



4175883-Rev A



# Parts & Maintenance Manual

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## Cushman® Haulster™

### With Four Post Roll Over Protective Structure

84065 – Kubota® D1105 Diesel Engine, Manual Transmission

84058 – Suzuki® K6 Gas Engine, 5 Speed Manual Transmission

84059 – Suzuki® K6 Gas Engine, Automatic Transmission

84060 – Suzuki® K6 Gas Engine, RV and Utility



### WARNING

If incorrectly used, this machine can cause severe injury. Those who use and maintain this machine should be trained in its proper use, warned of its dangers and should read the entire manual before attempting to set up, operate, adjust, or service the machine.



**When Performance Matters.™**


## FOREWORD

This manual contains adjustment, maintenance, troubleshooting instructions and parts list for your new Cushman vehicle. This manual should be stored with the equipment for reference during operation.

Before you operate your machine, you and each operator you employ should read the manual carefully in its entirety. By following the safety, operating and maintenance instructions you will prolong the life of your equipment and maintain its maximum efficiency.

If additional information is needed contact your Cushman Dealer.

The serial plate is located on the frame rail under the steering wheel. Cushman recommends you record these numbers below for easy reference.

<b>JACOBSSEN</b> <small>A Textron Company</small>		CHARLOTTE, NC, USA 1 800 848 1636 Jacobsen.com
MODEL	84043	
DATE CODE	M1903	
LABEL #	75984G55	
SERIAL #	*2128855*	
		Lb/kg W Batt Norm Power Hp/kw
		

## Suggested Stocking Guide

To Keep your equipment fully operational and productive Cushman suggests you maintain a stock of the more commonly used maintenance items. We have also included part numbers for additional support materials and training aids.

To order any of the following material:

1. Write your full name and complete address on your order form.

2. Explain where and how to make shipment:

☐ UPS

☐ Regular Mail

☐ Overnight

☐ 2nd Day

3. Order by the quantity desired, the part number, and the description of the part.

4. Send or bring the order to your authorized Cushman Dealer.

## Service Parts

Qty.	Part No.	Description	Qty.	Part No.	Description
	4113986	Diesel Engine Oil Filter		2701908	Gas Engine Oil Filter
	550489	Diesel Engine Fuel Filter Element		2701898	Gas Engine Fuel Filter
	4175560	Diesel Alternator-Power Steering Belt		4139265	Gas Alternator-Power Steering Belt
	5000919	Diesel Engine Air Filter Element		840352	Gas Engine Air Filter Element

## Service Support Material

Qty.	Part No.	Description
	4175882	Safety & Operation Manual
	4175883	Parts & Maintenance
	4160162	Kubota D1105 Engine Parts Manual
	4140632	Suzuki K6A Engine Parts Manual

Qty.	Part No.	Description
	4171642	MT Truck Service Manual
	4171675	AT Truck Service Manual
	4171985	Suzuki K6A Service Manual

### Proposition 65 Warning

This product contains or emits chemicals known to State of California to cause cancer and birth defects or other reproductive harm.

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# Table of Contents

<b>1</b>	<b>Safety</b>				
1.1	Operating Safety .....	4	5.11	Charging Battery .....	20
1.2	Important Safety Notes .....	5	5.12	Fuel .....	21
<b>2</b>	<b>Vehicle Identification Numbers</b>		5.13	Fuel System .....	21
2.1	Vehicle Identification Number .....	6	5.14	Tire Pressure .....	21
2.2	Engine Identification Numbers .....	6	5.15	Tire Removal and Installation .....	22
<b>3</b>	<b>Specifications</b>		5.16	Raising the vehicle .....	22
3.1	Product Identification .....	7	5.17	Towing the Vehicle .....	23
3.2	Engine .....	7	5.18	Governor Oil Level .....	23
3.3	vehicle .....	8	5.19	Hydraulic Brakes .....	24
3.4	Gear Ratios .....	8	5.20	Differential Fluid .....	25
3.5	Weights and Dimensions .....	8	5.21	Diesel Engine Manual Transmission .....	25
3.6	Accessories & Support Literature .....	9	5.22	Gas Engine Manual Transmission .....	26
<b>4</b>	<b>Adjustments</b>		5.23	Gas Engine Automatic Transmission .....	26
4.1	General .....	10	5.24	Electrical System .....	27
4.2	Engine Access .....	10	5.25	Dash Panel .....	27
4.3	Front Cowl Access .....	11	5.26	Headlight Replacement .....	28
4.4	Access Panels .....	11	5.27	Tail Light Replacement .....	28
4.5	Diesel Engine Alternator Belt .....	12	5.28	EFI Diagnostic Check .....	29
4.6	Gas Engine Power Steering-Alternator Belt .....	12	5.29	Care and Cleaning .....	30
4.7	Gas Engine Governor Belt .....	12	5.30	Storage .....	30
4.8	Parking Brake Cable .....	13	<b>6</b>	<b>Troubleshooting</b>	
4.9	Torque Specification .....	14	6.1	General .....	31
<b>5</b>	<b>Maintenance</b>		<b>7</b>	<b>Maintenance &amp; Lubrication Charts</b>	
5.1	General .....	15	7.1	General .....	32
5.2	Engine .....	15	7.2	Lubrication Chart .....	32
5.3	Engine Oil .....	16	7.3	Maintenance Charts .....	33
5.4	Power Steering Reservoir .....	17	7.4	Common Replacement Parts .....	34
5.5	Muffler and Exhaust .....	17	7.5	Kubota Diesel Engine Service Parts .....	34
5.6	Engine Overheat Procedure .....	17	<b>8</b>	<b>NOTES</b>	
5.7	Cooling System .....	18	<b>9</b>	<b>PARTS CATALOG</b>	
5.8	Air Filter .....	19	9.1	How To Use The Parts Catalog .....	36
5.9	Jump Starting .....	19	9.2	To Order Parts .....	36
5.10	Battery .....	20	9.3	Table Of Contents .....	37

# 1 SAFETY

## 1.1 OPERATING SAFETY



### WARNING

#### EQUIPMENT OPERATED IMPROPERLY OR BY UNTRAINED PERSONNEL CAN BE DANGEROUS.

Familiarize yourself with the location and proper use of all controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate the machine.

1. Safety is dependent upon the awareness, concern and prudence of those who operate or service the equipment. Never allow minors to operate any equipment.
2. It is your responsibility to read this manual and all publications associated with this equipment (Safety & Operation Manual, Engine Manual, accessories and attachments). If the operator cannot read English it is the owner's responsibility to explain the material contained in this manual to them.
3. Learn the proper use of the machine, the location and purpose of all the controls and gauges before you operate the equipment. Working with unfamiliar equipment can lead to accidents.
4. Never allow anyone to operate or service the machine or its attachments without proper training and instructions or while under the influence of alcohol or drugs.
5. Wear all the necessary protective clothing and personal safety devices to protect your head, eyes, ears, hands and feet. Operate the machine only in daylight or in good artificial light.
6. Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by Cushman.
7. Stay alert for holes in the terrain and other hidden hazards.
8. Inspect the area where the equipment will be used. Pick up all the debris you can find before operating. Beware of overhead obstructions (low tree limbs, electrical wires, etc.) and also underground obstacles (sprinklers, pipes, tree roots, etc.) Enter a new area cautiously. Stay alert for hidden hazards.
9. Never allow anyone near the machine while in operation. The owner/operator can prevent, and is responsible for, injuries inflicted to themselves, to bystanders and damage to property.
10. Do not carry passengers. Keep bystanders and pets a safe distance away.
11. Never operate equipment that is not in perfect working order or is without decals, guards, shields or other protective devices securely fastened in place.
12. Never disconnect or bypass any switch.
13. Do not change the engine governor setting or overspeed the engine.
14. Carbon monoxide in the exhaust fumes can be fatal when inhaled. Never operate the engine without proper ventilation or in an enclosed area.
15. Fuel is highly flammable; handle with care.
16. Keep the engine clean. Allow the engine to cool before storing and always remove the ignition key.
17. Place transmission in Neutral, depress clutch and engage parking brake before starting the engine (motor). Start the engine only when sitting in operator's seat, never while standing beside the unit.
18. Equipment must comply with the latest federal, state and local requirements when driven or transported on public roads. Watch out for traffic when crossing or operating on or near roads.
19. Local regulations may restrict the age of the operator.
20. Operate the machine up and down the face of the slopes (vertically) not across the face (horizontally).
21. To prevent tipping or loss of control do not start or stop suddenly on slopes. Reduce speed when making sharp turns. Use caution when changing directions.
22. Always use the seat belt when operating vehicles equipped with a ROPS.  
*Never use a seat belt when operating vehicle without a ROPS.*
23. Keep legs, arms and body inside the seating compartment while the vehicle is in motion.
24. Always shift transmission to 1st Gear (Manual Transmission) or Park (Automatic Transmission), engage parking brake, and stop engine before leaving the vehicle.
25. Charge batteries in an open, well ventilated area away from spark and flames. Unplug charger before connecting and disconnecting from battery. Wear protective clothing and use insulated tools.



## 1.2 IMPORTANT SAFETY NOTES



*This safety alert symbol is used to alert you to potential hazards.*

**DANGER** - Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

**WARNING** - Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

**CAUTION** - Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury and property damage. It may also be used to alert against unsafe practices.

**NOTICE** - Indicates a potentially hazardous situation which, if not avoided, **MAY** result in property damage. It may also be used to alert against unsafe practices.

*For pictorial clarity, some illustrations in this manual may show shields, guards or plates open or removed. Under no circumstances should this equipment be operated without these devices securely fastened in place.*



### WARNING

The Interlock System on this vehicle prevents the vehicle from starting unless the clutch pedal is depressed (Manual Transmission) or gear selector is in Park (P) or Neutral (N) (Automatic Transmission).

NEVER operate vehicle unless the Interlock system is working.



### WARNING

1. Before leaving the operator's position for any reason:
  - a. Remove foot from accelerator pedal.
  - b. Slow vehicle using service brake.
  - c. Depress clutch and shift transmission to 1st Gear (Manual Transmission, or Park (Automatic Transmission)).
  - d. Engage parking brake.
  - e. Stop engine and remove the ignition key.
2. Keep hands, feet and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the machine.
3. Keep the area of operation clear of all bystanders and pets.
4. Never carry passengers unless a seat is provided for them.
5. Never operate mowing equipment without the discharge deflector securely fastened in place.

By following all instructions in this manual you will prolong the life of your machine and maintain its maximum efficiency. Adjustments and maintenance should always be performed by a qualified technician.

If additional information or service is needed contact your Authorized Cushman Dealer who is kept informed of the latest methods to service this equipment and can provide prompt and efficient service.

## 2 VEHICLE IDENTIFICATION NUMBERS

### 2.1 VEHICLE IDENTIFICATION NUMBER

The Vehicle Identification Number (VIN), consisting of the model number, date code, and serial number, are all printed on the Nameplate/Identification Decal attached to the cross member under the dash.

The serial number is also stamped on the cross member. It is located to the left of the Nameplate/Identification Decal.

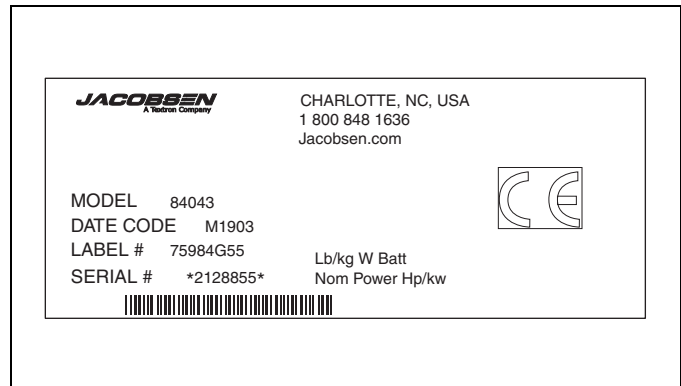
**NOTE:** *Reference to the Front, Rear, Left, and Right sides of the vehicle are always determined by the operator's seated position.*

Record the Vehicle Identification information below for easy reference.

Model Number: \_\_\_\_\_

Date Code: \_\_\_\_\_

Serial Number: \_\_\_\_\_



**Figure 2A**

Always provide the Vehicle Identification Number of the unit when ordering replacement parts or requesting service information. Vehicle Identification Numbers must appear on all correspondence concerning this vehicle.

### 2.2 ENGINE IDENTIFICATION NUMBERS

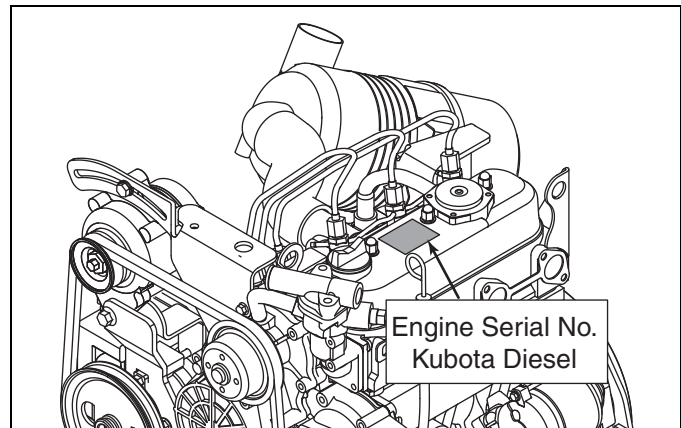
The Haulster™ is equipped with either a Kubota® three cylinder diesel powered, liquid cooled, four-cycle engine or a Suzuki® three cylinder gas powered, liquid cooled, four-cycle engine.

The Engine Serial Number for the Kubota engine is on a plate located on the valve cover.

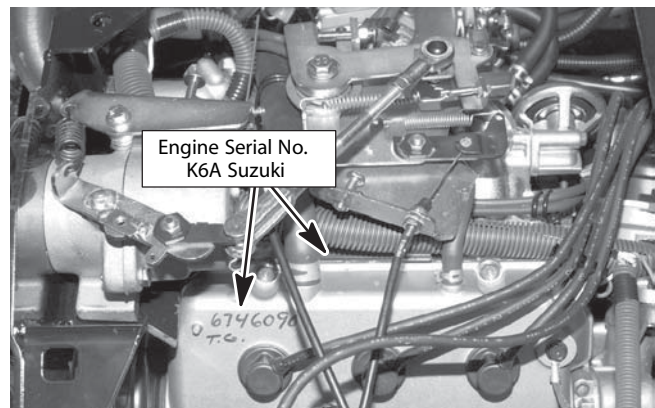
The Engine Serial Number for the Suzuki engine is stamped onto the upper engine block on the right side of the engine under the engine mount and may be partially hidden by the electrical harness. The serial number is also hand printed on the fuel rail.

Record the Engine Serial Number below for easy reference.

Engine Serial Number: \_\_\_\_\_



**Figure 2B**



## 3.1 PRODUCT IDENTIFICATION

84065 .....	Haulster, liquid cooled diesel engine, 4 speed manual transmission, single speed differential, and four post ROPS.	84059.....	Haulster, liquid cooled gas engine, 3 speed automatic transmission, single speed differential, and four post ROPS.
84058 .....	Haulster, liquid cooled gas engine, 4 speed manual transmission, single speed differential,, and four post ROPS.	84060.....	Haulster, liquid cooled gas engine, 5 speed manual transmission, single speed differential, and four post ROPS.

## 3.2 ENGINE

### Diesel Engine:

Make .....	Kubota
Model .....	D1105-E3B
Horsepower.....	26 hp (19.4 kW) @ 3000 rpm
<i>Note: Actual sustained horsepower will likely be lower than listed in specifications due to operating limitations and environmental factors</i>	
Displacement .....	68.5 cu. in. (1123 cc)
Torque .....	52.7 ft. lbs. (71.5 Nm) @ 2200 rpm
Fuel:	
Type .....	No. 2 Low or Ultra Low Sulfur Diesel
Rating.....	Cetane Rating-45
Capacity .....	6.55 U.S. Gal. (24.5 liters)

### Gas Engine:

Make .....	Suzuki
Model .....	K6
Horsepower.....	32 hp (23.8 kW) @ 4450 rpm
Displacement .....	40.2 cu. in. (658 cc)
Torque .....	38.3 ft. lbs. (51.9 Nm) @ 3200 rpm
Fuel:	
Type .....	Unleaded Gasoline
Rating.....	Min. Octane rating 87
Capacity .....	6.55 U.S. Gal. (24.5 liters)



## CAUTION

The use of any fuel containing greater than 10% ethanol may harm the engine's emission control system and therefore invalidate the emission-related warranty through the improper action of the operator.

Governor.....	All Speed Mechanical
Low Idle .....	1300 RPM
High Idle.....	3180 RPM
Lubrication:	
Capacity.....	5.4 quarts (5.1 liters)
Below 32° F (0° C) ...	SAE 10W or 10W-30/10W-40
32-77° F (0-25° C) ....	SAE 20W or 10W-30/10W-40
Above 77° F (25° C) .	SAE 30W or 10W-30/10W-40
API Classification .....	CD or CE
Air Filter .....	Dry type with evacuator valve.
Alternator .....	60 amp
Cooling System.....	Liquid Cooled
Capacity .....	5.1 qt. (4.8 l) 50/50 water ethylene glycol mix
Governor.....	External Mechanical
Low Idle .....	950 RPM
High Idle.....	3600 RPM (84058 and 84059)
High Idle.....	3600 RPM (84060 Only)
Lubrication:	
Capacity.....	3.3 quarts (3.0 liters)
Below 32° F (0° C) ...	SAE 10W30
32-86° F (0-30° C) ....	SAE 10W30
Above 86° F (30° C) .	SAE 10W30W or 10W40
API Classification .....	SJ
Air Filter .....	Dry type with evacuator valve.
Alternator .....	60 amp
Cooling System.....	Liquid Cooled
Capacity .....	3.3 qt. (3.0 l) 50/50 water ethylene glycol mix
Spark Plugs:	
NGK 3932 .....	DCPR7E Gap
Denso.....	XU22EPR-U
Gap .....	0.032 - 0.035 in. (0.8 - 1.27 mm)

## 3 SPECIFICATIONS

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### 3.3 VEHICLE

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Tires:	Brake Fluid .....	DOT 3
Front and Rear .....	Parking Brake .....	Integral to rear drum, hand lever actuated
Tire Pressure:	Steering .....	Front wheel power steering
Front and Rear .....	Vehicle Rated Capacity ..	2400 lb. (1089 kg)
Battery:	<b>NOTE:</b> When calculating load weight, include 118 lb. (53.5 kg) for the standard four post ROPS. Do not exceed Vehicle Rated Capacity.	
Type .....		
Group .....		
Service Brake .....		

### 3.4 GEAR RATIOS

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#### Diesel Engine Manual Transmission Gear Ratios:

4th Gear .....	1.000:1
3rd Gear .....	1.423:1
2nd Gear .....	1.947:1
1st Gear .....	3.652:1
Reverse .....	3.463:1
Hypoid Differential...	11.16:1

#### Gas Engine 5 Speed Manual Transmission Gear Ratios:

5th Gear .....	1.000:1
4th Gear .....	1.264:1
3rd Gear .....	1.908:1
2nd Gear .....	3.017:1
1st Gear .....	5.106:1
Reverse .....	5.151:1
Hypoid Differential ....	11.16:1

#### Gas Engine Automatic Transmission Gear Ratios:

3rd Gear .....	1.000:1
2nd Gear .....	1.536:1
1st Gear .....	2.727:1
Reverse .....	2.222:1
Hypoid Differential ....	11.16:1

### 3.5 WEIGHTS AND DIMENSIONS

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Dimensions:	Inches	(mm)	Weights:	Lbs.	(kg)
Length .....	136	(3454)	84065 .....	1690	(766)
Height .....	74.5	(1892)	84058 .....	1561	(708)
Wheel Base .....	88.2	(2240)	84059 .....	1503	(682)
Turning Radius (Outside) .....	242	(6146)	84060 .....	1661	(753)

## 3.6 ACCESSORIES & SUPPORT LITERATURE

Contact your area Cushman Dealer for a complete listing of accessories and attachments.



### CAUTION

Use of other than Cushman authorized parts, excluding emission related components defined in the Emission Warranty, and accessories may cause personal injury or damage to the equipment.

#### Flatbeds and Boxes

Full Ton Sides and Tailgate .....	4111182G01
Tool Box .....	887810

#### Hitches

Pintle Hitch (Requires 894779) .....	2703513
Rear Tow Hitch (Requires 894779) .....	894780

#### ROPS Attachments

Upper ROPS (Roll Over Protective Structure) ....	894761G01
Doors, Left & Right Side (Requires ROPS).....	36110G01
Outside Mirrors (Left and Right).....	894768
Rear Window.....	894758G01
Windshield with Wiper.....	894757G01
Roof Light Mounting Bracket.....	894777
Replacement Four Post ROPS .....	4205580

**NOTE:** The four post ROPS equipped as standard equipment on this vehicle cannot be used with cab attachments. If an enclosed cab is desired, the four post ROPS must be replaced with Upper ROPS 894761.

#### Truck Attachments

Front Bumper .....	894778
Rear Bumper .....	894779
Protecto Seal Gas Cap .....	894720
Turn Signal with Right Taillight .....	894764
Back-up Alarm .....	2703183
Exhaust Spark Arrestor .....	882574
Heater Defroster .....	894760
Rear Shock Absorbers.....	2701344
Spare Tire, 20.5 x 8.5-10 .....	4139806G02

#### Support Literature

Safety & Operation Manual.....	4175882
Parts & Maintenance Manual.....	4175883
Suzuki Gas Engine Parts Catalog .....	4140632
Kubota Diesel Engine Parts Catalog .....	4160162

## 4 ADJUSTMENTS

### 4.1 GENERAL



#### WARNING

To prevent injury, depress clutch pedal and shift transmission to Neutral, engage parking brake, stop engine, and remove key from ignition switch before making any adjustments or performing maintenance.

Make sure the vehicle is parked on a solid and level surface. Never work on a vehicle that is supported only by the jack. Always use jack stands.

If only the front or rear of the vehicle is raised, place chocks in front of and behind the wheels that are not raised.

1. Adjustments and maintenance should always be performed by a qualified technician. If proper adjustment cannot be made, contact an authorized Cushman Dealer.

2. Replace, do not adjust, worn, or damaged components.
3. Long hair, jewelry, or loose fitting clothing may get tangled in moving parts.



#### CAUTION

Be careful to prevent entrapment of the hands and fingers between moving and fixed components of the machine.

4. Do not change governor settings or overspeed the engine.
5. Keep hands and feet away from moving parts. If possible do not make adjustments with the engine running.

### 4.2 ENGINE ACCESS

Never remove or install the engine cover while the engine is running. The engine cover is a *machinery guard* and its removal exposes you to moving parts. Keep hands, hair, and clothing away from flywheel, radiator cooling fan, alternator fan, engine belts, pulleys, and air intake.



#### WARNING

Keep clothing, hands, and hair away from moving parts. These items could become entangled, causing serious personal injury.

For servicing the engine and related components, the engine cover can be tilted forward or removed.

To gain access to the engine, unlock key-lock if installed, push the engine cover latch towards the rear of the unit and tilt cover forward.

When replacing the engine cover, make sure the retaining tabs located at the front corners of the engine cover are inserted into the slots in the floorboard. Tilt seat to the rear until the engine latch engages. Lock key-lock if equipped.



#### WARNING

Failure to latch the seat properly can result in the engine cover tipping forward causing loss of control of the vehicle and possible personal injury.

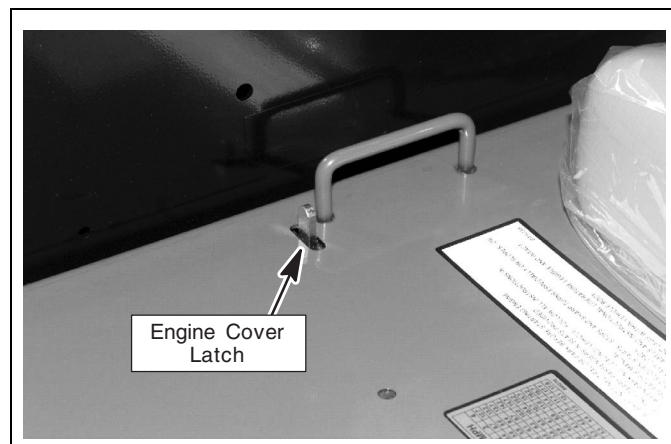


Figure 4A

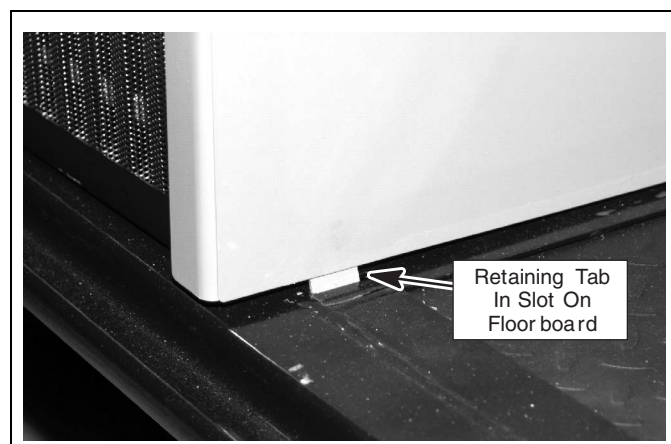


Figure 4B

## 4.3 FRONT COWL ACCESS

The front cowl opens to gain access to two access panels, fuse panel, horn, and master cylinder reservoir.

