MAGNUM 180
MAGNUM 190
MAGNUM 210

Tractor with Full Powershift Transmission

from PIN ZARH06086

SERVICE MANUAL

Part number 84386819
English
November 2010

CASE IH AGRICULTURE

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Grade 10.9 bolts, nuts and studs

Size	Nm	lb in/lb ft
4 mm	4 - 5 Nm	36 - 48 lb in
5 mm	9 - 11 Nm	84 - 96 lb in
6 mm	15 - 18 Nm	132 - 156 lb in
8 mm	37 - 43 Nm	324 - 384 lb in
10 mm	73 - 87 Nm	54 - 64 lb ft
12 mm	125 - 150 Nm	93 - 112 lb ft
14 mm	200 - 245 Nm	149 - 179 lb ft
16 mm	310 - 380 Nm	230 - 280 lb ft
20 mm	610 - 730 Nm	450 - 540 lb ft
24 mm	1050 - 1275 Nm	780 - 940 lb ft
30 mm	2000 - 2400 Nm	1470 - 1770 lb ft
36 mm	3500 - 4200 Nm	2580 - 3090 lb ft

Grade 12.9 bolts, nuts and studs

Size	Nm	lb in/lb ft
Typically the torque values specified for grade 10.9 hardware can be used satisfactorily on grade 12.9 hardware.		

Steel hydraulic fittings

37° flare fitting

Tube outside diameter/Hose inside diameter		Thread size	Nm	lb in/lb ft
inch	mm			
6.4 mm	1/4 in	7/16-20 in	8 - 16 Nm	72 - 144 lb in
7.9 mm	5/16 in	1/2-20 in	11 - 22 Nm	96 - 192 lb in
9.5 mm	3/8 in	9/16-18 in	14 - 34 Nm	120 - 300 lb in
12.7 mm	1/2 in	3/4-16 in	20 - 57 Nm	180 - 504 lb in
15.9 mm	5/6 in	7/8-14 in	34 - 79 Nm	300 - 696 lb in
19.0 mm	3/4 in	1-1/16-12 in	54 - 108 Nm	40 - 80 lb ft
22.2 mm	7/8 in	1-3/16-12 in	81 - 135 Nm	60 - 100 lb ft
25.4 mm	1 in	1-5/16-12 in	102 - 158 Nm	75 - 117 lb ft
31.8 mm	1-1/4 in	1-5/8-12 in	169 - 223 Nm	125 - 165 lb ft
38.1 mm	1-1/2 in	1-7/8-12 in	285 - 338 Nm	210 - 250 lb ft

Straight threads with O-ring

Tube outside diameter/Hose inside diameter		Thread size	Nm	lb in/lb ft
inch	mm			
6.4 mm	1/4 in	7/16-20 in	16 - 26 Nm	144 - 228 lb in
7.9 mm	5/16 in	1/2-20 in	22 - 34 Nm	192 - 300 lb in
9.5 mm	3/8 in	9/16-18 in	34 - 54 Nm	300 - 480 lb in
12.7 mm	1/2 in	3/4-16 in	57 - 91 Nm	540 - 804 lb in
15.9 mm	5/6 in	7/8-14 in	79 - 124 Nm	58 - 92 lb ft
19.0 mm	3/4 in	1-1/16-12 in	108 - 174 Nm	80 - 128 lb ft
22.2 mm	7/8 in	1-3/16-12 in	136 - 216 Nm	100 - 160 lb ft
25.4 mm	1 in	1-5/16-12 in	159 - 253 Nm	117 - 187 lb ft
31.8 mm	1-1/4 in	1-5/8-12 in	224 - 357 Nm	165 - 264 lb ft
38.1 mm	1-1/2 in	1-7/8-12 in	339 - 542 Nm	250 - 400 lb ft

Split flange mounting bolts

Size	Nm	lb in/lb ft
5/16-18 in	20 - 27 Nm	180 - 240 lb in
3/8-16 in	27 - 34 Nm	240 - 300 lb in
7/16-14 in	47 - 61 Nm	420 - 540 lb in
1/2-13 in	74 - 88 Nm	55 - 65 lb ft
5/8-11 in	190 - 203 Nm	140 - 150 lb ft

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Schematic reference: Wiring harness - Electrical schematic frame 18 (A.30.A)

Pin/cavity number	Wire identification/color	Circuit reference
1	ECU ground	ECU
2	2.5V	ECU
3	ECU ground	ECU

Connector CCM_MOTOR – Blower motor

Schematic reference: Wiring harness - Electrical schematic frame 55 (A.30.A)

Pin/cavity number	Wire identification/color	Circuit reference
A	MTRB_CCU - OR	High
B	MRTA_CCU - N	Ground

Connector B_MOT_C – Low pressure switch (NC)

Schematic reference: Wiring harness - Electrical schematic frame 55 (A.30.A)

Pin/cavity number	Wire identification/color	Circuit reference
A	LP - N	Ground
B	LP_CCU - OR	Low pressure

Connector CCU3 – Blower motor controls

Schematic reference: Wiring harness - Electrical schematic frame 55 (A.30.A)

