Sealing and Locking Fluids

Type	Description
Loctite 242	Medium strength thread lock
Loctite 243	Medium strength oil tolerant sealant
Loctite 270	Maximum strength stud lock
Loctite 496	Instant Adhesive
Loctite 510	High temperature flange sealant
Loctite 542	Fine thread sealant
Loctite 638	Maximum strength retaining compound
Loctite 648	High strength/rapid cure retaining compound

General Specifications

Engine

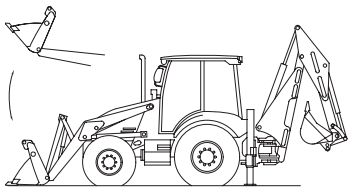
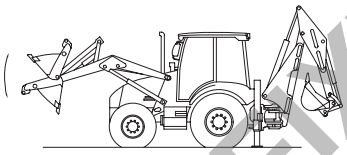
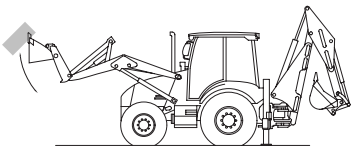
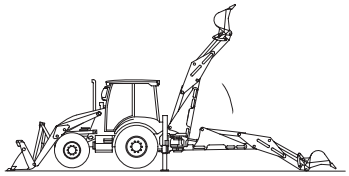
Engine	Low Power (820)	High Power (860 – 970)
Make	Perkins	
Model	1104C–44T	
Bore and Stroke	105x127mm	
Capacity	4400 cc	
Compression Ratio	16.5:1	
Firing Order	1 3 4 2	
Type	2164/2200	2166/2200
Build List (With Air Con)	RG38043	RG38044
Build List (Without Air Con)	RG38100	RG38099
Power @ 2200rpm	68.5kW (92 HP)	74.5kW (100 HP)
Torque @ 1400rpm	395Nm	415Nm
Turbocharger	Garrett GT 25, with wastegate	
Perkins P/N	2674A226	
Wastegate beginning to operate pressure	1.0 +/- 0.05bar	
Injection Pump	Delphi	
Model	DP210	
Type	1398/2644H013	1405/2644H023
Setting Code	XR/2/2350	DT/2/2350
Perkins Type	9320A212G	9320A342G
Perkins P/N	2644H002	2644H003
Injection Advance	0.5° BTDC	
Timing	Pin Timed 0° ATDC	
Speed at which cut off starts under full load	2200 +/- 25rpm	
Maximum No Load Speed	2350 +/- 25rpm	
Idle Speed	700 – 1200rpm	

