Medium & Heavy Duty Diesel

CUMMINS

GENERAL SPECIFICATIONS

Engine	Cycle	Displ. Cu. Ins.	Compr. Ratio	Bore	Stroke	Firing Order ②	Inj. Timing ①
V8-210	4	504″	17.0:1	4.625″	3.750″	1,5,4,8,6,3,7,2	③24.5°
V8-555	4	555″	17.0:1	4.625″	4.125″	1,5,4,8,6,3,7,2	④22.5°
NH/NT 855	4	855″	15.8:1	5.4995″	6.000″	R-1,5,3,6,2,4 L-1,4,2,6,3,5	20.0°
V/VT 903	4	903″	15.5:1	5.4995″	4.750″	1,5,4,8,6,3,7,2	21.0°
KT 1150	4	1150″	14.5:1	6.250″	6.250″	1,5,3,6,2,4	⑤.2032″

① — Unless noted otherwise, all Injection Timing is BTDC.
② — R- Right-hand rotation. L- Left-hand rotation.
③ — "H" Model is 15.5°BTDC.
④ — "H" Model is 14.5°BTDC.
⑤ — Piston travel with 0.1080″ push rod travel. Use of special tools required.

NORMAL OPERATING SPECIFICATIONS

Engine	Idle RPM	Max. RPM	Oil Temp.	Oil Press.	Coolant Temp.	Compression Pressure (PSI) @ RPM (Sea Level)
V8-210	525-600	3300	240°	40-58	190°	.....
V8-555	525-620	3300	225°	40-75	200°	.....
NH/NT855	600	2100	225°	40-75	200°	.....
V/VT903	600-650	2600	225°	40-65	190°	.....
KT1105	600	2100	225°	45-70	200°	

VALVES & SEATS

Engine	Head Diameter	Face Angle	Seat Angle	Seat Width	Stem Diameter	Stem Clearance	Valve Seat Insert O.D.	Valve Clearance
V8-210								
Int.	.....	30°	30°	.060-.125″	.3795-.3785″	.0015-.0022″	1.690-1.691″	.010″
Exh.	.....	30°	30°	.060-.125″	.3795-.3785″	.0015-.0022″	1.690-1.691″	.020″
V8-555								
Int.	.....	30°	30°	.060-.125″	.3795-.3785″	.0015-.0020″	1.690-1.691″	.010″
Exh.	.....	30°	30°	.060-.125″	.3795-.3785″	.0015-.0020″	1.690-1.691″	.020″
NH/NT 855								
Int.	.....	30°	30°	.125″	.4500-.4510″	.0022-.0025″	2.0025-2.0035″	.014″
Exh.	.....	30°	30°	.125″	.4500-.4510″	.0022-.0025″	2.0025-2.0035″	.029″
V/VT 903								
Int.	.....	30°	30°	.060-.125″	.4500-.4510″	.0020-.0022″	2.0025-2.0035″	.012″
Exh.	.....	30°	30°	.060-.125″	.4500-.4510″	.0020-.0022″	2.0025-2.0035″	.025″
KT 1150								
Int.	.....	30°	30°	.100″	.4945-.4955″	.0005-.0016″	2.3805-2.3815″	.014″
Exh.	.....	30°	30°	.100″	.4945-.4955″	.0005-.0016″	2.3805-2.3815″	.027″

VALVE SPRINGS

Engine	Free Length	Compressed Length	Lbs. @ Comp. Length
V8-210	1.953″	1.329″	221
V8-555	1.953″	1.329″	221
NH/NT 855	2.890″	1.765″	108
V/VT 903	2.350″	1.287″	136
KT 1150	3.349″	1.908″	266

CAMSHAFT

Engine	Journal Diam.	Clearance	Lobe Lift
V8-210	1.997-1.998″	.....	.002-.006″
V8-555	1.997-1.998″	.....	.002-.006″
NH/NT 855	1.997-1.998″	.0020-.0025″	.010″
V/VT 903	2.496-2.497″	.0030-.0035″	.007-.011″
KT 1150	2.996-2.997″	.0035-.0040″	.009″

CUMMINS (Cont.)

