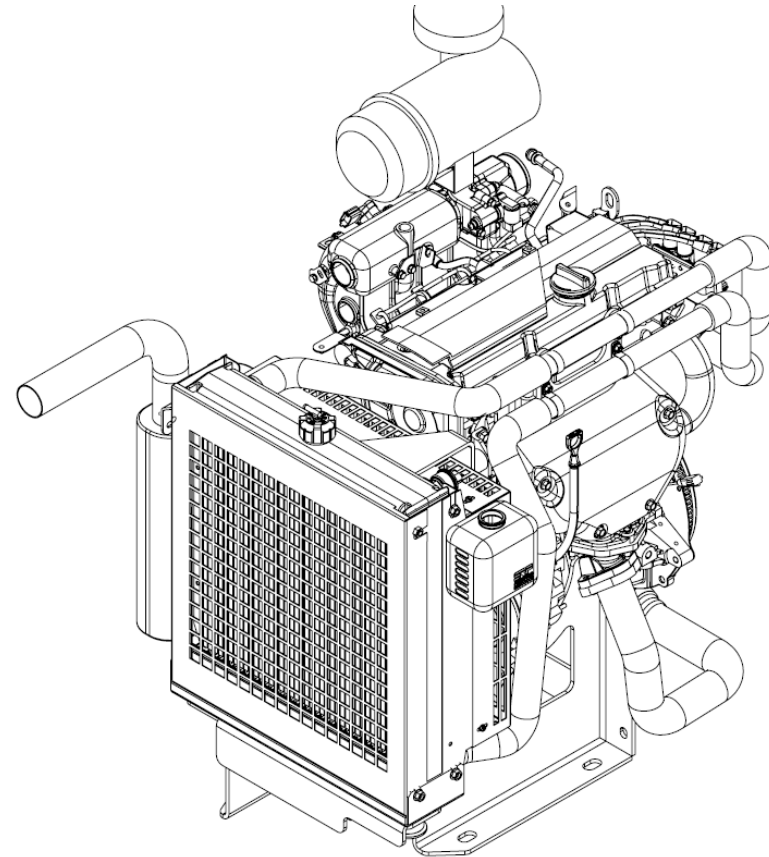




# ZENITH

POWER PRODUCTS

## ZPP 416 Service Parts Manual



# Engine Sub-system Index



<b>Engine Subsystem</b>	<b>Page Location</b>
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# Availability & Shipping Information



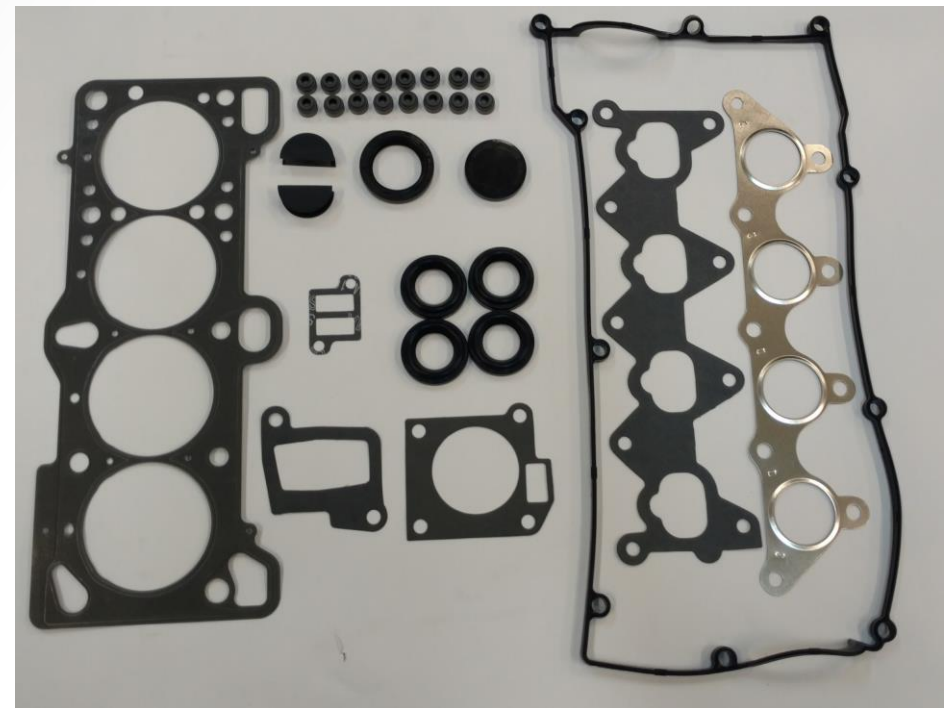
- Part Availability is subject to change based on obsolescence from Original Part Manufacturer.
- Any order on in-stock parts placed by 2 P.M. Eastern Time will ship the same day.
- ZPP utilizes UPS small package service (preferred carrier) on a 5-day-per-week basis with afternoon pick-ups.
- ZPP also contracts with FedEx Ground and Express services for small packages. Express packages (Air and International) ship same day while Ground packages will be picked up the day after the shipment is processed.
- Orders on in-stock items that require LTL shipping services will ship the following day.
- Customers have the option of using their own collect account or being invoiced for the freight charges.
- DHL is also an option for international packages.
- All shipments are FOB origin shipping point (this includes any drop-shipments made from ZPP's suppliers).
- Expedited Charges may apply to rushed orders.

# ZPP 416 Recommended Parts Stock List



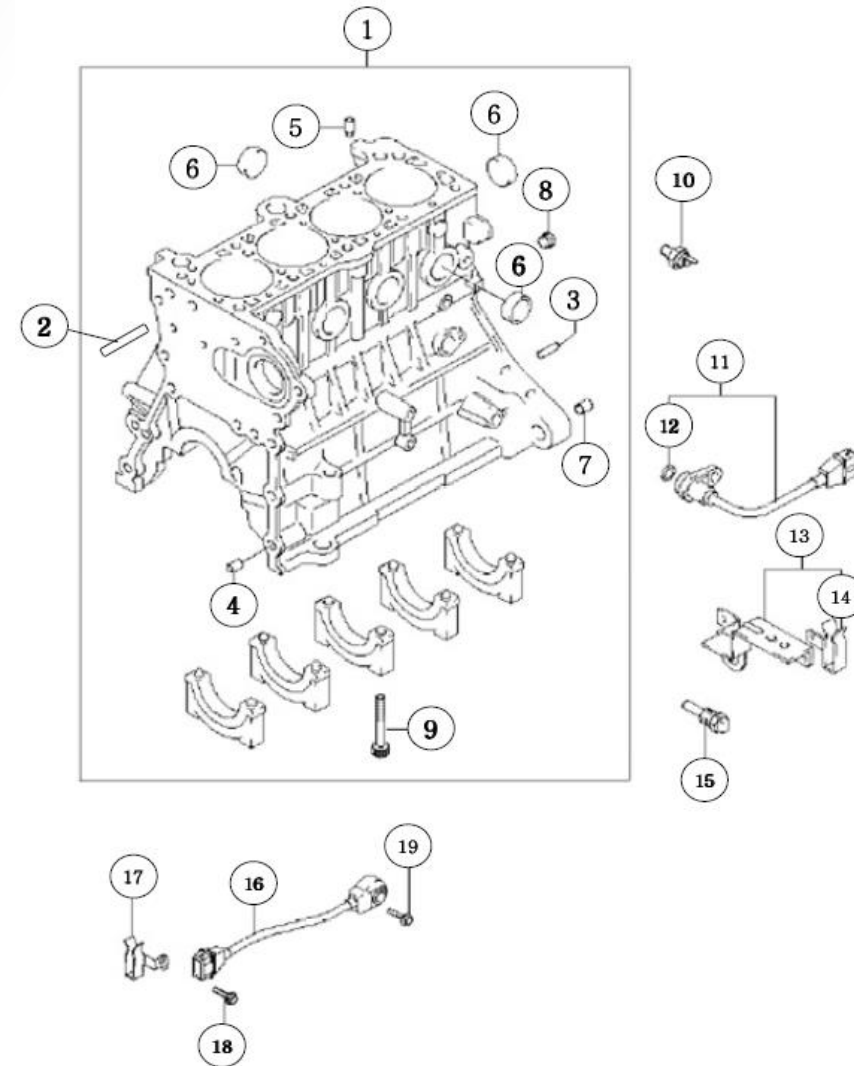
Part Number	Description	Page Location
201982	Fan Belt	12
200971	Fan	22
201222	Radiator	22
25600-26120	Thermostat Housing Assy	13
200348	Hose, Top Rear	22
200349	Hose, Lower Rear	22
200350	Hose, Top Front	22
200351	Hose, Bottom Front	22
201388	Low water alarm	22
201566	Wiring Harness	25
201402	ECU- Med. Duty	25
201280	Oxygen Sensor (pre or post cat)	24
201547	Mixer	18
201420	Regulator	18
201474	Trim Valve	18
200842	Lock-off	18
20920-26M00	Upper Gasket Set	NA
18814-11051	Spark Plug	14
27501-26D00	Ignition Wire Set	14
27301-26600	Coil Pack Assy	14
27310-22600	Coil Pack (1&4)	14
27310-26600	Coil Pack (2&3)	14
39350-22600	Cam Sensor	8
39180-22600	Crank Sensor	5
25100-26902	Water Pump	12
202457	Air Filter Element	23
26300-35503	Oil Filter	6