To open the front cowl locate the release lever at the upper left corner of front clip near the left side headlight.

Pull the lever toward the headlight to release the front cowl latch and at the same time pull up on the front cowl.

Fully open the cowl and allow it to rest on the steering wheel (or upper ROPS structure if installed).

The front cowl will not *spring up* when the release lever is pulled and so must be lifted manually.

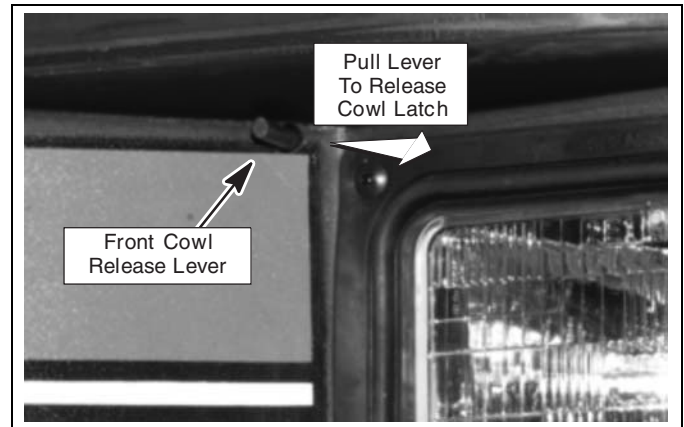


Figure 4C

## 4.4 ACCESS PANELS

There are two access panels located under the front cowl and one located in the middle of the floorboard.

Remove panel **(A)** under cowl to access the shifter linkage and wiring for the instrument panel.

Remove panel **(B)** under cowl to access the front suspension.

Remove the center panel **(C)** in the middle of floorboard to access the throttle cable, accelerator pedal linkage, wire harness, and rear hydraulic brake line.

**NOTE:** *It will be necessary to remove the accelerator pedal in order to completely remove the center floorboard panel.*

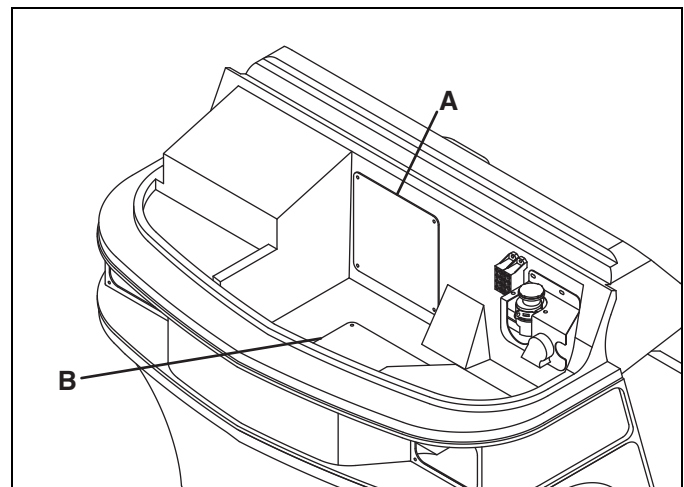


Figure 4D

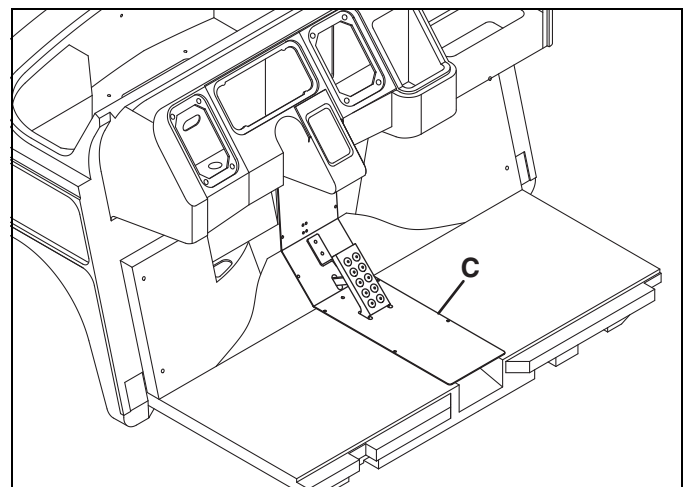


Figure 4E



## 4 ADJUSTMENTS

### 4.5 DIESEL ENGINE ALTERNATOR BELT

Inspect and adjust new belt after first 24-48 hours of operation. Adjust every 200 hours thereafter.

Adjust alternator pulley so belt deflects 1/4 to 1/2 in. (6 to 12 mm) with a 20 lb. push at midpoint between water pump and alternator pulleys.

If tension is incorrect loosen alternator mounting bolts (**D**) and adjust alternator until proper belt tension is achieved.

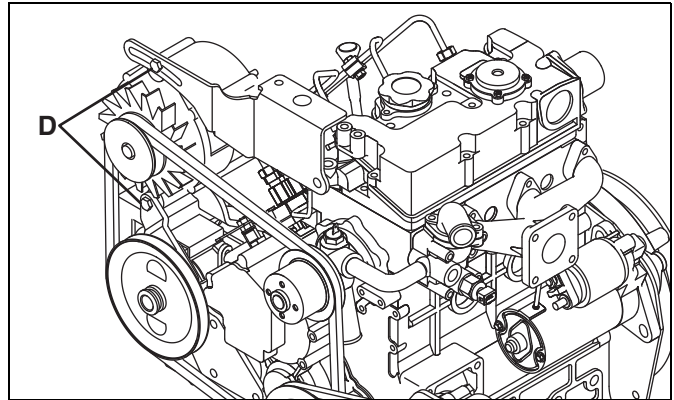


Figure 4F

### 4.6 GAS ENGINE POWER STEERING-ALTERNATOR BELT

Inspect and adjust new belt after first 24-48 hours of operation. Adjust every 200 hours thereafter.

Adjust power steering pump so belt deflects 1/4 to 1/2 in. (6 to 12 mm) with a 20 lb. push at midpoint between pulleys.

If tension is incorrect loosen power steering pump mounting bolts (**F**) and carefully pry pump away from the engine until proper belt tension is achieved.

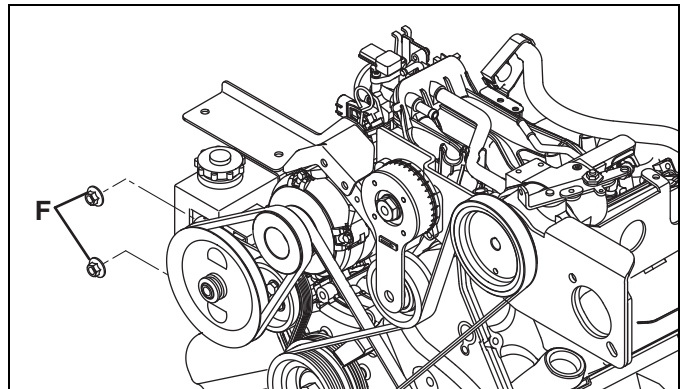


Figure 4G

### 4.7 GAS ENGINE GOVERNOR BELT

Inspect new belt after first 24-48 hours of operation. Inspect every 200 hours thereafter.

Belt is dynamically adjusted with a spring loaded tensioner to 12 ft-lbs. *No adjustment is required.*

To remove belt rotate tensioner towards radiator to release tension and remove belt from pulleys.

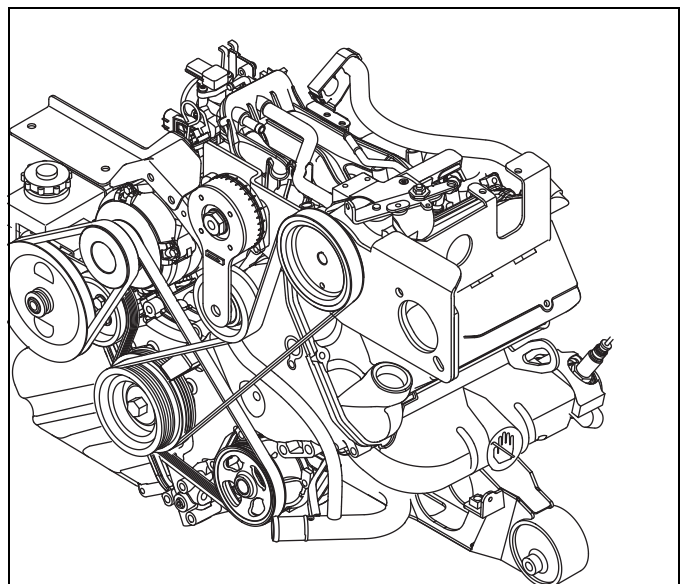


Figure 4H



## 4.8 PARKING BRAKE CABLE

1. Remove the engine cover. Put chocks in front of and behind at least two wheels at opposite corners of vehicle.
2. Engage parking brake. If handle is at an angle greater than  $45^\circ$  to the panel adjustment is required.
3. Disengage parking brake.
4. Tighten adjustment nut (**E**) a couple of turns.
5. Engage parking brake. Repeat steps 3 and 4 until handle is at an approximate  $45^\circ$  angle when parking brake is engaged.

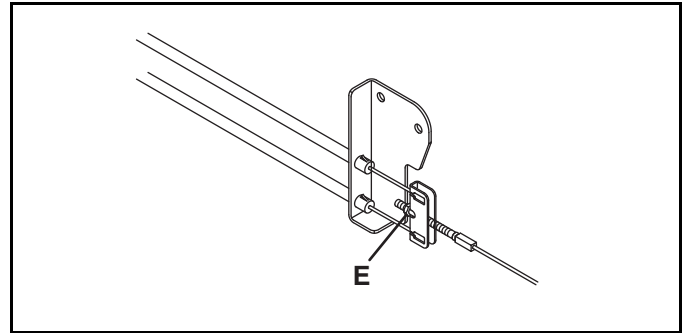


Figure 4I



## 4 ADJUSTMENTS



### 4.9 TORQUE SPECIFICATION






#### NOTICE

All torque values included in these charts are approximate and are for reference only. Use of these torque values is at your sole risk. Jacobsen is not responsible for any loss, claim, or damage arising from the use of these charts. **Extreme caution should always be used when using any torque value.**

Cushman uses Grade 5 (Inch) or Grade 8.8 (Metric) bolts as standard, unless otherwise noted.

SIZE	UNITS	 GRADE 5	 GRADE 8
#6-32	in-lbs (Nm)	20 (2.3)	—
#8-32	in-lbs (Nm)	24 (2.7)	30 (3.4)
#10-24	in-lbs (Nm)	35 (4.0)	45 (5.1)
#10-32	in-lbs (Nm)	40 (4.5)	50 (5.7)
#12-24	in-lbs (Nm)	50 (5.7)	65 (7.3)
1/4-20	in-lbs (Nm)	95 (10.7)	125 (14.1)
1/4-28	in-lbs (Nm)	95 (10.7)	150 (17.0)
5/16-18	in-lbs (Nm)	200 (22.6)	270 (30.5)
5/16-24	in-lbs (Nm)	240 (27.1)	300 (33.9)
3/8-16	ft-lbs (Nm)	30 (40.7)	40 (54.2)
3/8-24	ft-lbs (Nm)	35 (47.5)	45 (61.0)

SIZE	UNITS	 GRADE 5	 GRADE 8
7/16-14	ft-lbs (Nm)	50 (67.8)	65 (88.1)
7/16-20	ft-lbs (Nm)	55 (74.6)	70 (94.9)
1/2-13	ft-lbs (Nm)	75 (101.7)	100 (135.6)
1/2-20	ft-lbs (Nm)	85 (115.3)	110 (149.2)
9/16-12	ft-lbs (Nm)	105 (142.4)	135 (183.1)
9/16-18	ft-lbs (Nm)	115 (155.9)	150 (203.4)
5/8-11	ft-lbs (Nm)	150 (203.4)	195 (264.4)
5/8-18	ft-lbs (Nm)	160 (217.0)	210 (284.8)
3/4-10	ft-lbs (Nm)	170 (230.5)	220 (298.3)
3/4-16	ft-lbs (Nm)	175 (237.3)	225 (305.1)
7/8-14	ft-lbs (Nm)	300 (406.8)	400 (542.4)

SIZE	UNITS	 4.8	 5.8	 8.8	 10.9	 12.9	Non Critical Fasteners into Aluminum
M4	Nm (in-lbs)	1.2 (11)	1.7 (15)	2.9 (26)	4.1 (36)	5.0 (44)	2.0 (18)
M5	Nm (in-lbs)	2.5 (22)	3.2 (28)	5.8 (51)	8.1 (72)	9.7 (86)	4.0 (35)
M6	Nm (in-lbs)	4.3 (38)	5.7 (50)	9.9 (88)	14.0 (124)	16.5 (146)	6.8 (60)
M8	Nm (in-lbs)	10.5 (93)	13.6 (120)	24.4 (216)	33.9 (300)	40.7 (360)	17.0 (150)
M10	Nm (ft-lbs)	21.7 (16)	27.1 (20)	47.5 (35)	66.4 (49)	81.4 (60)	33.9 (25)
M12	Nm (ft-lbs)	36.6 (27)	47.5 (35)	82.7 (61)	116.6 (86)	139.7 (103)	61.0 (45)
M14	Nm (ft-lbs)	58.3 (43)	76.4 (55)	131.5 (97)	184.4 (136)	219.7 (162)	94.9 (70)

## 5.1 GENERAL



### WARNING

Before you clean, adjust or repair this equipment depress clutch pedal and shift transmission to Neutral, engage parking brake, stop engine and remove key from ignition switch to prevent injuries.

Make sure the vehicle is parked on a solid and level surface. Never work on a vehicle that is supported only by a jack. Always use jack stands.

1. Adjustment and maintenance should always be performed by a qualified technician. If proper adjustments cannot be made contact an Authorized Cushman Dealer.
2. Inspect the equipment on a regular basis, establish a maintenance schedule, and keep detailed records.
  - a. Keep the equipment clean.
  - b. Keep all moving parts properly adjusted and

lubricated.

- c. Replace worn or damaged parts before operating the machine.
  - d. Keep all fluids at their proper levels.
  - e. Keep shields in place and all hardware securely fastened.
  - f. Keep tires properly inflated.
3. Long hair, jewelry, or loose fitting clothing may get tangled in moving parts.
  4. Use the illustrations in the **Parts & Maintenance Manual** as reference for the disassembly and assembly of components.
  5. Recycle or dispose of all hazardous materials (batteries, fuel, lubricants, anti-freeze, etc.) according to federal, state, and local regulations.
  6. Keep hands and feet away from moving parts. Whenever possible do not make adjustments with the engine running.

## 5.2 ENGINE

**IMPORTANT:** A separate Engine Manual, prepared by the engine manufacturer, is supplied with this vehicle. Read the Engine Manual carefully until you are familiar with the operation and maintenance of the engine. Proper attention to the engine manufacturer's directions will assure maximum service life of the engine. To order replacement Engine Manuals contact the engine manufacturer.

The proper break-in of a new engine can make a considerable difference to the performance and life of the engine.

*Note: The vehicle is designed to operate most efficiently at the preset governor setting. Do not change the engine governor settings or overspeed the engine.*

During the break-in period Cushman recommends the following:

1. During the first 50 hours of operation a new engine should be allowed to reach an operating temperature of at least 140°F (60°C) prior to operation at full load.
2. Check the engine oil level twice daily during the first 50 hours of operation. Higher than normal oil consumption is not uncommon during the break-in period.
3. Change engine oil and oil filter element after first 35 hours of operation.
4. Check and adjust alternator belts.

5. Refer to **Section 7.3** and Engine Manual for specific maintenance intervals.
6. If the injection pump, injectors, or the fuel system require service contact an authorized Cushman Dealer.

*Keep your engine clean.* If dirt has accumulated on the engine it should be washed with a nonflammable solvent or strong detergent.

When washing the vehicle becomes necessary it can be carried out concurrently with servicing the vehicle.

In order to maintain reliable service from your engine a regular checkup and maintenance schedule should be followed. Proper maintenance will prolong the engine's life and avoid premature overhaul.

## 5 MAINTENANCE

### 5.3 ENGINE OIL

Check the engine oil at the start of each day before starting the engine.

To check the engine oil remove the dipstick and wipe it with a clean rag. Reinsert the dipstick until it contacts the oil tube, remove the dipstick and read the oil level.

The oil level should always be between the ADD and FULL mark on the dipstick. If oil level is below the ADD mark remove filler cap and add oil to bring the level up between marks. *Do Not Overfill.*

**NOTE:** If the engine has recently been running allow time (with engine turned OFF) to let the oil settle to obtain an accurate oil level reading.

**Diesel Engine:** Use only engine oils with API classification CH4.

**Gas Engine:** Use only engine oils with API classification SL.

Using oil other than the service class listed or oil change intervals longer than recommended could reduce engine life. Damage to engine due to improper maintenance or use of incorrect oil quality and/or viscosity is not covered by the engine warranty.

**Diesel Engine:** Perform initial oil change after first 35 hours of operation and every 75 hours or two months thereafter. See Engine Manual.

**Gas Engine:** Perform initial oil change after first 50 hours of operation and every 100 hours or three months thereafter. See Engine Manual.

Significant oil loss can damage the engine. Considerable oil loss could be due to a loose or incorrectly installed drain plug, cracked gaskets, or a loose oil filter.

Drain plugs are located beneath the engine in the oil pan. Remove both plugs when changing the oil.

Check drain plugs and oil for metal chips that could indicate engine damage. Immediately replace drain plugs with damaged gasket surfaces.

After oil has completely drained, clean excess oil from oil pan and drain plugs. Install drain plugs and tighten securely. Refer to Engine Manual for proper torque.

Always replace the engine oil filter when changing the engine oil. Apply a light coat of engine oil to the rubber gasket surface of new filter before installing.

**Diesel Engine:** Fill Kubota engine with approximately 3.7 qts. (3.5 l) of clean engine oil. Check oil level and add additional oil if required.

**Gas Engine:** Fill Suzuki engine with approximately 3.3 qts. (3.0 l) of clean engine oil. Check oil level and add additional oil if required.

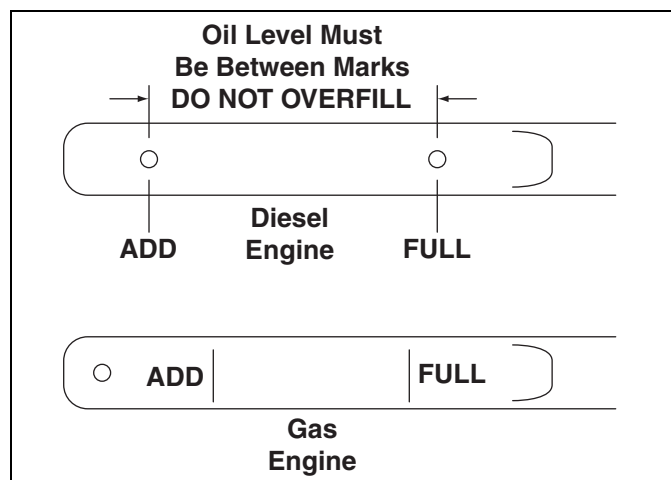


Figure 5A

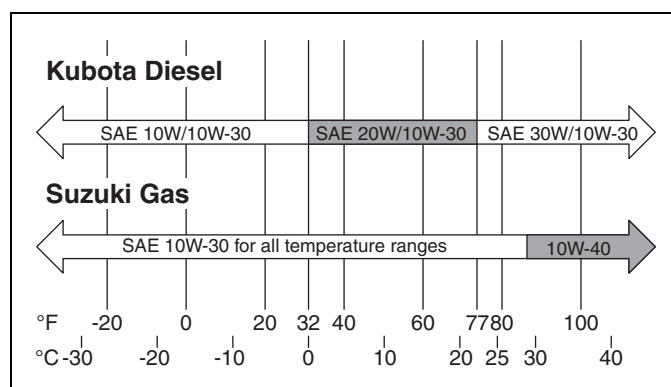


Figure 5B

#### Diesel Engine:

Above 77°F (25°C)	SAE 30W or SAE10W30
32 to 77°F (0 to 25°C)	SAE 20W or SAE 10W30
Below 32° (0°C)	SAE10W or SAE 10W30

#### Gas Engine:

All temperature ranges	SAE 10W30
Above 85° F (29° C)	SAE 10W 40

#### Replacement Oil Filters

Kubota Diesel	4113986
Suzuki Gas	2701908

## 5.4 POWER STEERING RESERVOIR

### WARNING

Before servicing or doing any maintenance work around the engine area make sure the engine has had time to cool. Serious burns can result if the engine or surrounding surfaces are hot.

The power steering reservoir is located on the right side of the engine below the alternator.

The level in the reservoir should be checked after the first 35 and 70 hours. After that the level should be checked every 100 hours.

When checking the fluid level before the engine has been warmed up the level should be at the COLD mark on the dipstick. After the engine has been warmed up and the fluid is warm the level should be between the COLD and HOT marks. Use General Motors® Power Steering Fluid as necessary to bring fluid up to proper level.

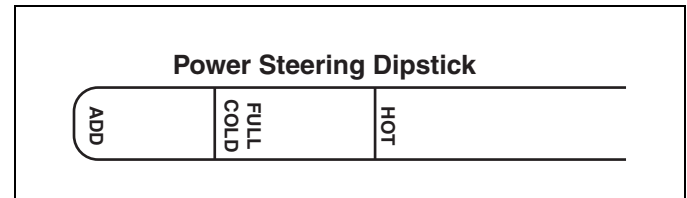


Figure 5C

## 5.5 MUFFLER AND EXHAUST

### WARNING

Exhaust fumes contain carbon monoxide that is toxic and can be fatal when inhaled.

**NEVER** operate an engine without proper ventilation.

To protect against carbon monoxide poisoning inspect the complete exhaust system regularly and always replace a defective muffler.

If you notice a change in the color or sound of the exhaust, stop the engine immediately. Identify the problem and have the system repaired.

Torque all exhaust manifold hardware evenly. Tighten or replace exhaust clamps.

## 5.6 ENGINE OVERHEAT PROCEDURE

During vehicle operation if the water temperature gauge shows 230° F (110° C) or above and/or the overheat warning buzzer sounds follow this procedure.

1. **Stop** the vehicle. **DO NOT shut the engine off.** Place vehicle in Neutral and engage the parking brake.
2. Immediately disengage any accessories that are operating.
3. Slow the engine speed to a fast idle.
4. Remove any dirt, chaff, debris, etc. from the radiator intake screen located on the right side of the vehicle.

Temperature gauge needle should start to go down approximately 30 seconds after the screen is cleaned. If temperature does not go down STOP the engine and check the following.

1. Check to see if cooling fan is operating. Fan should be turning with coolant above 180° F even with ignition switch in OFF position.
2. Check engine oil level.
3. Check for a leak in the cooling system. **Do not** open radiator when hot. Check coolant levels after system completely cools.

Failure to heed the overheat warning and properly maintain the cooling system will cause permanent engine damage.

### CAUTION

Be careful when opening the engine access cover or cleaning the intake screen. Metal surfaces near the radiator and engine may be hot to the touch. Use a brush or gloves to clean screen.

## 5 MAINTENANCE

### 5.7 COOLING SYSTEM

This vehicle is equipped with a radiator, temperature controlled fan, temperature gauge, and an overheat buzzer.



#### WARNING

To prevent serious bodily injury from hot coolant or steam blow-out, never attempt to remove the radiator cap while the engine is running. Stop the engine and wait several hours until it is cool. Even then, use extreme care when removing the cap.



#### CAUTION

Do not pour cold water into a hot radiator. Do not operate engine without a proper coolant mixture. Install cap and tighten securely.



