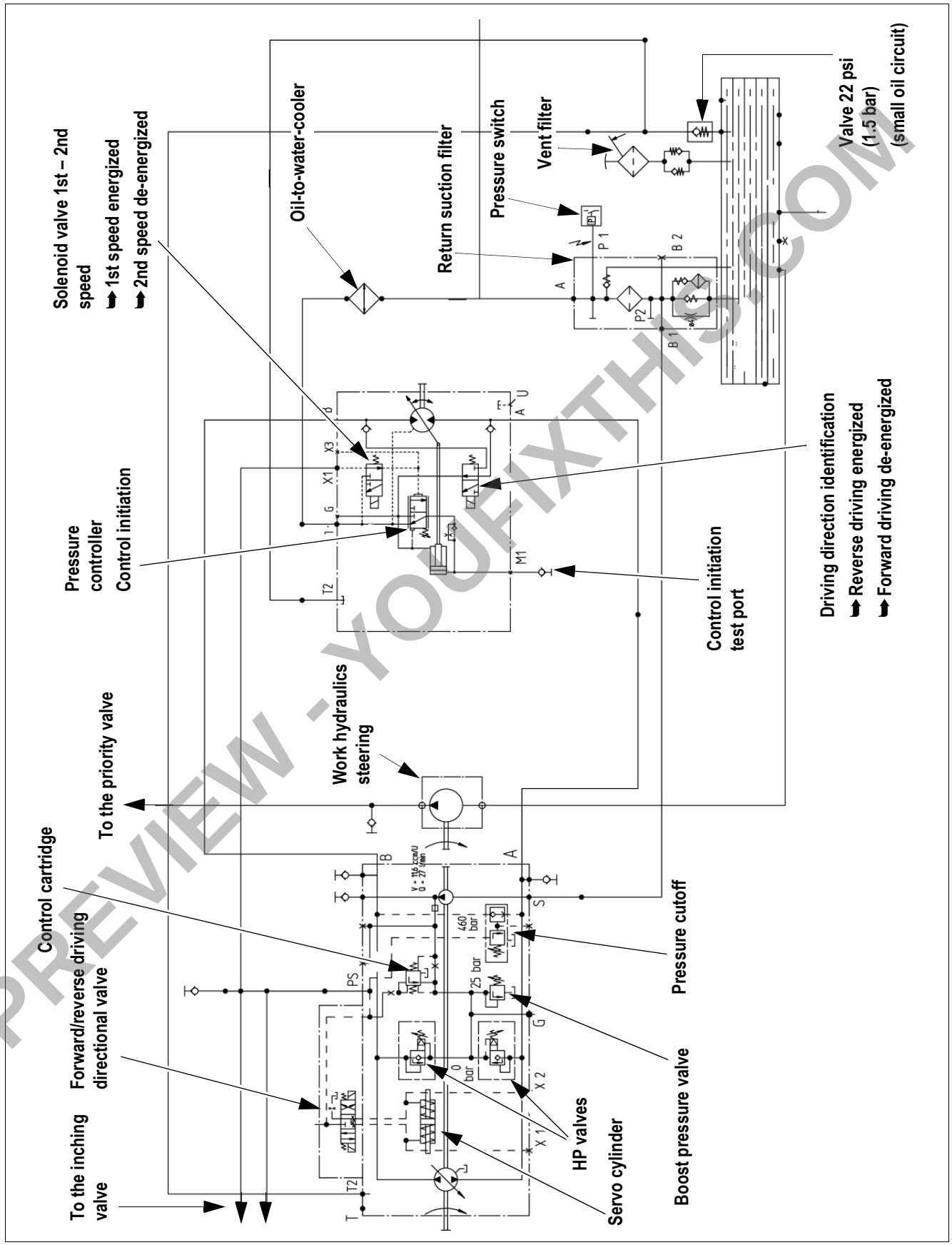
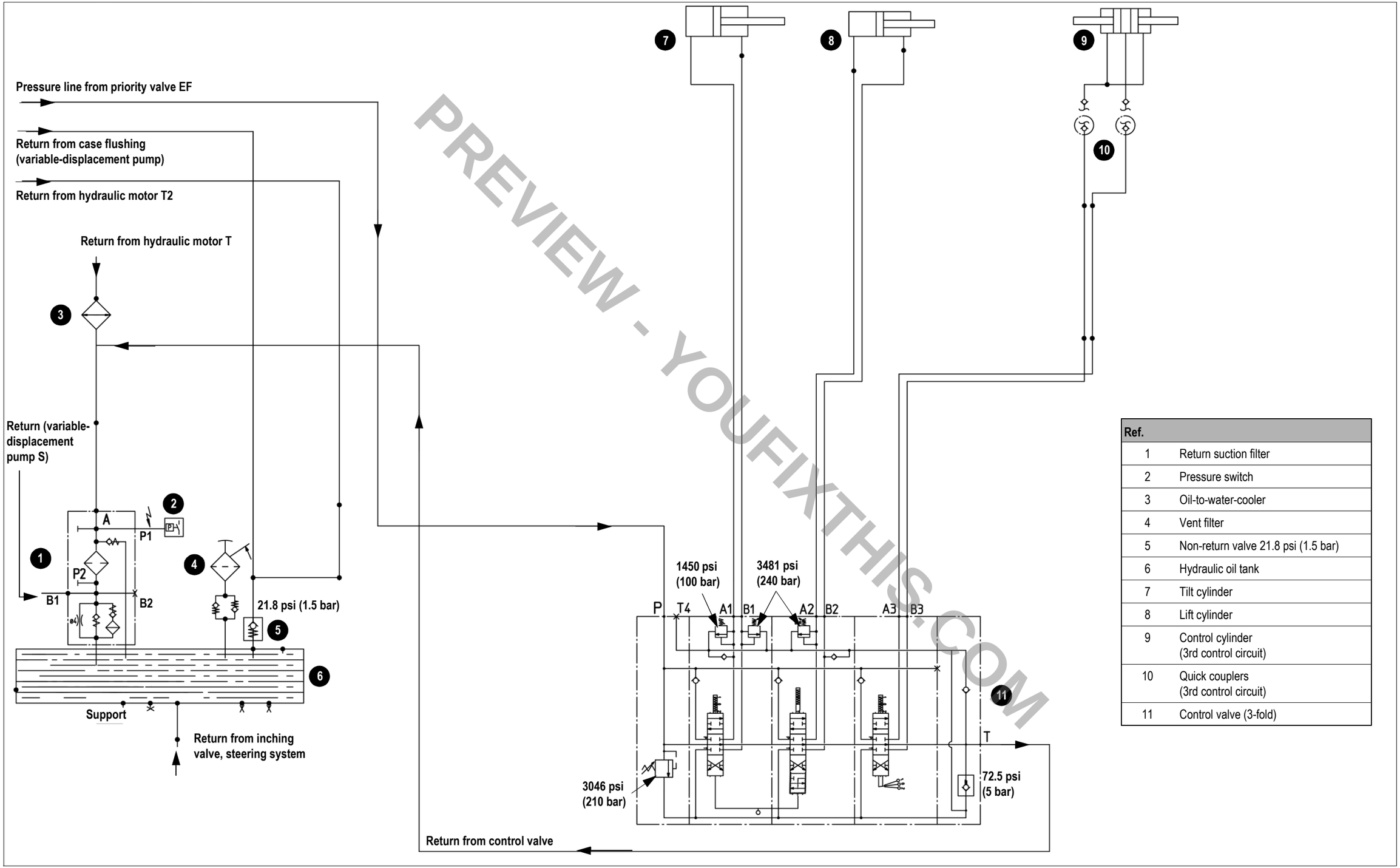
5.11 Drive, 12 mph (20 kph): wiring diagram