Upper Gasket Set



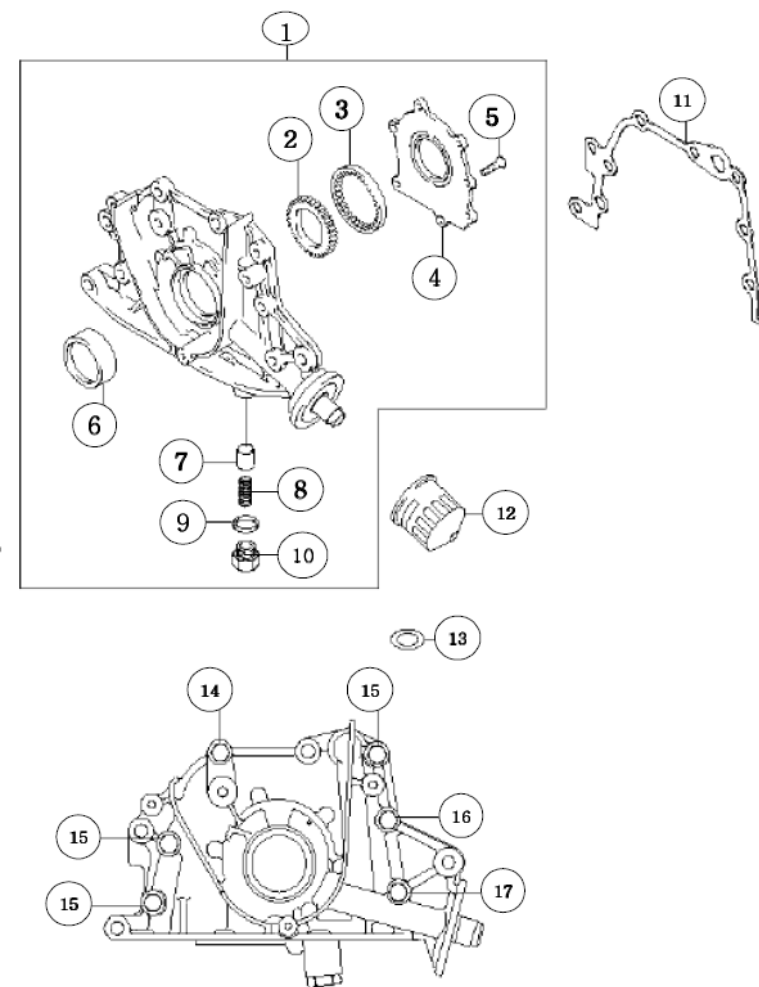
# Engine Block

Item No	Part Number	Description	Qty
1	21100-26952	Block Assembly	1
2	11541-10301	Stud	1
3	14303-06140	Dowel Pin	2
4	14331-08090	Alignment Bushing	4
5	14331-10160	Alignment Bushing	2
6	15733-35000	Freeze Plug	9
7	21124-21000	Alignment Bushing	2
8	21133-32000	Pipe Plug – 3/8 NPT	1
9	21114-22020	Bearing Cap Bolt	10
10	94750-21030	Oil Pressure Switch	1
	201384	OPS (optional – app specific)	1
11	39180-22600	Crank Position Sensor	1
12	39188-22000	O-Ring	1
13	39183-26800	Bracket	1
14	39181-26650	Clip	1
15	39230-22600	Water Temp Sensor	1
16	39250-26600	Knock Sensor	1
17	39251-26600	Bracket	1
18	11403-28256K	Bolt	1
19	11400-08253	Bolt	1



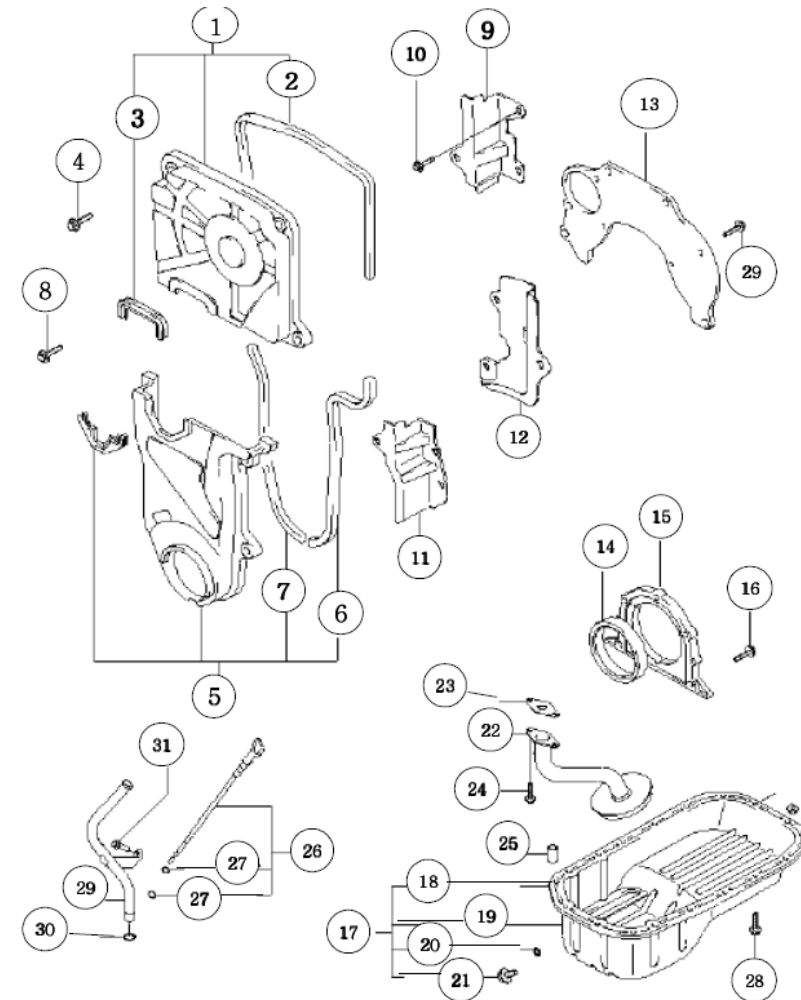
# Engine – Front Case

Item No	Part Number	Description	Qty
1	21310-26801	Font Case Assembly	1
2	26112-26800	Inner Oil Pump Gear	1
3	26113-26800	Outer Oil Pump Gear	1
4	21313-22000	Oil Pump Cover	1
5	12203-06141	Cap Screw	1
6	21421-22001	Front Oil Seal	1
7	26122-35000	Relief Plunger	1
8	26123-21000	Relief Spring	1
9	21513-11000	Gasket	1
10	26124-35000	Plug	1
11	21411-26011	Gasket – Front Case	1
12	26300-35502	Oil Filter	1
13	K995641800	Gasket	1
14	11403-08356K	Bolt	3
15	11403-08303	Bolt	3
16	11403-08506K	Bolt	1
17	11403-08656K	Bolt	1



# Engine – Timing Belt / Oil Pan

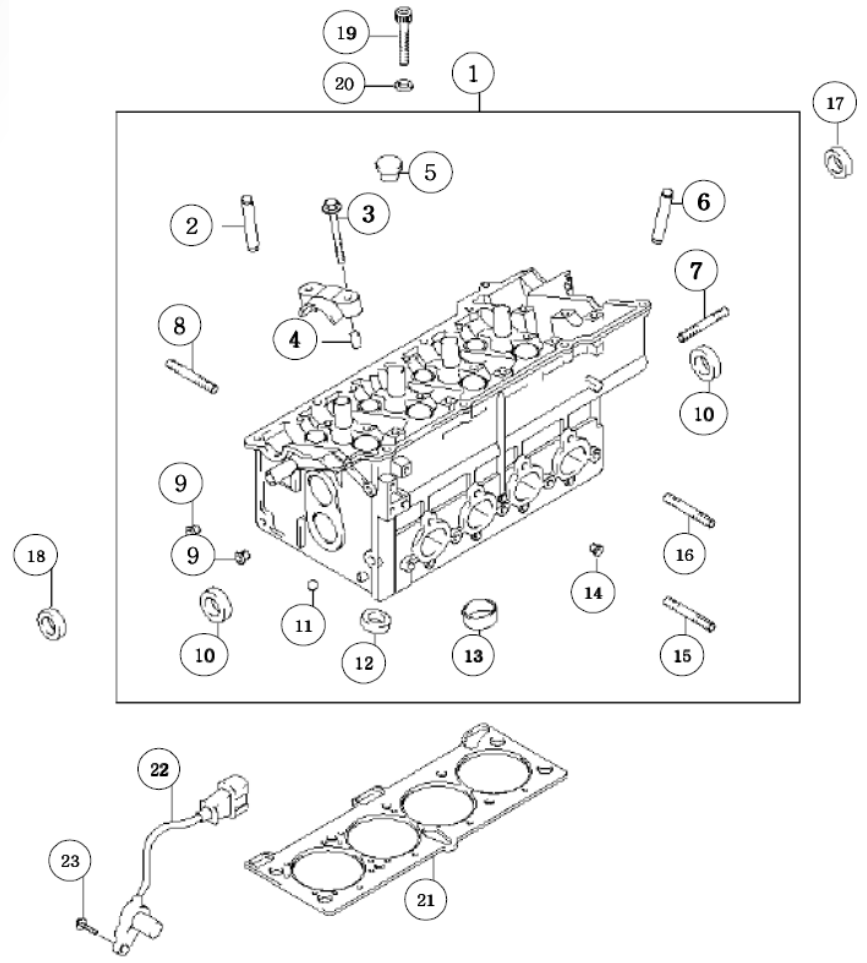
Item No	Part Number	Description	Qty
1	21360-26602	Upper Timing Cover Assembly	1
2	21361-26000	Gasket – Timing Cover	1
3	31265-26000	Gasket – TC upper	1
4	21381-23002	Bolt	9
5	21350-26002	Lower Timing Cover Assembly	1
6	21352-26000	Gasket – Timing Cover	1
7	21353-26000	Gasket – Timing Cover	1
8	21381-26601	Bolt	2
9	21372-26001	Timing Cover – Rear, Upper Left	1
10	11403-06103	Bolt	6
11	21371-26001	Timing Cover – Rear, Lower Left	1
12	21373-26000	Timing Cover – Rear, Upper Right	1
13	21431-22030	Rear Plate	1
14	21443-22000	Rear Main Seal	1
15	21441-22610	Case – Rear Seal	1
16	11403-06161	Bolt	5
17	21510-26601	Oil Pan Assembly	1
18	21504-26600	Baffle Plate	1
19	21511-26601	Oil Pan	1
20	21513-23000	Drain Plug Gasket	1
21	21512-23000	Oil Drain Plug	1
22	26250-26010	Oil Pick-Up	1
23	26259-22010	Gasket – Oil Screen	1
24	11233-08201	Bolt	2
25	14303-08140	Dowel Pin	1
26	26611-26000	Dipstick	1
27	26615-33000	O-Ring	1
28	21516-35710	Bolt	16
29	26112-26010	Dipstick Tube	1
30	26614-35020	O-Ring	1
31	11400-08146K	Bolt	1