#### WARNING

The cooling fan is controlled by a temperature switch and may start at any time coolant temperature is above 150° F (65 ° C), even with the ignition switch in the OFF position. Do not attempt to service the cooling system without first disconnecting the negative battery cable or removing the fan fuse.

NEVER add straight antifreeze to the radiator. Mix equal amounts of clean water with ethylene glycol based antifreeze in a separate container before adding it to the cooling system. Do not use a mixture of more than 50% antifreeze.

Always recycle or dispose of used antifreeze in a responsible manner. Used antifreeze can be harmful to the environment.

1. Check coolant level daily. Radiator should be full and recovery bottle should be up to the **cold** mark.
  - a. Tilt engine cover forward to gain access to the radiator.
  - b. With the engine stopped and cool, remove radiator cap and check coolant level. The coolant level should be at or within 1/4 in. (6 mm) of the filler port. Fill with a 50/50 antifreeze/water mixture if required.
  - c. Visually check the reservoir tank. Coolant level should be at or above **FULL** line but less than 4 in. (102 mm). Add a 50/50 antifreeze/water mixture if required.
2. Drain and refill cooling system every 400 hours or 9 months, whichever comes first. Allow system to cool before draining.
  - a. Remove the cooling fan fuse
  - b. Remove the radiator cap.
  - c. Open the engine block drain and the radiator drain. Remove lower radiator hose. Close both drains and install lower radiator hose once system has completely drained.
  - d. Empty and clean the recovery bottle.
  - e. Fill radiator to the bottom of the filler neck with 50/50 antifreeze/water mixture.
  - f. Fill recovery bottle to full mark with 50/50 antifreeze/water mixture.
3. Keep radiator air passages clean. Use compressed air (30 psi maximum) to clean the fins. Water left between the fins will collect dirt and reduce the amount of air flow to properly cool the engine.
4. To provide proper air flow, do not obstruct the air intake screen on the right side of the vehicle. Keep screen clean.
5. Replace clamps and hoses every two years.
6. If you have to add coolant more than once a month, or add more than one quart at a time, have a authorized Cushman Dealer check the cooling system.

## 5.8 AIR FILTER

Do not remove the element for inspection or cleaning. Unnecessary removal of the filter increases the risk of injecting dust or other impurities into the engine.

When service is required first clean the outside of the filter housing. Remove the old element as gently as possible and discard.

1. Carefully clean the inside of the filter housing without allowing dust into the air intake.
2. Inspect the new element. Do not use a damaged element and never use an incorrect element.
3. Assemble the new element and make sure it seats properly.
4. Assemble cap making sure it seals completely around the filter housing. Dust evacuator **(A)** must be facing down.
5. Check all hoses and air ducts. Tighten hose clamps.

### Replacement (Diesel Only)

1. Clean the outside of the filter housing, especially around hose connections and cover.
2. Note location of hoses. Loosen hose clamps and remove both hoses from air cleaner. Use caution to prevent dust or other debris from entering engine intake hose.
3. Remove air cleaner mounting hardware **(B)**. Air filter is secured with a single screw and nut.
4. Lift the air cleaner assembly out of the vehicle.
5. Unsnap retaining clamps and remove the old element as gently as possible and discard.

6. Carefully clean the inside of the filter housing without allowing dust into the air intake.
7. Inspect the new element. Do not use a damaged element and never use an incorrect element.
8. Assemble the new element and make sure it seats properly.
9. Assemble cap making sure it seals completely around the filter housing. Dust evacuator **(A)** must be facing down.
10. Install air cleaner assembly into the vehicle. Secure with hardware **(B)**.
11. Connect both hoses and tighten hose clamps.

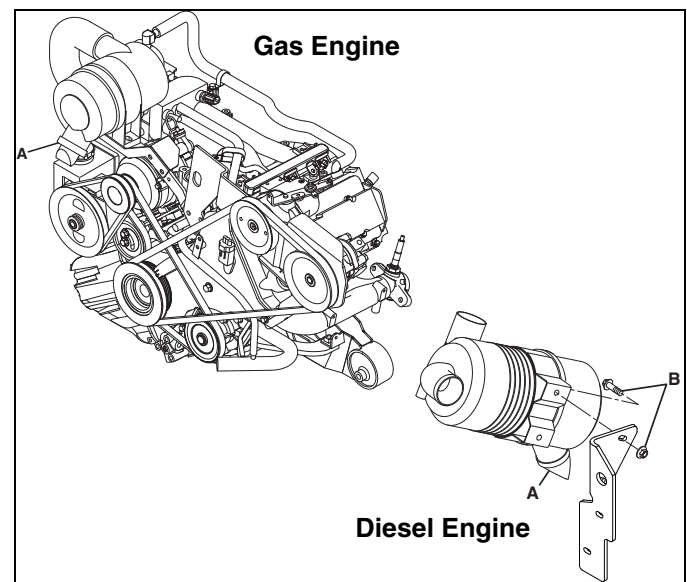


Figure 5D

## 5.9 JUMP STARTING

Before attempting to *jump start* the vehicle check the condition of the discharged battery.

Engage parking brake of both vehicles, shift transmission to Neutral and turn off all electrical loads.



### WARNING

Batteries generate explosive hydrogen gas. To reduce the chance of an explosion avoid creating sparks near battery. Always connect the Negative (BLACK) jumper cable to the frame of the vehicle with the discharged battery away from the battery.

### When connecting jumper cables:

1. Stop the engine on the vehicle with the good battery.
2. Connect RED jumper cable to the Positive (+) terminal on the good battery and to the Positive (+) terminal on the discharged battery.
3. Connect the BLACK jumper cable from the Negative (-) terminal on the good battery and to the frame of the vehicle with the discharged battery.

After cables have been connected, start the engine on the vehicle with the good battery and then start the vehicle with the discharged battery.



## 5 MAINTENANCE

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### 5.10 BATTERY

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Make absolutely certain the ignition switch is OFF and the key has been removed before servicing the battery.



#### CAUTION

Always use insulated tools, wear protective glasses or goggles, and protective clothing when working with batteries. You must read and obey all battery manufacturer's instructions.

Tighten cables securely to battery terminals and apply a light coat of silicone dielectric grease to terminals and cable ends to prevent corrosion. Keep vent caps and terminal covers in place.

Keep the top of the battery clean and free of corrosion by washing battery with a solution of baking soda and water. Rinse with clean water.

Verify battery polarity before connecting or disconnecting the battery cables.

1. When installing the battery, always assemble the Positive (RED) (+) battery cable first and the Negative (BLACK) (-) battery cable last.
2. When removing the battery, always remove the Negative (BLACK) (-) battery cable first and Positive (RED) (+) battery cable last.
3. Make sure battery is properly installed and secured to the battery tray.



#### WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. **Wash your hands after handling.**

### 5.11 CHARGING BATTERY

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#### WARNING

Charge battery in a well ventilated area. Batteries generate explosive gases. To prevent an explosion keep any device that may create sparks or flames away from the battery.

To prevent injury stand away from battery when the charger is turned on. A damaged battery could explode.

1. Refer to **Section 5.10**. Read the battery's and charger's manuals for specific instructions.
2. Whenever possible remove the battery from the vehicle before charging. If battery is not sealed check that the electrolyte covers the plates in all the cells.

Battery cables must be disconnected before using a *fast charger* or damage to the alternator may result.

3. Make sure the charger is Off. Then connect the charger to the battery terminals as specified in the charger's manual.
4. Always turn the charger Off before disconnecting charger from the battery terminals.



## 5.12 FUEL

Handle fuel with care—it is flammable and highly explosive under certain conditions. Use an approved container. The spout must fit inside the fuel filler neck. *Do not use cans and funnels to transfer fuel.*



### WARNING

Remove the fuel cap slowly. Fuel may be under pressure. Spray could cause serious injury.

Never remove the fuel cap from the fuel tank or add fuel when the engine is running or while the engine is hot.

Do not smoke when handling fuel. Never fill or drain the fuel tank indoors.

Do not spill fuel. If spilled, clean spilled fuel immediately.

Never handle or store fuel containers near an open flame or any device that may create sparks and ignite the fuel or fuel vapors.

Be sure to reinstall and tighten fuel cap securely.

1. Fill the fuel tank to within 1 in. (25 mm) of the bottom of the filler neck.
2. Store fuel according to federal, state and local ordinances and recommendations from your fuel supplier.
3. Never overfill or allow the tank to become empty. Check fuel level in the tank by turning the ignition switch to the ON position and reading the level indicated by the fuel gauge.

## 5.13 FUEL SYSTEM

The Kubota diesel engine in the Haulster is self priming. It is not required to purge air from the system.

Refer to **Section 7.3** for specific maintenance intervals.

## 5.14 TIRE PRESSURE

Keep tires properly inflated to prolong tire life. Check inflation pressure while the tires are cool. Inspect tread wear.

Lower pressure will help avoid leaving tire marks in soft turf. Higher pressures may be required for heavier loads. Rear tire pressure must be set at 28 psi (1.93 BAR) when operating with a full load. *Never* exceed the maximum pressure indicated on the tire.

4. Check fuel lines and clamps every 50 hours. Replace fuel lines and clamps at the first sign of damage.
5. The fuel tank capacity is 6.5 gal. (24.5 l). Fill tank using the following fuel recommendations:

### Diesel Engine

- a. Use clean, fresh, #2 Diesel fuel when operating temperature is above 20° F (-7° C). Minimum Cetane rating 45.
- b. Use clean, fresh, #1 Diesel fuel when operating temperature is below 20° F (-7° C). If #1D fuel is not available a winterized blend of #1D and #2D may be available. This blended fuel is usually called #2D and may be used in colder climates. Do not use #2D unless you are sure it has been **winterized**. Cold temperatures may cause it to thicken which will keep your vehicle from running properly.
- c. **DO NOT** use Aviation Fuel JP4. Refer to Engine Manual for additional information.

**Gas Engine:** Use clean fresh Unleaded Gasoline, 87 octane or higher.



### CAUTION

The use of any fuel containing greater than 10% ethanol may harm the engine's emission control system and therefore invalidate the emission-related warranty through the improper action of the operator.

Before replacing any filter thoroughly clean the filter housing and the area around the filter. Dirt must not be allowed to enter into fuel system.

Check the pressure with an accurate, low pressure tire gauge. Due to the low volume of air needed, over-inflation may be reached in a matter of two to three seconds.

Keep tires inflated to:

Front - 50 psi - (3.44 BAR)

Rear - 50 psi (3.44 BAR)

## 5 MAINTENANCE

### 5.15 TIRE REMOVAL AND INSTALLATION

Removal:

1. Park the vehicle on a flat and level surface. Apply parking brake, turn the ignition switch to the OFF position, and shift transmission to 1st gear or Park.
2. Refer to **Section 5.16** for proper lifting procedures. Always use jack stands. Never rely only on a jack for support.

Raise the vehicle only enough to remove the tire. Never place feet, hands, or any part of your body under the vehicle when raising it.

3. Remove the wheel retaining nuts and remove wheel and tire assembly from the hub.
4. Perform required service on tire.



#### CAUTION

Unless you have the proper training, tools, and experience DO NOT attempt to mount a tire on a rim. Improper mounting can produce an explosion which may result in serious injury.

Installation:

1. Remove dirt, grease, and oil from stud thread. Do not lubricate threads.
2. Position wheel on hub and inspect to ensure full contact between mounting surface of wheel and hub or brake drum. Make sure valve stem is located towards the outside. Finger tighten all hardware then torque hardware in criss-cross order always tightening nuts in the top position.
3. Check and retorque daily until 70-100 ft.lbs. (95-140 Nm) torque is maintained.

### 5.16 RAISING THE VEHICLE



#### WARNING

Make sure the vehicle is parked on a solid and level surface. Never work on a vehicle that is supported only by a jack. Always use jack stands.

Whenever possible empty the truck platform before raising the vehicle. Loads moving on truck platform can cause an unbalanced load that could tip the vehicle.

Never raise the vehicle with the engine running or with a person sitting in the operator's seat.

Always block the tire diagonally opposite the tire being raised.

Never place hands, feet, or any part of your body under the vehicle when raising it with a hoist or if vehicle is not properly supported by jack stands.

A scissors type jack or a floor jack with a 1-1/2 ton (minimum) capacity that can be lowered to a height of 3-3/8 in. (86 mm) is required. Refer to **Figure 5E** for jacking locations.

Shift the transmission into 1st gear or Park and apply the parking brake. Chock or block the tire diagonally opposite the side being raised. Raise the vehicle only enough to perform maintenance required.

Jack the vehicle to an appropriate height and place jack stands or equivalent support beneath the frame near the jack. Lower the jack and allow the vehicle to rest on jack stands. *Do not remove jack.*

When using a hoist to raise the vehicle use the same procedure for supporting the frame and blocking the tires as you would when using a jack.

To prevent damage to the vehicle or attached accessory never use a hoist to raise only one corner of the vehicle. Always raise BOTH front or rear corners equally.

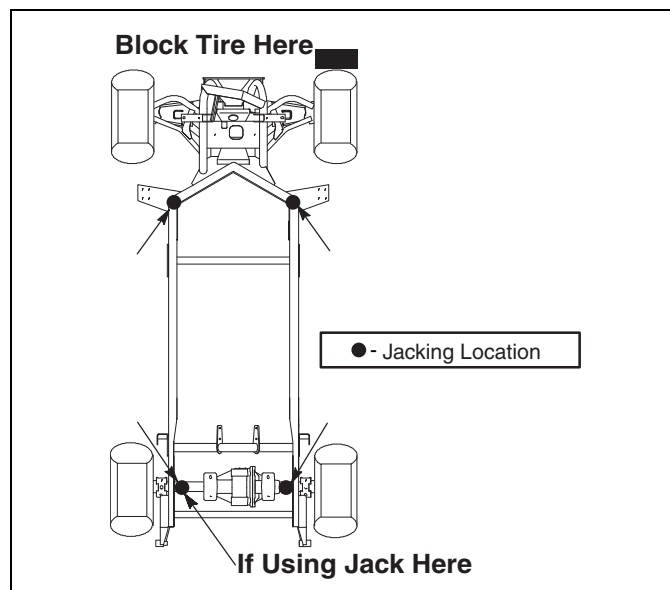


Figure 5E

## 5.17 TOWING THE VEHICLE

### WARNING

To prevent injury or vehicle damage the following guidelines should always be followed:

- **Never** accelerate or stop suddenly when towing a vehicle.
- **Never** change the direction of the vehicle abruptly or make sharp turns on an incline when towing a vehicle.
- **Never** tow the vehicle faster than 5 mph (8 km/h). Towing at excessive speed could cause either vehicle to lose proper steering control.
- Adjust your speed for weather and surface conditions (rain, snow, ice, hills, etc.) when towing.
- Use care when loading or unloading machine onto a trailer or truck.

If for any reason the vehicle needs to be towed follow the procedures below:

1. If towing the vehicle with a tow-rope or chain an operator is required to steer the vehicle and to control the brakes.
2. Attach a tow-rope only to the front vertical frame member on either side of the vehicle.
3. Shift transmission into Neutral and release parking brake.

## 5.18 GOVERNOR OIL LEVEL

### Suzuki Gas Engine only

Check the oil level in the governor every 100 hours of use. To check the level remove the plug from the back side of the governor. Oil level should be up to the level of the plug opening.

**Governor Oil Capacity** . . . . . 1.5 oz. (44 ml)

**Oil Type** . . . . . SAE 20W engine oil

If oil level is low add the recommended oil type.

Remove the plug from the rear of the governor, remove the plug from the top of the governor, and add a SAE 20W motor oil until the oil begins to leak from the rear port. Replace both plugs.

When replacing the plugs use Teflon<sup>®</sup> tape or a Permatex 20 sealant (or equivalent pipe thread sealant) on the threads of the plug.

Torque the plugs to 95 ±10 in. lb. (10.7±1Nm).

4. Slowly drive towing vehicle forward until tow-line is pulled tight.
5. While towing, try to keep the tow-line taut at all times. Be careful going down inclines and turning corners.

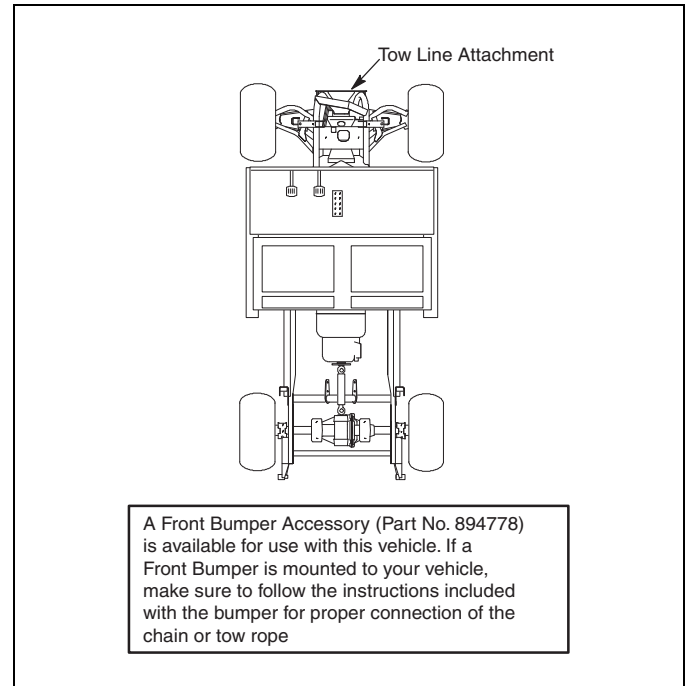


Figure 5F

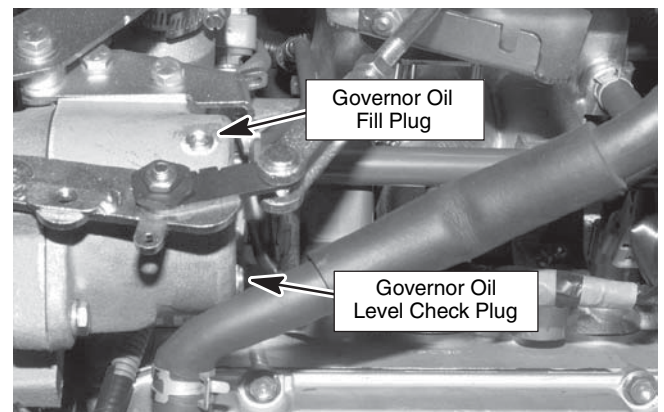


Figure 5G

## 5 MAINTENANCE

### 5.19 HYDRAULIC BRAKES



#### WARNING

Improper maintenance of the brake system may result in loss of vehicle control by the operator. Losing control of the vehicle due to brake loss may cause injury to the operator or bystanders and vehicle damage.

This vehicle is equipped with four wheel hydraulic brakes controlled by the brake pedal and a hand operated parking brake lever.

Keep your brake system clean and properly maintained. Do not operate the truck if the brakes do not stop vehicle properly.

The brake fluid master cylinder reservoir is located under the front cowl.

The fluid level in the master cylinder reservoir must be kept between the MIN (minimum) and MAX (maximum) marks. Add DOT 3 type brake fluid as required.

If the brake fluid indicator light comes on and remains on check the fluid level in the reservoir.

#### Bleeding Hydraulic Brakes:

If the brakes do not hold properly, if they feel spongy, or if the brake fluid reservoir is allowed to run-dry it may be required to bleed the system in order to remove air from the brake lines.

1. Bleed the brakes in the following order: Left Rear, Right Rear, Right Front, and Left Front.
2. Attach a hose to the bleeder screw and place the other end of the hose in a container to catch fluid from brake when bleeding the system.
3. Bleed brake.
  - a. Have an assistant push down on the brake pedal and hold the pedal down.
  - b. Loosen the bleeder screw allowing fluid to flow.
  - c. Tighten the bleeder screw.
  - d. Have assistant release pedal.

**NOTE:** *Do Not* release brake pedal until the bleeder screw is tightened or air will be sucked back into the brake lines.

- e. Repeat **Steps a** through **d** as required until all air bubbles are purged from the system and a steady flow of fluid comes from the brake line.
- f. Periodically check fluid level in reservoir. Do not allow the reservoir to fully empty or bleeding procedure will need to be repeated.

4. Repeat Step 3 for each brake.

5. Most communities have a disposal system for **DOT 3** brake fluid. Please dispose of fluids properly.

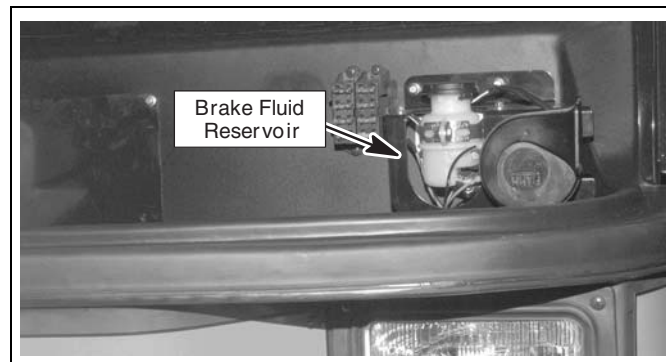


Figure 5H

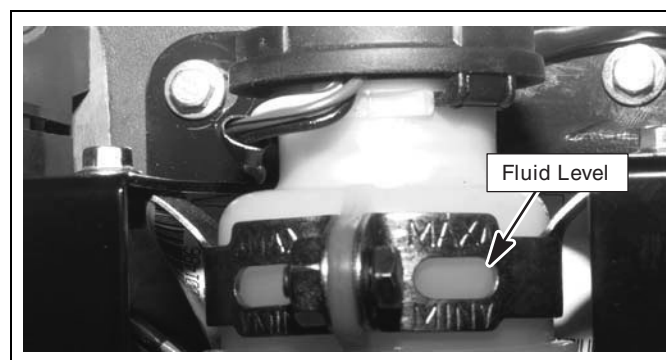


Figure 5I

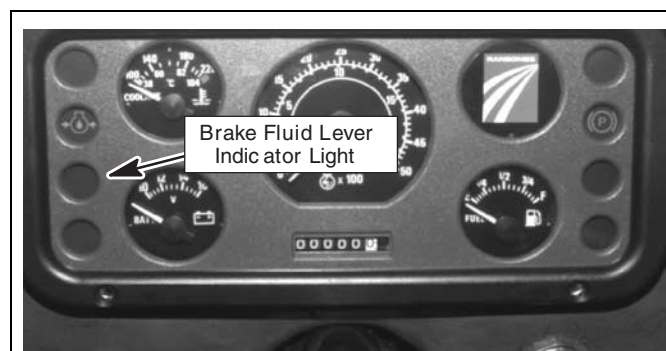


Figure 5J

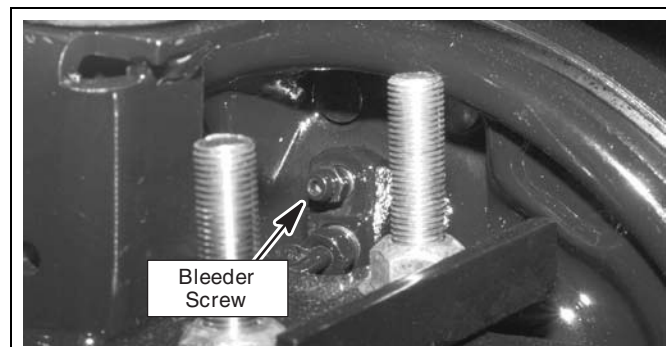


Figure 5K



## 5.20 DIFFERENTIAL FLUID

The differential fluid should be checked every 100 hours or 3 months. Fluid should be changed after the first 100 hours and every 600 hours (or yearly) thereafter.

Differential Fluid Capacity ..... 5.2 pints (2.5 l)

Fluid Type..... SAE EP 80-90 gear lube

To check differential fluid level remove the filler plug from the front of the differential. Fluid should be level with the bottom of filler hole.

If fluid is low add gear lube until fluid begins to leak from hole. Apply pipe thread sealant and install filler plug.

To change differential fluid remove drain plug from rear of differential.

Allow fluid to drain into a suitable container. Dispose of used fluid properly according to federal, state, and local regulations.

Apply pipe thread sealer to drain plug and install.

Fill differential with gear lube until fluid begins to leak from hole. Apply pipe thread sealant and install filler plug.