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DIAGNOSING AND TESTING — HYDRAULICS/PRESSURE TESTING

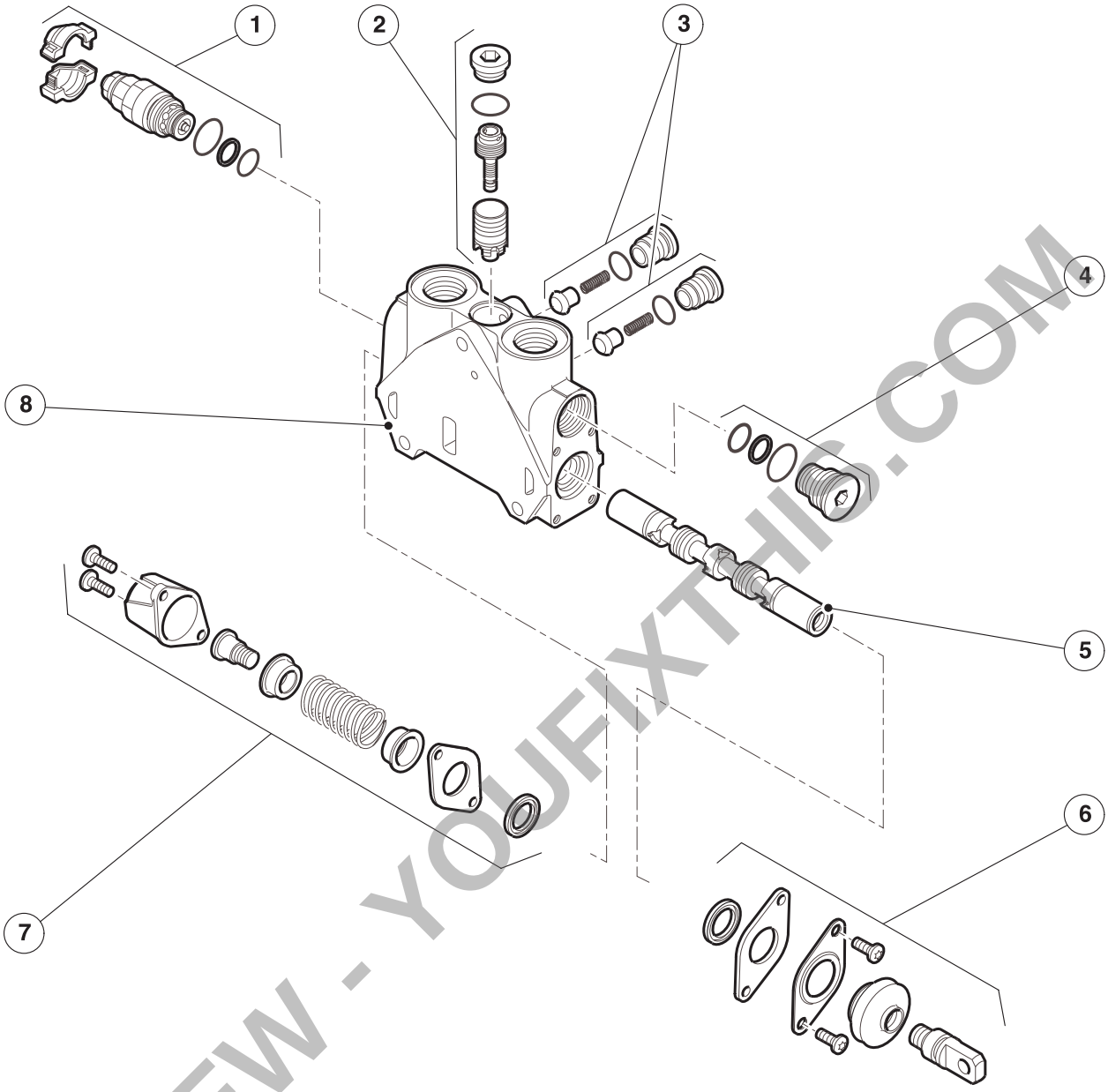
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Classification	Check Item	Conditions		Pump 1 Operation Time (± 15%)	Pump 1 and 2 Operation Time (± 15%)
Operational Speed	Front Loader Beam	Positioning  TV074050 • Engine Speed 1800 rpm • Oil Temp 50–60 °C (122–140 °F)	Raise	9.5 Secs (± 1.4 Secs)	5.3 Secs (± 0.8 Secs)
			Lower	3.2 Secs (± 0.5 Secs)	3.0 Secs (± 0.5 Secs)
	Front Loader Bucket	Positioning  TV074051 • Engine Speed 1800 rpm • Oil Temp 50–60 °C (122–140 °F)	Crowd	4.5 Secs (± 0.7 Secs)	2.7 Secs (± 0.4 Secs)
			Dump	3.2 Secs (± 0.5 Secs)	2.0 Secs (± 0.3 Secs)
	Multi-Purpose Loader Bucket	Positioning  TV074052 • Engine Speed 1800 rpm • Oil Temp 50–60 °C (122–140 °F)	Open	1.8 Secs (± 0.3 Secs)	1.3 Secs (± 0.2 Secs)
			Close	1.9 Secs (± 0.3 Secs)	1.3 Secs (± 0.2Secs)
	Backhoe Boom	Positioning  TV074053 • Engine Speed 1800 rpm • Oil Temp 50–60 °C (122–140 °F)	Raise	5.8 Secs (± 0.9 Secs)	4.0 Secs (± 0.6 Secs)
			Lower	4.0 Secs (± 0.6 Secs)	3.6 Secs (± 0.5 Secs)

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Auxiliary Service Element



TV040666

1	Pressure Relief Valve
2	Compensator Valve
3	Check Valves
4	Plug
5	Valve
6	Mechanical Actuator
7	Mechanical Return
8	Valve Body

