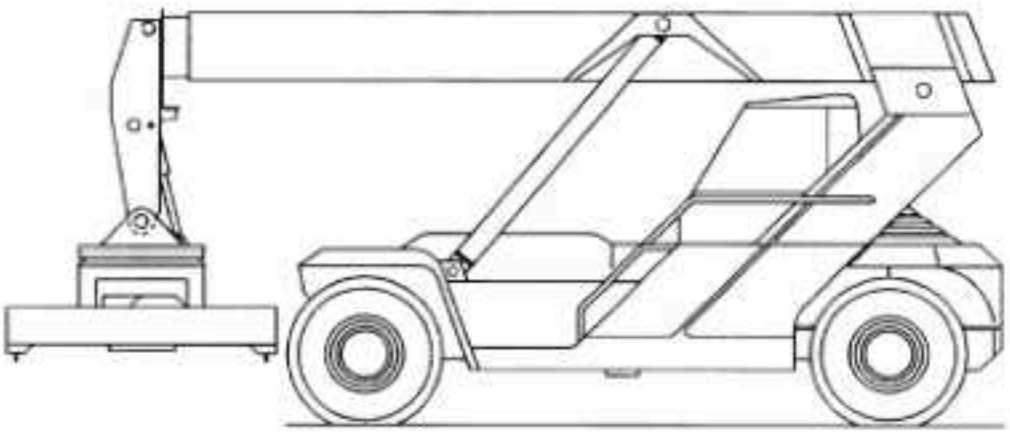
SERVICE MANUAL

HR45-EC, HR48-EC



FORM 1472541 Rev. 11/03

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HR45-EC, HR48-EC
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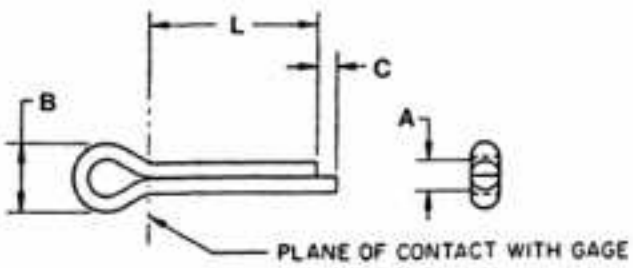
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Table 8. Cotter Pin Dimensional Data