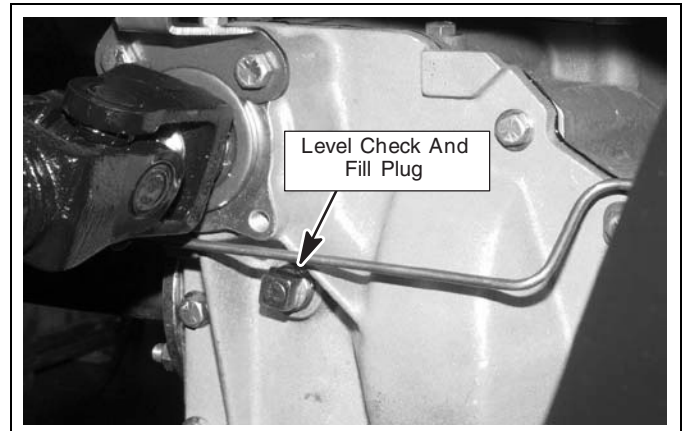


Figure 5L

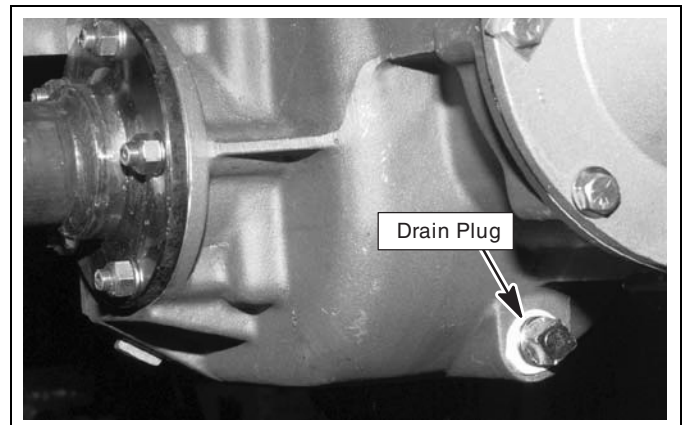


Figure 5M

## 5.21 DIESEL ENGINE MANUAL TRANSMISSION

The transmission fluid should be checked every 100 hours or 3 months. Fluid should be changed every 600 hours (or yearly).

Differential Fluid Capacity ..... 1.35 qts (1.3 l)

Fluid Type..... SAE EP 80-90 gear lube

To check transmission fluid level remove the filler plug from the front of the transmission. Fluid should be level with the bottom of filler hole.

If fluid is low add gear lube until fluid begins to leak from hole. Apply pipe thread sealant and install filler plug.

To change fluid remove drain plug from rear of transmission.

Allow fluid to drain into a suitable container. Dispose of used fluid properly according to federal, state, and local regulations.

Apply pipe thread sealer to drain plug and install.

Fill transmission with gear lube until fluid begins to leak from hole. Apply pipe thread sealant and install filler plug.

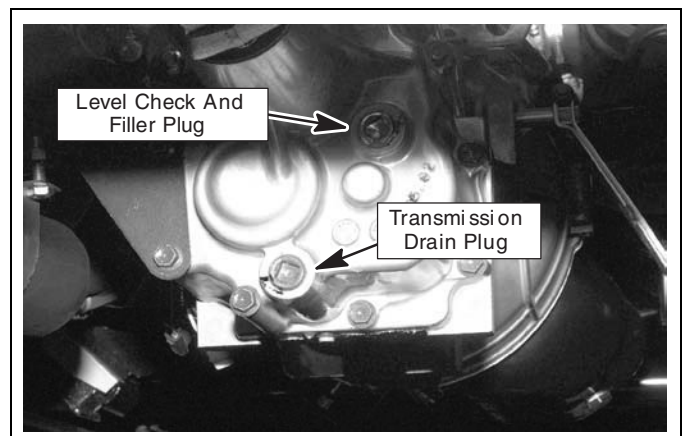


Figure 5N

## 5 MAINTENANCE

### 5.22 GAS ENGINE MANUAL TRANSMISSION

The transmission fluid should be checked every 100 hours or 3 months. Fluid should be changed every 600 hours (or yearly).

Differential Fluid Capacity ..... 1.3 qts (1.2 l)

Fluid Type ..... SAE EP 80-90 gear lube

To check transmission fluid level remove the filler plug from the front of the transmission. Fluid should be level with the bottom of filler hole.

If fluid is low add gear lube until fluid begins to leak from hole. Apply pipe thread sealant and install filler plug.

To change fluid remove drain plug from rear of transmission.

Allow fluid to drain into a suitable container. Dispose of used fluid properly according to federal, state, and local regulations.

Apply pipe thread sealer to drain plug and install.

Fill transmission with gear lube until fluid begins to leak from hole. Apply pipe thread sealant and install filler plug.

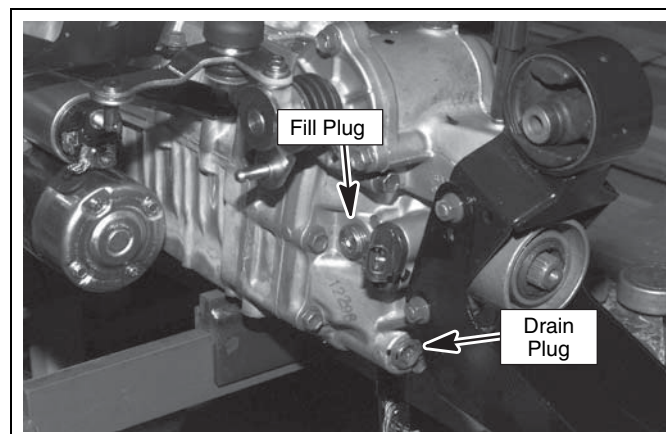


Figure 50

### 5.23 GAS ENGINE AUTOMATIC TRANSMISSION

The transmission fluid should be checked every 100 hours or 3 months. Fluid should be changed every 600 hours (or yearly).

Differential Fluid Capacity ..... 3.7 qts (4.2 l)

Fluid Type ..... Mercon / Dexron II

To check transmission fluid level the engine must be running. Place the gear selector in Park, apply the parking brake and start the engine.

With engine running remove the dipstick and wipe it with a clean rag. Insert the dipstick into the extension tube until it contacts the tube. Remove the dipstick and read the fluid level.

Fluid must be kept between the two marks on the dipstick. If fluid is low add fluid to obtain the proper level.

**Do Not Overfill.** Add fluid using the extension tube as a fill tube.

To change fluid remove drain plug from bottom of transmission.

Allow fluid to drain into a suitable container. Dispose of used fluid properly according to federal, state, and local regulations.

Apply pipe thread sealer to drain plug and install.

Fill transmission until fluid reaches proper mark on dipstick.

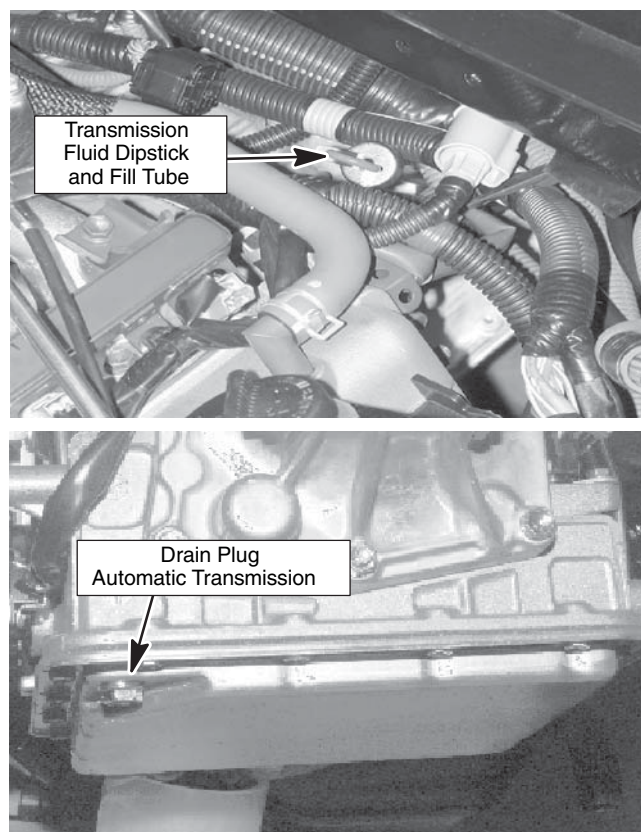


Figure 5P

## 5.24 ELECTRICAL SYSTEM

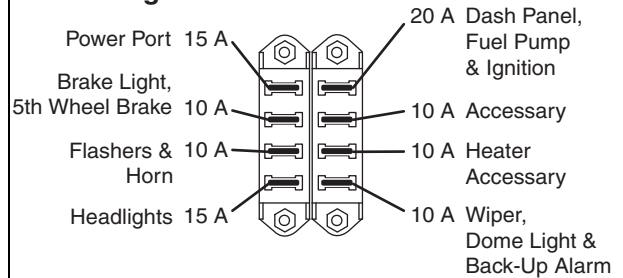
### CAUTION

Always turn the ignition switch OFF and remove the Negative (BLACK) battery cable before inspecting or working on the electrical system.

General precautions that can be taken to reduce electrical problems are:

1. Make certain all terminals and connections are clean and properly secured.
2. Check the Interlock System and fuses regularly.  
If the Interlock does not function properly and the problem cannot be corrected contact an authorized Cushman Dealer.
3. Keep the wire harness and all individual wires away from moving parts to prevent damage.
4. Check the battery and battery charging circuit.
5. Do not wash or pressure spray around electrical connections and components.
6. Circuits are protected by fuses located under the front cowl and a fuse located near the cooling fan.

### Diesel Engine



### Gas Engine

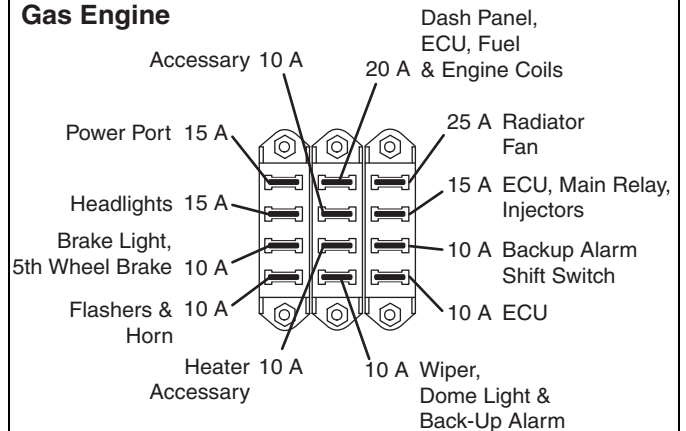


Figure 5Q

## 5.25 DASH PANEL

The dash panel contains gauges and instrument lights to display unit functions. Maintenance of the panel is limited to replacing bulbs and setting the DIP switches. Remove the four screws securing the instrument panel to the dash.

Pull panel out, tilt panel forward and disconnect electrical connector for easier access to rear of panel.

### Light Bulb Replacement:

1. Determine which bulb needs to be replaced.
2. Rotate bulb holder 1/4 turn counter-clockwise and pull up and away from dash panel.
3. Replace old bulb with a new bulb of equal type.

Location	Replacement Bulb
A Voltmeter	C658
B Temperature Gauge	C658
C Fuel Gauge	C658
D Hour Meter	C658
E Tachometer	C161
F Left Turn Signal	C161
G Oil Pressure	C161
H Glow Plug	C161
J Brake Fluid	C161
K Right Turn	C161

- L Parking Brake ..... C161
- M High Beam ..... C658
- N Alternator / Battery ..... C161

4. Place bulb and holder back into panel. Turn holder 1/4 turn clockwise to secure into panel. Ensure base of holder is properly seated in panel.

## 5 MAINTENANCE

### Tachometer DIP Switch Setting:

The dash panel uses a DIP Switch sequence code to identify the number of input pulses per engine revolution and engine type to correctly display the engine RPM on the tachometer.

If you are replacing the dash panel or if the tachometer is not operating correctly, check to be sure the sequence code is set correctly.

The Haulster with a Kubota Diesel engine uses the following sequence code for 10.5 pulses / revolution:

Kubota Diesel Sequence Code: 0 0 0 1 0 1 0 0

The Haulster with a Suzuki Gas engine uses the following sequence code for 1.5 pulses / revolution:

Suzuki Gas Sequence Code: 0 0 0 0 0 0 1 0

Using a small blade screwdriver or similar tool push the switch levers either up or down to match the sequence code for this unit.

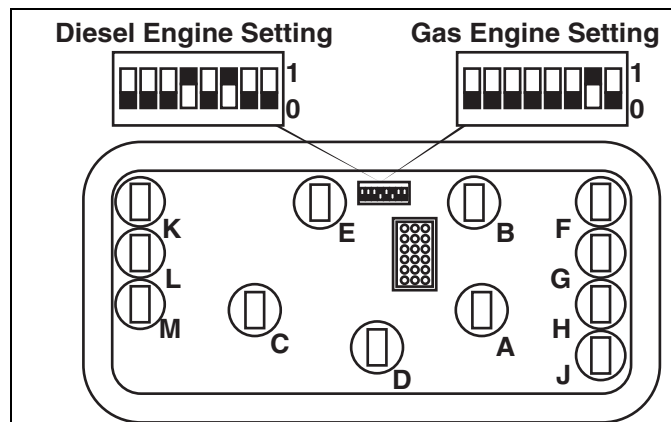


Figure 5R

### 5.26 HEADLIGHT REPLACEMENT

The headlight should be replaced as soon as it stops functioning or is damaged. The headlight is a sealed unit and can only be replaced as a complete unit.

Description.....	bulb type	Cushman Part No.
Headlight.....	H6545	837303

1. Disconnect the Negative (BLACK) battery cable.
2. Remove the four screws securing the headlight bezel to the front cowl.
3. Pull headlight and bezel forward out of the front clip opening.
4. Disconnect the electrical connector from the rear of the headlight.

5. Remove the headlight from the bezel. Properly dispose of old bulb.
6. Install new headlight in reverse order of removal.

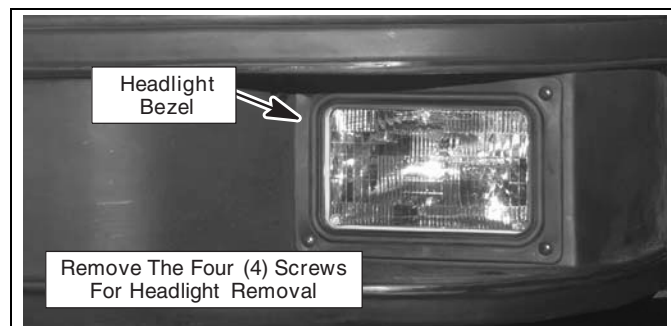


Figure 5S

### 5.27 TAIL LIGHT REPLACEMENT

The tail light should be repaired as soon as it stops functioning or is damaged. The tail light bulb and lens are replaceable components. Damage to the body of the tail light requires a complete replacement.

Description.....	bulb type	Cushman Part No.
Tail light bulb .....	1157	822049

1. Remove the two screws securing lens. Remove lens and gasket.
2. Push bulb in, turn 1/4 turn and remove bulb. Dispose of old bulb properly.
3. Install new bulb in reverse order of removal. Ensure lens gasket is properly positioned.
4. To remove complete tail light assembly remove two nuts and shake proof washer securing tail light to

frame. Disconnect harness and remove tail light from frame.

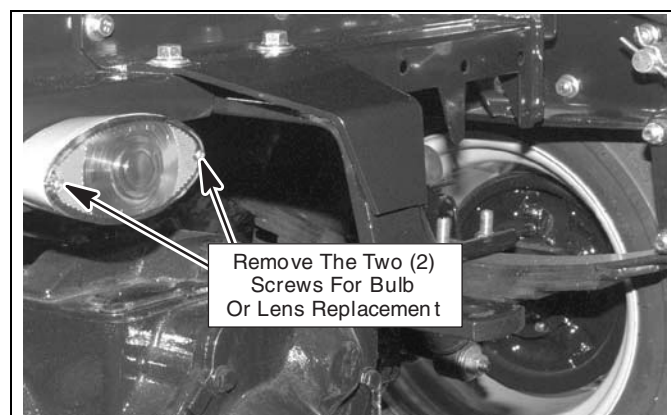


Figure 5T



## 5.28 EFI DIAGNOSTIC CHECK

### Suzuki Gas Engine units only

The electrical system is equipped with a plug-in connector which, when used with the diagnostic jumper accessory (Part No. 2700920), will perform diagnostic checks on various engine components.

**Manual transmission:** Engage parking brake, shift transmission to Neutral, and turn the ignition switch to the OFF position.

**Automatic Transmission:** Engage parking brake, place gear selector in Park, and turn the ignition switch to the OFF position.

Open the front cowl and locate the plug in connector (Black/White and Black Wires) coming from the wire harness below the brake fluid reservoir.

To run the diagnostic test plug the diagnostic jumper into the plug-in connector. Turn ignition switch to the ON

position. The brake fluid light at the lower left corner of the dash panel will flash a diagnostic code.

The first digit of the code will be given by each 0.3 second flash followed by a one second pause followed by the second digit with no pause.

A code of 12 (System Normal) would turn the light on for 0.3 seconds, a one second pause then two fast flashes. **(Flash-Pause-Flash-Flash)**

A code of 46 (Shift switch) would turn the light on four times for 0.3 seconds and a one second pause then six fast flashes. **(Flash-Pause-Flash-Pause-Flash-Pause-Flash-Flash-Flash-Flash-Flash)**

The following list shows **which code number corresponds to which component and lists possible causes for each fault.**

Code	Engine Component	Possible Causes
11	Pressure Sender	Voltage at pin 25 (Green/Yellow wire) of the 34 pin ECU connector is higher than 4.5 Volts or lower than 0.19 Volts.
12	Normal	System operating normally.
13	Throttle Sensor	Voltage at pin 33 (Gray/Yellow wire) of the 34 pin ECU connector is higher than 4.73 Volts or lower than 0.25 Volts.
14	O <sub>2</sub> Sensor	No signal for a length of time at pin 24 (Red/Blue wire) of the 34 pin ECU connector.
15	Crank Angle Sensor	While in starting mode, no signal is seen at pin 16 (Brown/Red wire) of the 34 pin ECU connector.
16	Vehicle Speed Sensor	No signal for a length of time at pin 16 (Orange wire) of the 26 pin ECU connector.
19	Water Temperature Sensor	Voltage at pin 32 (Green/White wire) of the 34 pin ECU connector is higher than 4.85 Volts or lower than 0.15 Volts.
41	Shift Solenoid #1 (Automatic Transmission only)	Open or short circuit at pin 27 (Blue/Black wire) of the 34 pin ECU connector. Should be 12 Volts if gear selector is in the <b>L</b> position.
42	Shift Solenoid #2 (Automatic Transmission only)	Open or short circuit at pin 28 (Blue/White wire) of the 34 pin ECU connector. Should be 12 Volts if gear selector is in the <b>L</b> or <b>2</b> position.
43	Shift Solenoid #3 (Automatic Transmission only)	Open or short circuit at pin 29 (Blue/Red wire) of the 34 pin ECU connector.
46	Shift Switch (Automatic Transmission only)	No signal present at pin 18 (Green/Pink wire) <b>and</b> pin 19 (Orange Blue wire) <b>and</b> pin 20 (Orange/Green wire) <b>and</b> pin 24 (Green/Blue wire) <b>and</b> pin 25 (Green wire) <b>and</b> pin 26 (Red wire) of the 26 pin ECU connector. <b>OR</b> signal present at more than one of pins 18, 19, 20, 24, 25 and 26 of the 26 pin ECU connector.

## 5 MAINTENANCE

### 5.29 CARE AND CLEANING

Wash the vehicle after each use. Keep the equipment clean.

**Note:** Do not wash any portion of the equipment while it is hot. Do not use high pressure spray or steam. Use cold water and automotive cleaners.

1. Use compressed air to clean engine and radiator fins. A special blow gun is available through Cushman Dealer.
2. Use only fresh water for cleaning your equipment.

**Note:** Use of salt water or affluent water has been known to encourage rust and corrosion of metal parts resulting in premature deterioration or failure. Damage of this nature is not covered by the factory warranty.

### 5.30 STORAGE

#### General

1. Wash the vehicle thoroughly and lubricate. Repair and paint damaged or exposed metal.
2. Inspect the vehicle, tighten all hardware, replace worn or damaged components.
3. Drain and refill radiator.
4. Clean the tires thoroughly and store the vehicle so the load is off the tires. If vehicle is not on jack stands check tires at regular intervals and reinflate as necessary.
5. Keep the machine and all its accessories clean, dry and protected from the elements during storage. Never store equipment near an open flame or spark which could ignite fuel or fuel vapors.

#### Battery

1. Remove, clean and store battery in upright position on a nonconductive surface (wood) in a cool, dry place. To prevent accelerated discharge do not store battery on concrete or steel surface.
2. Check and recharge battery every 60 to 90 days while in storage.
3. To reduce the self discharge rate room temperature should not rise above 80°F (27°C). Room temperature should not fall below 20°F (-7°C) to prevent electrolyte from freezing.

#### Engine (General)

1. While the engine is warm remove the drain plug, drain the oil from the crankcase, and change oil filter. Install drain plug and refill with fresh oil. Let engine cool before storing.

3. Do not spray water directly at the dash panel, ignition switch, controls, or any other electrical components, or at bearing housings and seals.
4. Clean all plastic or rubber trim with a mild soap solution or use commercially available vinyl/rubber cleaners.

Repair damaged metal surfaces and use touch-up paint. Wax the equipment for maximum paint protection.



#### CAUTION

Clean grass and debris from drives, muffler, and engine to prevent fires.

2. Clean exterior of engine. Paint exposed metal or apply a light coat of rust preventative oil.

Add a fuel conditioner or biocide to prevent gelling or bacterial growth in fuel. See your local fuel supplier.

If storing indoors drain fuel from tank.

Close fuel shut off valve.

#### After Storage

1. Check and reinstall battery.
2. Check or service fuel filter and air cleaner.
3. Check the radiator coolant level.
4. Check oil level in the engine crankcase.
5. Fill the fuel tank with fresh fuel. Open fuel shut off valve and bleed the fuel system.
6. Make certain that the tires are properly inflated.
7. Start and operate the engine at 1/2 throttle. Allow enough time for the engine to become properly warmed and lubricated.



#### WARNING

Never operate the engine without proper ventilation. Exhaust fumes can be fatal when inhaled.

**6.1 GENERAL**

The troubleshooting chart below lists basic problems that may occur during startup and operation. For more

detailed information regarding the electrical system contact your area Cushman Dealer.

Symptoms	Possible Causes	Action
Engine will not start.	<ol style="list-style-type: none"><li>1. Clutch pedal not depressed.</li><li>2. Battery low on charge or defective.</li><li>3. Fuel tank empty or dirty. Fuel shut off valve closed.</li><li>4. Fuse blown.</li></ol>	<ol style="list-style-type: none"><li>1. Check startup procedure.</li><li>2. Inspect condition of battery and battery connections.</li><li>3. Fill with fresh fuel. Change fuel filter. Bleed fuel lines. Open fuel shut off valve.</li><li>4. Replace fuse.</li></ol>
Engine hard to start or runs poorly.	<ol style="list-style-type: none"><li>1. Fuel level low. Fuel or fuel filter dirty.</li><li>2. Air cleaner dirty.</li><li>3. Injectors, fuel pump.</li><li>4. Engine problem.</li></ol>	<ol style="list-style-type: none"><li>1. Fill with fresh fuel. Change fuel filter. Bleed fuel lines.</li><li>2. Inspect and replace air filter.</li><li>3. Consult engine manual.</li><li>4. Consult engine manual.</li></ol>
Engine stops.	<ol style="list-style-type: none"><li>1. Fuel tank empty.</li></ol>	<ol style="list-style-type: none"><li>1. Fill with fresh fuel and bleed fuel lines.</li></ol>
Engine overheating.	<ol style="list-style-type: none"><li>1. Coolant level low.</li><li>2. Air intake restricted.</li><li>3. Water pump belt broken or loose.</li><li>4. Engine overload.</li></ol>	<ol style="list-style-type: none"><li>1. Inspect and add coolant.</li><li>2. Clean cooling air intake.</li><li>3. Replace or Tighten belt.</li><li>4. Reduce forward speed.</li></ol>
Vehicle does not react to throttle pedal.	<ol style="list-style-type: none"><li>1. Parking brake engaged.</li><li>2. Transmission in Neutral.</li><li>3. Clutch Pedal Depressed.</li></ol>	<p>Disengage parking brake.</p> <p>Depress brake and clutch pedals. Shift to proper gear for desired ground speed. Release brake pedal. Slowly let out clutch while pressing the throttle pedal.</p> <p>Slowly let out clutch pedal.</p>

## 7 MAINTENANCE & LUBRICATION CHARTS

### 7.1 GENERAL



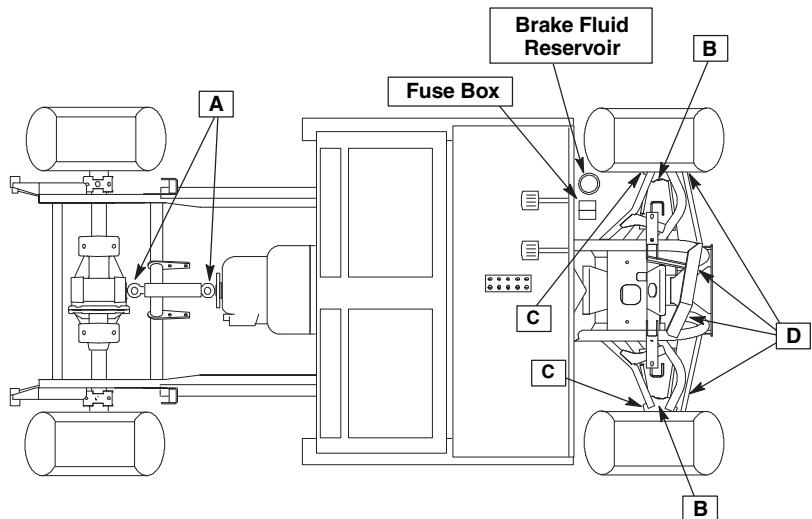
#### WARNING

Before you clean, adjust, or repair this equipment disengage all drives, lower implements to the ground, engage parking brake, stop engine and remove key from ignition switch to prevent injuries

1. Always clean the grease fitting before and after lubricating.
2. Lubricate with grease that meets or exceeds NLGI Grade 2 LB specifications. Apply grease with a manual grease gun and fill slowly until grease begins to seep out. *Do not use compressed air guns.*
3. For smooth operation of all levers, pivot points and other friction points that are not shown on the lubrication chart apply several drops of SAE 30 oil every 40 hours or as necessary.
4. Grease fittings every 100 hours. Do not over grease drive shaft fittings **(A)**. Too much grease will damage the seals.

