



Document Title: Volvo standard tightening torques	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Volvo standard tightening torques

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

The tightening torques in the following tables apply to bolts and nuts with tensile strength. The tables should be used as a general instruction for tightening bolts and nuts without specified values. The charts contains values for course thread bolts and nuts.

Torque values should be increased with $\approx 10\%$, for flange bolts.

All standard torques for bolts are without surface treatment.

The standard torque for bolts lubricated with oil should be reduced with 20% of the given value.

Standard tightening torque charts

Bolt size Metric Coarse Threads	Tensile strength 8.8		Tensile strength 10.9	
	(Nm)	(lbf ft)	(Nm)	(lbf ft)
M5	6	4	8	6
M6	10	7	14	11
M8	25	18	35	26
M10	50	37	70	52
M12	87	64	122	90
M14	139	103	195	144
M16	213	157	299	220
M18	293	216	413	305
M20	416	307	585	432
M24	719	530	1010	745
M27	1060	782	1490	1100
M30	1140	840	2025	1493
M36	2500	1844	3600	2653

Bolt size Inch SAE Coarse Threads	Tensile strength 5		Tensile strength 8	
	(lbf ft)	(Nm)	(lbf ft)	(Nm)
1/4	10	13,6	14	19
5/16	21	28,5	29	39,3
3/8	37	50,2	52	70
7/16	59	80	84	114
1/2	90	122	128	174
9/16	130	176	184	250
3/4	200	271	284	388
1 1/8	300	408	428	581
1 1/4	400	544	576	776
1 3/8	500	680	720	970
1 1/2	600	816	864	1164
1 5/8	700	952	1008	1358
1 3/4	800	1088	1152	1552
1 7/8	900	1224	1300	1746
2	1000	1360	1440	1940
2 1/8	1100	1496	1584	2134
2 1/4	1200	1632	1728	2328
2 3/8	1300	1768	1872	2522
2 1/2	1400	1904	2016	2716
2 5/8	1500	2040	2160	2910
2 3/4	1600	2176	2304	3104
2 7/8	1700	2312	2448	3298
3	1800	2448	2592	3492

Product: L350F Volvo Wheel Loaders Service Manual

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3/4	320	434	451	612
7/8	515	700	728	988
1	775	1052	1091	1480
1 1/8	953	1290	1545	2100
1 1/4	1344	1823	2180	2960
1 3/8	1600	2170	2650	3600
1 1/2	2000	2714	3200	4340

Sample manual. Download All 2088 pages at:

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Document Title: Lubrication specifications	Function Group: system, 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Lubrication system, specifications

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Oil pressure

Oil pressure max. warm engine, high idle	375–550 kPa (3.75–5.50 bar) (54.4–79.8 psi)
Oil pressure min. warm engine, low idle	175 kPa (1.75 bar) (25.4 psi)

Oil consumption

Oil consumption in percentage of fuel consumption	Max. 0.45 %
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NOTE!

A new or fully overhauled engine often uses more oil than an engine already in operation. It is only possible to determine the correct oil consumption, of the engine, after 1000-1500 operating hours.

Document Title: Fuel system, tightening torques	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Fuel system, tightening torques

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo	Arvika	1001	9999

Injector

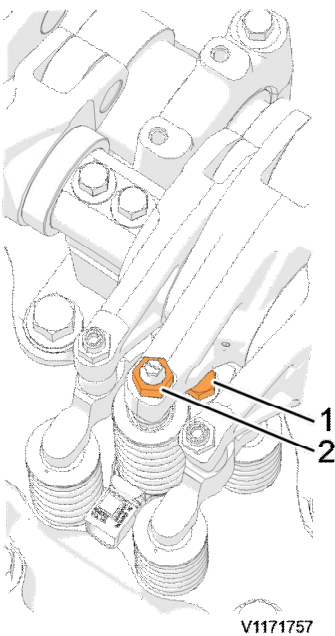


Figure 1

1. Bolt, yoke, injector	
Step 1:	20 +5 Nm (15 +4 lbf ft)
Step 2:	180° ±5°
Step 3:	Loosen the bolt approx. 150°
Step 4:	25 +5 Nm (18 +4 lbf ft)
Step 5:	90° ±5°
2. Lock nut for adjusting screw, injector	52 ±4 Nm (38 ±3 lbf ft)