Nominal Size	Shank Diameter A		Head Dia. B	Length of Extended Prong C		Recommended Hole Size	
	max	min	min	max	min	min	max
1.00 mm (0.031 in.)	0.90 mm (0.035 in.)	0.70 mm (0.028 in.)	1.50 mm (0.060 in.)	1.52 mm (0.060 in.)	0.25 mm (0.01 in.)	0.91 mm (0.036 in.)	1.37 mm (0.054 in.)
1.60 mm (0.047 in.)	1.20 mm (0.048 in.)	0.90 mm (0.035 in.)	1.50 mm (0.060 in.)	2.54 mm (0.10 in.)	0.51 mm (0.02 in.)	1.50 mm (0.059 in.)	1.78 mm (0.070 in.)
2.00 mm (0.062 in.)	1.50 mm (0.060 in.)	1.30 mm (0.051 in.)	2.40 mm (0.094 in.)	2.54 mm (0.10 in.)	0.76 mm (0.03 in.)	1.90 mm (0.075 in.)	2.18 mm (0.086 in.)
2.50 mm (0.094 in.)	2.30 mm (0.091 in.)	2.10 mm (0.083 in.)	4.00 mm (0.158 in.)	2.54 mm (0.10 in.)	1.00 mm (0.04 in.)	2.41 mm (0.095 in.)	2.95 mm (0.116 in.)
3.20 mm (0.125 in.)	3.00 mm (0.120 in.)	2.70 mm (0.106 in.)	5.10 mm (0.201 in.)	3.30 mm (0.13 in.)	1.52 mm (0.06 in.)	3.12 mm (0.123 in.)	3.76 mm (0.148 in.)
4.00 mm (0.156 in.)	3.80 mm (0.150 in.)	3.50 mm (0.138 in.)	6.50 mm (0.256 in.)	4.06 mm (0.16 in.)	1.78 mm (0.07 in.)	3.94 mm (0.155 in.)	4.55 mm (0.179 in.)
5.00 mm (0.188 in.)	4.60 mm (0.181 in.)	4.40 mm (0.172 in.)	8.00 mm (0.315 in.)	4.06 mm (0.16 in.)	2.03 mm (0.08 in.)	4.93 mm (0.194 in.)	5.33 mm (0.210 in.)
6.30 mm (0.250 in.)	5.90 mm (0.232 in.)	5.60 mm (0.220 in.)	10.3 mm (0.406 in.)	4.06 mm (0.16 in.)	2.03 mm (0.08 in.)	6.22 mm (0.245 in.)	6.96 mm (0.274 in.)
8.00 mm (0.312 in.)	7.50 mm (0.295 in.)	7.00 mm (0.275 in.)	13.1 mm (0.516 in.)	4.06 mm (0.16 in.)	2.03 mm (0.08 in.)	7.85 mm (0.309 in.)	8.28 mm (0.326 in.)
9.50 mm (0.375 in.)	9.50 mm (0.374 in.)	8.40 mm (0.329 in.)	16.6 mm (0.654 in.)	6.35 mm (0.25 in.)	4.06 mm (0.16 in.)	9.45 mm (0.372 in.)	9.73 mm (0.383 in.)
13.0 mm (0.500 in.)	12.4 mm (0.488 in.)	11.9 mm (0.467 in.)	21.7 mm (0.854 in.)	6.35 mm (0.25 in.)	3.05 mm (0.12 in.)	12.62 mm (0.497 in.)	13.21 mm (0.520 in.)
16.0 mm (0.625 in.)	15.4 mm (0.606 in.)	15.0 mm (0.590 in.)	27.0 mm (1.063 in.)	8.89 mm (0.35 in.)	3.05 mm (0.12 in.)	15.80 mm (0.622 in.)	16.28 mm (0.641 in.)



EXTENDED PRONG

HM211587

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Troubleshooting

PROBLEM	POSSIBLE CAUSE	PROCEDURE OR ACTION
No attachment functions or no attachment functions in one direction.	Check truck hydraulic supply valve for correct operation.	Repair supply valve.
	Low main hydraulic pressure at the attachment main relief valve.	Adjust pressure at main relief valve to 140 bar (2030 psi).
	Dirt in the relief valve cartridge.	Clean or replace relief valve.
	No electrical power at the solenoids of both the truck and attachment.	Check for proper voltage at the solenoids. If voltage is present, replace solenoid. If voltage is not present, check the appropriate switch.
Low attachment response time.	Low hydraulic pressure at the attachment main relief valve.	Adjust pressure at main relief valve to 140 bar (2030 psi).
Both extension beams will not extend.	Low hydraulic pressure at the attachment main relief valve.	Adjust pressure at main relief valve to 140 bar (2030 psi).
	No electrical power at the solenoids of both the truck and attachment.	Check for proper voltage at the solenoid. If voltage is present, replace solenoid. If voltage is not present, check the appropriate switch.
One extension beam will not extend.	No electrical power at the solenoid mounted on the rear of the extension cylinder.	Check for proper voltage at solenoids. If voltage is present, replace solenoid. If voltage is not present, check the appropriate switch.
	Shock relief pressure is too low.	Set relief valve pressure to 80 bar (1160 psi).
Both extension beams will not retract.	Low hydraulic pressure at the attachment main relief valve.	Adjust pressure at main relief valve to 140 bar (2030 psi).
	No electrical power at the solenoid valves on both truck and attachment.	Check for proper voltage at the solenoids. If voltage is present, replace solenoid. If voltage is not present, check the appropriate switch.