# Engine – Cylinder Head



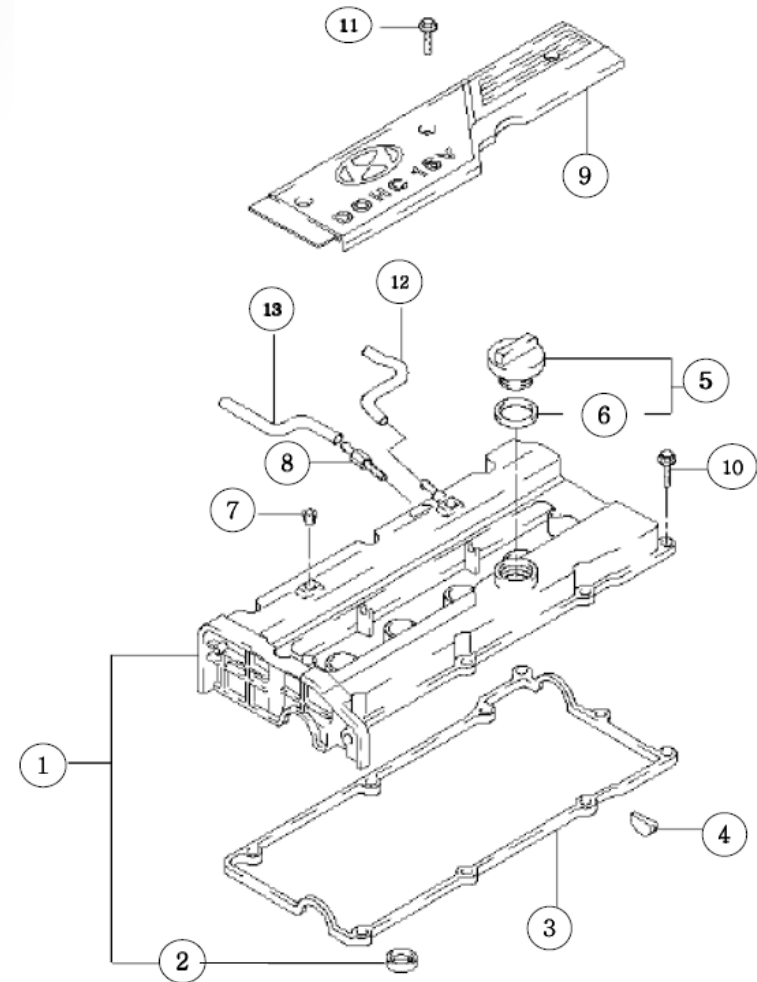
Item No	Part Number	Description	Qty
1	22100-26100	Cylinder Head Assembly	1
2	22114-26000	Guide – Intake Valve	8
3	22129-26000	Bolt	24
4	22124-26000	Bushing	4
5	15717-10081	Pipe Plug	2
6	22115-26000	Guide – Exhaust Valve	8
7	11510-08286K	Stud	2
8	22125-22020	Stud	6
9	15717-10081	Pipe Plug	2
10	15733-3000	Sealing Cap	3
11	16011-12000	Steel Ball	5
12	22113-26001	Seat – Exhaust Valve	8
13	22112-26100	Seat – Intake Valve	8
14	15717-21153	Pipe Plug	2
15	22127-23000	Stud	3
16	22127-26000	Stud	9
17	22327-35504	Packing	1
18	22144-3B001	Camshaft Seal	1
19	201049	Head Bolt Set – Includes Washers	1
20			
21	22311-26101	Head Gasket	1
22	39350-22600	Camshaft Position Sensor	1
23	11403-06146K	Bolt	1





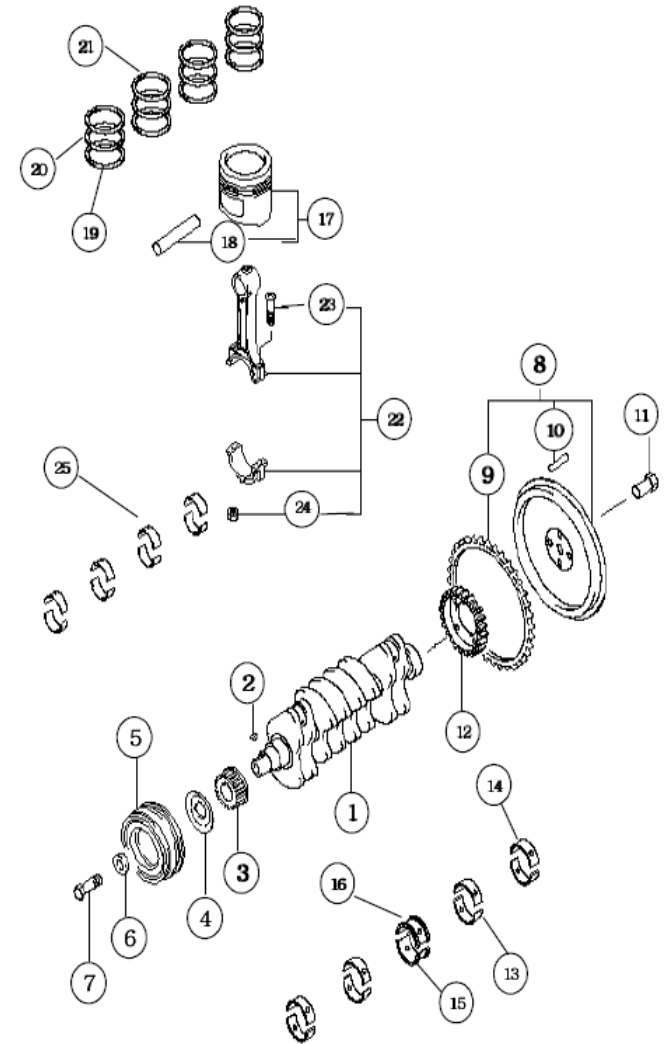
# Engine – Valve Cover

Item No	Part Number	Description	Qty
1	22410-26635	Valve Cover w/ Gasket	1
2	22443-23001	Spark Plug Tube Seal	4
3	22441-26020	Gasket – Valve Cover	1
4	22442-23500	Packing	2
5	26510-26600	Oil Fill Cap	1
6	26502-22600	Seal	1
7	17350-06000	Plug	2
8	26470-26700	PCV Valve	1
9	22405-26610	Center Cover	1
10	11293-06287K	Bolt	10
11	22404-26000	Bolt	3
12	26710-26510	Breather Hose	1
13	26721-26504	PCV Hose	1



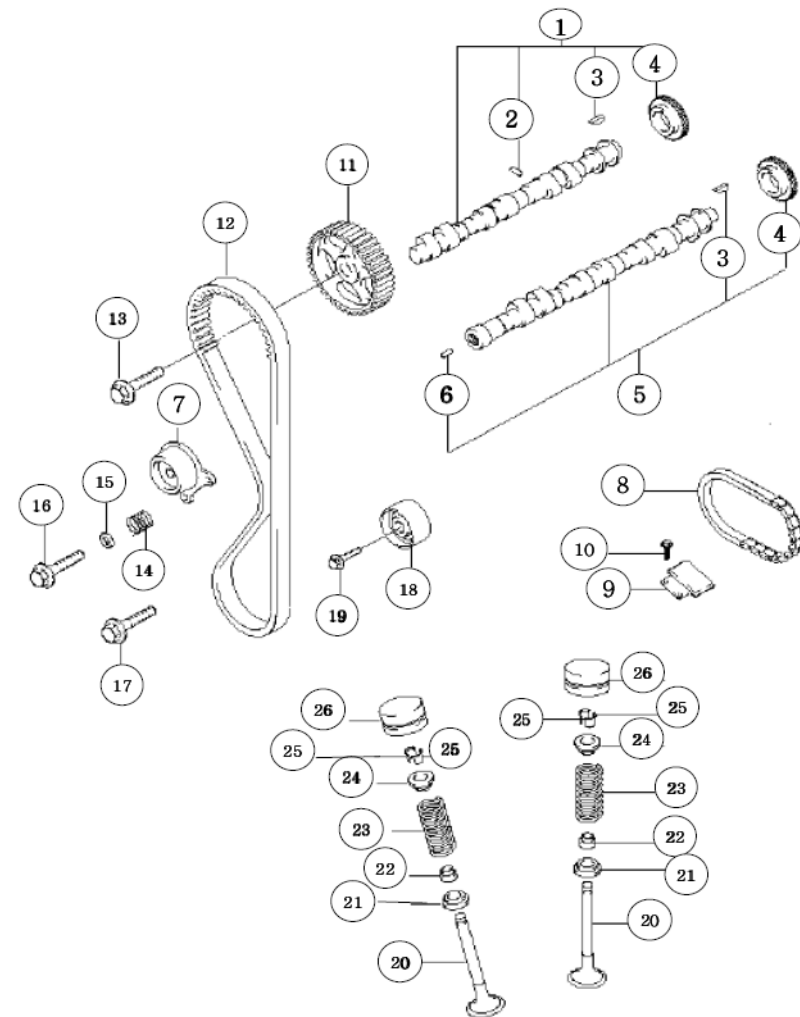
# Engine – Rotating Assembly

Item No	Part Number	Description	Qty
1	23111-26100	Crankshaft	1
2	23125-22020	Woodruff Key	1
3	23121-26100	Crankshaft Sprocket	1
4	23123-22020	Flange	1
5	23124-26030	Damper/Pulley	1
6	23126-22010	Washer	1
7	23127-22601	Bolt	1
8	23200-26101	Flywheel Assembly	1
9	201296	Ring Gear	1
10	14303-08180	Dowel Pin	3
11	23311-23000	Flywheel Bolt	5
12	39190-22600	Crank Trigger Wheel	1
13	21213-26621	Main Bearing – Lower	4
14	21211-26621	Main Bearing – Upper	4
15	21215-26631	Thrust Bearing – Lower	1
16	21214-22621	Thrust Bearing – Upper	1
17	23410-26510	Piston with Pin	4
18	23412-22001	Wrist Pin	4
19	23433-26110	Oil Ring	4
20	23432-26110	Second Ring	4
21	23431-26110	Top Ring	4
22	23510-26040	Connecting Rod Assembly	4
23	23513-11104	Bolt	8
24	23514-22020	Nut	8
25	23611-26621	Rod Bearing	8