ROCKER ARMS & VALVE BRIDGES

Engine	Rocker Shaft O.D.	Rocker Arm I.D.	Rocker Arm Clearance	Bridge Guide O.D.	Bridge I.D.	Bridge Height Above Head
V8-210	1.1230-1.1240"	1.1245-1.1280"	.0015-.0040"	.3750-.3755"	.376-.378"	2.040-2.060"
V8-555	1.1230-1.1240"	1.1245-1.1280"	.0015-.0040"	.3750-.3755"	.376-.378"	2.040-2.060"
NH/NT 855	1.1230-1.1240"	1.1245-1.1275"	.0015-.0035"	.4330-.4335"	.440-.442"	1.860-1.880"
V/VT 903	1.1855-1.1865"	1.1875-1.1905"	.0020-.0040"	.4330-.4335"	.434-.436"	1.860-1.880"
KT 1150	1.3720-1.3725"	1.3755-1.3765"	.0015-.0040"	.4330-.4335"	.434-.436"	2.350-2.370"

PISTONS, PINS, RINGS

	PISTONS	PINS		RINGS		
Engine	Clearance	Piston Fit	Rod Fit	Rings	End Gap	Side Clearance
V8-210	.0085-.0110"	.0003"	Press Fit	1	.013"	.005"
				2	.025"	.005"
				3	.010"	.005"
V8-555	.0085-.0110"	.0003"	Press Fit	1	.013"	.005"
				2	.025"	.005"
				3	.010"	.005"
NH/NT 855	.0125-.0130"	.0002"	Press Fit	1	.023"	.005"
				2	.019"	.005"
				3	.019"	.005"
				4	.010"	.005"
V/VT 903	.0095-.0120"	.0003"	Press Fit	1	.017"	.005"
				2	.013"	.005"
				3	.010"	.005"
KT 1150	.0112-.0115"	.0003"	Press Fit	1	.025"	.005"
				2	.025"	.005"
				3	.012"	.005"

CRANKSHAFT & MAIN BEARINGS

Engine	Journal Diameter	Bearing Clearance	Crankshaft End Play	Thrust Location	Thrust Washer Thickness	Number of Main Bearings
V8-210	3.4990-3.5000"	.0015-.0045"	.004-.014"	No.5	.1490-.1510"	5
V8-555	3.4990-3.5000"	.0015-.0045"	.004-.014"	No.5	.1490-.1510"	5
NH/NT 855	4.4985-4.5000"	.0015-.0050"	.007-.022"	No.7	.2450-.2470"	7
V/VT 903	3.7490-3.7500"	.0020-.0090"	.005-.015"	Front	.1505-.1735"	5
KT 1150	5.4985-5.5000"	.0026-.0065"	.004-.016"	No.6	.1505-1735"	7

CYLINDER LINER & BORE

Engine	Type	Liner Bore	Liner Protrusion
V8-210	Wet	4.6245-4.6260"	.006-.009"
V8-555	Wet	4.6245-4.6260"	.006-.009"
NH/NT 855	Wet	5.4995-5.5010"	.003-.006"
V/VT 903	Wet	5.4995-5.5010"	.003-.006"
KT 1150	Wet	6.2495-6.2550"	.003-.006"

CONNECTING RODS & BEARINGS

Engine	Journal Diameter	Bearing Clearance	Sideplay
V8-210	2.4990-2.5000"	.0015-.0045"	.008-.018"
V8-555	2.7490-2.7500"	.0015-.0045"	.008-.018"
NH/NT 855	3.1235-3.1250"	.0015-.0045"	.....
V/VT 903	3.1240-3.1250"	.0050"	.005-.020"
KT 1150	3.9985-4.0000"	.0050"	.....

CUMMINS (Cont.)

OIL PUMP SPECIFICATIONS

V8-210 & V8-555

Type	Gear
Idler Gear Bushing I.D.	.6195-.6205"
Pump Drive Shaft Bushing I.D.	.6165-.6175"
Drive Shaft Diameter	.6150-.6155"
Idler Shaft Diameter	.6180-.6185"
Driven-to-Idler Gear Backlash	.016-.020"

NH/NT 855

Type	Gear
Bushings I.D.	.8400-.8405"
Idler and Drive Shaft Diameter	.8375-.8380"
Driven Shaft Protrusion	.580-.610"
Drive Shaft Protrusion	.050-.070"
Drive Shaft End Play	.004-.010"
Pressure Relief Valve Open	130PSI

