

Product: New Holland T8010/T8020/T8030/T8040/T8050 Tractor Service Repair Manual

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TRACTOR SERVICE

**T8010, T8020, T8030,
T8040, T8050
North America**

**84315763
(Replaces 84170102)**

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NEW HOLLAND

T8010/T8020/ T8030/T8040/ T8050

SERVICE MANUAL

Book A.10.A-A.20.A
Hydraulic System
Pneumatic System



PARTS

T8010/T8020/T8030/T8040/T8050 Service Manual 84170102 (Replaces 87746431)

CONTENTS



84176620 - BOOK A.10.A - A.20.A

Hydraulic System, Pneumatic System

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84176630 - BOOK E.20.A - E.50.B - Cab and HVAC System

84176631 - BOOK H.10.C - Rear Hitch

84142369 - Electrical Schematic, Z8RW06000 and After

87718855 - Electrical Schematic, Z7RW05000 and After

87738099 - Hydraulic Schematic

You can order Service Manual books separately or as a complete set (84170102) or on CD (84170102-CD).



INTRODUCTION

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Safety rules

 **WARNING** 

Improper machine operation can cause injury or death. Always operate all machine controls from the operator's seat.

84-60

 **WARNING** 

Before starting engine, study operator's manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating. It is your responsibility to understand and follow manufacturer's instructions on machine operation, service, and to observe pertinent laws and regulations. Operators and service manuals can be obtained from your equipment dealer.

D46-59C

 **WARNING** 

If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.

M492

 **WARNING** 

When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.

M493

 **WARNING** 

When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.

M494

 **WARNING** 

Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service.

M496

 **WARNING** 

Fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Always protect the skin and eyes from escaping fluid under pressure. Before disconnecting lines or fittings, be sure to release all pressure by operating the tractor control valves. Before applying pressure to the system, be sure all connections are tight and that hoses and connections are not damaged. If injured by escaping fluid, obtain medical assistance at once. Serious infection or reaction can develop if medical treatment is not administered immediately. Failure to comply could result in death or serious injury.

M1184

INTRODUCTION

 **WARNING** 

Hydraulic fluid escaping under pressure can have enough force to penetrate the skin. Hydraulic fluid may also infect a minor cut or opening in the skin. If injured by escaping fluid, see a doctor at once. Serious infection or reaction can result if medical treatment is not given immediately. Make sure all connections are tight and that hoses and lines are in good condition before applying pressure to the system. Relieve all pressure before disconnecting the lines or performing other work on the hydraulic system. To find a leak under pressure use a small piece of cardboard or wood. Never use hands. Failure to comply could result in death or serious injury.

M252A

 **WARNING** 

When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer.

M497

 **WARNING** 

When using a hammer to remove and install pivot pins or separate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors).

M498

 **WARNING** 

Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in placed with suitable safety stands.

M499

 **WARNING** 

When servicing or repairing the machine. Keep the shop floor and operators compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and or shop cloths as required. Use safe practices at all times.

M500

 **WARNING** 

Batteries contain acid and explosive gas. Explosions can result from sparks, flames or wrong cable connections. To connect the jumper cables correctly to the battery of this machine see the Operators Manual. Failure to follow these instructions can cause serious injury or death.

M504

Torque

Decimal hardware

Grade 5 bolts, nuts and studs

Size	Nm	lb in/lb ft
1/4 in	12 - 15 Nm	108 - 132 lb in
5/16 in	23 - 28 Nm	204 - 252 lb in
3/8 in	48 - 57 Nm	420 - 504 lb in
7/16 in	73 - 87 Nm	54 - 64 lb ft
1/2 in	109 - 130 Nm	80 - 96 lb ft
9/16 in	149 - 179 Nm	110 - 132 lb ft
5/8 in	203 - 244 Nm	150 - 180 lb ft
3/4 in	366 - 439 Nm	270 - 324 lb ft
7/8 in	542 - 651 Nm	400 - 480 lb ft
1 in	787 - 944 Nm	580 - 696 lb ft
1-1/8 in	1085 - 1193 Nm	800 - 880 lb ft
1-1/4 in	1519 - 1681 Nm	1120 - 1240 lb ft
1-3/8 in	1980 - 2278 Nm	1460 - 1680 lb ft
1-1/2 in	2631 - 2983 Nm	1940 - 2200 lb ft

Grade 8 bolts, nuts and studs

Size	Nm	lb in/lb ft
1/4 in	16 - 20 Nm	144 - 180 lb in
5/16 in	33 - 39 Nm	288 - 348 lb in
3/8 in	61 - 73 Nm	540 - 648 lb in
7/16 in	95 - 114 Nm	70 - 84 lb ft
1/2 in	149 - 179 Nm	110 - 132 lb ft
9/16 in	217 - 260 Nm	160 - 192 lb ft
5/8 in	298 - 358 Nm	220 - 264 lb ft
3/4 in	515 - 618 Nm	380 - 456 lb ft
7/8 in	814 - 976 Nm	600 - 720 lb ft
1 in	1220 - 1465 Nm	900 - 1080 lb ft
1-1/8 in	1736 - 1953 Nm	1280 - 1440 lb ft
1-1/4 in	2468 - 2712 Nm	1820 - 2000 lb ft
1-3/8 in	3227 - 3688 Nm	2380 - 2720 lb ft
1-1/2 in	4285 - 4827 Nm	3160 - 3560 lb ft

NOTE: Use thick nuts with Grade 8 bolts.