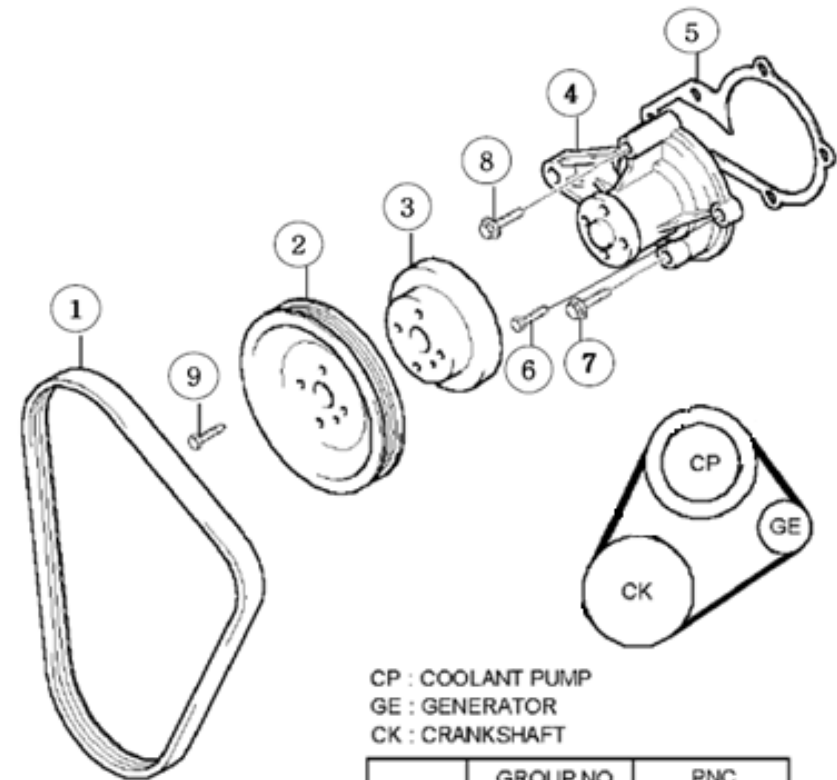
# Engine – Timing and Valve Train

Item No	Part Number	Description	Qty
1	24100-26601	Camshaft – Intake	1
2	11403-06140	Dowel Pin	1
3	24323-23500	Woodruff Key	1
4	24322-26602	Chain Sprocket	2
5	24200-26004	Camshaft – Exhaust	1
6	11403-06140	Dowel Pin	1
7	24410-26000	Timing Tensioner	1
8	24321-26010	Chain	1
9	24431-26000	Guide	1
10	11233-06123	Bolt	2
11	24211-26100	Cam Sprocket	1
12	24312-26001	Timing Belt	1
13	11404-12301	Bolt	1
14	24422-24000	Spring	1
15	24421-24000	Spacer	1
16	11403-08381	Bolt	1
17	24433-26001	Bolt	1
18	28410-26020	Timing Idler	1
19	11404-10251	Bolt	1
20	22212-26000	Exhaust Valve	8
21	22225-26000	Seat – Valve Spring	16
22	22224-23500	Valve Stem Seal	16
23	22221-26000	Valve Spring	16
24	22222-26000	Retainer – Valve Spring	16
25	22223-22001	Retainer Lock	32
26	22231-37110	Lash Adjuster (Lifter)	16






# Engine – Water Pump

Item No	Part Number	Description	Qty
1	201978	Serpentine Belt (Standard)	1
	201982	Serpentine Belt (with High Speed Fan/Pulley)	1
2	25221-26001	Water Pump Pulley (Standard)	1
	201980	Water Pump Pulley (with High Speed Fan/Pulley)	1
3	25226-26001	V-Belt Pulley (Not used in High Speed apps)	1
4	25100-26902	Water Pump	1
5	25124-26002	Gasket – Water Pump	1
6	11403-08506K	Bolt	1
7	11400-08283	Bolt	3
8	11400-08656K	Bolt	1
9	11233-06146K	Bolt	4



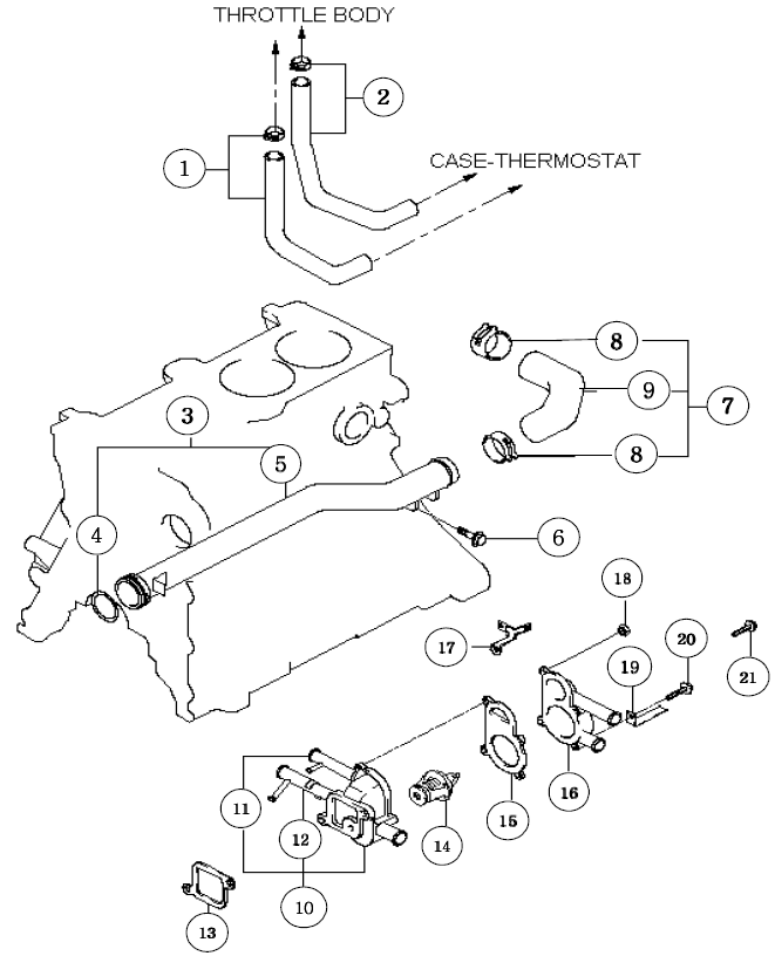
CP : COOLANT PUMP  
 GE : GENERATOR  
 CK : CRANKSHAFT

	GROUP NO	PNC
	25-251	25212A
	56-571	57231
	97-976A	97713A

# Engine – Coolant Plumbing

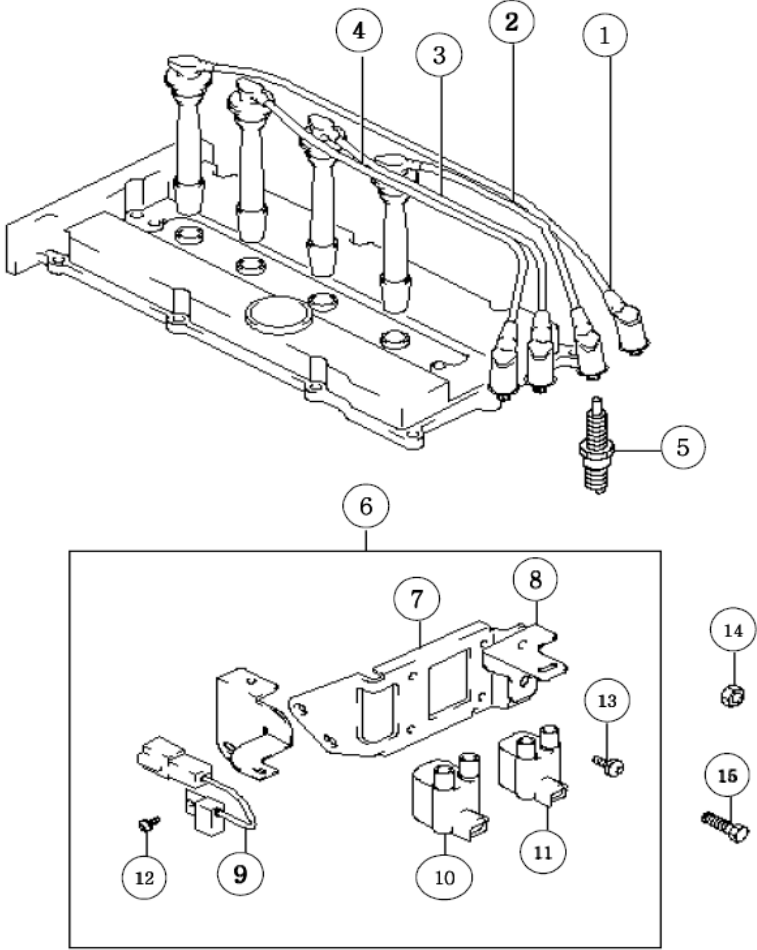


Item No	Part Number	Description	Qty
1	25468-26750	Hose A	1
2	25469-26750	Hose B	1
3	25460-26000	Water Inlet Pipe w/ O-Ring	1
4	25462-23000	O-Ring	1
5	25461-26000	Water Inlet Pipe	1
6	11400-08123	Bolt	1
7	25480-26001	Hose C w/ Clamps	1
8	25331-3D041	Clamp	2
9	25472-26001	Hose C	1
10	25620-26100	Thermostat Housing	1
11	22134-26100	Hose Nipple	1
12	22134-26300	Hose Nipple	1
13	25614-26002	Gasket – Thermostat Housing to Block	1
14	25500-23001	Thermostat	1
15	25612-26001	Gasket – Thermostat	1
16	25611-26100	Thermostat Housing Cover	1
17	25616-26601	Bracket	1
18	13396-08007K	Nut	1
19	18490-00809	Clip	1
20	11233-08253	Bolt	3
21	11233-08353	Bolt	1