Pin/cavity number	Wire identification/color	Circuit reference
1	MRTA CCU - N	Ground
2	83A CCU - W	Blower low speed
3	84A CCU - R	
4	110A CCU - OR	Blower high speed

Connector CCU4 – Motor resistor inline connector

Schematic reference: Wiring harness - Electrical schematic frame 55 (A.30.A)

Pin/cavity number	Wire identification/color	Circuit reference
1	MRT_CCU - N	Ground
2	83_CCU - W	Blower low speed
3	84_CCU - R	Blower mid speed
4	110_CCU - OR	Blower high speed

Connector CCU5 – Evaporator temperature sensor

Schematic reference: Wiring harness - Electrical schematic frame 55 (A.30.A)

Pin/cavity number	Wire identification/color	Circuit reference
1	PB_CCU - S	Sensor input

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4517-Front remote no. 2 - switched to fail-safe

Magnum 180 [ZARH06086 -] Full Powershift Transmission, Magnum 190 [ZARH06086 -] Full Powershift Transmission, Magnum 210 [ZARH06086 -] Full Powershift Transmission

NOTE: *Midmount / front are the same remote sections; No. 1, No. 2 and No. 3 correspond to EHR-7, EHR-8 and EHR-9.*

NOTE: *When the cause of the error code has been rectified, clear the error code and test the system for normal operation.*

Cause:

Possible failure modes:

1. Other EHR error code(s) detected.
2. Faulty EHR valve

Solution:

1. Check for other EHR error code(s).

   A. Make a note of the error code(s), clear the error code(s) and test the system for normal operation. If any other error codes are still displayed, continue to these tests.

   B. If only error code 4517 is still displayed, download the correct level of software and configure the EHR valve. If the fault reoccurs, remove, replace, and configure the EHR valve.

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Component	Size	Specification
Camshaft Sensor	M6 Studs	6 - 10 Nm (4.4 - 7.4 lb ft)
	M6 Nut	8 - 12 Nm (5.9 - 8.9 lb ft)
	M6 Screw	6 - 10 Nm (4.4 - 7.4 lb ft)
Wiring Bulkhead	M6 Screw	8 - 12 Nm (5.9 - 8.9 lb ft)
Support Bracket for Injector Wiring	M8 Screw	20 - 28 Nm (14.8 - 20.7 lb ft)
Injector Wiring		1.25 - 1.75 Nm (0.92 - 1.29 lb ft)
ECU Cooling Plate	M6 Screw	8 - 12 Nm (5.9 - 8.9 lb ft)
	M8 Screw	20 - 28 Nm (14.8 - 20.7 lb ft)
Fuel Outlet	M12	10 - 14 Nm (7.4 - 10.3 lb ft)
Fuel Inlet	M12	10 - 14 Nm (7.4 - 10.3 lb ft)
Crankshaft Speed Sensor	M6 Screw	6 - 10 Nm (4.4 - 7.4 lb ft)
Coolant Temperature Sensor	M14 Screw	17 - 23 Nm (12.5 - 17.0 lb ft)
Oil Pressure / Temperature Sensor	M5 Screw	5 - 7 Nm (3.7 - 5.2 lb ft)
Fuel Pressure Sensor		30 - 40 Nm (22.1 - 29.5 lb ft)
Fuel Temperature Sensor	M14	17 - 23 Nm (12.5 - 17.0 lb ft)
Air Pressure / Temperature Sensor		5 - 7 Nm (3.7 - 5.2 lb ft)
Engine Oil Level Sensor	M12	10 - 14 Nm (7.4 - 10.3 lb ft)
Alternator Support Bracket	M10 Screw	37 - 49 Nm (27.3 - 36.1 lb ft)
Alternator Tension Bracket	M10 Screw	37 - 49 Nm (27.3 - 36.1 lb ft)
Starter		37 - 49 Nm (27.3 - 36.1 lb ft)
Fuel System and Components		
Feed Pump	M8 Studs	10 - 14 Nm (7.4 - 10.3 lb ft)
High Pressure Pump Gear	M18 Nut	100 - 110 Nm (73.8 - 81.1 lb ft)
Fuel Pump	M8 Nut	20 - 28 Nm (14.8 - 20.7 lb ft)
Injector		
First Phase	M6 Screw	8.15 - 8.85 Nm (6.0 - 6.5 lb ft)
Second Phase	M6 Screw	70 - 80 °
Injector Feed Connector		45 - 55 Nm (33.2 - 40.6 lb ft)
Common Rail	M8 Screw	20 - 28 Nm (14.8 - 20.7 lb ft)
High Pressure Fuel Line	M14 Fitting	18 - 22 Nm (13.3 - 16.2 lb ft)
High Pressure Pipe Connector	M8 Screw	20 - 28 Nm (14.8 - 20.7 lb ft)
Fuel Filter Bracket	M12 Screw	71 - 85 Nm (52.4 - 62.7 lb ft)
Fuel Filter Holder	M8 Screw	20 - 28 Nm (14.8 - 20.7 lb ft)
Fuel Filter		Contact + ¾ Turn
Cooling System and Components		
Engine Coolant Inlet	M10 Screw	37 - 49 Nm (27.3 - 36.1 lb ft)
Fitting on Coolant Inlet	90 ° Elbow	20 - 28 Nm (14.8 - 20.7 lb ft)
Compressor Cooling Pipe		20 - 24 Nm (14.8 - 17.7 lb ft)
Engine Coolant Drain Collector	M6 Screw	8 - 12 Nm (5.9 - 8.9 lb ft)
Water Pump	M8 Screw	20 - 28 Nm (14.8 - 20.7 lb ft)
Belt Tensioner	M10	37 - 49 Nm (27.3 - 36.1 lb ft)
Idler Pulleys	M10	37 - 49 Nm (27.3 - 36.1 lb ft)