V903 & VT903

Type	Gear
Shaft Bores	.8770-.8775"
Drive Shaft Diameter	.8740"min
Idler Shaft Diameter	.8750"min
Pump Gears	2.397"min
Gear Housing Diameter	2.415"max
Gear Housing Depth	1.252"max
Clearance Driven Gear From Shaft End	.5450-.5750"
Clearance Scavenger Drive Gear-to-Body	.0020-.0040"
Clearance Drive Gear From Shaft End	1.232-1.290"
Clearance Main Drive Gear From Shaft End	.0000-.0200"

KT1150

Type	Gear
Bushing I.D.	.8765-.8775"
Idler Shaft Diameter	.8745-.8750"
Drive Shaft Diameter	.8745-.8750"
Clearance Drive Gear-to-Body	.1300-.1500"
Shaft Protrusion From Mounting Surface	1.030-1.050"
Drive Shaft End Clearance	.0025-.0065"

TIGHTENING SPECIFICATIONS

V8-210

NOTE – *Use minimum two steps to torque all nuts and bolts.*

Application	Ft. Lbs.
Cylinder Head Bolts①	110-115
Main Bearing Cap Bolts	175-185
Connecting Rod Cap Nuts	55
Flywheel Bolts	100-105
Pulley-to-Crankshaft	90-100

① – See cylinder head tightening sequence.

TIGHTENING SPECIFICATIONS (Cont.)

V8-555

NOTE – *Use minimum two steps to torque all nuts and bolts.*

Application	Ft. Lbs.
Cylinder Head Bolts①	135-140
Main Bearing Cap Bolts	165-175
Connecting Rod Cap Nuts	85-90
Flywheel Bolts	135-140
Vibration Damper-to-Crankshaft	135-140

① – See cylinder head tightening sequence.

NH/NT 855

NOTE – *Use minimum two steps to torque all nuts and bolts.*

Application	Ft. Lbs.
Cylinder Head Bolts①	280-300
Main Bearing Cap Bolts	300-310
Connecting Rod Cap Nuts	140-150
Flywheel Bolts	200-220
Vibration Damper and Pulley-to-Crankshaft	180-200

① – See cylinder head tightening sequence.

V903 & VT903

NOTE – *Use minimum two steps to torque all nuts and bolts.*

Application	Ft. Lbs.
Cylinder Head Bolts①	280-300
Main Bearing Cap Bolts	340-350
Connecting Rod Cap Nuts	95-100
Flywheel Bolts	200-210
Vibration Damper and Pulley-to-Crankshaft	200-205

① – See cylinder head tightening sequence.

KT1150

NOTE – *Use minimum two steps to torque all nuts and bolts.*

Application	Ft. Lbs.
Cylinder Head Bolts①	
Cadium Plated	250-260
Lubrited	350-370
Main Bearing Cap Bolts	440-450
Connecting Rod Cap Nuts	210-220
Flywheel Bolts	200-220
Vibration Damper and Pulley-to-Crankshaft	320-340

① – See cylinder head tightening sequence.

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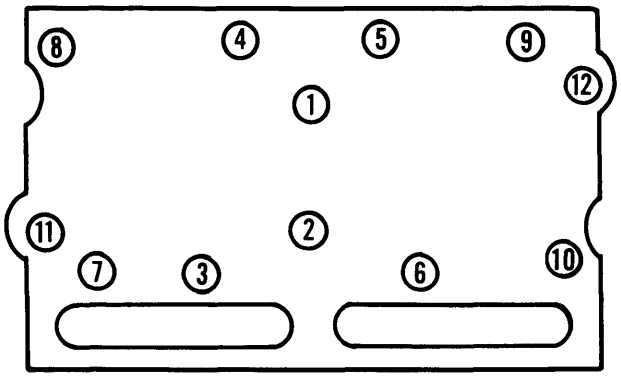
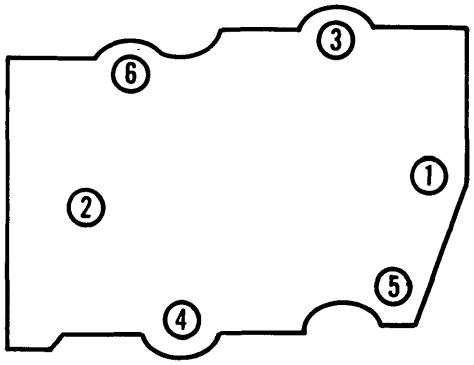
CUMMINS (Cont.)

CYLINDER HEAD TIGHTENING SEQUENCE

NH/NT 855



KT 1150



V8-210, V8-555, V903 & VT903