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9.13 Work hydraulics diagram



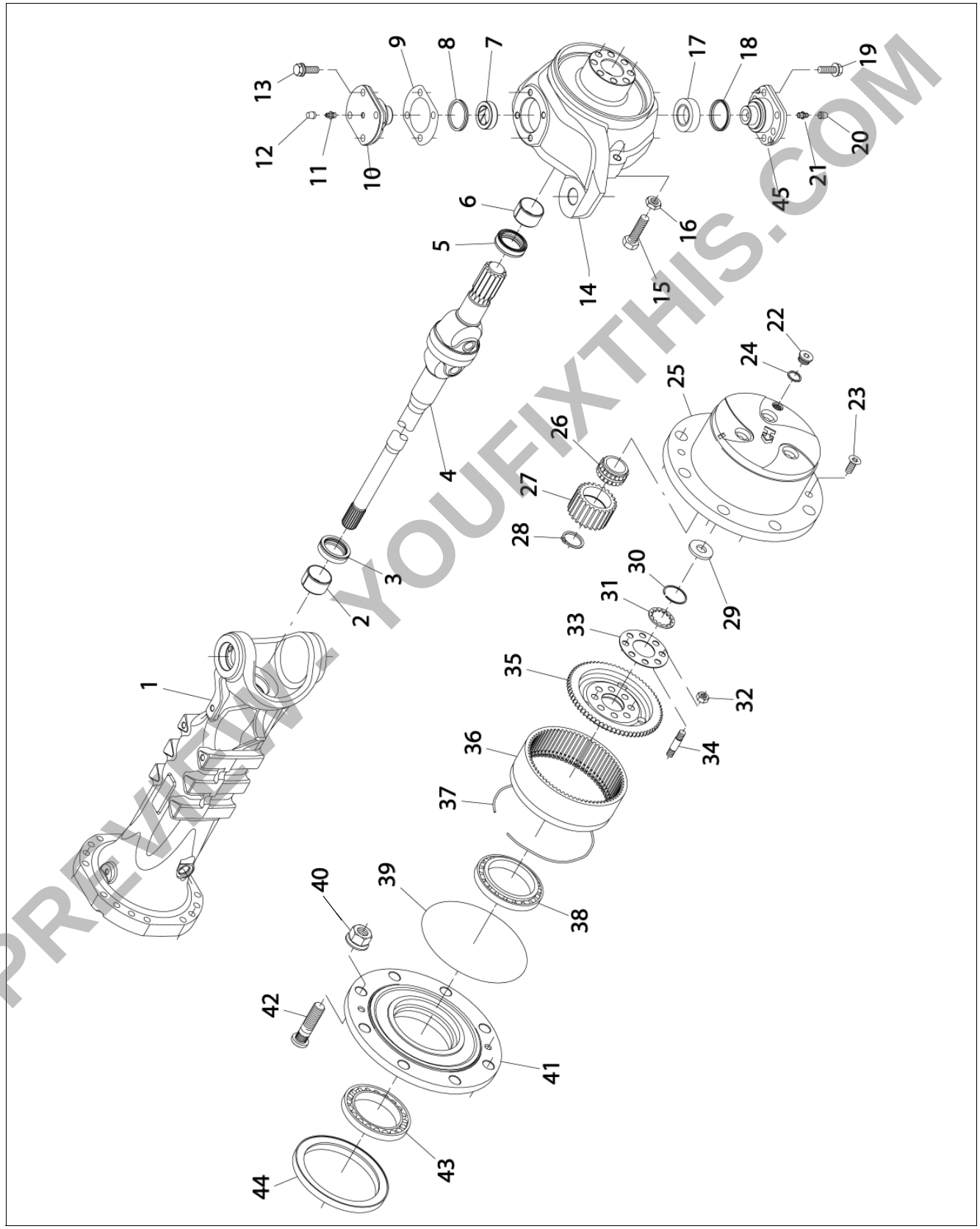
Ref.	
1	Return suction filter
2	Pressure switch
3	Oil-to-water-cooler
4	Vent filter
5	Non-return valve 21.8 psi (1.5 bar)
6	Hydraulic oil tank
7	Tilt cylinder
8	Lift cylinder
9	Control cylinder (3rd control circuit)
10	Quick couplers (3rd control circuit)
11	Control valve (3-fold)

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6 Axles

6.1 Axle overview



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TORQUE SPECIFICATIONS

Use these torque values when tightening hardware (excluding: locknuts and self-tapping, thread forming and sheet metal screws) unless specified otherwise