Metric hardware

Grade 8.8 bolts, nuts and studs

Size	Nm	lb in/lb ft
4 mm	3 - 4 Nm	24 - 36 lb in
5 mm	7 - 8 Nm	60 - 72 lb in
6 mm	11 - 12 Nm	96 - 108 lb in
8 mm	26 - 31 Nm	228 - 276 lb in
10 mm	52 - 61 Nm	456 - 540 lb in
12 mm	90 - 107 Nm	66 - 79 lb ft
14 mm	144 - 172 Nm	106 - 127 lb ft
16 mm	217 - 271 Nm	160 - 200 lb ft
20 mm	434 - 515 Nm	320 - 380 lb ft
24 mm	675 - 815 Nm	500 - 600 lb ft
30 mm	1250 - 1500 Nm	920 - 1100 lb ft
36 mm	2175 - 2600 Nm	1600 - 1950 lb ft

INTRODUCTION

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	5/8 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	5/8 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

INTRODUCTION

Nominal SAE dash size	O-ring face seal end		Thread size	Nm	lb in/lb ft	O-ring boss end fitting or lock nut		
	Tube outside diameter mm	in				Thread size	Nm	lb in/lb ft
-4	6.4 mm	1/4 in	9/16-18 in	14 - 16 Nm	120 - 144 lb in	7/16-20 in	23 - 27 Nm	204 - 240 lb in
-6	9.5 mm	3/8 in	11/16-16 in	24 - 27 Nm	216 - 240 lb in	9/16-18 in	34 - 41 Nm	300 - 360 lb in
-8	12.7 mm	1/2 in	13/16-16 in	43 - 54 Nm	384 - 480 lb in	3/4-16 in	61 - 68 Nm	540 - 600 lb in
-10	15.9 mm	5/8 in	1-14 in	62 - 76 Nm	552 - 672 lb in	7/8-14 in	81 - 88 Nm	60 - 65 lb ft
-12	19.0 mm	3/4 in	1-3/16-12 in	90 - 110 Nm	65 - 80 lb ft	1-1/16-12 in	115 - 122 Nm	85 - 90 lb ft
-14	22.2 mm	7/8 in	1-3/16-12 in	90 - 110 Nm	65 - 80 lb ft	1-13/16-12 in	129 - 136 Nm	95 - 100 lb ft
-16	25.41 mm	1.0 in	1-7/16-12 in	125 - 140 Nm	92 - 105 lb ft	1-5/16-12 in	156 - 169 Nm	115 - 125 lb ft
-20	31.8 mm	1-1/4 in	1-11/16-12 in	170 - 190 Nm	125 - 140 lb ft	1-5/6-12 in	201 - 217 Nm	150 - 160 lb ft
-24	38.1 mm	1-1/2 in	2-12 in	200 - 254 Nm	150 - 180 lb ft	1-7/8-12 in	258 - 271 Nm	190 - 200 lb ft

Capacities

System	Metric	U.S.	Imperial
Engine Oil			
No filter change	19 l	5 US gal	4.2 UK gal
With filter change	21 l	5.5 US gal	4.5 UK gal
Cooling system	26.5 l	7 US gal	5.8 UK gal
Trans/hydraulic system	172 l	45.5 US gal	38 UK gal
Front wheel drive			
10 bolt axle*			
Differential – Standard and Suspended FWD	12.3 l	13 US qt**	21.6 UK pt
Differential – SuperSteer FWD	13.25 l	14 US qt***	23.3 UK pt
Planetary (each)	1.4 l	3 US pt	2.5 UK pt
12 bolt axle*			
Differential – Standard and Suspended FWD	11.8 l	12.5 US qt****	20.8 UK pt
Differential – SuperSteer FWD	13.25 l	14 US qt***	23.3 UK pt
Planetary (each)	3.3 l	7 US pt	5.8 UK pt
Fuel tank	674 l	178 US gal	148 UK gal
* Pin and bolt quantity are determined by observing the wheel ends.			
** 25 US pt of NEW HOLLAND AMBRA HYPOIDE 140 GEAR LUBE (SAE 85W140) plus 1 US pt of NEW HOLLAND AMBRA LIMITED SLIP ADDITIVE (B96606) for 13 US qt total.			
*** 27 US pt of NEW HOLLAND AMBRA HYPOIDE 140 GEAR LUBE (SAE 85W140) plus 1 US pt of NEW HOLLAND AMBRA LIMITED SLIP ADDITIVE (B96606) for 14 US qt total.			
**** 24 US pt of NEW HOLLAND AMBRA HYPOIDE 140 GEAR LUBE (SAE 85W140) plus 1 US pt of NEW HOLLAND AMBRA LIMITED SLIP ADDITIVE (B96606) for 12.5 US qt total.			



