

Quick Reference Guide

Version 2

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Differential Front / Rear		
	Standard (ft-lb)	Metric (Nm)
Cover Bolt	16	22
Drain or Fill plugs, Teflon Loctite	16	21
Halfshaft to flange*, Red Loctite	57	77
Mounting bracket to Housing Bolts, Red Loctite	138	186
Output Flange LockNut	181	245
U-Joint to Pinion Yoke		
1/4" Fine Thread	16	21
5/16" Fine Thread	27	37
**Use special 2 piece locking washers (nord-loc's amg part number 06008029), 91812A466 McMasterCarr*		

Brake Caliper Front / Rear		
	Standard (ft-lb)	Metric (Nm)
Bleed Screw	11	14
Cable Braket Screws	23	31
Caliper Guide Pins	30	41
Caliper Yoke To Adapter, Blue Loctite	40	54
Lever Retaining Screw	20	27

Geared Hub		
	Standard (ft-lb)	Metric (Nm)
Access Cover, Blue Loctite	15	20
Access Plug, Half-shaft Bolt	11	15
Drain / Fill plug, Teflon Loctite	11	15
Halfshaft to Drive Gear Bolt, Blue Loctite	37	50
Input Seal Plate, Blue Loctite	30	40
Steering Cover, Blue Loctite	65	88

Transmission and Transfer Case		
	Standard (ft-lb)	Metric (Nm)
Torque Converter to Flywheel, Blue Loctite	32	44
Transmission Case to Engine, Blue Loctite	32	44
Transmission Drain Plug	25	34
Transmission Pan	12	16
T-case Drain / Fill plugs	35	95
T-case Output Yoke Locknut	110	149

Steering System

	Standard (ft-lb)	Metric (Nm)
Ball joint to Control Arm		
OEM 3/8 Fine Thread	28	38
OEM 3/8 Coarse Thread	37	50
OEM7/16 Coarse Thread	65	80
MM Upper Ball Joint Hardware	40	61
MM Lower Ball Joint Hardware	75	109
Ball Joint To Geared hub		
Lower	73	99
Upper	65	88
Saginaw Steering Gear (OEM Steering Gear until the Alpha and 300k serial # and up Humvee)		
Idler Arm to Center Link	80	108
Idler Arm to Frame - 7/16 Bolts	60	81
Idler Arm to Frame - 12mm Bolts	90	122
Intermediate Shaft to Steering Gear	60	81
Pitman Arm to Center Link	80	108
Pitman Arm to Steering Gear	185	250
Steering Gear Mount Bolts, Blue Loctite	60	81
Steering Wheel to Shaft	35	47
Sheppard M83 Steering Gear (Alpha, ECV, REV, 300k serial # Humvee & Up and MM Sheppard Swap)		
Tie Rod End to Center Link or Hub	70	95
Rear Tie Rod to Frame	260	354
Idler Arm to Center Link	110	149
Idler Arm to Frame	90	122
Intermediate Shaft to Steering Gear	60	81
Pitman Arm to Center Link	110	149
Pitman Arm to Steering Gear	225	250
Steering Gear Mount Bolts	160	217

Suspension

	Standard (ft-lb)	Metric (Nm)
Control Arm Bushing	260	354
Control Arm Bracket	90	122
Frame Bolts		
1/2" Coarse Thread	90	122
5/8" Coarse Thread	178	241
3/4" Coarse Thread	261	354
Shock Absorber Bottom Bracket	178	242
Shock Pin-Top/Bottom	300	408
Stabilizer Bar Link to Control Arm	70	95
Stabilizer to Bar Link	75	100