Hydraulic fittings with various seals (light application). All torque values are in lb-ft (Nm) unless marked otherwise.					
Thread	**Straight pipe fitting with thread and screwed plug (GE)**			**Non-return valve with elastic seal**	**Identification aid outside Ø**
	Sealing washer	**Elastic seal**	**O-ring**		
M10x1.0	7 (9)	13 (18)	11 (15)	13 (18)	0.4 in. (10 mm)
M12x1.5	15 (20)	18 (25)	18 (25)	18 (25)	0.5 in. (12 mm)
M14x1.5	26 (35)	33 (45)	26 (35)	26 (35)	0.6 in. (14 mm)
M16x1.5	33 (45)	41 (55)	30 (40)	37 (50)	0.6 in. (16 mm)
M18x1.5	41 (55)	52 (70)	33 (45)	52 (70)	0.7 in. (18 mm)
M22x1.5	48 (65)	92 (125)	44 (60)	92 (125)	0.9 in. (22 mm)
M27x2.0	66 (90)	133 (180)	74 (100)	107 (145)	1.0 in. (27 mm)
M33x2.0	111 (150)	229 (310)	118 (160)	155 (210)	1.3 in. (33 mm)
M42x2.0	177 (240)	332 (450)	155 (210)	266 (360)	1.7 in. (42 mm)
M48x2.0	214 (290)	398 (540)	192 (260)	398 (540)	1.9 in. (48 mm)
G1/8A	7 (9)	13 (18)	11 (15)	13 (18)	0.4 in. (9.73 mm)
G1/4A	26 (35)	26 (35)	22 (30)	26 (35)	0.5 in. (13.16 mm)
G3/8A	33 (45)	52 (70)	33 (45)	37 (50)	0.7 in. (16.66 mm)
G1/2A	48 (65)	66 (90)	41 (55)	48 (65)	0.8 in. (20.96 mm)
G3/4A	66 (90)	133 (180)	74 (100)	103 (140)	1.0 in. (26.44 mm)
G1A	111 (150)	229 (310)	118 (160)	140 (190)	1.3 in. (33.25 mm)
G1 1/4A	177 (240)	332 (450)	155 (210)	266 (360)	1.7 in. (41.91 mm)
G1 1/2A	214 (290)	398 (540)	192 (260)	398 (540)	1.9 in. (47.80 mm)

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4.13 Engine trouble

Problem	Possible causes
Engine does not start or is not easy to start	Parking brake not applied
	Steering-column control lever not in neutral
	Engine starting temperature too low
	Wrong SAE grade of engine lubrication oil
	Fuel quality does not comply with specifications
	Defective or discharged battery
	Loose or oxidized cable connections in starter circuit
	Defective starter, or pinion does not engage
	Wrong valve clearance
	Defective fuel injector
Engine starts, but does not run smoothly or faultlessly	Fuel quality does not comply with specifications
	Wrong valve clearance
	Injection line leaks
	Defective fuel injector
Engine overheats; temperature warning system responds	Oil level too low
	Oil level too high
	Dirty air filter
	Defective air filter maintenance switch or gauge
	Fouled oil cooler fins
	Defective fan, torn or loose V-belt
	Cooling air heats up
	Resistance in cooling system too high, flow capacity too low
	Defective fuel injector
Insufficient engine output	Oil level too high
	Fuel quality does not comply with specifications
	Dirty air filter
	Defective air filter maintenance switch or gauge
	Wrong valve clearance
	Injection line leaks
	Defective fuel injector
Engine does not run on all cylinders	Injection line leaks
	Defective fuel injector

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2 Specifications

2.1 Frame

Sturdy steel sheet frame, rubber-mounted engine

2.2 Types and Models: overview

Type	Model
346-02	**AWS36**
347-02	**AWS46**

2.3 Engine

Wheel loader model	**AWS36**	**AWS46**
Engine	Deutz diesel engine	
Model	F4M 2011	BF4M 2011
Design	In-line	
No. of cylinders	4	
Displacement	189.7 in.³ (3109 cm³)	
Bore and stroke	3.7 in. x 4.4 in. (94 x 112 mm)	
Compression ratio	1:19	1:17.5
Output (as per ISO 9249)	59 hp/44 kW at 2400 rpm	76 hp/56 kW at 2300 rpm
Max. torque	143.8 lb.-ft. (195 Nm) at 1700 rpm	199.1 lb.-ft. (270 Nm) at 1600 rpm
Specific minimum fuel consumption	7.8 oz/kWh (222 g/kWh)	7.4 oz/kWh (210 g/kWh)
Fuel injection system	Direct fuel injection	
Firing order	1-3-4-2	
Starting aid	Glow plug	
Max. inclined position (engine no longer supplied with oil)	Max. lateral left/right inclination: 30 and 57% Max. uphill/downhill inclination: 30 and 57% **Observe the tilting limit of the machine!**	
Oil pressure	45.5–65.2 psi (3.0–4.5 bar) at 2300 rpm	
Valve tip clearance (engine at cold temperature)	Intake valve 0.01 in. (0.3 mm) Exhaust valve 0.02 in. (0.5 mm)	

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3.6 Maintenance schedule

Work description

For service and maintenance work on the attachment, also refer to the operation and maintenance manual of the attachment manufacturer.