REPAIR MANUAL

DISTRIBUTION SYSTEMS



T8010
T8020
T8030
T8040
T8050

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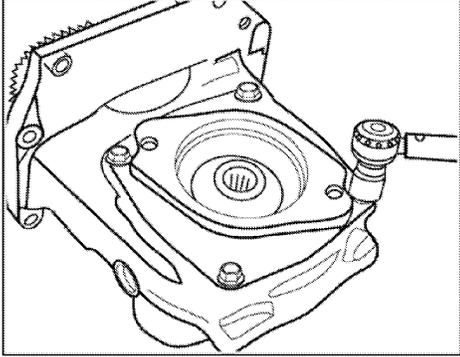
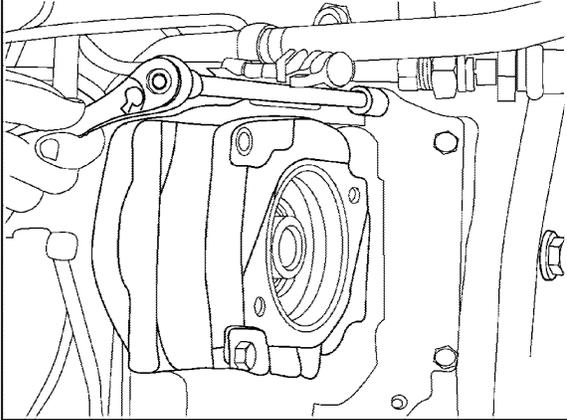
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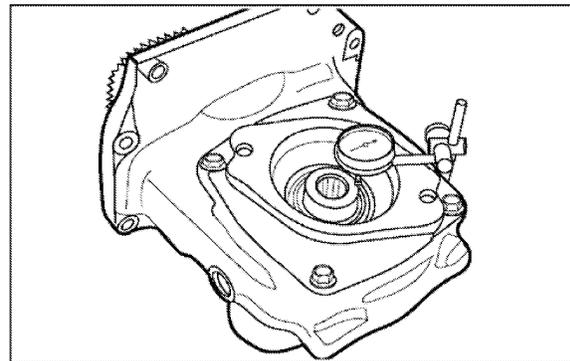
Pump drive - Torque

Component	N·m	Identification	lb-ft/lb-in
Bearing cage bolts	55 - 60 Nm	 <p data-bbox="850 653 1003 674">RCPH07CCH639ABC 1</p>	41 - 44 lb ft
Pump drive mounting bolts	52 - 61 Nm	 <p data-bbox="850 1136 1003 1157">RCPH07CCH631BBC 2</p>	38 - 45 lb ft

Pump drive - General specification

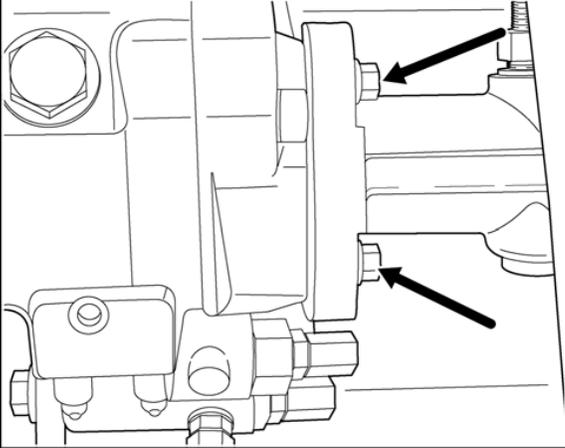
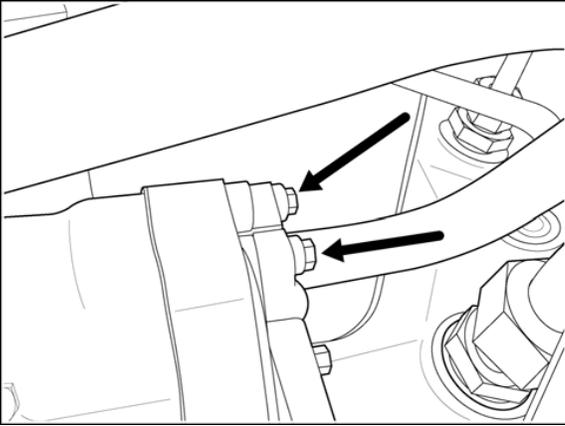
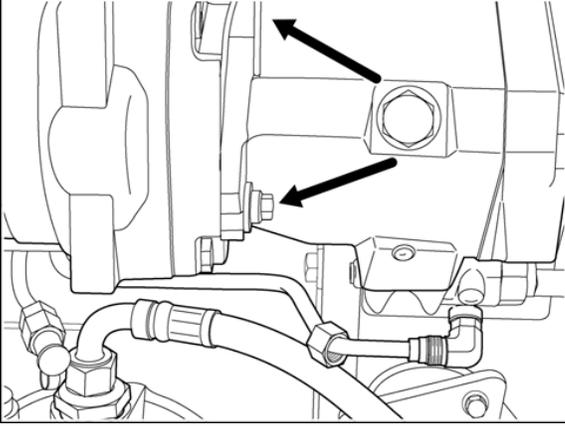
Driven gear shaft end play

