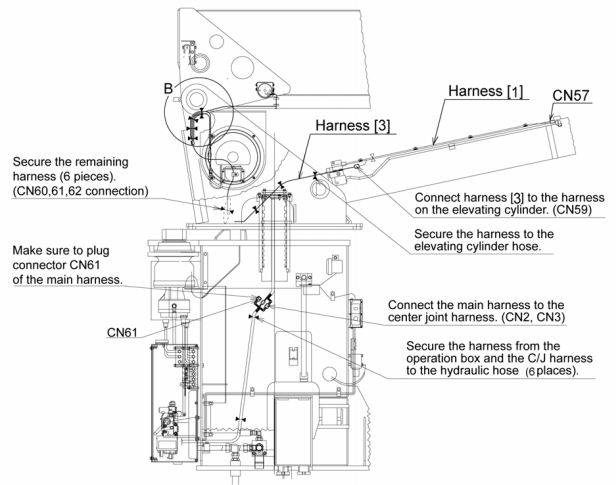
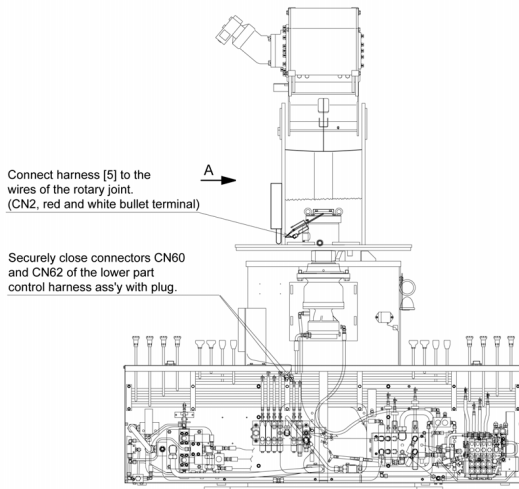
- ◆ Oil temperature: 45 - 55°C (113 - 131°F) (TADANO Hydraulic oil LL)
- ◆ Connect a pressure gauge to the PG port.

Item	Set pressure		Engine speed (min ⁻¹)	Note
	MPa	psi		
Relief valve (RV4) at 216L / min	20.1-20.6	2915-2987	1960	<ol style="list-style-type: none"> 1.Plug the hoses connected to the hoist-up and hoist-down ports. 2.Connect a pressure gauge to the PG port. 3.Turn the PTO switch ON. 4.Push on the winch high-speed switch continuously. 5.Operate the winch lever toward the hoist-up position until the lever reaches the full stroke. 6.Check the pressure at engine speed 1960 rpm.

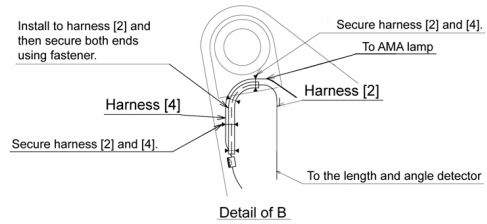
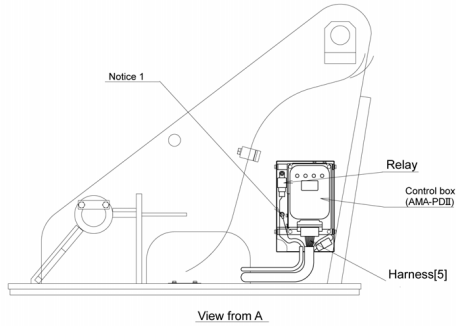


Location of Electrical Parts

2.2 Continuous rotation spec.



Notice
 1. Secure the ground terminal of harness [5] to the stud bolt.



WZ02-3270E/03

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