### 7.2 LUBRICATION CHART

Fitting	Description	Qty
A	Drive Shaft	2
B	Upper Ball Joints	2
C	Lower Ball Joints	2
D	Tie Rod Ends	4



## 7.3 MAINTENANCE CHARTS

### Recommended Service and Lubrication Intervals

	Daily	First 35 Hours	Every 75 Hours or 2 Months	Every 100 Hours or 3 Months	Every 200 Hours or 6 Months	Every 400 Hours or 9 Months	Every 600 Hours or 12 Months	See Section	Lubricant Type
Air Filter					R**			5.8	
Alternator							I		
Battery			I				C	5.10	
Belts	I-A*			I-A			I-A	4., 4.2	
Brake Fluid				I-A				5.19	VI
Brake Linings		I-A*		I-A			I-A		
Clutch				I-A					
Cooling System	I-C-A				I	R		5.7	IV
Differential Fluid				I-R*			R	5.20	III
Electrical System		I*		I				5.24	
Engine Glow Plugs							I		
Engine Idle Speed		I*					I		
Engine Noise / Vibration	I								
Engine Oil (Suzuki)	I	R*****		R**				5.3	
Engine Oil (Kubota)	I	R*	R**					5.3	II
Engine Oil Filter	I	R*****		R**				5.3	
Engine Oil Filter	I	R*	R**					5.3	
Engine Valve Clearance		I****				I****			
Fluid Leaks	I-R								
Fuel System		I*					I	5.13	
Fuel Filter				R				5.13	
Fuel Water Separator (Diesel Only)	I-C								
Governor Fluid				I-A					VIII
Injection Pump / Timing							I		
Lubricate Chassis				L			L	7.2	I
Muffler and Exhaust	I			I				5.5	
Radiator Screens	I-C/AR							5.7	
Power Steering Fluid		I*		I				5.4	V
Spark Plugs (Gas only)							C-A-R		
Starter Motor Brushes							I		
Tires	I	I-A						5.14	
Transmission Fluid (Manual Transmission)				I			R	5.21 5.22	III
Transmission Fluid (Automatic Transmission)				I			R	5.23	VII
Wheel Bearings							Repack		

**A - Add or Adjust    C - Clean    I - Inspect    L- Lubricate    R - Repair or Replace    AR - As Required**

## 7 MAINTENANCE & LUBRICATION CHARTS

### Notes:

- \* Indicates initial service for new machines.
- \*\* Depending on operating conditions engine oil, oil filter and air filter may require more frequent replacement.
- \*\*\* Inspect visible hoses and tubes for leaks or oil marks.
- \*\*\*\* Must be done at Authorized Dealer.
- \*\*\*\*\* Change oil and filter on Suzuki engines after first fifty hours.

### Lubricants and Fluids

- I Manual grease gun with NLGI Grade 2 (Service Class LB)
- II Engine Oil - See **Section 5.3**
- III SAE EP 80-90 gear lube
- IV Capacity: 3qt. (2.8 l) 50/50 water ethylene glycol mix
- V GM Power Steering Fluid
- VI DOT 3 brake fluid
- VII Mercon/Dextron II automatic transmission fluid
- VIII SAE 20W engine oil

### 7.4 COMMON REPLACEMENT PARTS

Part Number	Part Description
840352	Gas Air Filter Element
5000919	Diesel Air Filter Element
4113986	Diesel Oil Filter
2701809	Gas Oil Filter
4183591	Diesel Fuel Filter
2701898	Gas Fuel Filter

Part Number	Part Description
4175560	Diesel Alternator Belt
841966	Diesel Hydraulic Pump Belt
4139265	Gas Alternator - Power Steering Belt
4139351	Gas Hydraulic Pump Belt

### 7.5 KUBOTA DIESEL ENGINE SERVICE PARTS

The following common engine parts are provided for reference only. Parts may be obtained from your nearest Kubota Engine Dealer

Part Number	Part Description
2811021	Fuel Solenoid
5000894	Injection Pump
5000901	Injection Pipe #1
5000902	Injection Pipe #2
5000903	Injection Pipe #3
4183586	Fuel Injector
5001265	Injector Return Pipe
4177227	Glow Plug
556412	Thermostat
4134370	Thermostat Gasket
4165525	Water Pump
557867	Water Pump Gasket
4177260	Oil Pan Drain Plug
2500811	Oil Pan Drain Plug Gasket
4113986	Oil Filter
4145944	Oil Fill Cap
2809955	Oil Fill Cap Seal
2500856	Valve Cover Gasket
557888	Starter Motor

Part Number	Part Description
4183623	Alternator



## 9 PARTS CATALOG

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### 9.1 HOW TO USE THE PARTS CATALOG

#### Abbreviations

**N/S** - Not serviced separately, can only be obtained by ordering main component or kit.

**AR** - Variable quantity or measurement is required to obtain correct adjustment.

**Symbols** such as ● next to the item number indicates that a note exists which contains additional information important in ordering that part.

#### Indented Items

Indented items indicate component parts that are included as part of an assembly or another component. These parts can be ordered separately or as part of the main component.

Item	Part No.	Qty	Description	Serial Numbers/Notes
● 1	123456	1	Mount, Valve	<i>Indicates a piece part</i>
2	789012	1	Valve, Lift	<i>Includes Items 3 and 4</i>
3	345678	1	• Handle	<i>Serviced part included with Item 2</i>
4	N/S	1	• Seal Kit	<i>Non serviced part included with Item 2</i>
5	901234	1	Screw, 1/4-20 x 2" Hex Head	

### 9.2 TO ORDER PARTS

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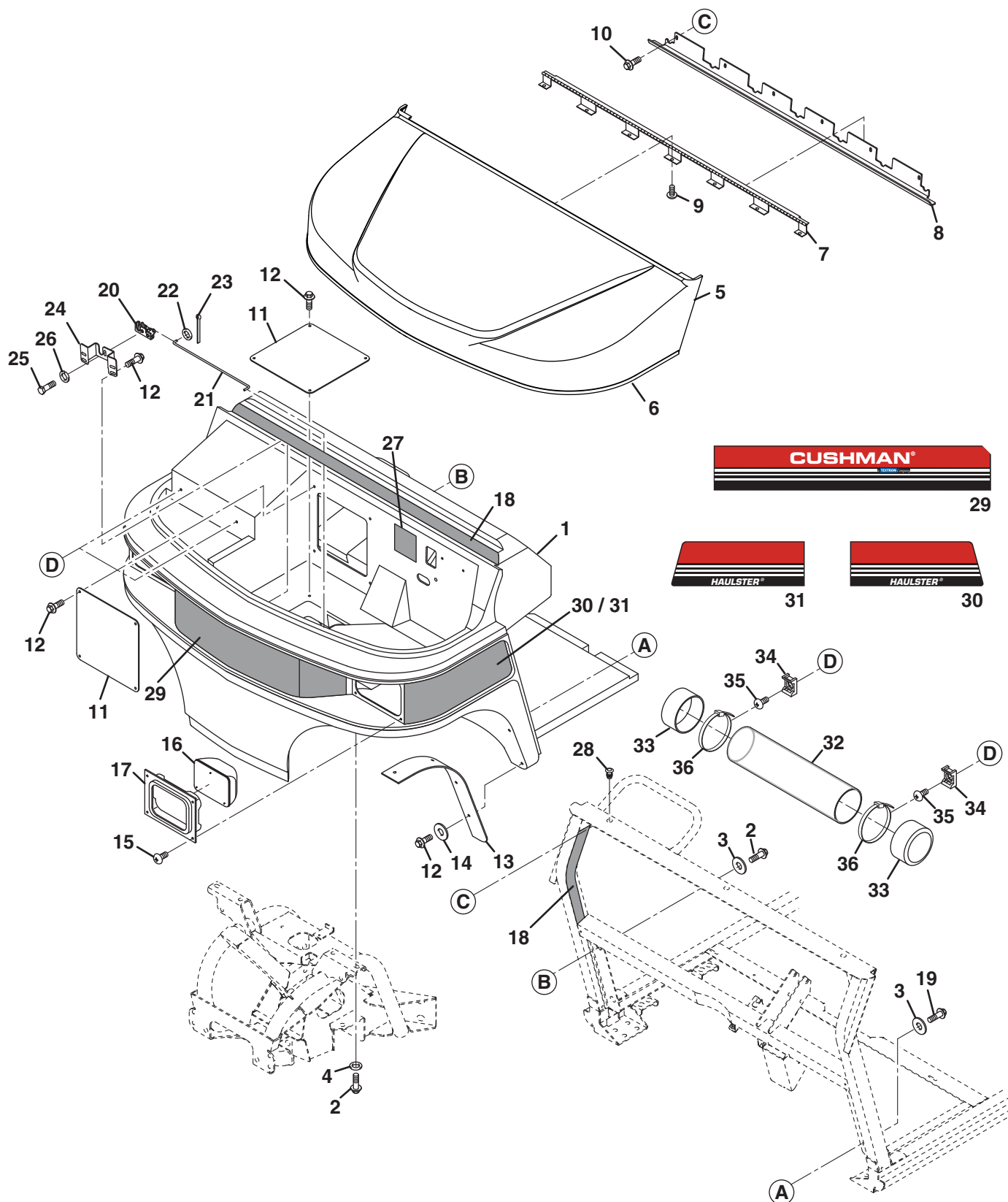
1. Write your **full** name and **complete** address on the order.
2. Explain where and how to make shipment.
3. Give product number, name and serial number that is stamped on the name plate or serial plate of your product.
4. Order by the quantity desired, the part number and description of the part as given in the parts list.
5. Send or bring the order to an authorized Cushman Distributor.
6. Inspect all shipments on receipt. If any parts are damaged or missing file a claim with the carrier before accepting.
7. Do not return material without a letter of explanation listing the parts being returned. Transportation charges must be prepaid.

**Use of other than Cushman authorized parts will void the warranty.**



## 9.3 TABLE OF CONTENTS

1.1 .....	Front Body .....	38
2.1 .....	Engine Cover .....	40
2.2 .....	Engine Cover .....	42
3.1 .....	Upper ROPS .....	44
4.1 .....	Upper ROPS .....	46
5.1 .....	Throttle Control .....	48
6.1 .....	Control Console .....	50
7.1 .....	Parking Brake .....	52
8.1 .....	Brake Pedal .....	54
9.1 .....	Clutch Pedal Linkage .....	56
10.1 .....	Manual Transmission Shifter Linkage .....	58
11.1 .....	Manual Transmission Shifter Linkage .....	60
12.1 .....	Automatic Transmission Shifter .....	62
13.1 .....	Automatic Transmission Oil Cooler .....	63
14.1 .....	Frame Attachments .....	64
15.1 .....	Frame and Lower ROPS .....	66
16.1 .....	Rear Axle .....	68
17.1 .....	Front Control Arms .....	70
18.1 .....	Steering Linkage .....	72
19.1 .....	Front Brakes .....	74
20.1 .....	Steering Column .....	76
21.1 .....	Diesel Radiator .....	78
22.1 .....	Gas Radiator .....	80
23.1 .....	Diesel Engine and Transmission Mounting ...	82
24.1 .....	Gas Engine and MT Mounting .....	84
25.1 .....	Gas Engine and AT Mounting .....	86
26.1 .....	Diesel Engine and Clutch .....	88
27.1 .....	Suzuki Gas Engine .....	90
28.1 .....	Diesel Engine Speed Control .....	92
29.1 .....	Diesel Engine Exhaust and Remote Oil Filter	94
30.1 .....	Governor Linkage .....	96
31.1 .....	Governor .....	98
32.1 .....	Gas Engine Remote Oil Fill .....	100
33.1 .....	Gas Engine Exhaust .....	101
34.1 .....	Fuel Tank .....	102
35.1 .....	Diesel Fuel System .....	104
36.1 .....	Gas Fuel System .....	106
37.1 .....	Diesel Electrical Components .....	108
38.1 .....	Gas Electrical Components .....	110
39.1 .....	Differential Assembly .....	112
40.1 .....	Differential Housing .....	114
41.1 .....	Axle Tubes and Shafts .....	116
42.1 .....	Front Cover .....	118
43.1 .....	Input Shaft .....	120
44.1 .....	Transmission Clutch Release-Shift Selector	122
45.1 .....	Transmission Case .....	124
46.1 .....	Input and Main Shaft .....	126
47.1 .....	Gear Shift Fork Linkage .....	128
48.1 .....	Diesel Engine Main Harness .....	130
49.1 .....	Diesel Engine and Fan Harness .....	132
50.1 .....	Gas Main Harness .....	134
50.1 .....	Gas Main Harness (Continued) .....	136
51.1 .....	Gas Engine Electrical Schematic .....	138
52.1 .....	Gas Engine Schematic .....	142
53.1 .....	Diesel Engine Electrical Schematic .....	144



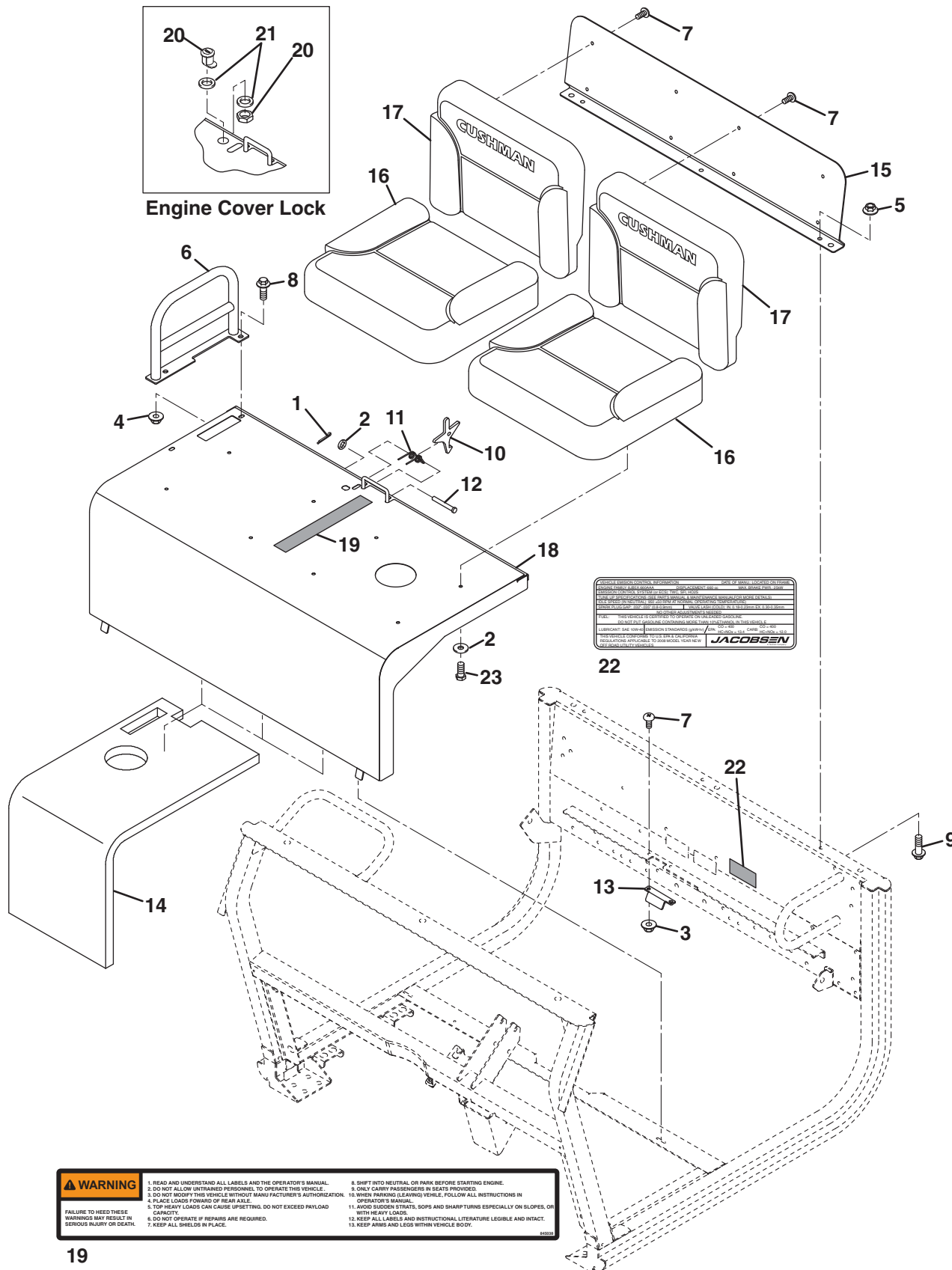
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	2700792	1	Front Clip	Includes decals 821071 & 840901
2	800930	2	Screw, M8-1.25 x 16 mm Hex Flange	
3	548159	4	Flat Washer, 5/16 x 1-1/4 in.	
4	450400	2	Washer, M8	
5	4207160	1	Hood, Orange	
6	4208620	1	• Weather Seal	
7	841477G01	1	Hinge, Hood	
8	841637	1	Angle, Front Clip Mounting	
9	450541	7	Screw, M6-1 x 16 mm Round Head	
10	452695	6	M6-1.00 20 HW Taptite	
11	841913	2	Plate, Access	
12	800934	20	Screw, M6-1 x 16 mm Hex Flange	
13	4139691	2	Flap, Mud	
14	548175	8	Flat Washer, 1/4 x 1-1/4 in.	
15	800943	8	Screw, #10-14 Self Tapping	
16	837303	2	Headlight, Rectangular	
17	841428	2	Bezel, Headlight	
18	828382	AR	Seal, Foam	
19	452398	4	Screw, M8-1.25 x 25 mm Hex Head	
20	2702198	1	Latch, Hood	
21	841715	1	Rod, Hood Release	
22	303952	1	Flat Washer, #10	
23	306463	1	Cotter Pin, 1/16 x 1/2 in.	
24	841753	1	Bracket, Hood Latch	
25	306419	2	Screw, 1/4-20 x 1/2 in. Hex Head	
26	306488	2	Lockwasher, 1/4 in. Shakeproof	
27	2703158	1	Decal, Fuses	Diesel Engine Gas Engine Not Used on 84060
27	4117221	1	Decal, Fuses	
28	844293	3	Plug, Panel	
29	844430	1	Decal, Cushman	
30	844428	1	Decal, Left Side Turf Haulster	
31	844429	1	Decal, Right Side Turf Haulster	
32	38541	1	Tube, Clear Document	
33	38061A	2	Cap, Vinyl	
34	840508	2	Mount, Cable Tie	
35	800344	2	Screw, #10 Type AB Self Tapping	
36	823549	2	Cable Tie, 15-1/2 in.	

> Change from previous revision

## 2.1 Engine Cover

Vehicles without ROPS

Serial No. All



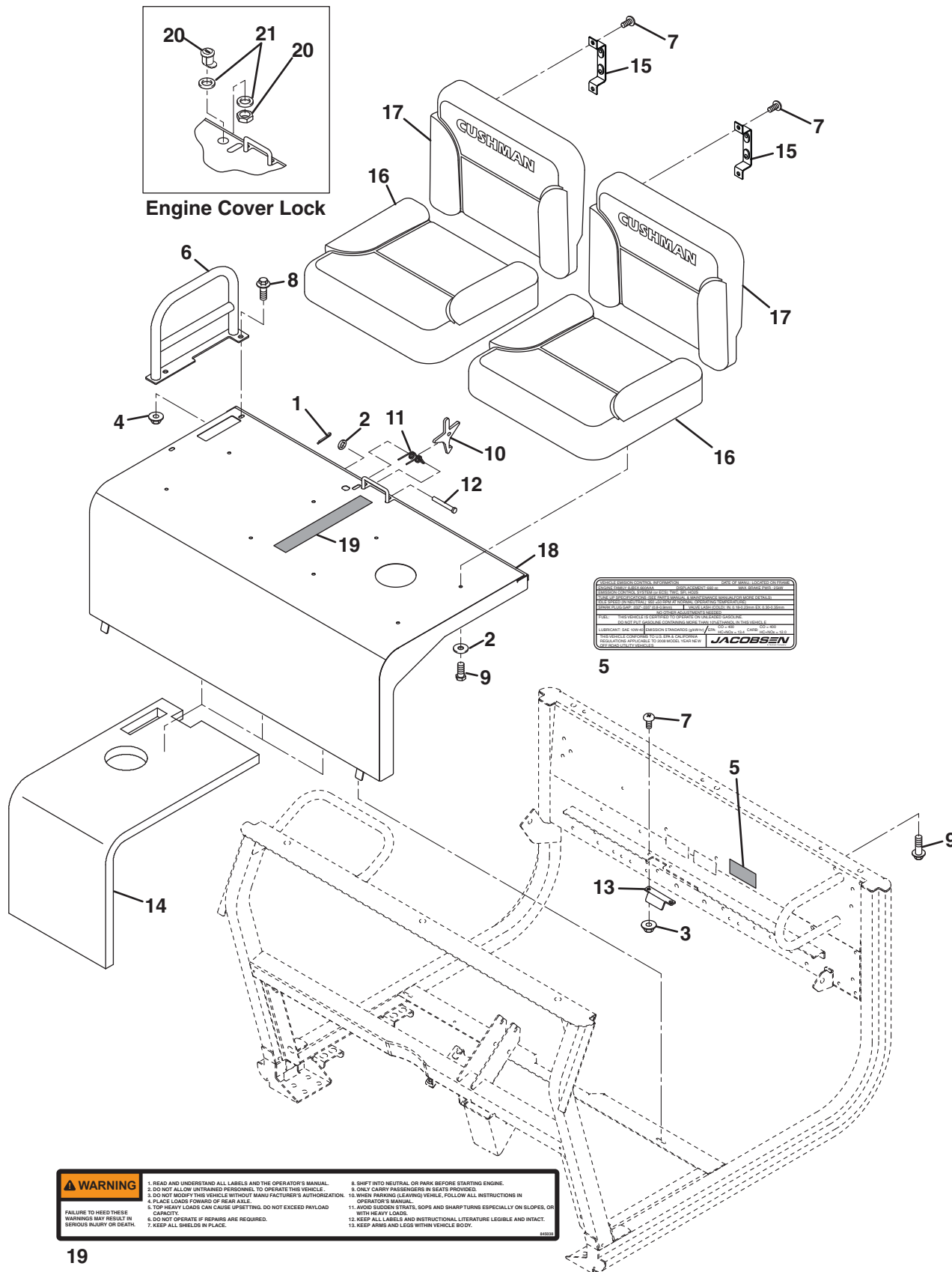
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	306328	1	Cotter Pin, 3/32 x 3/4 in.	
2	308090	9	Washer, 1/4	
3	450452	2	Nut, M6-1 Hex Flange	
4	450453	2	Nut, M8-1.25 Hex Flange	
5	450454	3	Nut, M10-1.5 Hex Flange	
6	893541	1	Handhold, Right Side	
7	450541	10	Screw, M6-1 x 16 mm Pan Head	
8	452388	2	Screw, M8-1.25 x 20 mm Hex Flange	
9	452398	3	Screw, M10-1.5 x 20 mm Hex Flange	
10	523085	1	Latch, Engine Cover	
11	816401	1	Spring, Torsion	
12	830784	1	Clevis Pin, 1/4 x 1-7/8 in.	
13	2702199	1	Catch, Engine Latch	
14	4139939	1	Insulation, Engine Cover	
15	842030	1	Mount, Backrest	Not Used on 84060
16	601937	2	Seat Base	
17	893322	2	Backrest	84060, See 4.1 for mounting
18	893375.14	1	Cover, Yellow Engine	
19	845038	1	• Decal, Operation	
20	840436	1	Lock, Engine Cover	Optional, Required in Europe
21	309488	2	Washer	Optional, Required in Europe
22	REF	1	Decal, Emmissions	Gas Vehicles
23	302288	8	Screw, 1/4-20 x 1 in.	