	Maintenance plan/service hours (s/h)					
	Delivery inspection	Maintenance work (once a day)	"A" every 50 s/h once a week	1st Inspection[1] at 100 s/h	"B" every 500 s/h[2] 2nd Inspection	"C" every 1500 s/h once a year
Oil and filter changes ( ):						
Carry out the following oil and filter changes (check oil levels after test run):						
• Engine oil				●	●	●
• Engine oil filter				●	●	●
• Fuel filter, fuel prefilter				●	●	●
• Air filter insert [3,4]: replace safety cartridge every 3rd time the air filter insert is replaced					●	●
• Gearbox oil in front and rear axle differentials and in rear axle gearbox				●		●
• Gearbox oil in front and rear axle planetary drives (left and right)				●		●
• Hydraulic oil[5]						●
• Hydraulic oil filter insert				●		●
• Breather filter – hydraulic oil tank [4]						●
Inspection work ( ):						
Check the following material. Refill if necessary:						
• Engine oil	●	●	●			
• Hydraulic oil	●	●	●	●	●	
• Gearbox oil in front and rear axle differentials and in rear axle gearbox	●			●	●	
• Gearbox oil in front and rear axle planetary drives (left and right)	●			●	●	
• Brake fluid[6]	●	●	●	●	●	●
• Check radiator for engine and hydraulic oil for contamination. Clean if necessary[7]			●	●	●	●
• When using biodegradable oil: drain the condensation water in the hydraulic oil tank [5]					●	●
• Clean dust valve on air filter housing [3]	●	●	●	●	●	●
• V-belt: check condition and pre-tension. Retighten or replace if necessary[8]	●	●	●	●	●	●
• Check the fuel/water separator. Drain water if necessary			●	●	●	●
• Clean filter insert on fuel pump. Replace if necessary			●	●	●	●
• Check valve tip clearance (engine timing). Set if necessary					●	●
• Battery: check charge condition					●	●
• Heating: clean dust filter. Replace every 1500 s/h if necessary[9]						●
• Check and set service brake and handbrake pads. Replace if necessary				●	●	●
• Tire check (damage, air pressure, tread depth)	●	●	●	●	●	●
• Engine coolant (also check antifreeze in autumn/winter and temps below 40°F (4°C)	●			●	●	●

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1.5 Safety decals

The following section explains signs and symbols that may not be easily understood.

Warning!

Safety decals must be replaced if they become unreadable.



Fig. 9: Eye hook decal

Meaning

Warning!

Do not use the eye hooks on the cab to crane-lift the machine.

Location

Cab roof (4x).

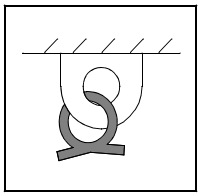


Fig. 10: Machine tie down point decal

Meaning

Points for tying down the machine.

The eye hooks are used for tying down the machine during loading and transport.

Location

On the left and right of the machine frame above the front axle attachment, and at the rear underneath the engine.



Fig. 11: Sound levels decal

Meaning

Sound levels produced by the machine.

L_{WA} = sound power level.

For additional information, see *Section "Noise levels"* on page 2-9.

Location

Rear window.



Fig. 12: Danger decal

Meaning

General indication of danger.

This decal warns persons standing or working near the machine of existing hazards within the area of increased danger around the machine.

Location

Front left and right of machine frame and at rear of machine.

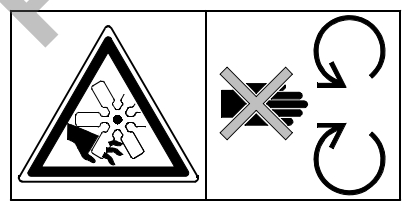


Fig. 13: Prohibitory decal

Meaning

DO NOT open engine cover before engine is at a standstill.