Fuel hose connections

Banjo bolt, fuel hose connections	
M10	12 ±2 Nm (8.8 ±1.5 lbf ft)

M12	20 ±3 Nm (14.8 ±2.2 lbf ft)
M14	35 ±5 Nm (25.8 ±3.7 lbf ft)
M16	40 ±5 Nm (29.5 ±3.7 lbf ft)

Document Title: Engine, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Engine, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Number of cylinders	6
Cylinder bore	144 mm (5.67 in)
Stroke	165 mm (6.50 in)
Cylinder capacity	16.1 litres (4.25 US gal)
Injection order	1-5-3-6-2-4
Idling speed, low	750 ±25 rpm
Idling speed, high	1970 ±20 rpm
Weight, engine	1525 kg (3362 lbs)

Stall speed torque converter⁽¹⁾

HTE400	1810–1830 rpm
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(1) Shall be performed on gear 2, APS-mode service (manual), and without using the hydraulics.

Document Title: Valve mechanism, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Valve mechanism, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo	Arvika	1001	9999

Valve mechanism	
Valve arrangement	Top valves with IEGR-rocker arm
Inlet valves	0.30 mm (0.012 in)
Exhaust valves	0.60 mm (0.024 in)

Document Title: Tightening torques, valve cover	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Tightening torques, valve cover

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Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Valve cover	
Valve cover, attaching bolts	25 ± 3 Nm (18 ± 2 lbf ft)

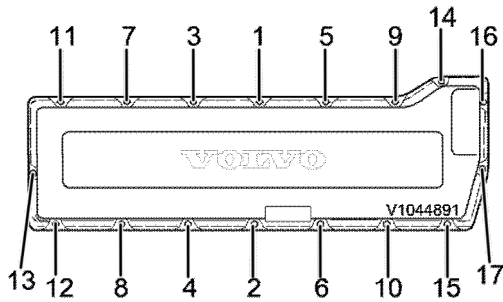


Figure 1
Tightening diagram, valve cover

Document Title: Engine, capacities	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Engine, capacities

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

NOTICE

Stated capacity applies when changing, unless otherwise stated.

Engine	
Engine oil, when changing, incl. filters	42 l (11.1 US gal)

Document Title: Fuel feed pump, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Fuel feed pump, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Fuel feed pump	
Type	Gear pump
Feed pressure	min. 220 kPa (32 psi) at low idle min. 375 kPa (54 psi) at above 1800 rpm

Document Title: Oil-bath precleaner, volume	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Oil-bath precleaner, volume

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L350F Volvo			

Oil-bath precleaner (optional equipment)	
Oil-bath precleaner 2 pcs., volume	2x9.1 l (2x2.4 US gal)

Document Title: Tightening torques, cooling fan	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Tightening torques, cooling fan

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Cooling fan motor, bracket	85 ± 9 Nm (63 ± 7 lbf ft)
Cooling fan, hub nut	220 ± 22 N m (162 ± 16 lbf ft)

Document Title: Hydraulic pump (P3), specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Hydraulic pump (P3), specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Pump 3 (P3) Cooling fan pump / Brake pump	
Type	Axial piston pump, variable displacement
Positioned	On torque converter's right side, in series with pump 2
Displacement	45 cm ³ (2.75 in ³)
Max. flow at 30 r/s (1800 rpm) and 10 MPa (1450 psi)	84 litres/minute (22.2 US gal / minute)
Stand-by pressure, high idle (LS disconnected)	2.0 ± 0.1 MPa (20 ± 1 bar) (290 ± 15 psi)
Stand-by pressure, high idle (LS connected)	2.4 ± 0.1 MPa (24 ± 1 bar) (348 ± 14.5 psi)
Working pressure (max.)	25.5 ± 0.5 MPa (255 ± 5 bar) (3698 ± 72 psi)
Unloading pressure	26.0 ± 0.4 MPa (260 ± 4 bar) (3771 ± 58 psi)
Fan speed at pressure test	1350-± 50 rpm

Document Title: Cooling system, volume	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Cooling system, capacity

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Coolant, total	85 l (22.5 US gal)
Coolant when changing, incl. filter	68 l (18.0 US gal)

Document Title: Temperature limits for cooling fan speed, specifications.	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Temperature limits for cooling fan speed, specifications.