> Change from previous revision

## 2.2 Engine Cover

Vehicles with Four Post ROPS

Serial No. All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	306328	1	Cotter Pin, 3/32 x 3/4 in.	Gas Vehicles
2	308090	9	Washer, 1/4	
3	450452	2	Nut, M6-1 Hex Flange	
4	450453	2	Nut, M8-1.25 Hex Flange	
5	REF	1	Decal, Emmissions	
6	893541	1	Handhold, Right Side	
7	450541	10	Screw, M6-1 x 16 mm Pan Head	
8	452388	2	Screw, M8-1.25 x 20 mm Hex Flange	
9	302288	8	Screw, 1/4-20 x 1 in.	
10	523085	1	Latch, Engine Cover	
11	816401	1	Spring, Torsion	
12	830784	1	Clevis Pin, 1/4 x 1-7/8 in.	
13	2702199	1	Catch, Engine Latch	
14	4139939	1	Insulation, Engine Cover	
15	893632	4	Mount, Backrest	
16	601937	2	Seat Base	
17	893322	2	Backrest	
18	893375.14	1	Cover, Engine	
19	845038	1	• Decal, Operation	Optional, Required in Europe
20	840436	1	Lock, Engine Cover	
21	309488	2	Washer	

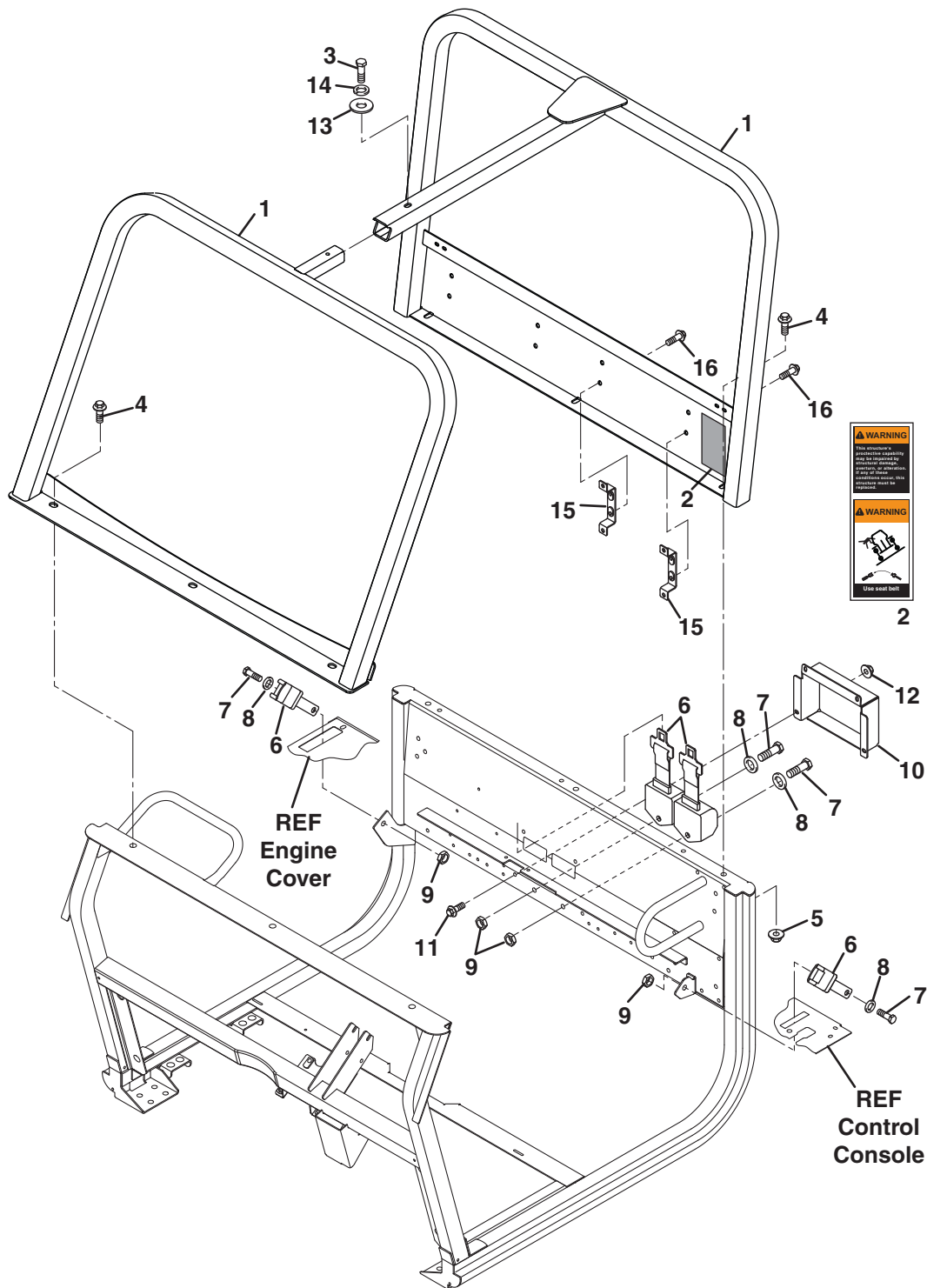
**See 3.1, or See 4.1**

> Change from previous revision



## 3.1 Upper ROPS Optional Kit

Serial No. All

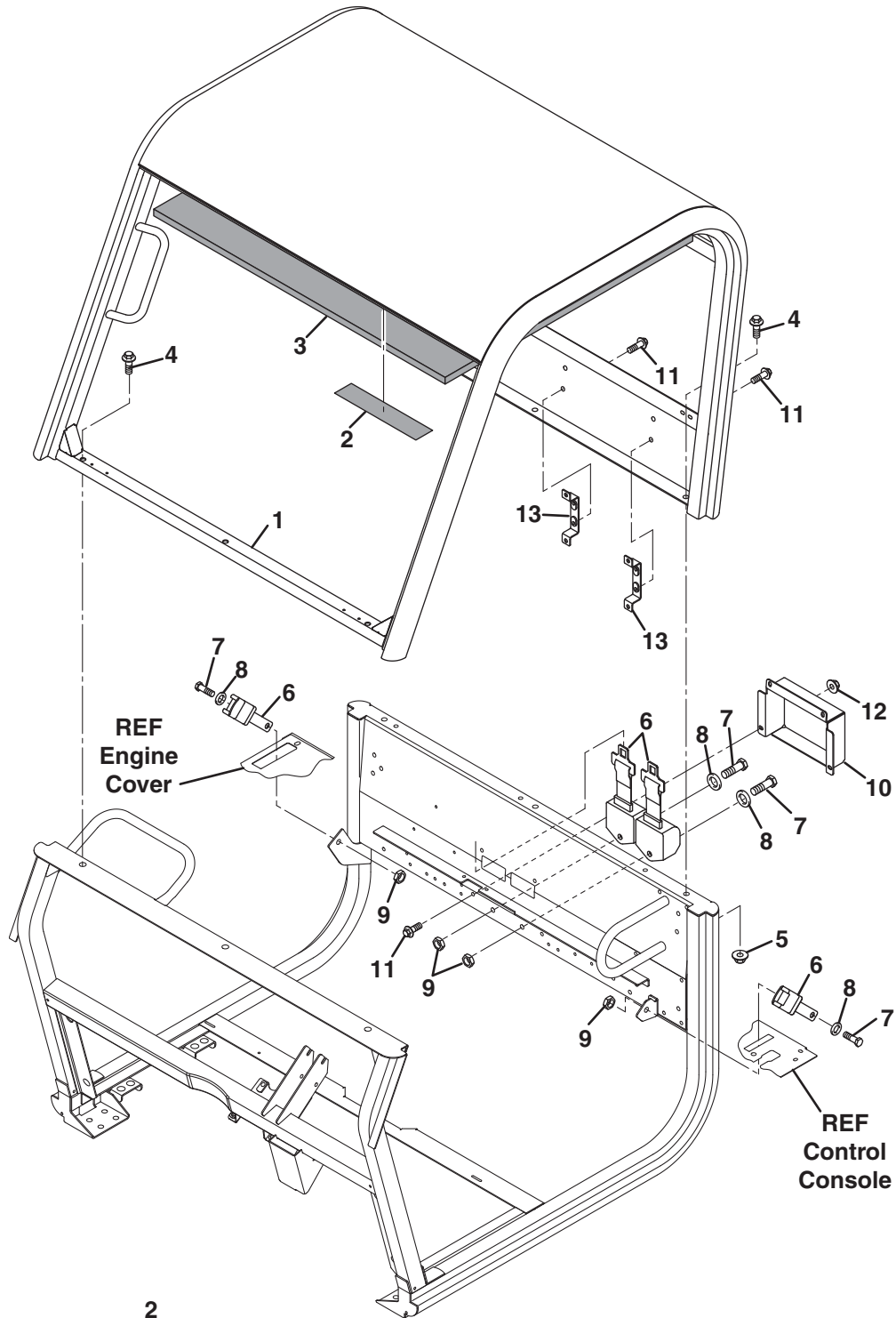


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4205580	1	Four Post ROPS	<b>See 2.2</b>
2		1	• Decal, ROPS Warning	
3	800547	1	• Screw, M10-1.25 x 20 mm Hex Head	
4	452411	6	• Screw, M12-1.75 x 40 mm Flange	
5	450455	3	• Nut, M12-1.75 Hex Flange	
6	4140269	2	• Seat Belt Assembly	
7	N/S	2	• • Screw, 7/16-20 x 1 in. Hex Head	
8	N/S	2	• • Flat Washer, 7/16	
9	N/S	2	• • Nut, 7/16-20 Hex	
10	841799	1	• Guard, Seat Belt	
11	800930	4	• Screw, M8-1.25 x 16 mm Flange	
12	450453	4	• Nut, M8-1.25 Hex Flange	
13	450401	1	• Flat Washer, M10	
14	450412	1	• Lockwasher, M10	
15	893632	4	Support, Backrest	
16	800930	8	Screw, M8-1.25 x 16 mm Flange	

> Change from previous revision

## 4.1 Upper ROPS Optional Kit

Serial No. All



2

PART NUMBER: 893146 Meets SAE: J1040 MAY94  
Only to be used on Cushman truck models  
with matching lower structure  
Manufactured by **JACOBSEN** a Textron Company  
11524 Wilmar Blvd. Charlotte NC 28273

### ⚠ WARNING ⚠

The protection offered by this ROPS will be impaired if it has been subjected to any modification or structural damage. This ROPS must be replaced after a rollover. Seat belts must be worn at all times.

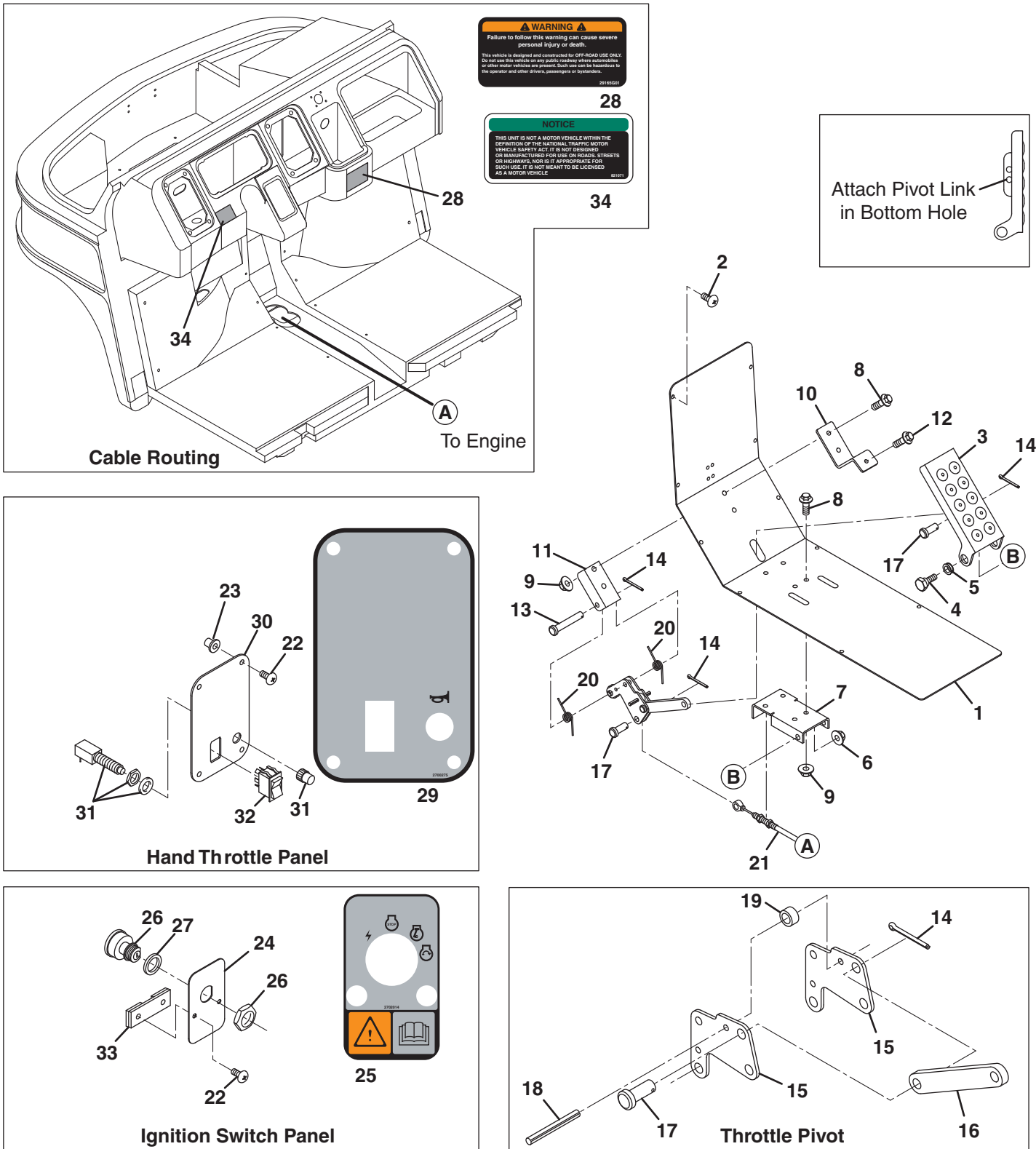
4175340

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4184320	1	Upper ROPS	<b>See 2.2</b>
2	4175340	1	• Decal, Warning and ROPS Cert.	
3	844988	1	Foam, 1/2 in. Perforated ROPS	
4	452411	6	Screw, M12-1.75 x 40 mm Flange	
5	450455	3	Nut, M12-1.75 Hex Flange	
6	4140269	2	Seat Belt Assembly	
7	N/S	2	• Screw, 7/16-20 x 1 in. Hex Head	
8	N/S	2	• Flat Washer, 7/16	
9	N/S	2	• Nut, 7/16-20 Hex	
10	841799	1	Guard, Seat Belt	
11	800930	12	Screw, M8-1.25 x 16 mm Flange	
12	450453	4	Nut, M8-1.25 Hex Flange	
13	893632	4	Support, Backrest	

> Change from previous revision

## 5.1 Throttle Control

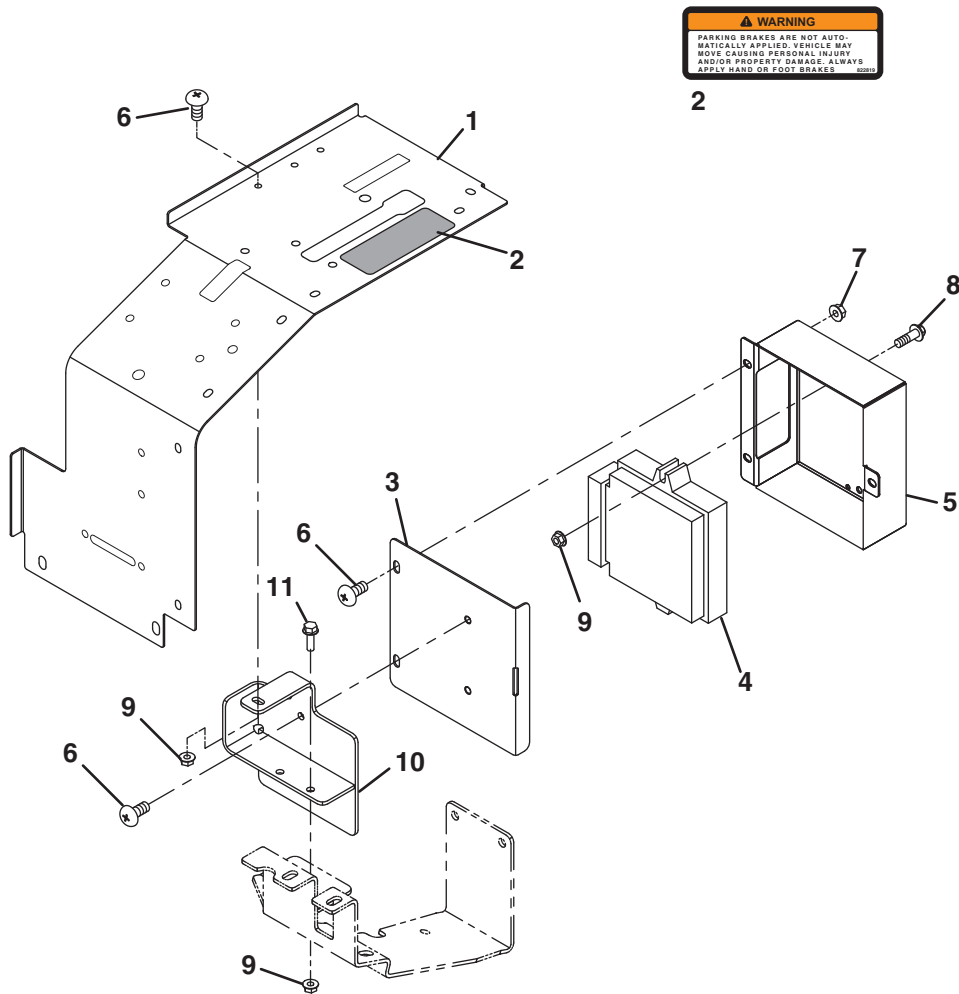
Serial No. All



All Views Rotated 90° for Clarity

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	841663	1	Panel, Floor Access	Diesel Vehicles, See 28.1 Gas Vehicles, See 30.1
2	800943	10	Screw, #10-14 x 5/8 in. Self Tapping	
3	894159	1	Pedal, Throttle	
4	524633	2	Bolt, 5/16-18 x 1 in. Shoulder	
5	524643	2	Bearing, Split	
6	548911	2	Nut, 5/16-18 Flange	
7	2703257.7	1	Bracket, Foot Throttle	
8	452378	6	Screw, M6-1 x 20 mm Flange	
9	450452	6	Nut, M6-1 Flange	
10	843997	1	Bracket, Pedal Stop	
11	843562	1	Mount, Channel	
12	452695	1	Screw, M6-1 x 20 mm Self Tapping	
13	830784	1	Clevis Pin, 1/4 x 1-7/8 in.	
14	306328	4	Cotter Pin, 3/32 x 3/4 in.	
15	843563	2	Plate, Pivot	
16	843561	1	Link, Throttle Pivot	
17	806714	3	Clevis Pin, 5/16 x 3/4 in.	
18	844224	2	Roll Pin, 3/16 x 1-3/4 in.	
19	515268	2	Bushing	
20	844223	2	Spring, Torsion	
21	2703683	1	Throttle Cable	
21	2703684	1	Throttle Cable	
22	800582	6	Screw, 1/4-10 x 3/4 in. Truss Head	
23	2700496	4	Insert, 1/4-20 Threaded	
24	2701850.7	1	Panel, Ignition Switch	
25	2702014	1	Decal, Ignition Switch Panel	
26	837295	1	Ignition Switch	
27	837298	1	Spacer	
28	29165G01	1	Decal, Off Road Use	
29	2700275	1	Decal, Control Panel	
30	841866	1	Panel, Control	
31	830366	1	Switch, Horn	
32	843581	1	Switch, Light	
33	2702012	1	Strap Nut, 1/4-20 x 2 in.	
34	821071	1	Decal, Not Motor Vehicle Notice	