Fluids & Capacities

Gear Box	Fluid Type	Capacity Per Unit, qt	Notes
Engine			
6.2NA, 6.5NA, 6.5TD	15w-40	8	Filter - PF1218
Alpha	15w-40	12.5	Filter - PF2232
MM Dmax Swap	15w-40	13	Filter - PF2232
Transmission			
3 Speed T400	Dex III	4	Filter - 58881
4 Speed 4L80-E	Dex III	5.5	Filter - 58608
Alpha 5 Speed Allison 1000	Dex III	8.5	External Filter - 29539579 Internal Filter - 58970
MM Dmax Swap 6 Speed Allison 1000	Dex III	8.5	External Filter - 29539579 Internal Filter - 58970
Transfercase	Dex III	2.5	
Differential			
OEM	75w-90	2	Synthetic
OEM Locker	75w-90	2	Non Synthetic with Friction Modifier
Auburn Locker	75w-90	2	Non Synthetic with Friction Modifier
Detroit Locker	75w-90	2	Synthetic
ARB Locker	75w-90	2	Synthetic
Geared Hub	75w-90	0.5	Synthetic
Power Steering			
6.2NA, 6.5NA, 6.5TD, OEM Pump	Dex III	1	
Alpha, OEM Pump	Dex III	1.75	
MM Dmax Swap, OEM Pump	Dex III	2	
PSC Pump, with capacity by type	Sweepco 715 AC Delco	2.5	Non Synthetic
Geared Fan Drive	75w-90	0.4	Synthetic
Windshield Washer Tank			
92-98 H1's and all Humvee's	0-20F	3	
99-06 H1's and Alpha	0-20F	6	
Brake Fluid			
DOT 3/4	DOT 3/4	2	ABS 99-06 H1's and Alpha Trucks
DOT 5	DOT 5	2	Non ABS 92-98 H1's and all Humvee's

HVAC Refrigerant Capacity

Year Model	With Aux Unit, lbs	With Out Aux Unit, lbs	Refrigerant Type
92-95 H1's	1.2	1	R12
96-04 H1's	3.2	2.4	R134a
06' Alpha	2.4	n/a	R134a

Alignment Specifications *(All Models Unloaded)*			
Front Suspension			
Location	**Shim**	**Caster (Degrees)**	**Camber (Degrees)**
Front Shim Only	+3.05mm (0.12in)	+0.6	+0.5
Rear Shim Only	+3.05mm (0.12in)	-0.6	0.0
Front and Rear Shim	+3.05mm (0.12in)	-0.1	+0.5
	Max	0.5	1.8
	Min	0	1
	Toe	0.03	
Rear Suspension			
Location	**Shim**	**Caster (Degrees)**	**Camber (Degrees)**
Front Shim Only	+3.05mm (0.12in)	+0.5	-0.1
Rear Shim Only	+3.05mm (0.12in)	-0.5	+0.6
Front and Rear Shim	+3.05mm (0.12in)	0.0	+0.5
	Max	0	0.75
	Min	0	0.25
	Toe	0.03	

Note:
For 1.52mm (0.060in) shim reduce the values in the table by half
For large changes, combinations of additionsor subtractions will provide mm (in.) results
All settings are measured with the vehicle on the ground at curb weight

*Wheel Mod Mafia Hutchinson (2-Piece Aluminum) Cast 17" / Forged 17" / Forged 20"		
	Standard (ft-lb)	Metric (Nm)
Lug Nut, Tapered	110	149
Wheel Half Lock-nut		
Initial	90	122
Final	100	135
***Wheel (2-Piece Steel)**		
	Standard (ft-lb)	Metric (Nm)
Lug Nut, Tapered	110	149
Wheel Half Lock-nut		
Initial	85	115
Final	125	170
***Wheel (1-Piece Steel)**		
	Standard (ft-lb)	Metric (Nm)
Lug Nut, Flanged	140	190
***Wheel (1-Piece Aluminum)**		
	Standard (ft-lb)	Metric (Nm)
Lug Nut, Tapered	110	149
***Wheel (2-Piece Aluminum)**		
	Standard (ft-lb)	Metric (Nm)
Lug Nut, Tapered	110	149
Wheel Half Lock-nut		
Initial	50	68
Final	75	102
**NOTE: Torque bolts in proper sequence for each step (see owners manual)*		
Beadlock / Runflat (Cam Style)		
	Standard (ft-lb)	Metric (Nm)
Beadlock Pinch Bolt	60	68
Runflat Cam Bolt (before cam adjust)	5	1.4-9.5
Runflat Cam Bolt (after cam adjust)	45	68
Runflat (Cross Bolt Style)		
	Standard (ft-lb)	Metric (Nm)
Runflat Cross Bolt	22	30
Locking Clip Screw	30-35	40-50
Cepek CTIS AN Wheel Fitting		
Cepek CTIS AN Wheel Fitting	36	in-lbs