DO NOT touch any moving or turning parts.

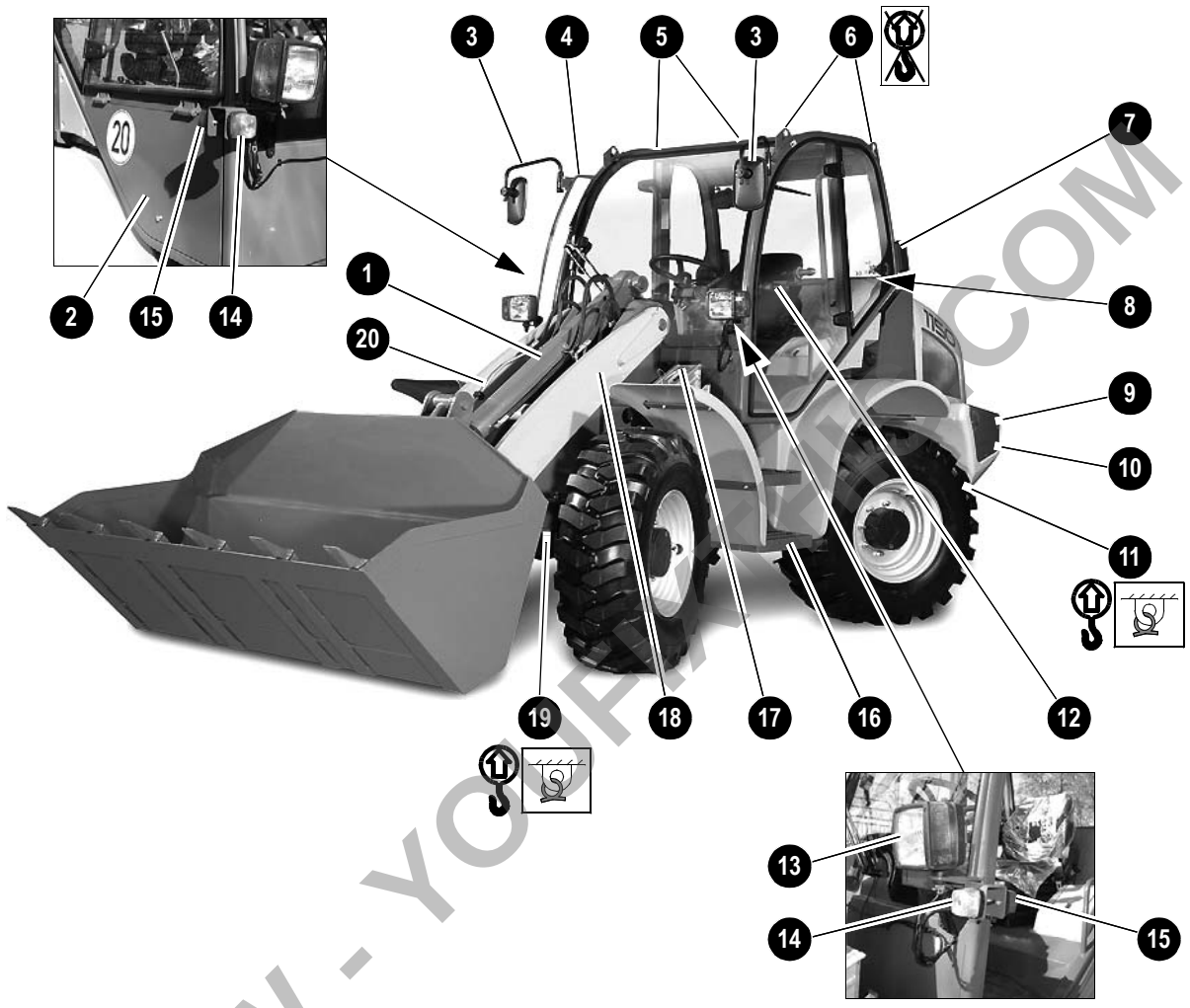
Location

On the engine cover of the machine.