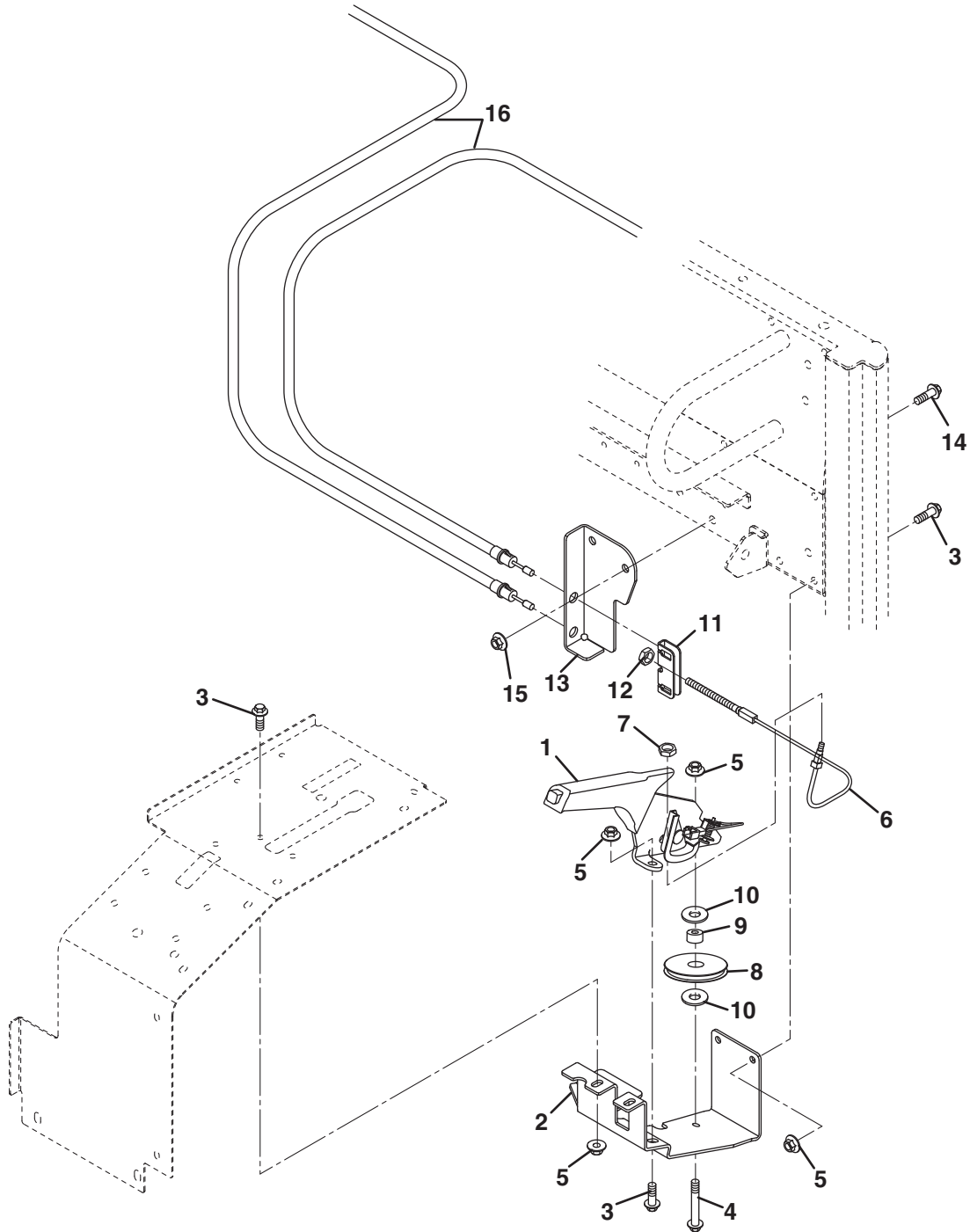
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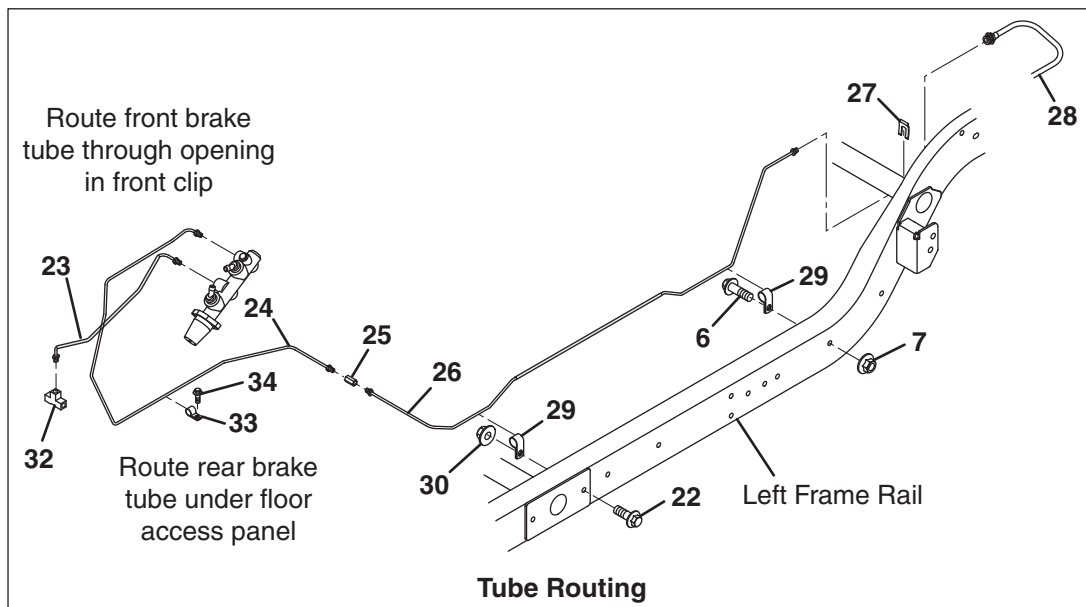
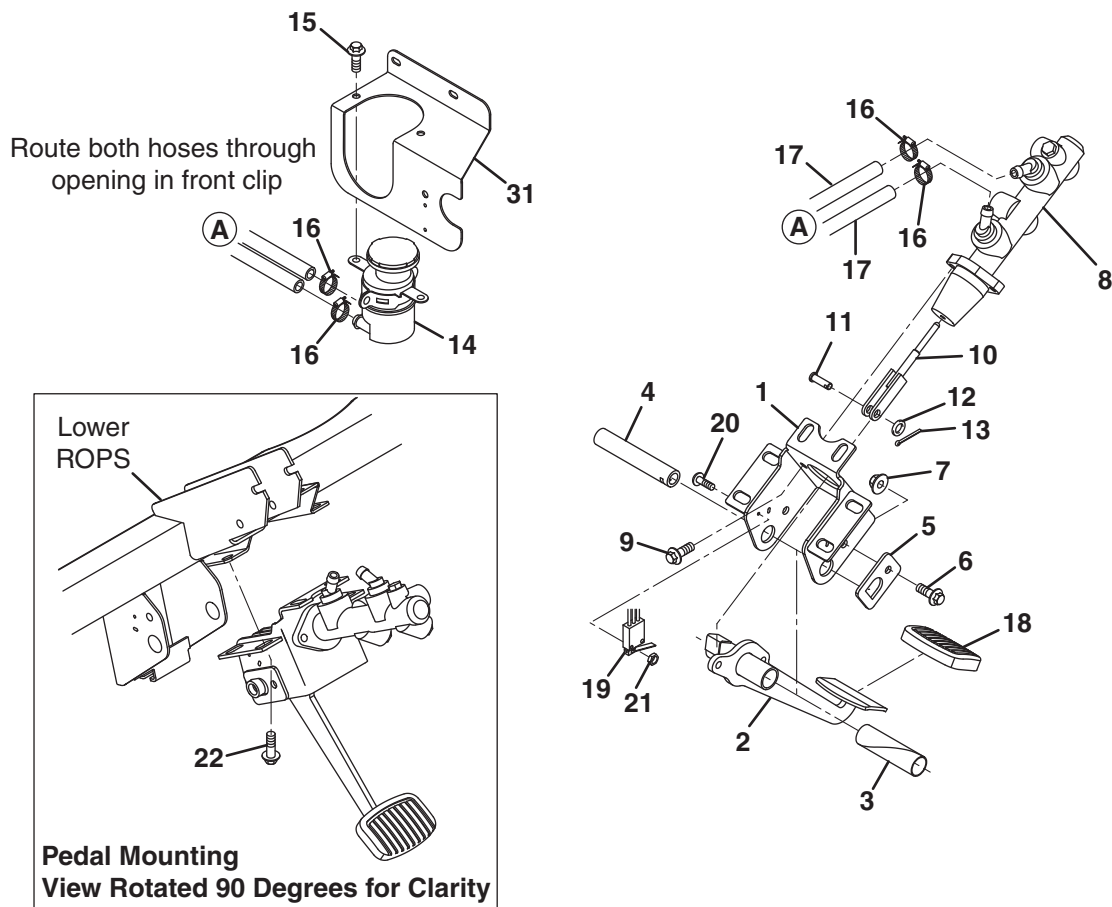
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	2701210	1	Console	
2	822819	1	• Decal, Parking Brake	
3	2701817.7	1	Cover, Upper ECU	Gas Units Only
4	4147117	1	Controller, EFI Engine	Gas Units, Manual Transmission
4	4147118	1	Controller, EFI Engine	Gas Units, Automatic Transmission
5	2701105.7	1	Cover, Lower ECU	Gas Units Only
6	800026	4	Screw, 1/4-20 x 3/4 in. Pan Head	Gas Units Only
7	548910	2	Nut, 1/4-20 Serrated Flange	Gas Units Only
8	450544	2	Screw, M6-1.00 30 YS	Gas Units Only
9	450452	2	Nut, M6-1.00 Verbus Ripp G10	Gas Units Only
10	4149981	1	Bracket, ECU MTG	Gas Units Only
11	452378	2	Bolt M6-1.00 20 YS	Gas Units Only

> Change from previous revision



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4202860	1	Lever, Parking Brake	See 39.1
2	845134	1	Bracket, Parking Brake Lever	
3	452388	5	Screw, M8-1.25 x 20 mm Flange	
4	452391	1	Screw, M8-1.25 x 40 mm Flange	
5	450453	6	Nut, M8-1.25 Flange	
6	845133	1	Cable, Parking Brake	
7	450377	1	Nut, M6-1 Staytite	
8	827182	1	Pulley, 3 in. Cable	
9	843359	1	Bushing, Pulley	
10	809152	2	Flat Washer, 5/16 x 1-3/16 in.	
11	843356	1	Equalizer, Parking Brake	
12	800446	1	Locknut, 5/16-24	
13	843158	1	Bracket, Parking Brake Cables	
14	452398	2	Screw, M10-1.5 x 20 mm Flange	
15	450454	2	Nut, M10-1.5 Flange	
16	893583	2	Parking Brake Cables	

> Change from previous revision

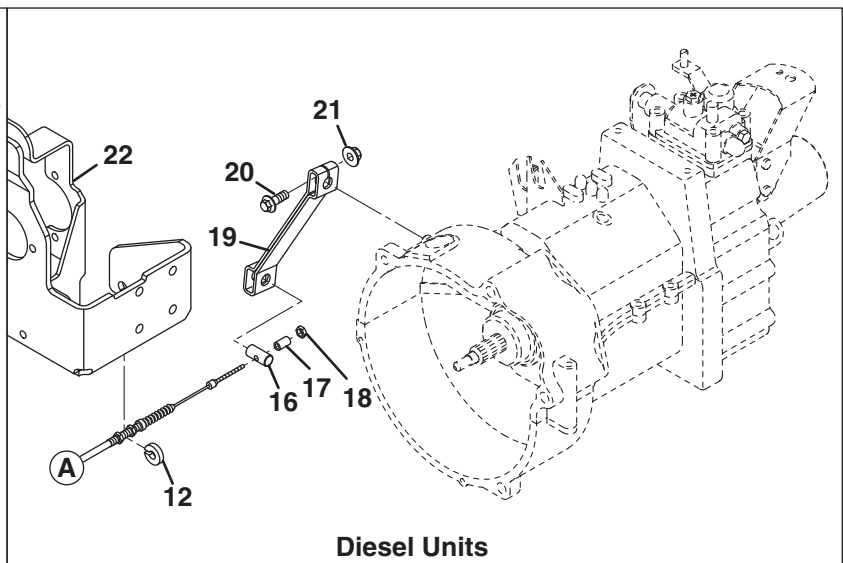
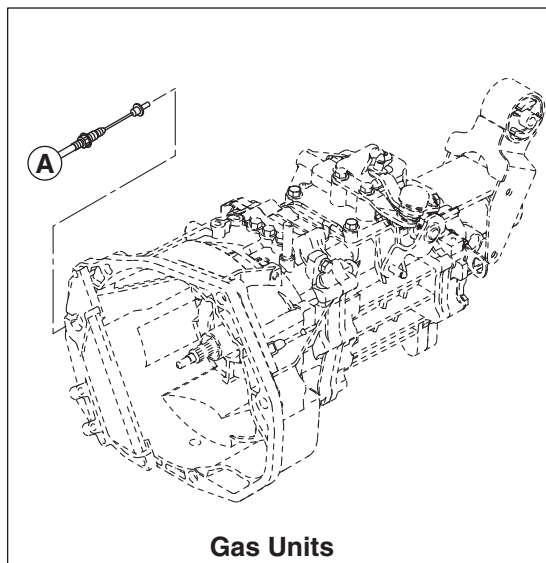
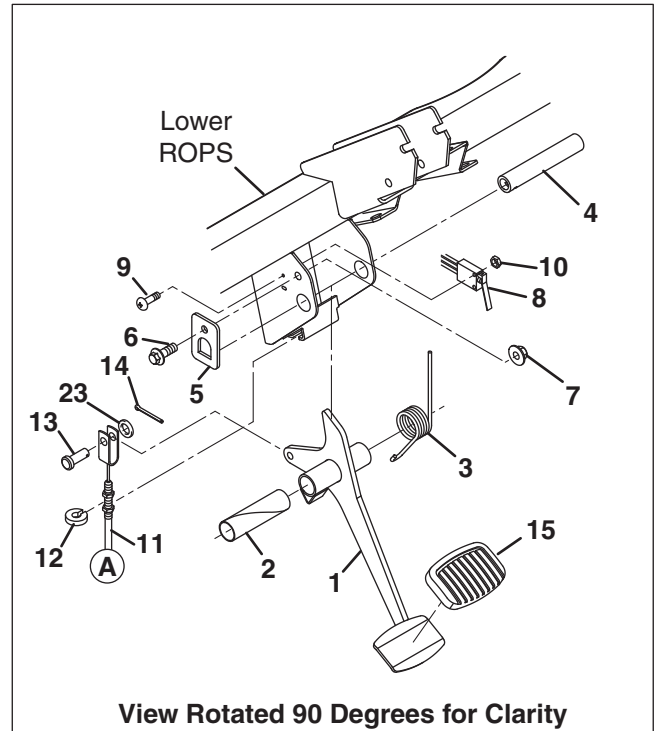
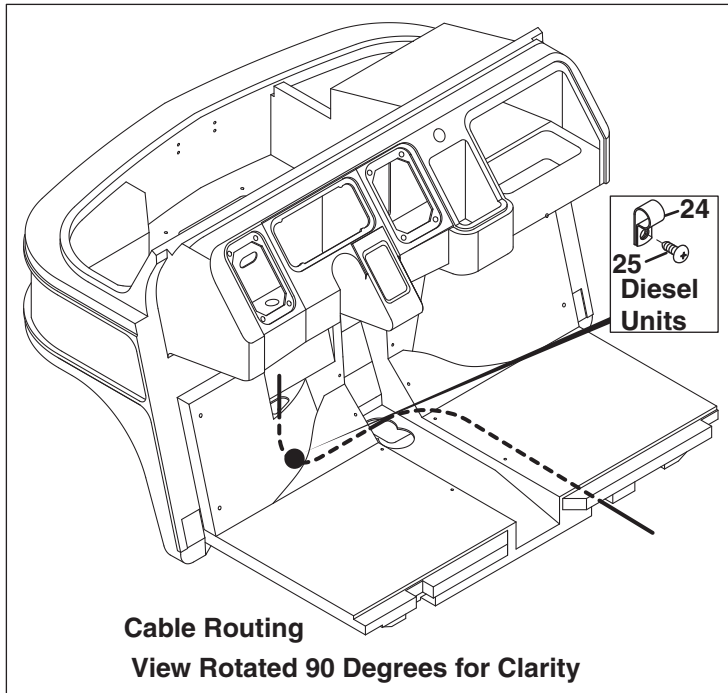


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	2701737.7	1	Bracket, Master Cylinder	
2	892921	1	Pedal, Brake	
3	840726	1	Bearing, Brake Pivot	
4	840725	1	Tube, Brake Pivot	
5	842935	1	Tab, Locking	
6	452388	2	Screw, M8-1.25 x 20 mm Flange	
7	450453	2	Nut, M8-1.25 Flange	
8	895113	1	Master Cylinder	
9	800930	2	Screw, M8-1.25 x 16 mm Flange	
10	894167	1	Rod, Brake	
11	806714	1	Clevis Pin, 5/16 x 15/16 in.	
12	103867	1	Flat Washer, 5/16	
13	306328	1	Cotter Pin, 3/32 x 3/4 in.	
14	894456	1	Reservoir, Brake Fluid	
	2702215	1	• Reservoir	
	826006	1	• Electrical Connector, 2 Wire	
	825886	2	• Terminal, 1/4 L Male	
15	800934	2	Screw, M6-1 x 16 mm Flange	
16	830930	4	Clamp, Hose	
17	4194500	2	Hose, 5/16 x 18 in. Brake	
18	810152	1	Pad, Pedal	
19	894308	1	Switch, Brake Micro	
20	450410	2	Screw, M3-0.5 x 20 mm Pan Head	
21	452424	2	Nut, M3-0.5 Hex	
22	452398	7	Screw, M10-1.5 x 20 mm Flange	
23	843021	1	Tube, Front Brake	
24	4194421	1	Tube, Rear Brake	
25	842103	1	Union, M10-1	
26	4194420	1	Tube, Rear Brake Line	
27	809137	1	Clip, Brake Line	
28	832587	1	Rear Brake Hose	See 39.1
29	810435	2	Clamp, Brake Tube	See 37.1 See 19.1
30	450454	1	Nut, M10-1.5 Flange	
31	844167	1	Bracket, Reservoir / Horn	
32	841842	1	Tee, M10-1.0 Flare Union	
33	812445	1	Clamp, Tube	
34	800943	1	Screw, #10-14 x 5/8 in. Self Tapping	

> Change from previous revision

## 9.1 Clutch Pedal Linkage

Serial No. 84065 All  
Serial No. 84058 All  
Serial No. 84060 All



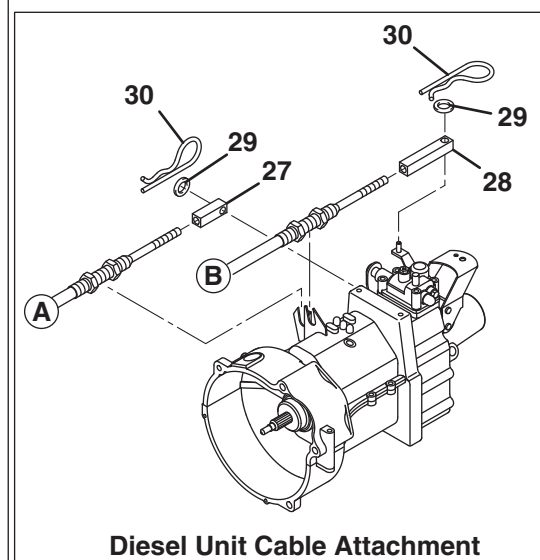
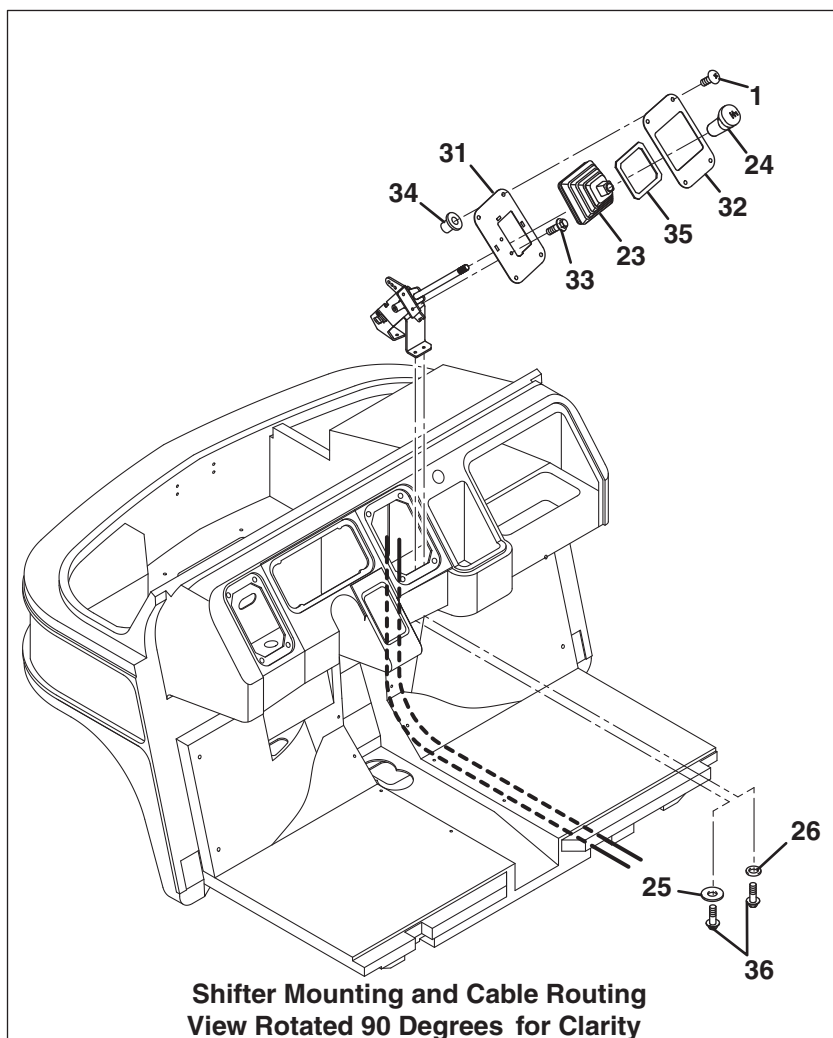
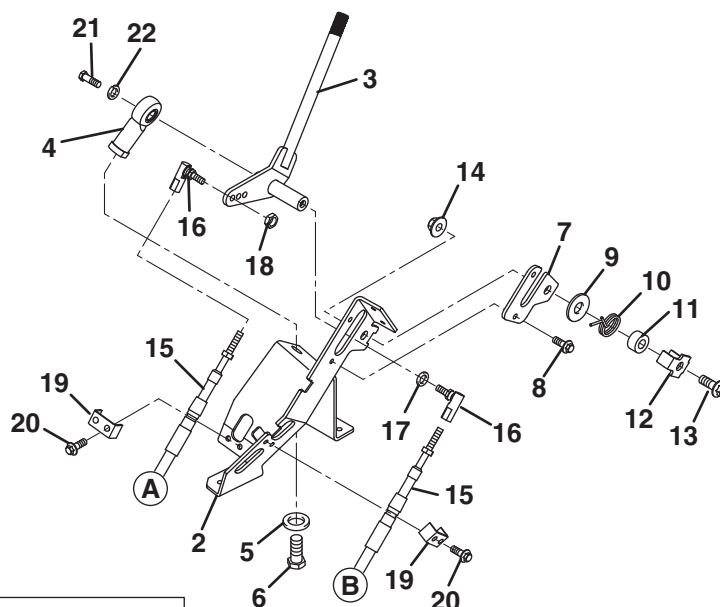
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## 10.1 Manual Transmission Shifter Linkage

Diesel Units

Serial No. 84065 All



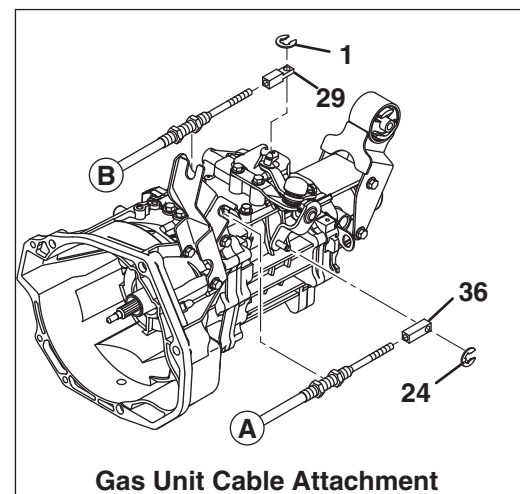
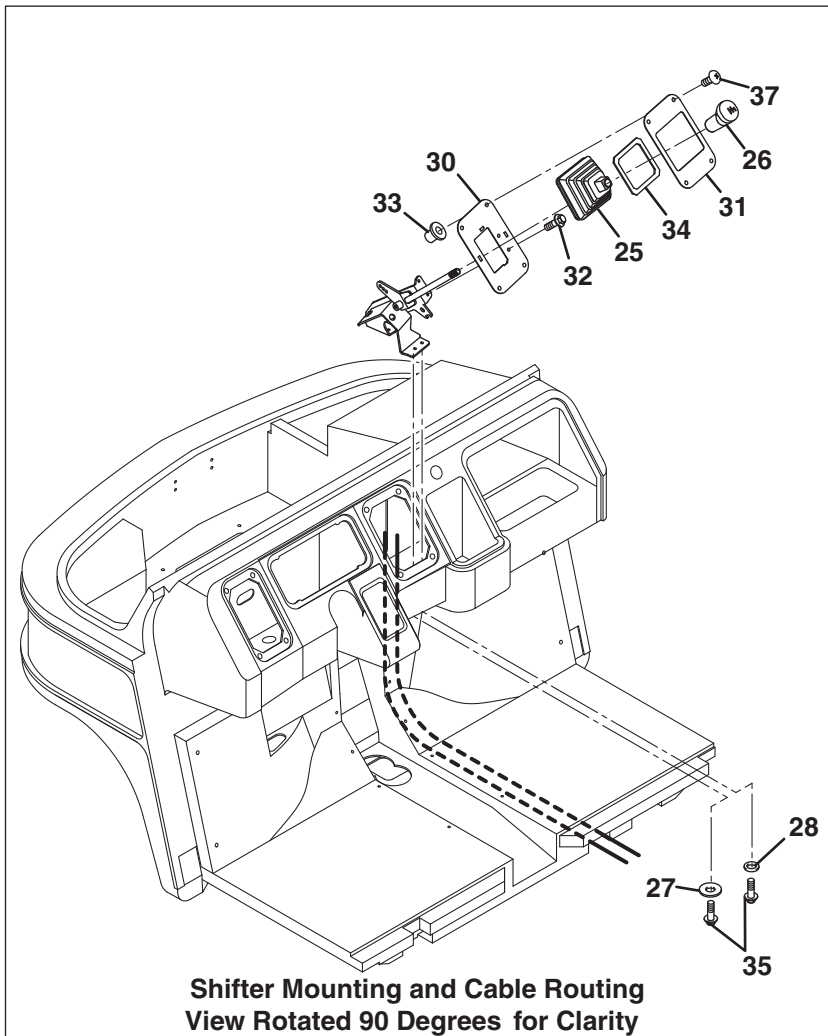
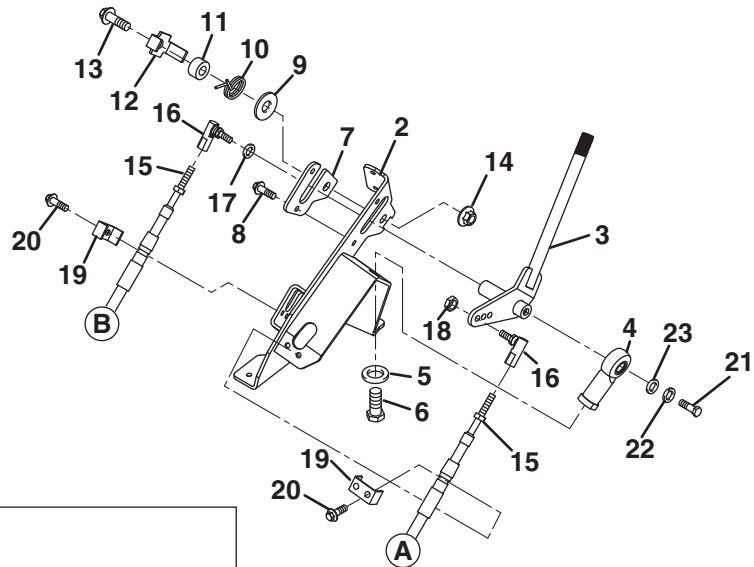
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	800582	4	Screw, 1/4-20 x 3/4 in. Truss Head	Diesel Units
2	2703956.7	1	Mount, Shifter	
3	2703953	1	Selector, Gear	
4	842773	1	Rod End, 1/2-20	
5	308091	1	Flat Washer, 1/2	
6	311763	1	Screw, 1/2-20 x 2-1/4 in. Hex Head	
7	843679	1	Plate, Wear	
8	452692	2	Screw, M6-1 x 12 mm Self Tap	
9	604174	1	Flat Washer, 3/8 in.	
10	843614	1	Spring, Torsion	
11	843685	1	Bushing, Spring	
12	2703951	1	Tab, Locating	
13	452401	1	Screw, M10-1.5 x 40 mm Flange	
14	450454	1	Nut, M10-1.5 Flange	
15	894179	2	Cable, Shifter	Diesel Units
16	842774	2	Ball Joint, 1/4-28	
17	816307	1	Flat Washer, 1/4	
18	306397	1	Nut, 1/4-28 Hex	
19	843724	2	Clamp, Cable	
20	452695	4	Screw, M6-1 x 20 mm Self Tap	
21	300977	1	Screw, 1/4-28 x 5/8 in. Hex Head	
22	306396	1	Lockwasher, 1/4	
23	2702996	1	Boot, Control Lever	
24	2702695	1	Knob, Shifter	
25	548175	3	Flat Washer, 1/4 x 1-1/4 in.	
26	308090	1	Flat Washer, 1/4	
27	843778	1	Connector, Shift Cable	
28	2703707	1	Connector, Shift Cable	
29	103867	2	Flat Washer, 5/16	
30	821164	2	Hair Pin	
31	2703964.7	1	Panel, Right Side Dash	
32	843792	1	Plate, Shifter Boot	
33	452692	2	Screw, M6-1 x 12 mm Self Tap	
34	2700496	4	Insert, 1/4-20 Threaded	
35	2703931.7	1	Ring, Boot Hold Down	
36	452695	4	Screw, M6-1 x 20 mm Self Tap	