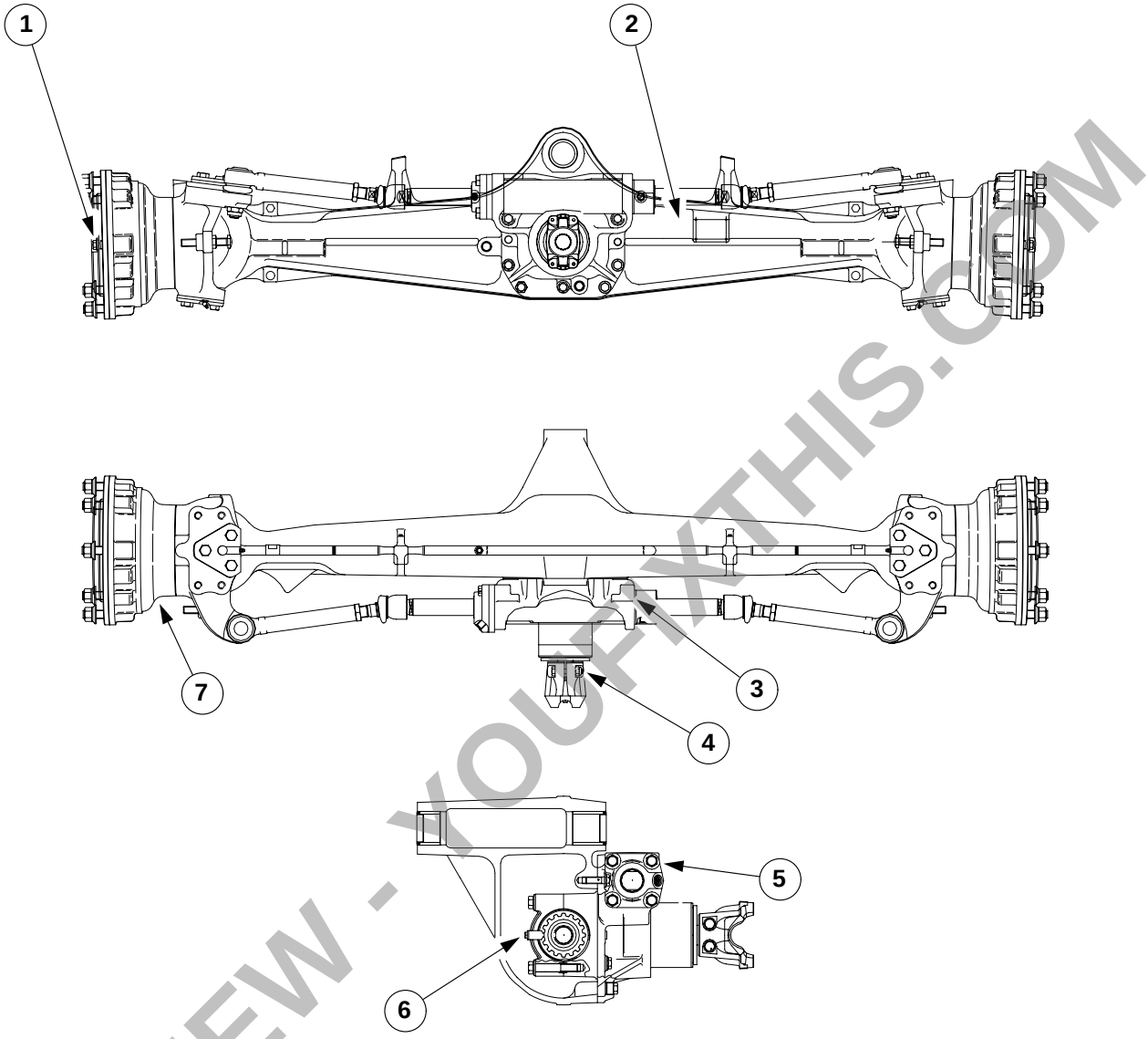
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DESCRIPTION AND OPERATION — FOUR-WHEEL DRIVE FRONT AXLE

BHL1102OA

General Description



TV040947

1	Epicyclic Reduction Gear Group
2	Axle Housing Group
3	Differential Support Group
4	Pinion Group
5	Steering Cylinder Group
6	Differential Group
7	Wheel Hub Group

The axle described in this manual consists of the following groups:

- WHEEL HUB GROUP: wheel support parts containing the epicyclic reduction gears.
- EPICYCLIC REDUCTION GEAR GROUP: planetary carrier with reduction/transmission parts.
- AXLE HOUSING GROUP: load-bearing shell structure of the axle.