Engine					
	6.5L / 6.5L Turbo			6.2L NA	
	Standard (ft-lb)	Metric (Nm)		Standard (ft-lb)	Metric (Nm)
Camshaft Thrust Plate				18	24
Cam Sprocket-Camshaft	125	171		61	83
Connectinig Rod Cap	49	66		49	66
Cylinder Head	*See Service Bulletin 98-02-03*				
Initial, Teflon Loctite	20	27		20	27
Final	55	75		50	68
Angle	90-100 deg (1/4 + turn)			90 deg (1/4 + turn in seq.)	
Exhaust Manifold	26	35		22	29
Flexplate to Crank, Blue Loctite	65	88		65	88
Glow Plug	13	18		13	18
Injector Lines to Pump & Nozzle	24	33		20	27
Injector Nozzle, Anti Seize	52	71		17	23
Injector Pump Gear-Pump Shaft	17	23		52	71
Intake Manifold	31	42		30	40
Lifter Retainer	18	24		18	24
Main Bearing Cap	(94-96)				
Initial/short	40	54		40	54
Initial Long	40	54		40	54
Final/Short	100	136		100	136
Final/Long	110	149		110	149
Main Bearing Cap 97-99 See Hummer Service Bulletin 98-02-02					
Oil Pan					
6mm	7	10		7	10
8mm	17	23		17	23
Oil Pan Drain Plug	20	27			
Oil Pump Drive	31	42		31	42
Oil Pump Mounting					
Stud	66	90		67	91
Nut	35	48		35	48
Rocker Shaft	41	56		41	56
Starter, Blue Loctite	40	54		40	54
Timing Gear Cover	33	45		33	45
Thermostat Housing				31	42
Torsional Damper, Blue Loctite	200	270		151	205
Turbocharger Mount Bolts	43	58			
Turbo Exhaust Clamps	90	10			
Rocker Cover Bolt	19	26		19	26
Water Cross-Over to Cylinder Head	31	42		31	42
Water Pump to Cover					
8mm, Teflon Loctite	17	23		17	23
10mm, Teflon Loctite	31	42		31	42
Water Pump to Plate, Blue Loctite	17	23		17	23

Mod Mafia Duramax Swap
Torque Specifications

Part	Standard	Metric
A/C Compressor Bolt	37 lb ft	50 N•m
Air Cleaner Outlet Duct Clamp	71 lb in	8 N•m
Air Conditioning Compressor/Power Steering Pump Bracket Bolt	34 lb ft	46 N•m
Air Inlet Tube Nut	18 lb ft	25 N•m
Battery Cable Bracket Bolt	106 lb in	12 N•m
Battery Cable Bracket Nut	71 lb in	8 N•m
Bypass Pipe Bolt	18 lb ft	25 N•m
Camshaft Gear Bolt	173 lb ft	234 N•m
Camshaft Position Sensor Bolt	89 lb in	10 N•m
Camshaft Position Sensor Exciter Ring Bolt	80 lb in	9 N•m
Camshaft Thrust Plate Bolt	16 lb ft	22 N•m
Charged Air Cooler Bolt	15 lb ft	21 N•m
Charged Air Cooler Clamp	71 lb in	8 N•m
Connecting Rod Cap Bolt - Angular Tightening Method		
1st Step	47 lb ft	64 N•m
2nd Step	30 deg	30 deg
3rd Step	30 deg	30 deg
Coolant Pipe Bolt and Nut	18 lb ft	25 N•m
Coolant Tube to Water Pump Nut	18 lb ft	25 N•m
Cooling Fan Pulley	30 lb ft	41 N•m
Crankshaft Balancer Bolt		
1st Step	74 lb ft	100 N•m
2nd Step	105 deg	105 deg
Crankshaft Bearing Cap Bolt		
1st Step	72 lb ft	98 N•m
2nd Step	97 lb ft	132 N•m
3rd Step	30 deg	30 deg
Crankshaft Bearing Cap Bolt - Angular Tightening Method		
1st Step	74 lb ft	100 N•m
2nd Step	90 deg	90 deg
Crankshaft Bearing Cap Side Bolt	52 lb ft	70 N•m
Crankshaft Position Sensor Bolt	89 lb in	10 N•m
Crankshaft Position Sensor Spacer Bolt	89 lb in	10 N•m
Crossmember Bolt	74 lb ft	100 N•m
Cylinder Head M12 Bolt - Angular Tightening Method		
1st Step	37 lb ft	50 N•m
2nd Step	59 lb ft	80 N•m
3rd Step	60 deg	60 deg
4th Step	60 deg	60 deg
Cylinder Head M8 Bolt	18 lb ft	25 N•m
Drive Belt Tensioner Pulley Bolt	37 lb ft	50 N•m
EGR Bracket	18 lb ft	25 N•m