ENGINE - Special tools

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ENGINE AND PTO IN - B

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HYDRAULIC - PNEUMATIC - ELECTRICAL - ELECTRONIC SYSTEMS - A

ELECTRICAL POWER SYSTEM - 30.A
Wiring Harnesses (Schematics)

MAGNUM 180
MAGNUM 190
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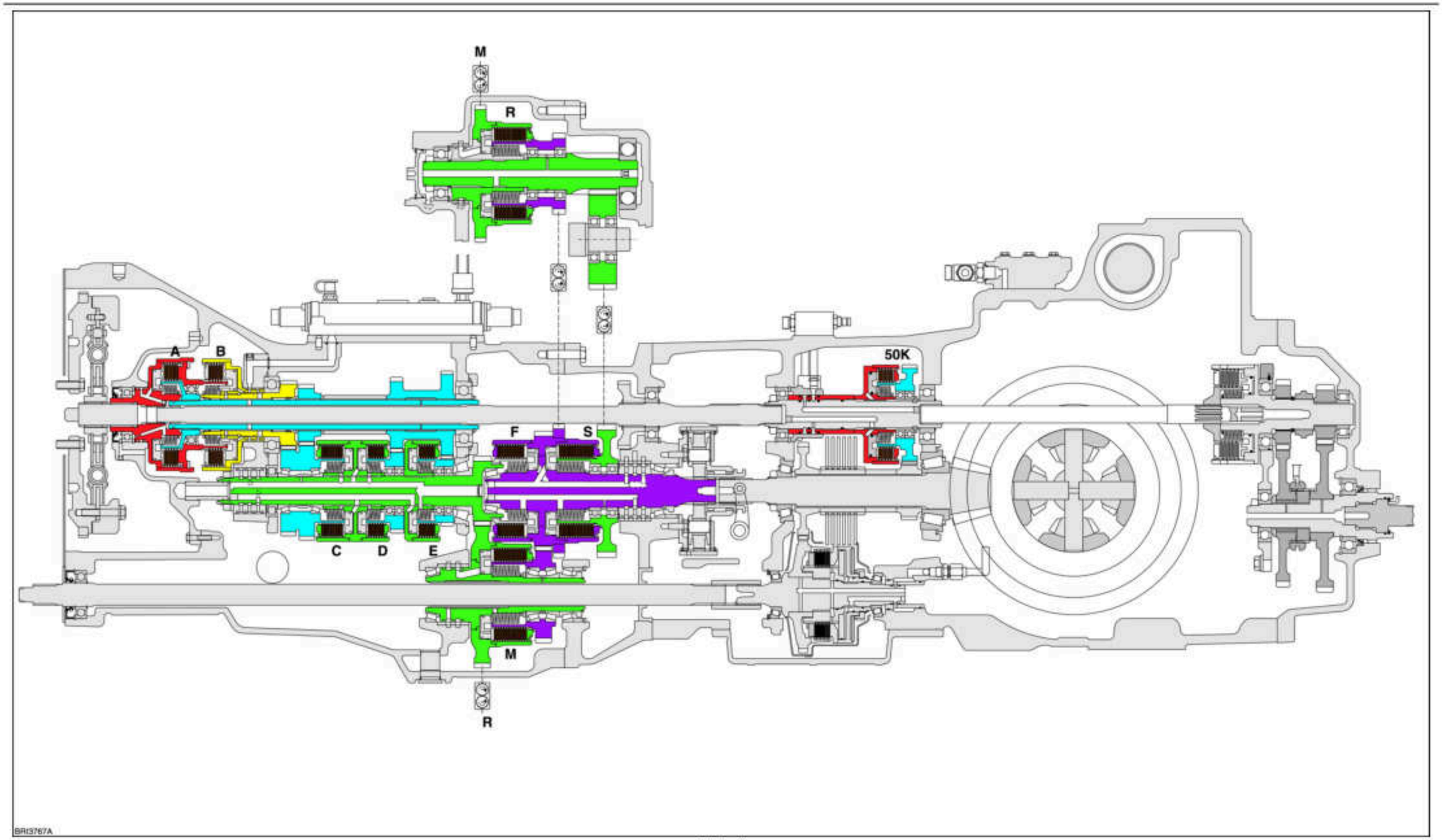
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