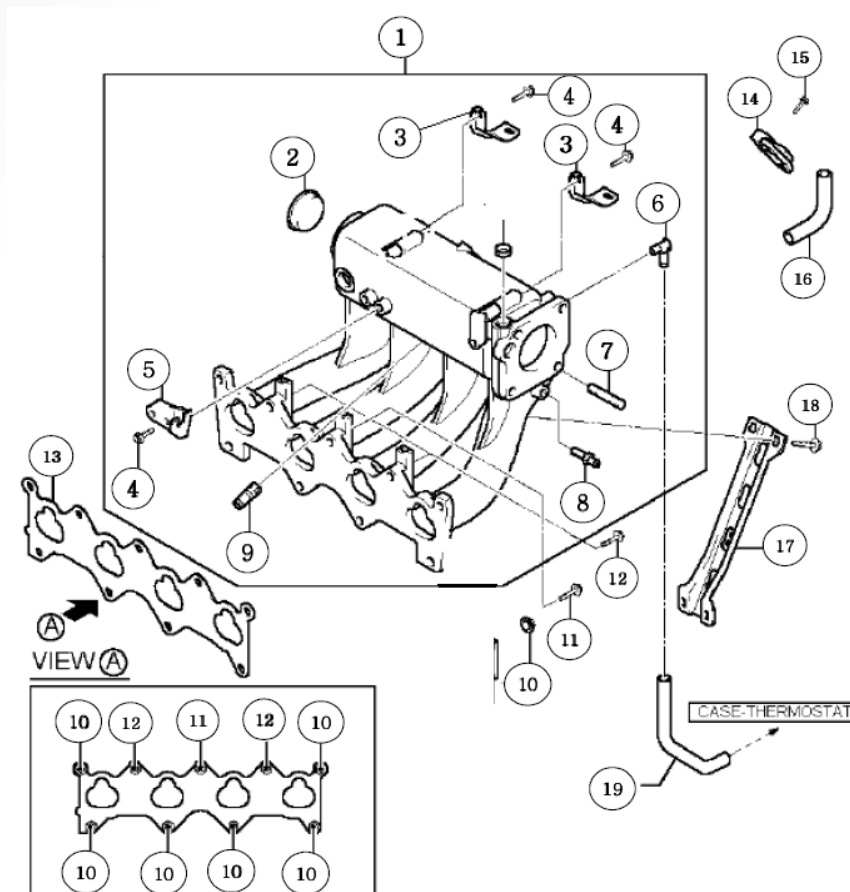
# Engine – Ignition

Item No	Part Number	Description	Qty
1	27501-26D00 Ignition Wire Set		1
2			
3			
4			
5	18814-11051	Spark Plug	4
6	27301-26600	Ignition Coil Assembly	1
7	27365-26600	Bracket	1
8	27366-26601	Bracket	1
9	27325-22600	Condenser	1
10	27310-26600	Coil – 2 &3	1
11	27310-22600	Coil – 4 & 1	1
12	12310-05107B	Screw	1
13	12310-06167B	Screw	4
14	13396-08003	Nut	2
15	11403-08163	Bolt	1



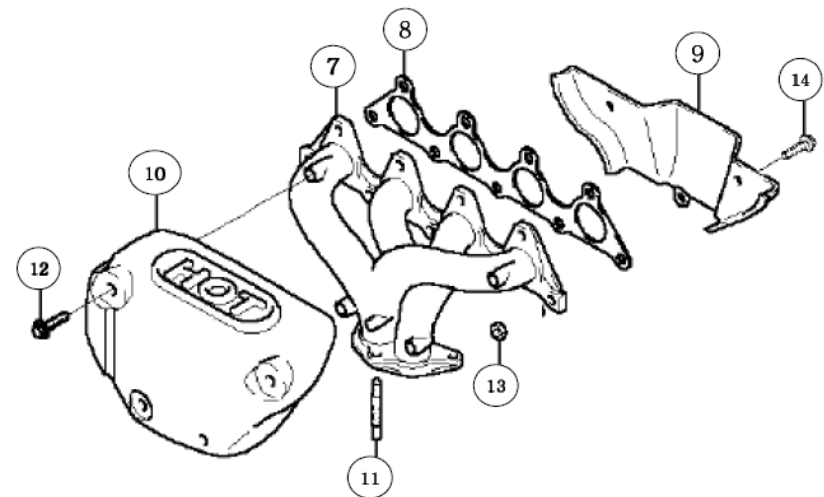
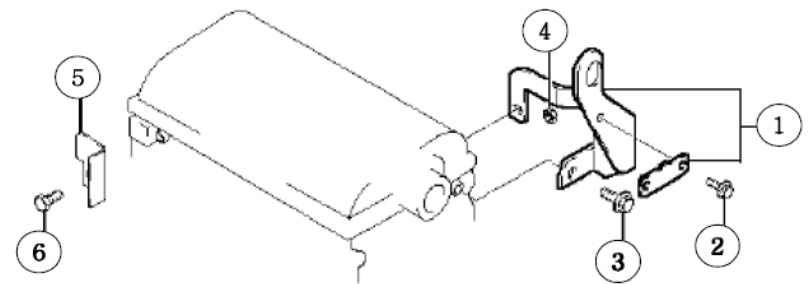
# Engine – Intake Manifold

Item No	Part Number	Description	Qty
1	28310-26470	Intake Manifold Assembly (Aluminum)	1
	28310-26101	Intake Manifold Assembly (Plastic)	1
2	15733-35000	Sealing Cap	1
3	91951-1C100	Bracket	2
4	11403-06103	Bolt	4
5	35103-26800	Bracket	1
6	29212-26010	Hose Fitting	1
7	11513-08256K	Stud	4
8	28321-11002	Hose Fitting	1
9	28312-22450	Hose Fitting	1
10	13396-08007K	Nut	6
11	11403-08223	Bolt	2
12	11403-08453	Bolt	2
13	28411-26011	Gasket – Intake Manifold (Al)	1
14	39300-38110	MAP Sensor (Al)	1
	39300-2B000	MAP Sensor (Pl)	1
15	39322-26300	Bolt	1
16	26721-26504	PCV Hose	1
17	28421-26900	Support	1
18	11294-10203	Bolt	1
19	25468-26750	Hose – Water	1



# Engine – Exhaust Manifold

Item No	Part Number	Description	Qty
1	28410-26470	Lifting Eye Assembly	1
2	11400-06123	Bolt	1
3	11403-08143	Bolt	1
4	13395-08003	Nut	1
5	28413-26470	Rear Lifting Eye	1
6	11234-10206K	Bolt	1
7	28511-26001	Exhaust Manifold	1
8	28521-26600	Gasket – Exhaust Manifold	1
9	28526-26000	Heat Shield – Under	1
10	28525-26002	Heat Shield – Over	1
11	28532-22030	Stud	3
12	28528-23300	Bolt	4
13	10226-08003	Nut	9
14	28528-23200	Bolt	3