End play must be 0.025 - 0.10 mm (0.001 - 0.004 in).



RCPH07CCH638ABC 1

Pressure/flow compensating (PFC) pump - Torque

Component	Nm	Identification	lb-ft
Filter head retaining bolts	62 - 80 Nm	 <p style="text-align: center;">RCPH07CCH095BAE 1</p>	46 - 59 lb ft
Pressure and flow compensating (PFC) pump split flange retaining bolts	40 - 60 Nm	 <p style="text-align: center;">RCPH07CCH088BAE 2</p>	30 - 44 lb ft
Pressure and flow compensating (PFC) pump mounting bolts	62 - 80 Nm	 <p style="text-align: center;">RCPH07CCH096BAE 3</p>	46 - 59 lb ft

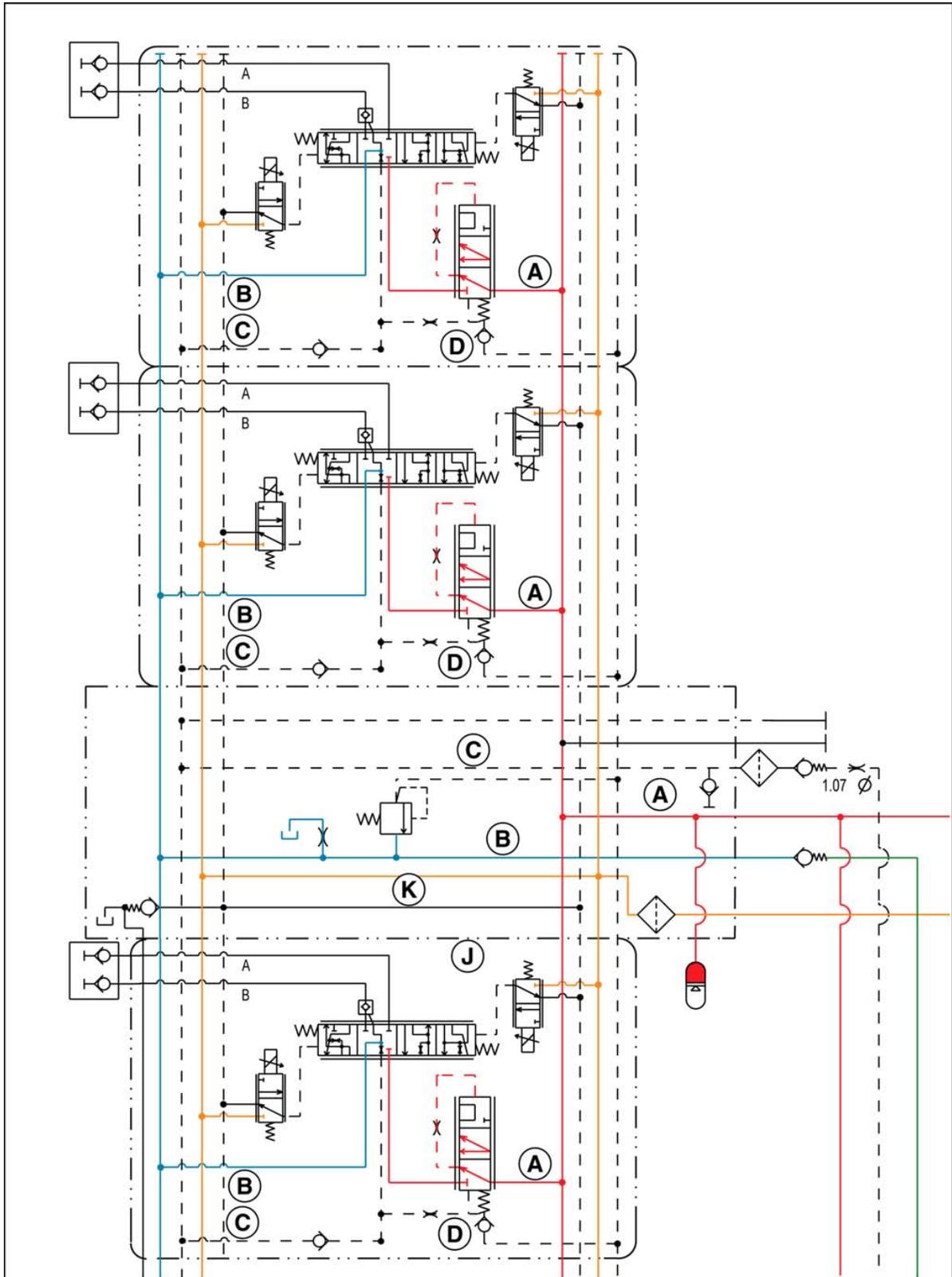
PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 01