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1.3 Machine overview



1	Tilt cylinder
2	Service access (fuses, relays, recirculated air filter)
3	Rearview mirror
4	Handle
5	Rear work light
6	Eye hook (for cab removal)
7	Brake, rear and turn indicator lights
8	Door arrester
9	Towing apparatus
10	Reflectors
11	Rear eye hook for tying down the machine

12	Door handle
13	Headlight with turn indicator
14	Position lights (white)
15	Position lights (red)
16	Cab access
17	Wheel chock
18	Loader unit
19	Front eye hook for tying down the machine
20	Lift cylinder

Fig. 1: Machine overview

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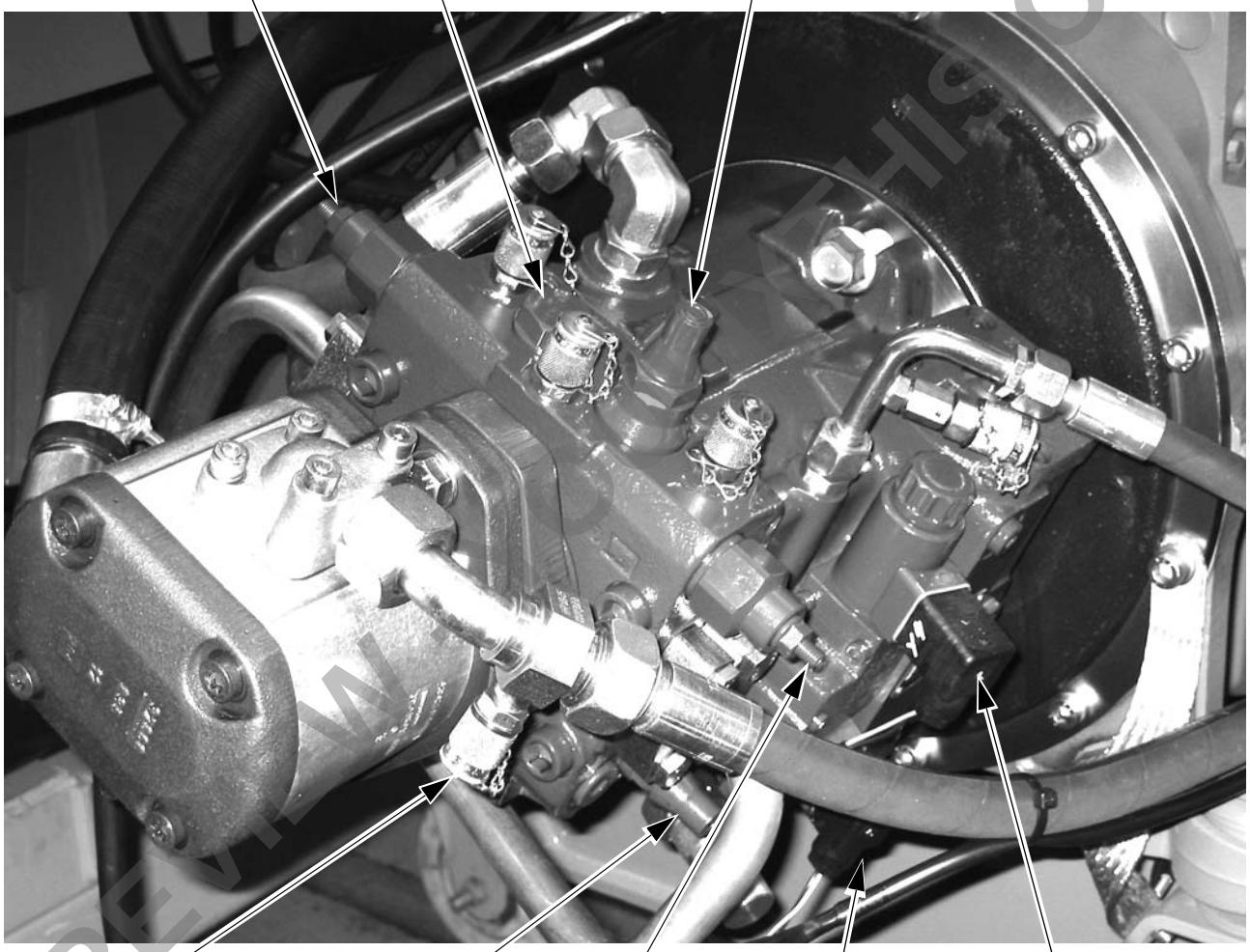
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5.4 Variable-displacement pump, 12 mph (20 kph) — model AWS46



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