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Valid for serial numbers			
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L350F Volvo			

Signals from the different sensors vary linearly between 0.0 and 1.0 depending on the temperature. The cooling fan signal with the highest value controls the requested cooling fan speed. If the engine speed is below 800 rpm, the value for the charge air will be 0 = 45 °C (113 °F)

System	Temperature interval
Coolant flowing out of the radiator	70–80 °C (158–176 °F)
Hydraulic system when the thermostat has opened, see Thermostat specifications	70–95 °C (158–203 °F)
Axles front and rear when the engine thermostat has opened, see Thermostat specifications	90–133 °C (194–271.4 °F)
Transmission	90–105 °C (194–221 °F)
Engine	85–95 °C (185–203 °F)
Charge air when induction air temperature is 25 °C (77 °F) or lower	45–60 °C (113–140 °F)
Charge air when induction air temperature is above 25 °C (77 °F)	Induction air temperature = T T+20 °C to T+35 °C (T+68 °F to T+95 °F)

Document Title: Cooling fan rpm, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
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Cooling fan rpm, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

VCADS Pro parameter GDR is used to set up max. cooling fan speed by selecting sound reduction level (A, B, or C), depending on which requirements there are for cooling of the engine, charge-air, transmission, and hydraulic oil.

Cooling fan	
Basic speed	400 rpm
Speed at pressure test	1450 rpm

GDR	Max. fan speed at high idle	Description
A	900 rpm	Low sound level
B	1200 rpm	Standard cooling
C	1400 rpm[1]	Maximal cooling

[1]1350 rpm if axle oil cooling is installed

Document Title: Engine, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Engine, tightening torques

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

NOTICE

Regarding bolted joints which are not listed here, see “Volvo standard tightening torques”

Engine mounting	
Engine member – Frame	220 Nm (162 lbf ft)
Engine mount front/rear	275 ± 45 Nm (203 ± 33 lbf ft)
Engine brackets right/left	220 ± 45 Nm (162 ± 33 lbf ft)
Engine	
Vibration damper	90 ± 10 Nm (66.4 ± 7.3 lbf ft)

Document Title: Valve cover, tightening torque	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Tightening torques, valve cover

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Valve cover	
Valve cover, attaching bolts	25 ± 3 Nm (18 ± 2 lbf ft)

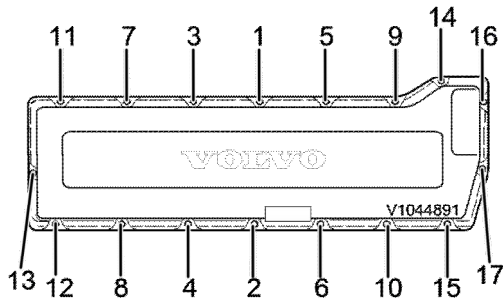


Figure 1
Tightening diagram, valve cover

Document Title: Battery, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Battery, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Battery	
Total	2 batteries connected in series
Voltage	12 V
Battery capacity	170 Ah

Charge level	Voltage
Fully charged battery	12.78 V
Charge within 24 hours	12.54 V
Minimum charge to store machine for 30 days	12.64 V

Document Title: Battery, weight	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Battery, weight

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Battery	
Weight, incl. electrolyte	45.5 kg (100.3 lb)

Document Title: Electrical specifications	Function Group: system, 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Electrical system, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Electrical system	
System voltage	24 V

Document Title: Preheating, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
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Preheating, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Preheating coil	
Output	4 kW

Document Title: Alternator 80 A, specification	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Alternator 80 A, specification

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Alternator, 80 amp with regulator	
Type	Alternating current
Output (rated output)	2280 W
Voltage, at +20 °C (68 °F)	28.3 ± 0.3 V
Current, maximum	80 A
Resistance across rotor winding	8.0 ± 0.4 Ω
Resistance in stator winding	0.1 Ω

Document Title: Starter specifications	motor,	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo				

Starter motor, specifications

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Model	Production site	Serial number start	Serial number stop
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Starter motor	
Output	7 kW

Document Title: Front and rear axles, tightening torque	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
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Front and rear axles, tightening torque

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

NOTE!

Bolted flanges not indicated here, see Volvo standard tightening torques.