EGR Bracket Bolt	18 lb ft	25 N•m
EGR Bracket to Cooler Bolt	18 lb ft	25 N•m
Electrical Harness Bracket Bolt	89 lb in	10 N•m
Engine Block Coolant Plug	13 lb ft	18 N•m
Engine Block Ground Bolt	25 lb ft	34 N•m
Engine Mount Through Bolt to Frame	55 lb ft	75 N•m
Engine Mount to Block Bolts	43 lb ft	58 N•m
Engine Mount to Frame Bolt	48 lb ft	65 N•m
Engine Shield Bolt	15 lb ft	20 N•m
Exhaust Heat Shield Nut	89 lb in	10 N•m
Exhaust Manifold Bolt/Nut	28 lb ft	38 N•m
Exhaust Manifold Heat Shield Bolts	89 lb in	10 N•m
Exhaust Outlet Clamp	11 lb ft	15 N•m
Exhaust Outlet Heat Shield Bolts	89 lb in	10 N•m
Exhaust Pipe Bracket Nut	39 lb ft	53 N•m
Exhaust Pipe Clamp	39 lb ft	53 N•m
Exhaust Pipe Heat Shield Bolts	89 lb in	10 N•m
Fan Pulley Bracket Bolt	37 lb ft	50 N•m
Flywheel Bolt - Angular Tightening Method		
1st Step	58 lb ft	79 N•m
2nd Step	60 deg	60 deg
3rd Step	60 deg	60 deg
Flywheel Housing Bolt	60 lb ft	80 N•m
Flywheel Housing to Upper Oil Pan Bolt	37 lb ft	50 N•m
Front Engine Cover Bolt	18 lb ft	25 N•m
Fuel Filter Bracket Bolt	22 lb ft	30 N•m
Fuel Injection Control Module Bolt	15 lb ft	20 N•m
Fuel Injection Control Module Bracket Bolt	15 lb ft	21 N•m
Fuel Injection Control Module Connector Bolt	89 lb in	10 N•m
Fuel Injection Control Module Connector Bracket Bolt	15 lb ft	21 N•m
Fuel Injection Control Module Cooler Eye Bolt	20 lb ft	27 N•m
Fuel Injection Pipe Nut	30 lb ft	41 N•m
Fuel Injector Bracket Bolt	22 lb ft	30 N•m
Fuel Inlet Pipe Bracket Bolt	15 lb ft	21 N•m
Fuel Injection Pump Assembly to Cylinder Block Bolt	18 lb ft	25 N•m
Fuel Injection Pump to Bracket Bolt	20 lb ft	28 N•m
Fuel Injection Pump Drive Gear Nut	52 lb ft	70 N•m
Fuel Line Bracket Nut	15 lb ft	21 N•m
Fuel Pressure Relief Valve	74 lb ft	100 N•m
Fuel Temperature Sensor	16 lb ft	22 N•m
Fuel Pipes Bracket Bolt	18 lb ft	25 N•m
Fuel Rail Assembly Bolt	18 lb ft	25 N•m
Fuel Rail Balance Pipe Bolt	15 lb ft	21 N•m
Generator Bracket Bolt and Nut	37 lb ft	50 N•m
Generator Positive Cable Nut	80 lb in	9 N•m
Glow Plug	13 lb ft	18 N•m
Glow Plug Controller Bolt	89 lb in	10 N•m