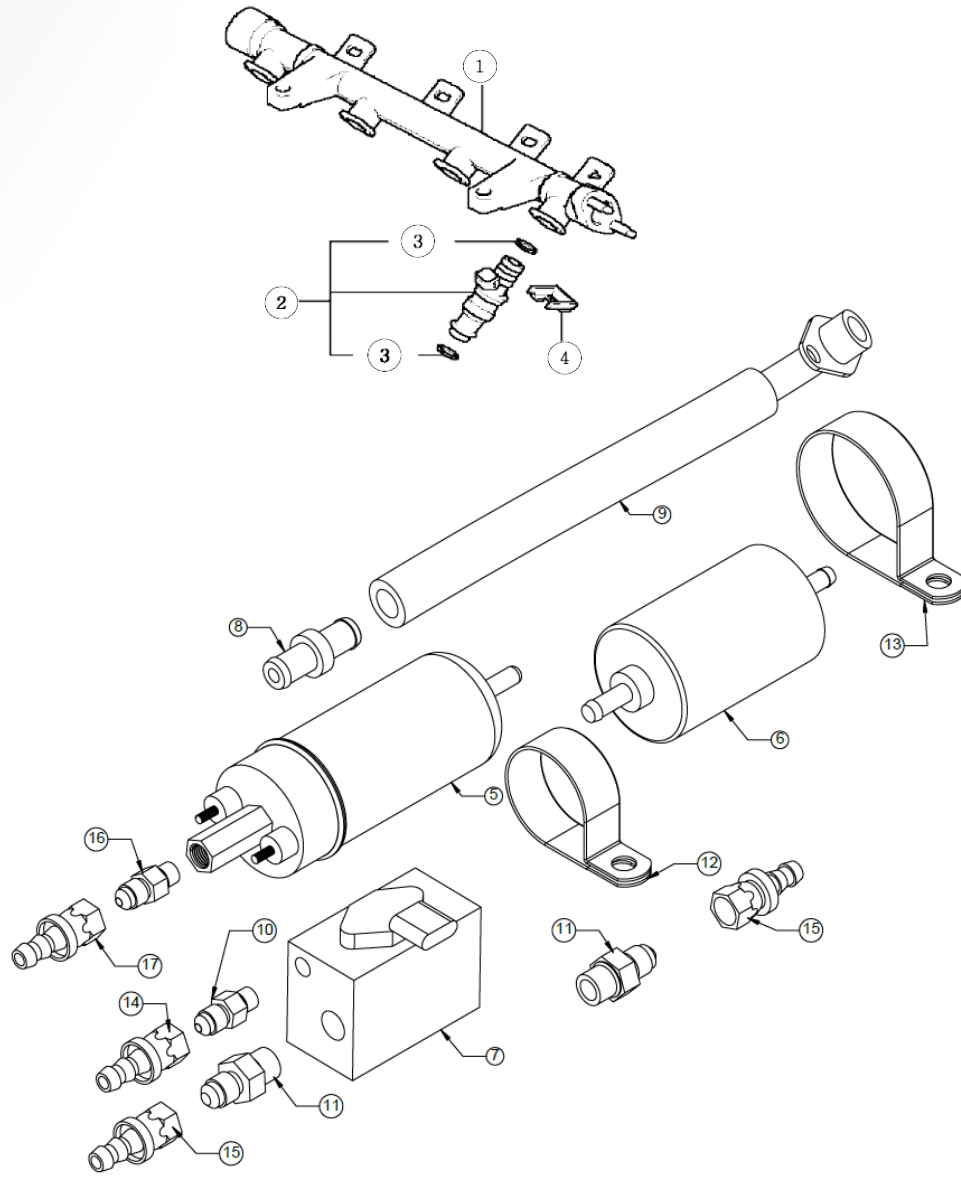




# Engine – Fuel System - Gasoline

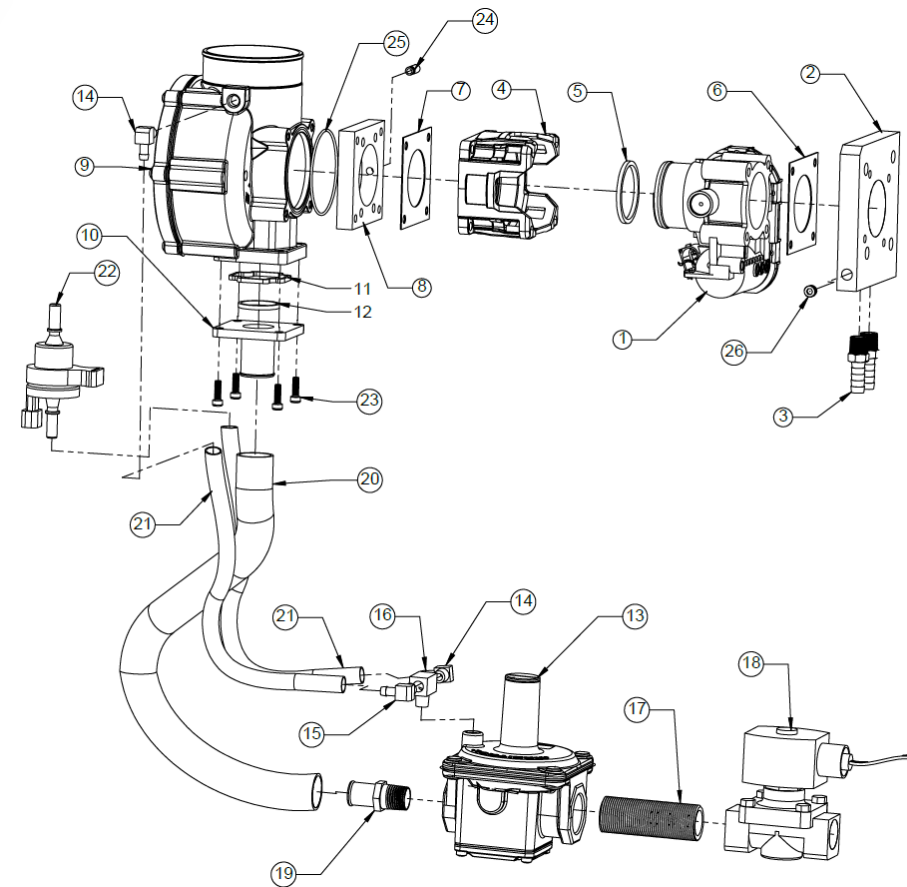


Item No	Part Number	Description	Qty
1	35304-26610	Fuel Rail – Aluminum Manifold	1
	35350-26940	Rail/Injector Assembly – Plastic Manifold	1
2	35310-26600	Injector Assembly – Aluminum Manifold	4
3	35312-22000	Injector O-ring	8
4	35309-26010	Injector Clip	4
5	201284	Fuel Pump	1
6	201287	Fuel Filter	1
7	201341	Fuel Pressure Regulator	1
8	201509	Hose Mender	1
9	200470	Fuel Supply Hose	1
10	201791	Adapter	1
11	201790	Adapter	2
12	200905	Clamp – Fuel Pump	1
13	200904	Clamp – Fuel Filter	1
14	201731	Hose Barb	1
15	201372	Hose Barb	2
16	201769	Adapter	1
17	201730	Hose Barb	1



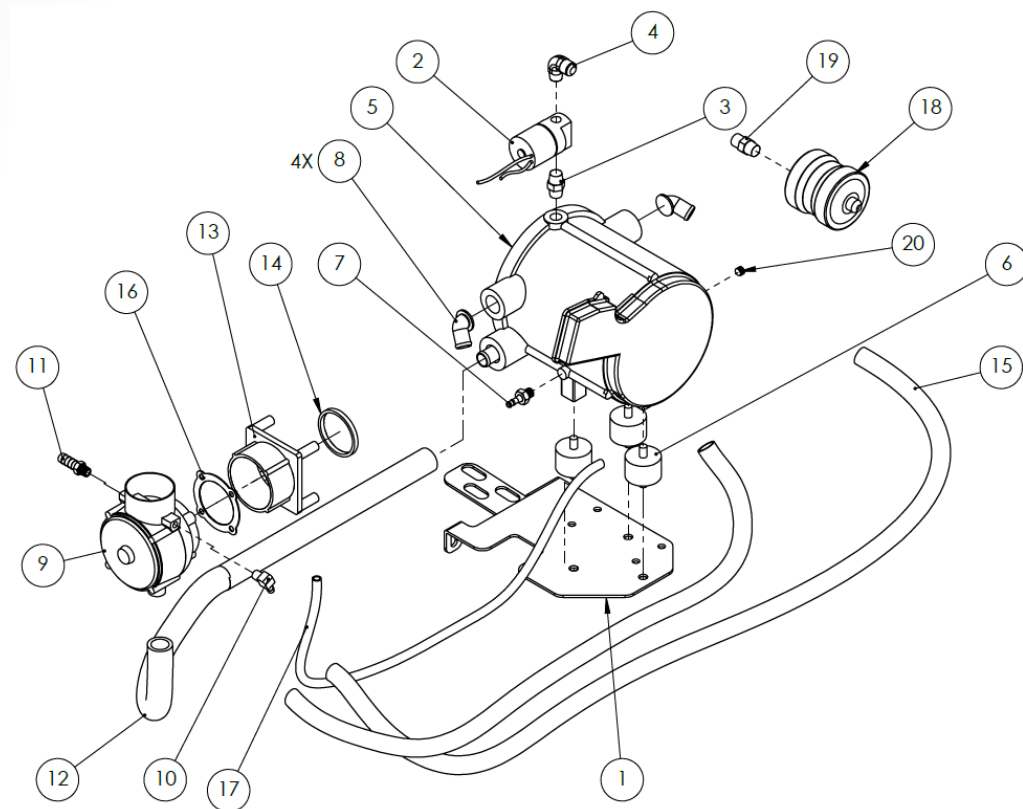
# Engine – Fuel System – Natural Gas

Item No	Part Number	Description	Qty
1	200704	Throttle Body	1
2	200849	Adapter – Throttle to Intake	1
3	201740	Hose Barb – 5/16 x 1/8 NPT	2
4	201464	Adapter – Mixer to TB – Black Anodized	1
5	201949	O-Ring	1
6	200862	Gasket – Throttle to Adapter	1
7	200864	Gasket – Adapter to Adapter	1
8	201599	Adapter Block	1
9	201544	Mixer	1
10	201490	Fuel Inlet Fitting	1
11	201993	O-Ring – Outer	1
12	201994	O-Ring – Inner	1
13	201420	Regulator	1
14	201744	Hose Barb - 90°	1
15	201745	Hose Barb - 90° (with Restricted Orifice)	1
16	201768	Tee	1
17	200008	Pipe Nipple	1
18	201469	Lock-off	1
19	201507	Hose Barb	1
20	200676	Fuel Delivery Hose	1 ft
21	200666	Vent Hose	2 ft
22	201474	Trim Valve	1
23	201825	Fillister ScREW	4
24	201742	Hose Barb	1
25	202566	O-Ring Seal – Mixer	1
26	201956	Pipe Plug	1



# Engine – Fuel System - Propane

Item No	Part Number	Description	Qty
1	200713	EPR Bracket	1
2	202225	Lock-off (Liquid)	1
3	201981	Hex Nipple	1
4	201760	SAE Flare Fitting	1
5	200712	Electronic Pressure Regulator	1
6	201483	Isolation Mount	3
7	201726	Hose Barb	1
8	201489	EPR Fitting Kit	1
9	201553	Mixer	1
10	201744	Hose Barb	1
11	210739	Hose Barb	1
12	200676	Fuel Delivery Hose	2 ft
13	201464	Adapter – Throttle to Mixer	1
14	201949	O-Ring	1
15	200681	Heater Hose	7 ft
16	200864	Gasket – Mixer Mounting	1
17	200666	Vacuum Hose	2 ft
18	201288	LP Fuel Filter – UL Listed	1
19	201755	SAE Flare Fitting	1
20	201956	Pipe Plug	1