	Front axle, AHW90	Rear axle, AHW90
Front axle - frame	3000 ±140 Nm (2215 ±105 lbf ft)	—
Rear axle mounting – frame	—	1350 ±50 Nm (995 ±37 lbf ft)
Plug, drain, hub	68 ±10 Nm (50 ±7 lbf ft)	
Plug, drain, axle	127–176 Nm (94–130 lbf ft)	
Final drive (differential carrier)		
Bolts, mounting final drive (differential carrier)	450 ±60 Nm (332 ±44 lbf ft)	
Hub reduction		
Hub washer, measuring	57.9–67.7 Nm (42.70–49.93 lbf ft)	
Hub washer, installing	279 ±29 Nm (205.7 ±21.3 lbf ft)	
Cover plate	98–123 Nm (72.3–90.7 lbf ft)	
Planet carrier	98–123 Nm (72.3–90.7 lbf ft)	
Bolts, brake end plate	245–289 Nm (181–213 lbf ft)	
Bolts, spindle	925 ±100 Nm (680 ±75 lbf ft)	

Document Title: Front and rear axles, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Front and rear axles, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Oil, type	See Recommended lubricants, oils
Oil level: Max. min.	Lower edge of filler hole 5 mm (0.2 inch) below filler hole

Document Title: Front and rear axles, volume	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
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Front and rear axles, volume

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Front axle, rear axle	
Axles incl. hub reduction gears, total	155 litres (40.9 US gal)
Axles incl. hub reduction gears, when changing	150 l (39.6 US gal)

Document Title: Torque converter, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Torque converter, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Torque converter	
Type	Single-stage
Designation	C9672-6
Torque amplification, at stall	2,29:1
Safety valve opening pressure	0.76-0.9 MPa (7.6-9 bar)(110-130 psi)
Torque converter pressure	0.37-0.54 MPa (3.7-5.4 bar)(54-78 psi)

Document Title: Hydraulic transmission, volume	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Hydraulic transmission, volume

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Transmission incl. filter(s), total	85 l (22.5 US gal)
Transmission incl. filter(s), when changing	84 litres (22.2 US gal)

Document Title: Hydraulic transmission, specifications	Function Group: 030	Information Type: Service Information	Date: 4/14/2026
Profile: L350F Volvo			

Hydraulic transmission, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L350F Volvo			

Hydraulic transmission HTE400

General	
Type	Full PowerShift with torque converter
Number of gears	4 forward, 4 reverse
Gearshifting system	Electrohydraulic, APS
Transmission disengagement	Electric
Oil pressure	
Main pressure (1800 rpm)	3.5 ±0.2 MPa (35 ±2 bar) (508 ±29 psi)
Main pressure Low idling	Min 435 psi (3,0 MPa) (30 bar)
Lubrication oil pressure (1800 rpm)	0.12 ±0.06 MPa (1.2 ±0.6 bar) (17 ±9 psi)
Backup pressure, torque converter High idle and neutral gear	0.51 ±0.1 MPa (5.1 ±1 bar) (74 ±14 psi)
Relief pressure, torque converter High idle and neutral gear	0.92 ±0.22 MPa (9.2 ±2.2 bar) (133 ±32 psi)
Clutch pressure	
Forward transmission (1800 rpm)	2.6 ±0.2 MPa (26 ±2 bar) (377 ±29 psi)
Reverse transmission (1800 rpm)	3.1 ±0.2 MPa (31 ±2 bar) (450 ±29 psi)
1st gear (1800 rpm)	3.0 ±0.2 MPa (30 ±2 bar) (435 ±29 psi)
2nd gear (1800 rpm)	2.0 ±0.2 MPa (20 ±2 bar) (290 ±29 psi)
3rd gear (1800 rpm)	3.0 ±0.2 MPa (30 ±2 bar) (435 ±29 psi)
4th gear (1800 rpm)	3.0 ±0.2 MPa (30 ±2 bar) (435 ±29 psi)
Lockup (1800 rpm)	1.8 ±0.2 MPa (18 ±2 bar) (261 ±29 psi)

Torque converter	
Type	Single stage
Torque multiplication, when stalling	2,65:1
Safety valve, opening pressure	0.86 MPa (8.6 bar) (125 psi)

Upshifting conditions	
Gear	Min. vehicle speed for upshifting
2F → 3F	8 km/h (5.0 mph)
3F → 3F LU[T1] ⓘ	15 km/h
3F LU → 4F	22 km/h