Glow Plug Harness Bracket Bolt	89 lb in	10 N•m
Glow Plug Nut	18 lb in	2 N•m
Glow Plug Power Feed Nut	11 lb ft	15 N•m
Glow Plug Relay Assembly Bolt	89 lb in	10 N•m
Heater Outlet Pipe Bolt	18 lb ft	25 N•m
Heater Pipe Bolt	18 lb ft	25 N•m
Hood Hinge Bolt	18 lb ft	25 N•m
Idle Pulley Bolt	37 lb ft	50 N•m
Injector Bracket Bolt	16 lb ft	23 N•m
Intake Manifold Bolts/Nuts	18 lb ft	25 N•m
Oil Cooler Adapter Bolts	18 lb ft	25 N•m
Oil Cooler Adapter Nuts	18 lb ft	25 N•m
Oil Cooler Assembly Bolts	18 lb ft	25 N•m
Oil Cooler Adapter Stud	89 lb in	10 N•m
Oil Drain Plug	62 lb ft	84 N•m
Oil Fill Tube Bolt	18 lb ft	25 N•m
Oil Filter	18 lb ft	24 N•m
Oil Gallery Plugs	39 lb ft	53 N•m
Oil Level Indicator Tube Bolt	15 lb ft	21 N•m
Oil Level Sensor Bolt	89 lb in	10 N•m
Oil Level Sensor Harness Bolt	29 lb ft	40 N•m
Oil Pan Bolts/Nuts - Lower	89 lb in	10 N•m
Oil Pan Bolt - Upper	15 lb ft	20 N•m
Oil Pan Skid Plate Bolt	15 lb ft	20 N•m
Oil Pressure Sensor Unit	36 lb ft	49 N•m
Oil Pressure Relief Valve	29 lb ft	39 N•m
Oil Pump Bolt	15 lb ft	21 N•m
Oil Pump Driven Gear Nut	74 lb ft	100 N•m
Oil Pump Gear Cover Bolt	15 lb ft	21 N•m
Oil Pump Pipe and Screen Assembly Bolts and Nuts	18 lb ft	25 N•m
Piston Cooling Nozzle Eye Bolt	15 lb ft	21 N•m
Positive Cable Junction Block Bracket to Power Steering Pump Bolt	80 lb in	9 N•m
Positive Crankcase Ventilation Cover Screws	35 lb in	4 N•m
Positive Crankcase Ventilation Oil Separator Bracket Nut	18 lb ft	25 N•m
Power Steering Pump Bracket Bolt	37 lb ft	50 N•m
Power Steering Pump Bolt	37 lb ft	50 N•m
Rocker Arm Shaft Bracket Bolt	30 lb ft	41 N•m
Starter Motor Bolt	58 lb ft	78 N•m
Transmission Fill Tube Nut	13 lb ft	18 N•m
Thermostat Housing Bolts/Nuts	18 lb ft	25 N•m
Thermostat Cover Bolt	18 lb ft	25 N•m
Torque Converter Bolt	44 lb ft	60 N•m
Transmission Oil Cooler Clip Nut	80 lb in	9 N•m
Turbocharger Bolt	80 lb ft	108 N•m
Turbocharger Boost Sensor Bolt	89 lb in	10 N•m
Turbocharger Coolant Outlet Pipe Bracket Nut	89 lb in	10 N•m
Turbocharger Heat Shield Bolts	89 lb in	10 N•m

Turbocharger Oil Return Pipe Stud	89 lb in	10 N•m
Turbocharger Oil Supply Hose Eye Bolt	19 lb ft	26 N•m
Turbocharger Oil Return Pipe Bolts/Nuts	18 lb ft	25 N•m
Upper Oil Pan to Flywheel Housing Screws	15 lb ft	20 N•m
Valve Adjusting Nut	16 lb ft	22 N•m
Valve Lifter Holdown Bracket Bolt	97 lb in	11 N•m
Valve Rocker Arm Cover Bolt - Lower	89 lb in	10 N•m
Valve Rocker Arm Cover Bolt - Upper (Torqe Twice)	71 lb in	8 N•m
Water Outlet Bolts	18 lb ft	25 N•m
Water Pump Bolt	18 lb ft	25 N•m
Water Pump Inlet Pipe Bolts	18 lb ft	25 N•m