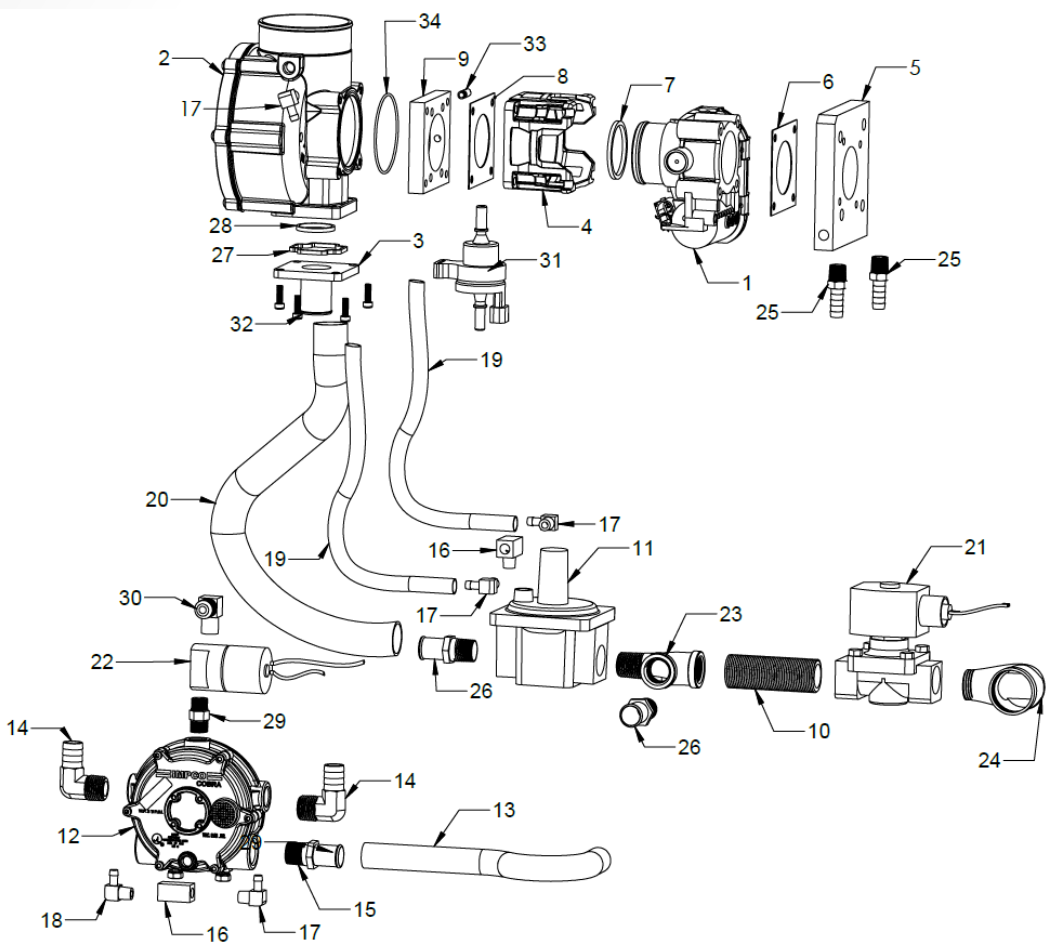
# Engine – Fuel System



## -Dual Fuel/Non-Cert

Item No	Part Number	Description	Qty
1	200704	Throttle Body	1
2	201544	Mixer	1
3	201490	Fuel Inlet Fitting	1
4	201464	Adaptor – Throttle to Mixer	1
5	200849	Adaptor – Intake Manifold to Throttle Body	1
6	200862	Gasket – Throttle Mounting	1
7	201949	O-Ring	1
8	200864	Gasket	1
9	201599	Adaptor – Mixer	1
10	200008	Pipe Nipple – 3/4 NPT	1
11	201420	Regulator	1
12	201426	Reg/Vaporizer – LP	1
13	200676	Fuel Delivery Hose	1 ft
14	201497	Hose Barb – 5/8	2
15	200161	Hose Barb – Fuel Outlet	1
16	201768	Tee – 1/8 NPT	1
17	201744	Hose Barb - 90°	1
18	201745	Hose Barb – Reduced Orifice	1
19	200666	Vent Hose	4 ft
20	200676	Fuel Delivery Hose	1 ft
21	201469	Lock-off – Vapor	1
22	200842	Lock-off – Liquid	1
23	200000	Street Tee – 3/4 NPT	1
24	201677	Street Ell – 3/4 NPT	1
25	201740	Hose Barb	2

Parts Continued on Following Page

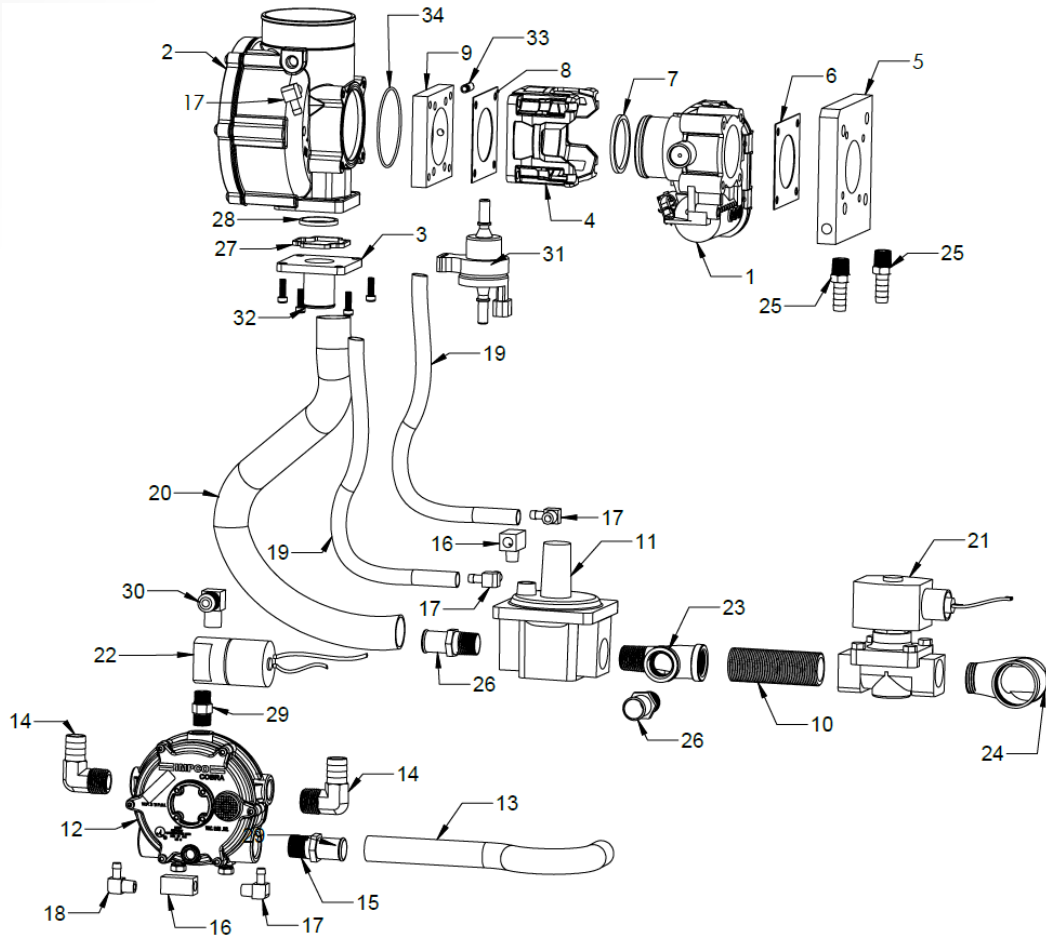


# Engine – Fuel System

## -Dual Fuel/Non-Cert



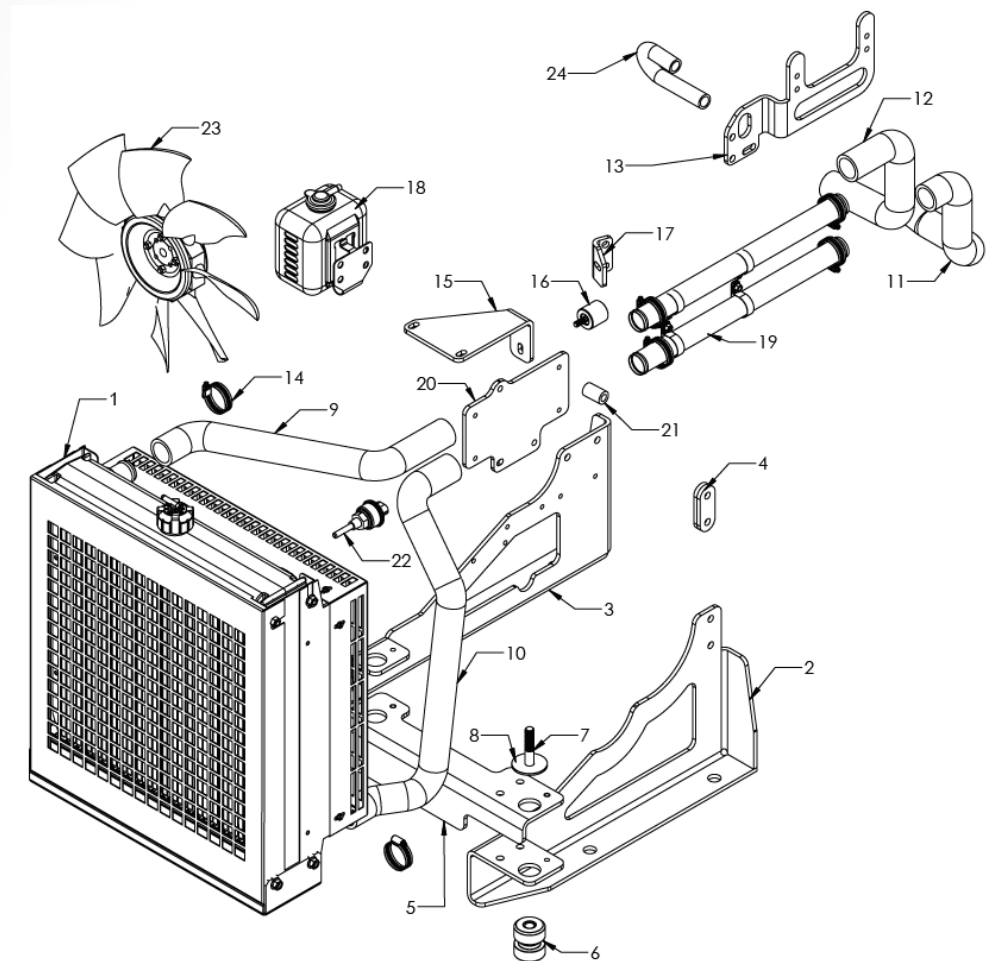
Item No	Part Number	Description	Qty
Continued from Previous Page			
26	201507	Hose Barb	2
27	201994	O-Ring – Outer	1
28	201993	O-Ring – Inner	1
29	201981	Hex Nipple	1
30	201760	SAE x NPT Elbow	1
31	201474	Tim Valve	1
32	201825	Fillister Screw	4
33	201742	Hose Barb	1
34	202566	O-Ring Seal – Mixer	1