T8050 NA

Standard flow

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13. MFD clutch	40. Trailer brake coupler	X. Lube supply								
14. Low clutch	41. Trailer brake priority valve	Y. PTO clutch lube								
15. Medium clutch	42. Manual geroter	aa. Inlet								
16. High clutch	43. Added geroter	bb. To park brake valve solenoid								
17. Reverse clutch	44. To trailer brakes	cc. Switch opens when pedal reaches full stroke at hyd pressure loss								
18. Fifth clutch	A. Supply	dd. Pressure sensor – rod								
19. Third clutch	B. Tank	ee. Pressure sensor – piston								
20. First clutch	C. Signal	ff. Rod solenoid								
21. Even clutch	D. Relief	gg. Piston solenoid								
22. Odd clutch	E. Pilot supply	hh. Rod								
23. Creep or 50 km/h clutch	F. Cylinder port	jj. Piston								
24. Park clutch	G. Case drain	kk. To regulated circuit								
25. Master clutch	H. Return	nn. To lube								
26. Master clutch inching valve	J. Pilot drain	pp. To brake valve								
27. Brake valve	K. Regulated									

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



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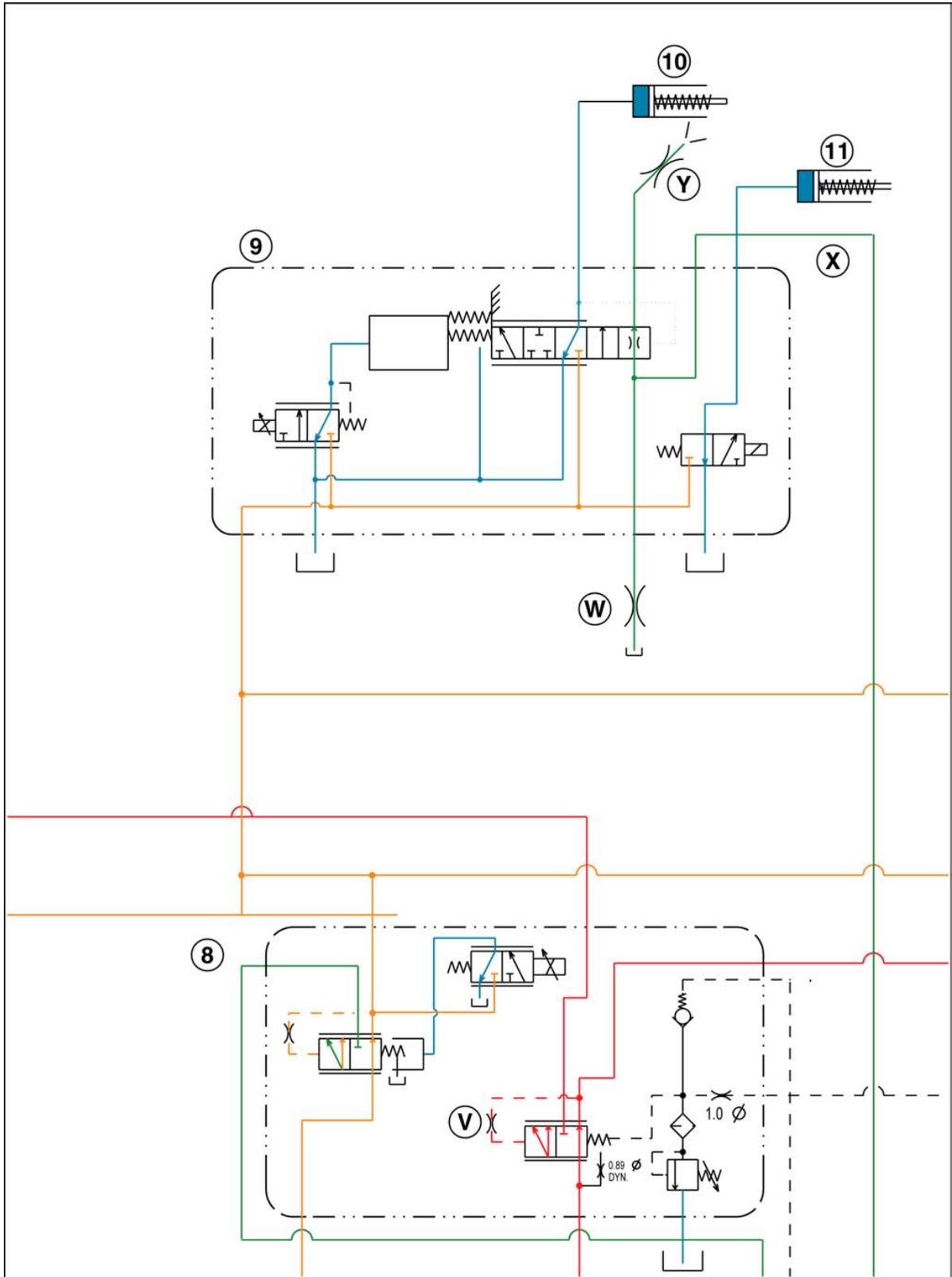
PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 02