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Torque Values

Description	Nm	Lb.ft
Epicyclic Reduction Hub	80	59
Wheel Hub	230	170
Axle Drain/Fill Plugs	60	44
Wheel Studs	70	52
King Pin	190	140
Crown Wheel	95	70
Grease Nipple	8	6
Differential Adjustment Nut Locking Tabs	13	10
Differential Housing	169	125
Differential Half Collers	266	196
Breather	10	7
Blanking Plug	25	18
Steering Cylinder	120	89
Swivel Joint	300	221
Tie-Rod Locking Nut	250	184
Tie-Rod End	220	162
Steering Angle Adjustment Locking Nut	150	111

General Specifications

Description	Value
Crown Wheel Gear Ratio	2.133/1
Epicyclic Reduction Gear Ratio	6.00/1
Total Ratio	12.80/1
Dry Weight	303 Kg
Input Rotation	Clockwise (C.W.)
Steering Angle	55° 0–2mm
Toe-in	0–5mm
Crown Wheel / Pinion Backlash	0.18 – 0.23mm
Pinion Shaft Bearing Pre-Load “P”	“P” = 9.2 – 13.7 daN
Total Pinion/Differential Bearing Pre-load	(4.3 + P) — (6.45 + P) daN
Axle Housing Oil Capacity	6.5 Litres
Epicyclic Reduction Hub Oil Capacity	1.0 Litre
Oil Type (Use recommended oil enriched in Additives)	API GL5 (for possible alternatives see – GENERAL INFORMATION – FLUIDS AND LUBRICANTS at the start of this manual).
Grease Type	TECNOLUBE SEAL PLOYMER 400/L (DIN = KHER1R ISO-I-XMR-XM2) AGIP MU/EP2 (King pin only)
Sealant	Silastic 732

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General Information

Transmission	Power Shift
Make	Dana
Model	121-4FT 16000-22
Fermec P/N	6108875M91
Torque Converter Stall Ratio	2.60:1
Pump Pressure	20.5 – 23.5bar
Clutch Pressure	20.5 – 23.0bar
Torque Converter Working Pressure	4.9 – 5.0bar
Torque Converter Safety Valve Pressure	9.0bar
Solenoid Pressure	9.5bar
860 Transmission Control Unit	4503428
970 Transmission Control Unit	4503427
Lubrication Pressure	0.4 – 0.5bar

Capacity

System	Temperatures	Viscocity	Specification	Capacity	Notes
Powershift Transmission	ALL	10W	ATF	23 (Total System)	Check oil level with engine running at idle. Approved oils: ATF Elfmatic G3 Esso D (21611)

Temperature Specifications

- Normal operating temperature 70 — 120°C (158 — 248°F).
- Maximum allowed transmission temperature 120°C (248°F).

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Axle Problem and Diagnosis

Problem	Possible Cause	Action
Noise while driving	• Excessive backlash between pinion and ring gear.	• ADJUST.
	• Worn out pinion and gear ring.	• REPLACE.
	• Worn out pinion bearings.	• REPLACE.
	• Pinion bearings loosened.	• ADJUST.
	• Excessive axial pinion backlash.	• ADJUST.
	• Worn out differential bearings.	• REPLACE.
	• Differential bearings loosened.	• ADJUST.
	• Ring gear out of roundness.	• REPLACE.
	• Low Lubricant level.	• OIL level.
	• Poor or wrong lubricant.	• REPLACE.
	• Bent halfshaft.	• REPLACE.
Noise whilst driving in neutral	• Noise coming from axle is usually heard when vehicle moves in neutral gear but are not loud.	• REPLACE or ADJUST (see above).
	• Incorrect backlash between pinion and ring (sound heard while decelerating disappears while increasing the speed.	• REPLACE.
	• Pinion or input flange worn out.	• ADJUST.
Intermittent noise	• Ring gear damaged.	• REPLACE crown wheel and pinion set.
	• Differential box bolts loosened.	• TIGHTEN to torque.
Constant noise	• Ring gear teeth or pinion damaged.	• REPLACE crown wheel and pinion set.
	• Worn out bearings.	• REPLACE.
	• Pinion spline worn out.	• REPLACE.
	• Bent halfshaft.	• REPLACE.
Noise while steering	• Worn out differential gears.	• REPLACE.
	• Worn out differential box or spider.	• REPLACE.
	• Differential thrust washers worn out.	• REPLACE.
	• Halfshaft spline worn out.	• REPLACE.

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