# Engine – Mounting / Cooling System

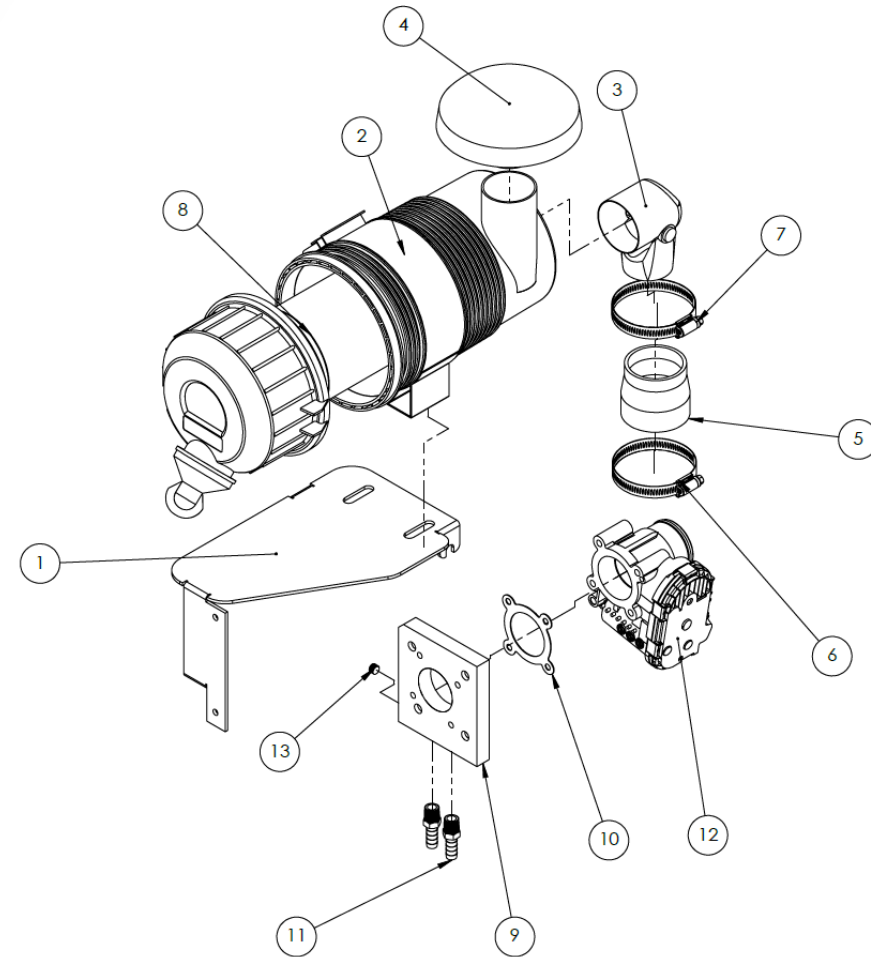


Item No	Part Number	Description	Qty
1	201222	Radiator	1
2	202520	Mounting Leg – Left	1
3	202521	Mounting Leg – Right	1
4	202522	Spacer – Left Mount	2
5	202523	Cross Member	1
6	202524	Isolator	2
7	201668	Bolt – Radiator Mount	2
8	201966	Washer – Radiator Mount	2
9	202525	Hose – Front Upper	1
10	202526	Hose – Front Lower	1
11	202527	Hose – Rear Lower	1
12	202528	Hose – Rear Upper	1
13	202529	Bracket – Coolant Tube	1
14	201524	Hose Clamp	8
15	202530	Support Bracket – Upper	1
16	202531	Isolator	1
17	202532	Support Bracket – Engine Side	1
18	200921	Coolant Overflow Bottle	1
19	202533	Coolant Tube	2
20	202534	Bracket – ECU	1
21	202535	Spacer – ECU Bracket	1
22	201388	Switch – Low Coolant Alarm (optional)	1
23	200970	Fan – Pusher	1
	200971	Fan – Pusher (High Speed Mod)	1
24	200687	Coolant Loop Hose	1



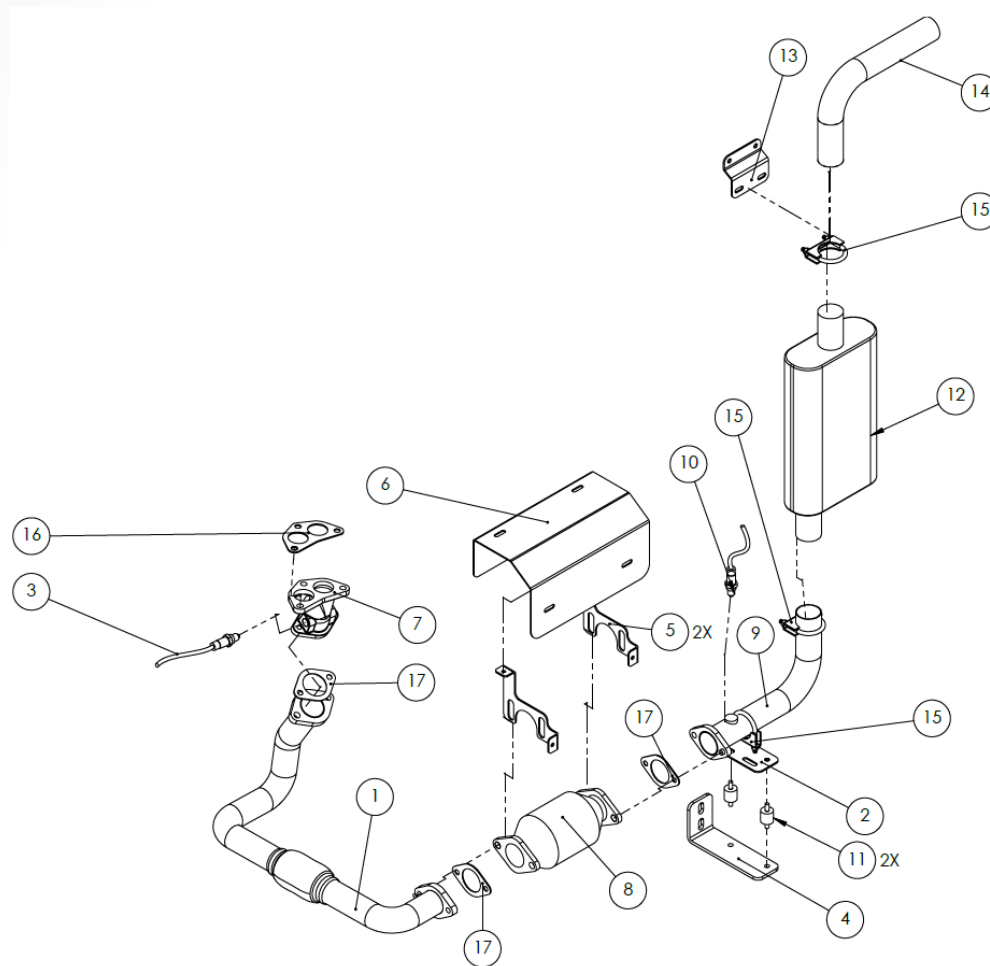
# Engine – Intake System

Item No	Part Number	Description	Qty
1	200804	Bracket – Air Cleaner Support (Plastic Int Manifold)	1
		Bracket (Aluminum Int Manifold)	1
2	201005	Air Cleaner Assembly	1
3	201006	Elbow	1
4	201021	Rain Hat	1
5	200974	Rubber Reducer	1
6	201529	Hose Clamp	1
7	201527	Hose Clamp	1
8	202457	Element – Air Cleaner	1
9	200849	Adaptor – Int Manifold to Throttle Body	1
10	200862	Gasket – Throttle Body Mounting	1
11	201740	Hose Barb – 5/16 x 1/8 NPT	2
12	200704	Throttle Body	1
13	201956	Pipe Plug – 1/8 NPT	1



# Engine – Exhaust System

Item No	Part Number	Description	Qty
1	201449	Pipe – Pre-catalyst	1
2	200794	Exhaust Support – Top Plate	1
3	200474	Oxygen Sensor – Pre-catalyst	1
	201280	Oxygen Sensor – Pre-cat in NG and Non-cert Apps	
4	200798	Support Bracket	1
5	200801	Bracket – Heat Shield	2
6	200802	Heat Shield	1
7	200847	Exhaust Adaptor	1
8	201379	Catalyst	1
9	201450	Pipe – Post-catalyst	1
10	201280	Oxygen Sensor – Post-catalyst	1
11	202272	Isolator – High Temp	2
12	201381	Muffler	1
13	200800	Bracket – Top Exhaust	1
14	201439	Tail Pipe	1
15	201528	Exhaust Clamp	3
16	200868	Gasket – Manifold to Adaptor	1
17	200870	Gasket – Exh Flange	3





# Engine – Electrical System



Item No	Part Number	Description	Qty
1	201402	GCP – ECM	1
2	202163	ECM Diagnostic Kit	1
3	200829	Customer-Side Harness	1
4	202452	Customer-Side Connection Kit (Dual)	1
5	201564	Wire Harness – Gasoline	1
	200429	Wire Harness – Propane, Liquid	1
	201556	Wire Harness – NG	1
6	201275	Relay Box Cover	1
7	201362	Starter (Standard)	1
	201367	Starter (Drilled-out Mounting Holes)	1
8	37300-22650	Alternator	1

1) GCP - ECM



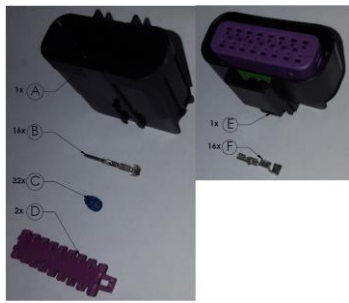
2) ECM Diagnostic Kit



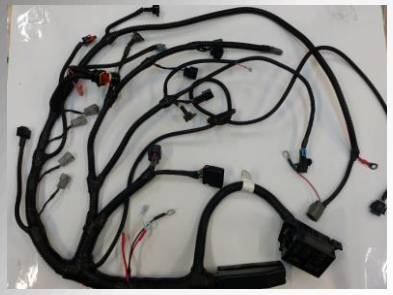
3) Customer-side Harness



4) Customer-side Connection Kit



5) 416A Wire Harness



6) Relay Box Cover



7) Starter



8) Alternator



# Engine – PTO Options

Item No	Part Number	Description	Qty
1	202567	Housing – Hydraulic Pump Adapter, SAE B	1
2	202568	Coupling - Hydraulic pump Adapter - 13T	1
3	202569	Housing – SAE 5	1
4	202570	Flywheel – SAE 5	1
5	23200-26101	Flywheel (Flat Face)	1
6	202571	Coupler - Bearing-Supported Stub Shaft	1
7	201315	Bearing-Supported Stub Shaft (includes coupler)	1
8	201296	Ring Gear	1