T8050 NA

Standard flow

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1	2	3	4										
5	6	7	8										
					Regulated circuit pump flow								
					Charge/lube pump flow								
					Return to tank/sump								
					Megaflow pump								
1. Hitch valve	28. Service brake	L. Lube regulator/relief valve											
2. Hitch cylinders	29. Steering hand pump	M. Chassis ground											
3. Power beyond manifold	30. Steering cylinders	N. Bypass valve											
4. Charge/lube pump	31. Park/emergency brake	O. Odd/even lube											
5. PFC pump	32. Brake release pump	P. Drop box lube											
6. Screen/compensator	33. Filter	Q. Creep drive lube											
7. Oil cooler	34. Suspension control valve	R. Master clutch lube											
8. Priority/regulator valve	35. Suspension axle cylinders	S. Right hand brake/differential lube											
9. PTO/differential lock valve	36. Speed housing	T. MFD/range lube											
10. PTO clutch brake	37. Autoguidance valve	U. Left hand brake/differential lube											
11. Differential lock clutch	38. PX sensor port	V. Damping											
12. Transmission control valves	39. Park brake valve	W. Bevel pinion lube											
13. MFD clutch	40. Trailer brake coupler	X. Lube supply											
14. Low clutch	41. Trailer brake priority valve	Y. PTO clutch lube											
15. Medium clutch	42. Manual geroter	aa. Inlet											
16. High clutch	43. Added geroter	bb. To park brake valve solenoid											
17. Reverse clutch	44. To trailer brakes	cc. Switch opens when pedal reaches full stroke at hyd pressure loss											
18. Fifth clutch	A. Supply	dd. Pressure sensor – rod											
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25. Master clutch	H. Return	nn. To lube											
26. Master clutch inching valve	J. Pilot drain	pp. To brake valve											
27. Brake valve	K. Regulated												