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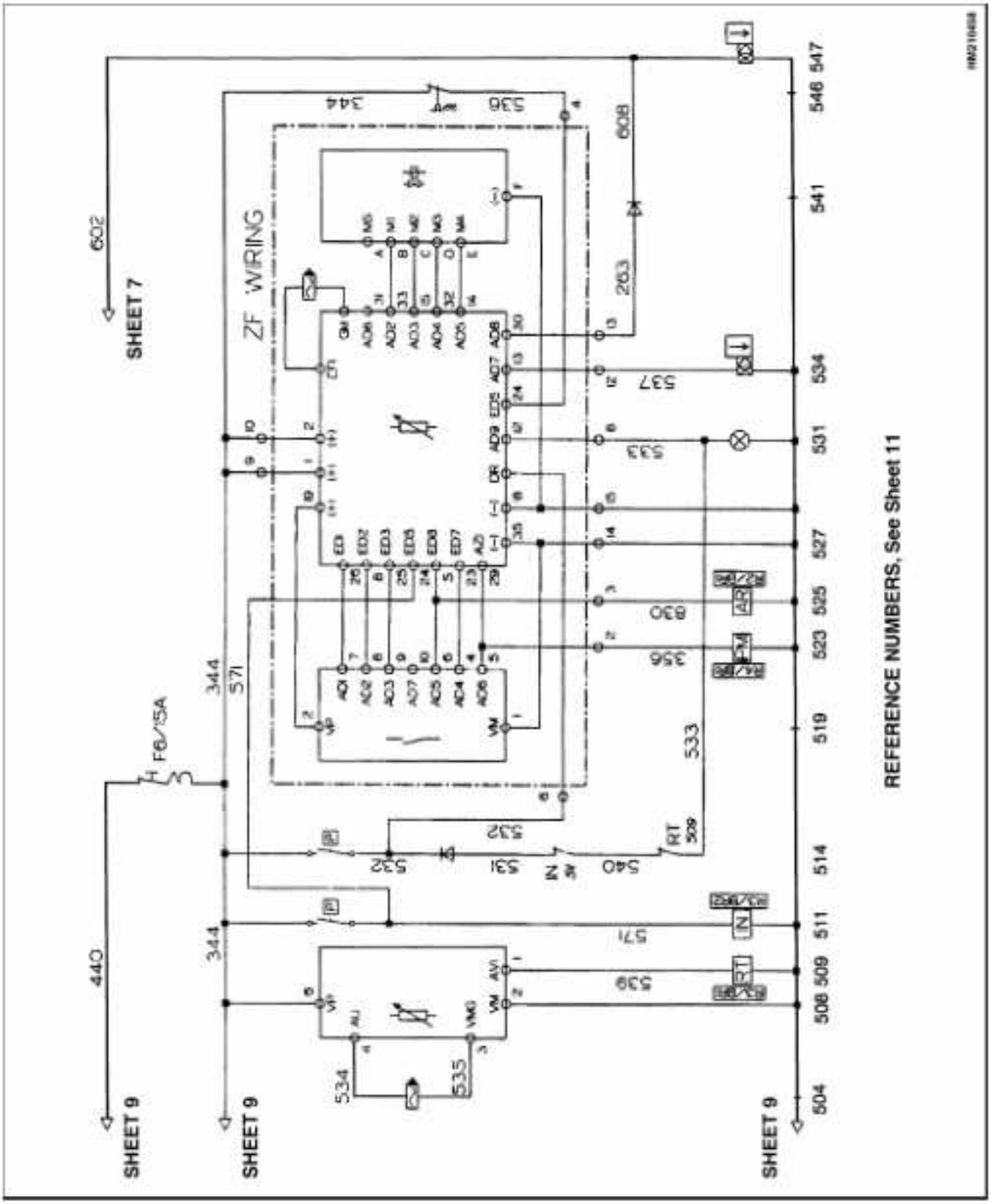


Figure 1. Electrical Schematic (Sheet 10 of 11)

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