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



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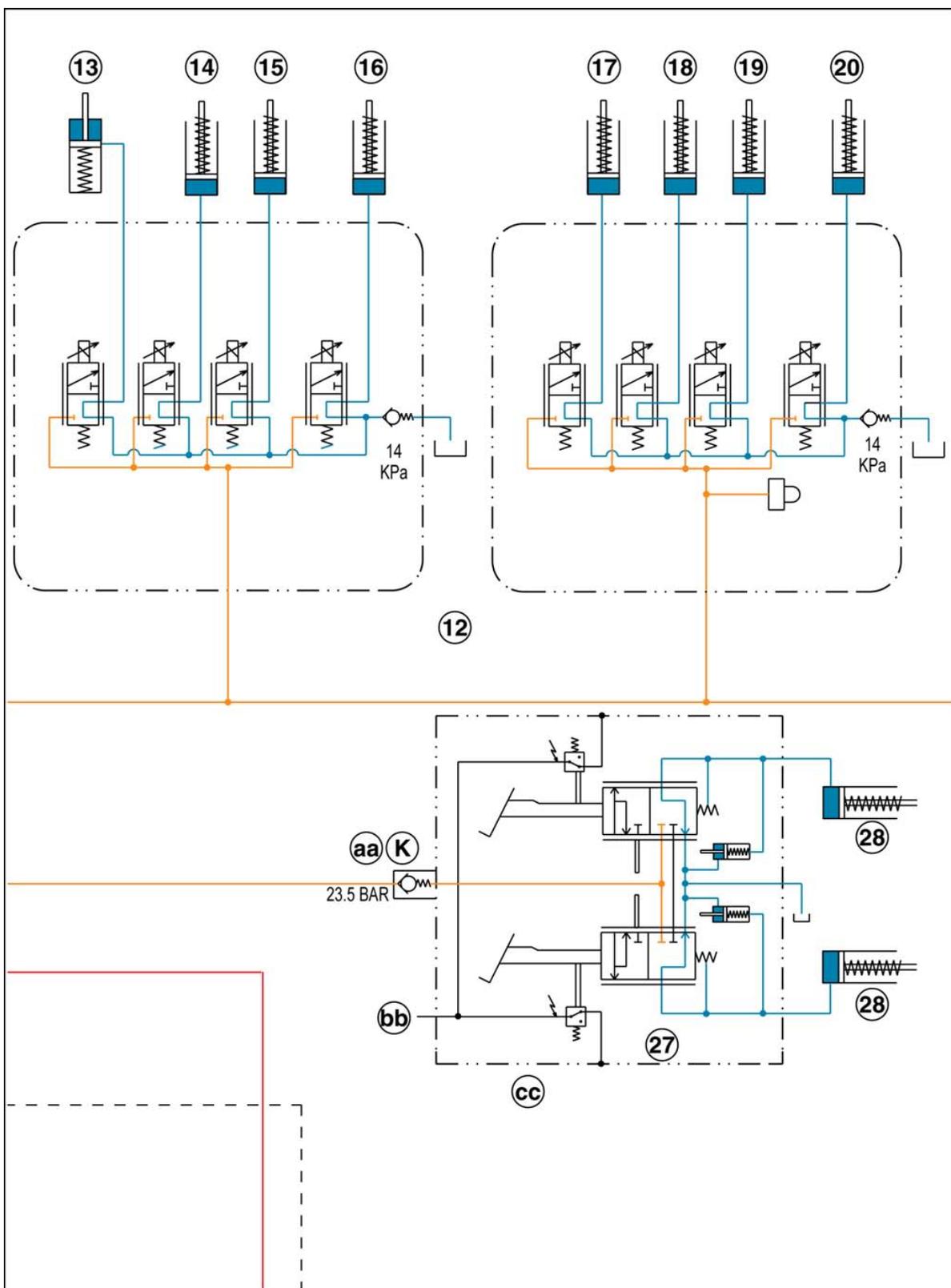
PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 03

T8050 NA

Standard flow

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	1	2	3	4						
	5	6	7	8						
		Regulated circuit pump flow								
		Charge/lube pump flow								
	Return to tank/sump									
	Megaflow pump									
1. Hitch valve	28. Service brake	L. Lube regulator/relief valve								
2. Hitch cylinders	29. Steering hand pump	M. Chassis ground								
3. Power beyond manifold	30. Steering cylinders	N. Bypass valve								
4. Charge/lube pump	31. Park/emergency brake	O. Odd/even lube								
5. PFC pump	32. Brake release pump	P. Drop box lube								
6. Screen/compensator	33. Filter	Q. Creep drive lube								
7. Oil cooler	34. Suspension control valve	R. Master clutch lube								
8. Priority/regulator valve	35. Suspension axle cylinders	S. Right hand brake/differential lube								
9. PTO/differential lock valve	36. Speed housing	T. MFD/range lube								
10. PTO clutch brake	37. Autoguidance valve	U. Left hand brake/differential lube								
11. Differential lock clutch	38. PX sensor port	V. Damping								
12. Transmission control valves	39. Park brake valve	W. Bevel pinion lube								
13. MFD clutch	40. Trailer brake coupler	X. Lube supply								
14. Low clutch	41. Trailer brake priority valve	Y. PTO clutch lube								
15. Medium clutch	42. Manual geroter	aa. Inlet								
16. High clutch	43. Added geroter	bb. To park brake valve solenoid								
17. Reverse clutch	44. To trailer brakes	cc. Switch opens when pedal reaches full stroke at hyd pressure loss								
18. Fifth clutch	A. Supply	dd. Pressure sensor – rod								
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20. First clutch	C. Signal	ff. Rod solenoid								
21. Even clutch	D. Relief	gg. Piston solenoid								
22. Odd clutch	E. Pilot supply	hh. Rod								
23. Creep or 50 km/h clutch	F. Cylinder port	jj. Piston								
24. Park clutch	G. Case drain	kk. To regulated circuit								
25. Master clutch	H. Return	nn. To lube								
26. Master clutch inching valve	J. Pilot drain	pp. To brake valve								
27. Brake valve	K. Regulated									

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



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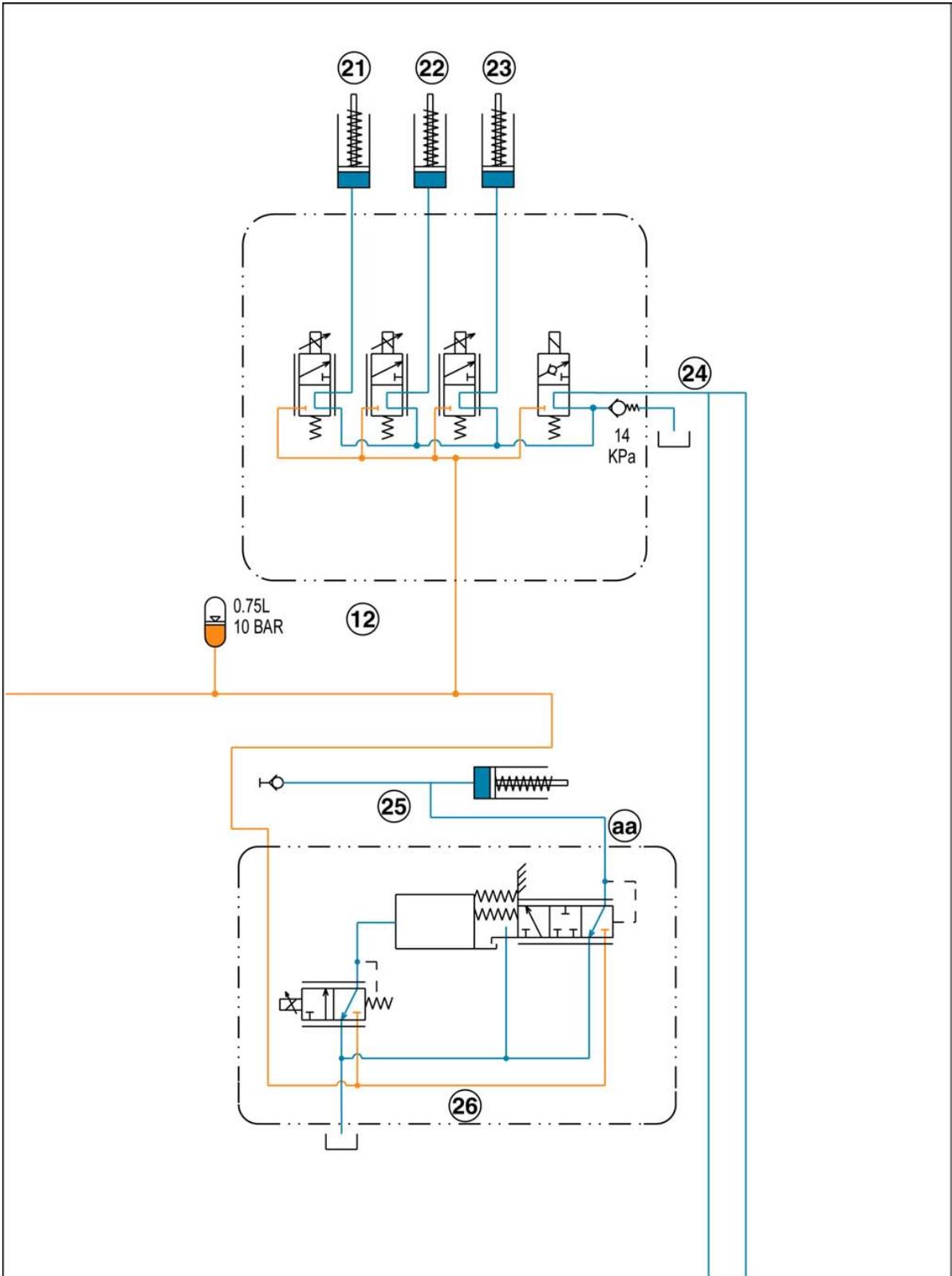
PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 04

T8050 NA

Standard flow

<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td style="background-color: orange;">4</td> </tr> <tr> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> </table>	1	2	3	4	5	6	7	8		Pressure and flow compensating (PFC) pump
	1	2	3	4						
	5	6	7	8						
		Regulated circuit pump flow								
		Charge/lube pump flow								
	Return to tank/sump									
	Megaflow pump									
1. Hitch valve	28. Service brake	L. Lube regulator/relief valve								
2. Hitch cylinders	29. Steering hand pump	M. Chassis ground								
3. Power beyond manifold	30. Steering cylinders	N. Bypass valve								
4. Charge/lube pump	31. Park/emergency brake	O. Odd/even lube								
5. PFC pump	32. Brake release pump	P. Drop box lube								
6. Screen/compensator	33. Filter	Q. Creep drive lube								
7. Oil cooler	34. Suspension control valve	R. Master clutch lube								
8. Priority/regulator valve	35. Suspension axle cylinders	S. Right hand brake/differential lube								
9. PTO/differential lock valve	36. Speed housing	T. MFD/range lube								
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20. First clutch	C. Signal	ff. Rod solenoid								
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25. Master clutch	H. Return	nn. To lube								
26. Master clutch inching valve	J. Pilot drain	pp. To brake valve								
27. Brake valve	K. Regulated									

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM



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PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 05

T8050 NA

Standard flow

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1	2	3	4										
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1. Hitch valve	28. Service brake	L. Lube regulator/relief valve											
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27. Brake valve	K. Regulated												