> Change from previous revision

## 11.1 Manual Transmission Shifter Linkage

Gas Units

Serial No. 84058 All  
Serial No. 84060 All

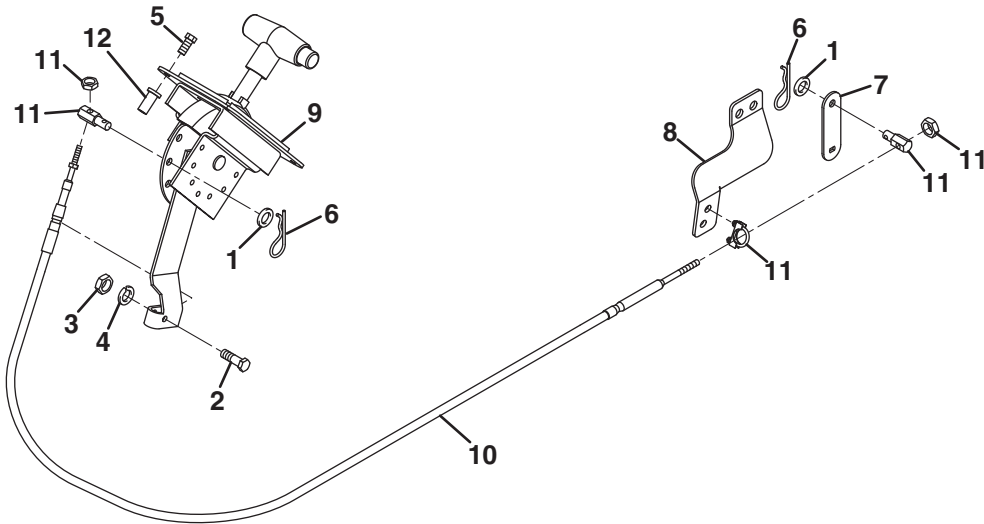


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4146819	1	Retaining Ring M6	
2	4142630	1	Mount, Shifter	
3	4142627	1	Selector, Gear	
4	842773	1	Rod End, 1/2-20	
5	308091	1	Flat Washer, 1/2	
6	311763	1	Screw, 1/2-20 x 2-1/4 in. Hex Head	
7	843679	1	Plate, Wear	
8	452692	2	Screw, M6-1 x 12 mm Self Tap	
9	604174	1	Flat Washer, 3/8 in.	
10	843614	1	Spring, Torsion	
11	843685	1	Bushing, Spring	
12	2703951	1	Tab, Locating	
13	452401	1	Screw, M10-1.5 x 40 mm Flange	
14	450454	1	Nut, M10-1.5 Flange	
15	2701273	2	Cable, Shifter	
16	842774	2	Ball Joint, 1/4-28	
17	816307	1	Flat Washer, 1/4	
18	306397	1	Nut, 1/4-28 Hex	
19	843724	2	Clamp, Cable	
20	452695	4	Screw, M6-1 x 20 mm Self Tap	
21	300977	1	Screw, 1/4-28 x 5/8 in. Hex Head	
22	306396	1	Lockwasher, 1/4	
23	308090	1	Flat Washer, 1/4	
24	4146818	1	Retaining Ring M5	
25	2702696	1	Boot, Control Lever	
26	4140431	1	Knob, Shifter	
27	548175	3	Flat Washer, 1/4 x 1-1/4 in.	
28	308090	1	Flat Washer, 1/4	
29	4142796	1	Connector, Shift Cable	
30	2703964.7	1	Panel, Right Side Dash	
31	843792	1	Plate, Shifter Boot	
32	452692	2	Screw, M6-1 x 12 mm Self Tap	
33	2700496	4	Insert, 1/4-20 Threaded	
34	2703931.7	1	Ring, Boot Hold Down	
35	452695	4	Screw, M6-1 x 20 mm Self Tap	
36	2701371	1	Connector, Shift Cable	
37	800582	4	Screw, 1/4-20 x 3/4 in. Truss Head	

&gt; Change from previous revision

## 12.1 Automatic Transmission Shifter

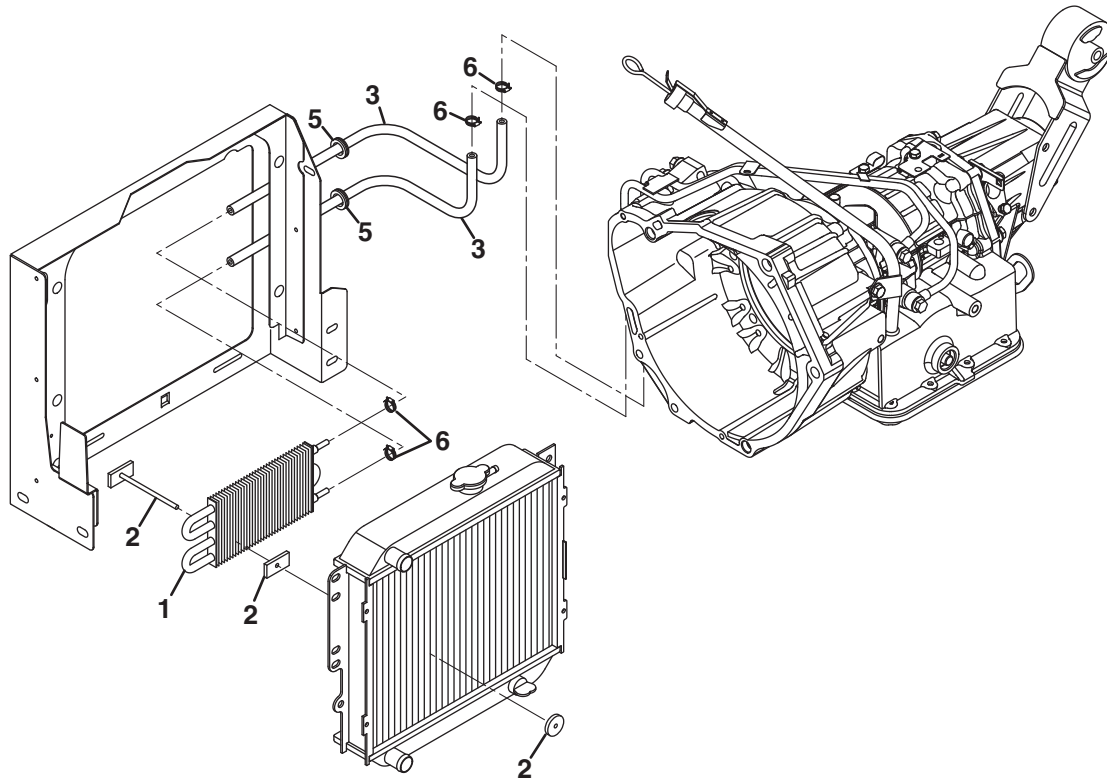
Serial No. 84059 All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	103867	2	Flat Washer, 5/16	
2	302030	1	Screw, 1/4-20 x 1-1/4 in.	
3	306375	1	Nut, 1/4-20 Hex	
4	306396	1	Lockwasher, 1/4	
5	800582	4	Screw, 1/4-20 x 3/4 in.	
6	821164	2	Hair Pin, 1/4 x 1-1/8 in.	
7	842740	1	Lever, Shifter	
8	845345.7	1	Bracket, Shifter Cable Mount	
9	894584	1	Shifter with Cable	
10	894508	1	• Cable, Shifter	
11	892164	1	• Kit, Cable Mounting Hardware	
12	2700496	4	Insert, 1/4-20	

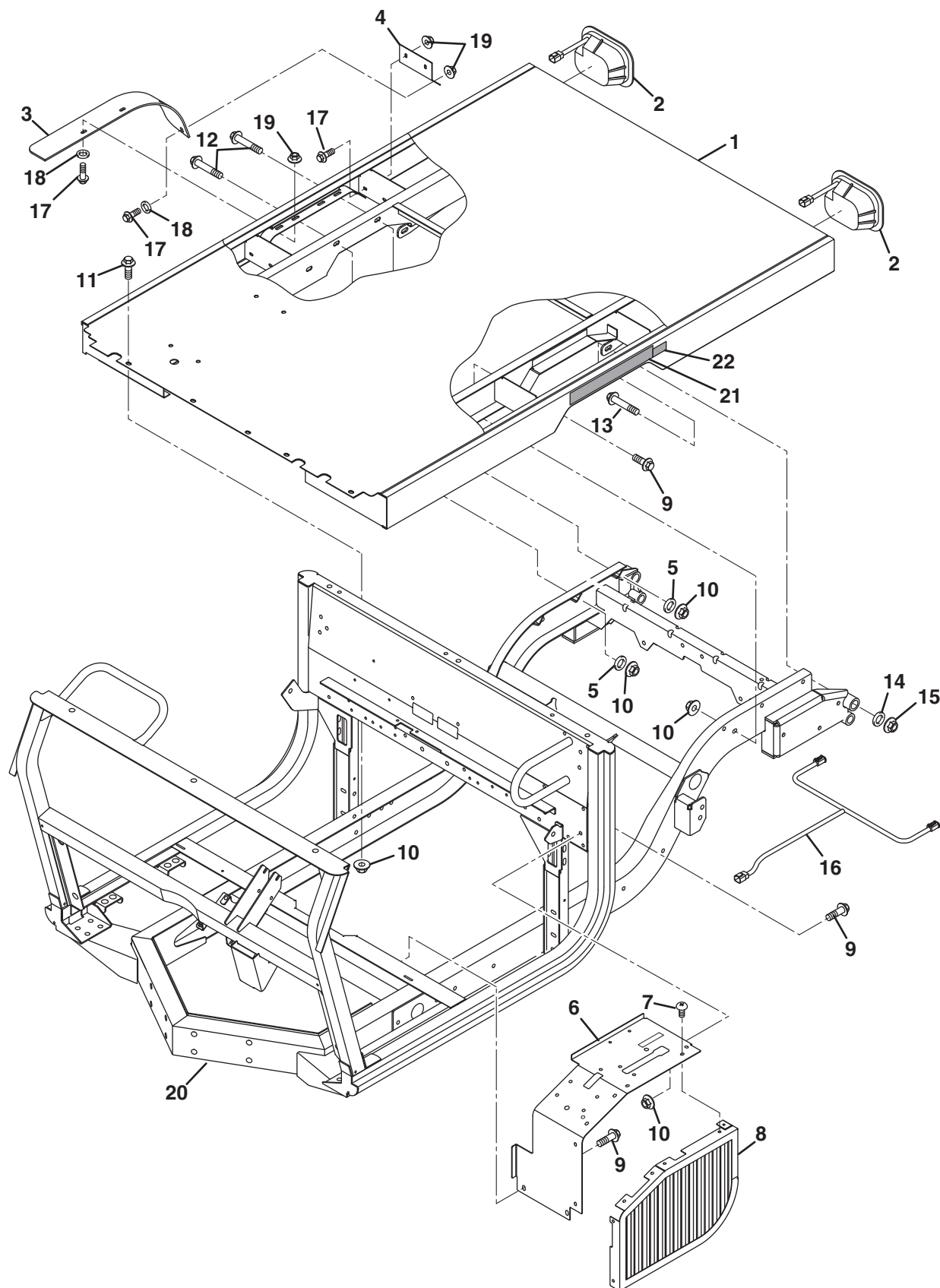
> Change from previous revision

## 13.1 Automatic Transmission Oil Cooler



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	838340	1	Oil Cooler	
2	800789	1	Kit, Oil Cooler Mounting	
3	826590	AR	Hose, 5/16 in. I.D.	
4	821893	AR	Trim, Push On	
5	809231	2	Grommet	
6	825624	4	Hose Clamp	

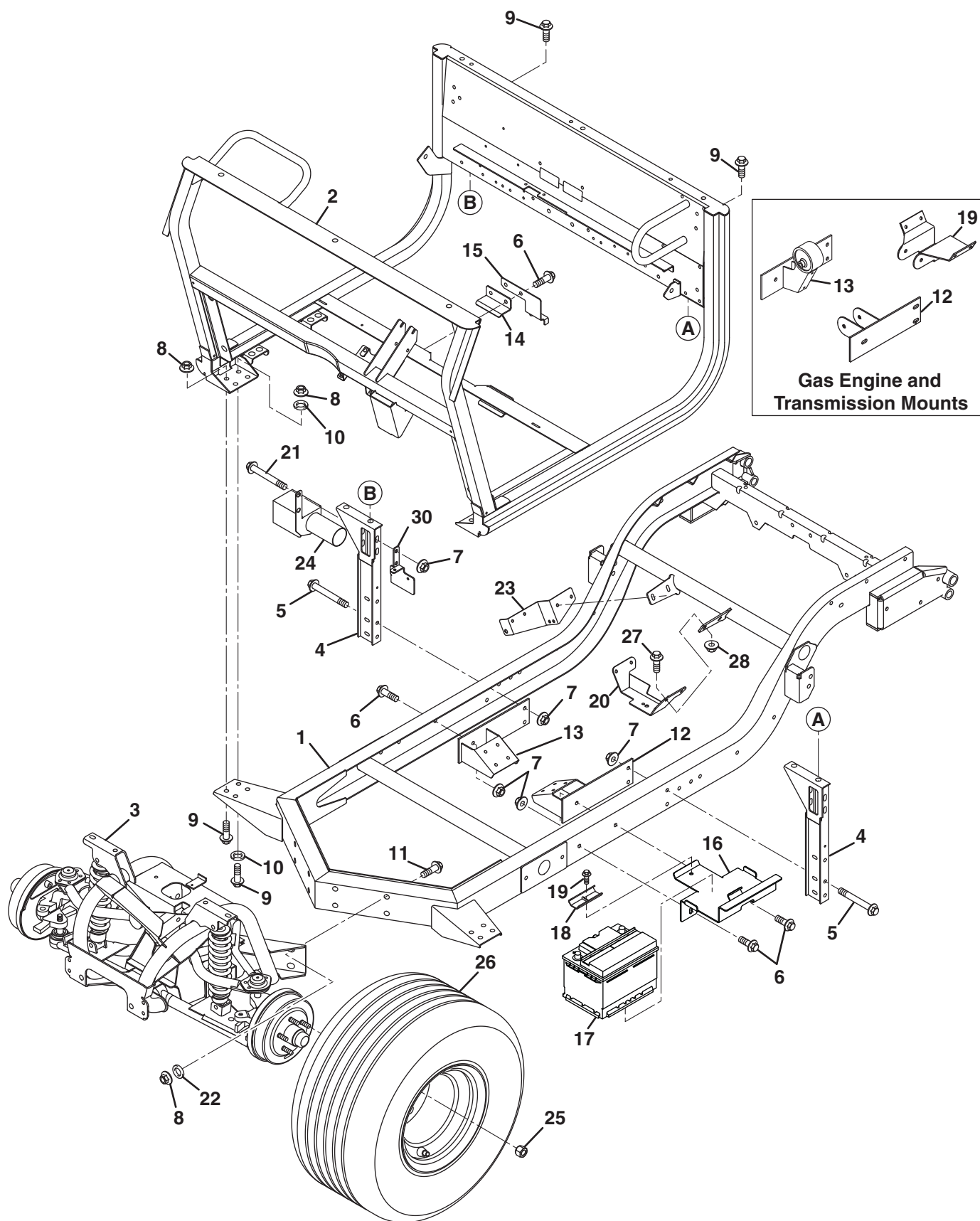
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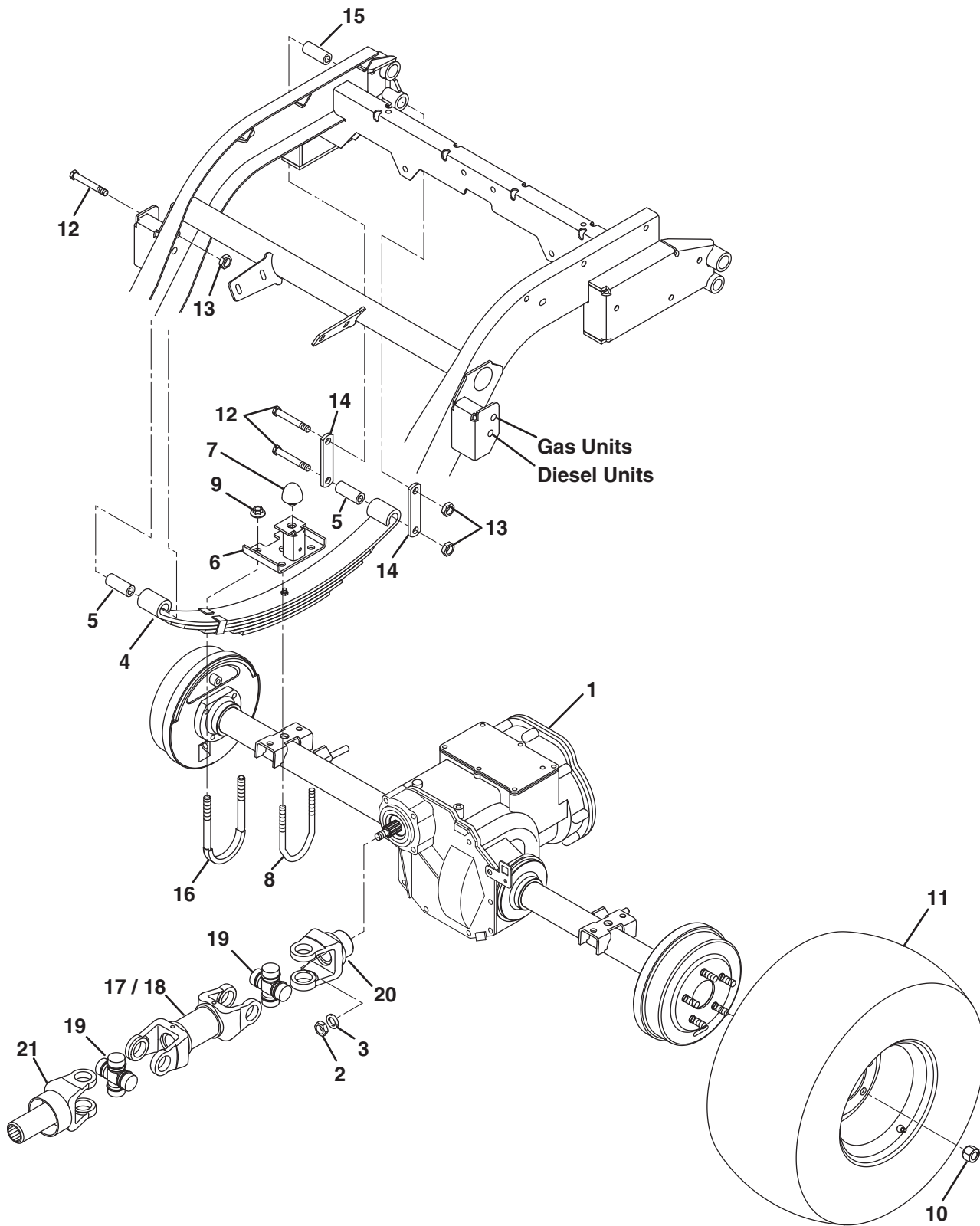
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	893404.7	1	Platform, 1 Ton Haulster	Standard Frame, Painted Black
1	893404G.7	1	Platform, Galvanized 1 Ton Haulster	Optional Galvanized Frame
2	892676	2	Taillight	
	822049	1	• Bulb, No. 1157	
	829630	1	• Connector, Male 4 Terminal	
	825886	3	• Terminal, 1/4 in. Male 14-16 AWG	
3	4139691	2	Fender, Flexible	
4	844156	2	Plate, Flap Mount	
5	450391	4	Flat Washer, M10	
6	2701210	1	Panel, Console	See 6.1
7	800026	7	Screw, 1/4-20 Truss Head	
8	4179842	1	Cover, Left Side Engine	
9	450398	6	Screw, M10-1.5 x 20 mm Flange	
10	450454	15	Nut, M10-1.5 Hex Flange	
11	452399	5	Screw, M10-1.5 x 25 mm Flange	
12	452402	4	Screw, M10-1.5 x 50 mm Flange	
13	452414	2	Screw, M12-1.75 x 70 mm Flange	
14	809156	2	Flat Washer, 1/2	
15	450455	2	Nut, M12-1.75 Hex Flange	
16	894314	1	Harness, Taillight	
	829630	1	• Connector, Male 4 Terminal	
	825886	4	• Terminal, 1/4 in. Male 14-16 AWG	
	829631	1	• Connector, Female 4 Terminal	
	825748	4	• Terminal, 1/4 in. Female 16 AWG	
	825878	2	• Terminal, 1/4 in. Female 16 AWG	2 Wire Terminal
17	800934	12	Screw, M6-1 x 16 mm Flange Head	
18	548175	8	Flat Washer, 1/4	
19	450452	12	Nut, M6-1 Hex Flange	
20	REF	1	Frame, Lower ROPS and Platform	See 15.1
21	838427	2	Decal, Cushman	
22	844847	2	Decal, Textron	

> Change from previous revision



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Frame, Main 4 Wheel	Standard Frame, Painted Black
1	N/S	1	Frame, Galvanized Main 4 Wheel	Optional Galvanized Frame
2	893145.7	1	ROPS, Lower	
3	REF	1	Front Suspension	See 17.1, 18.1 and 19.1
4	893525G01	2	Support, Platform	
5	452406	4	Screw, M10-1.5 x 90 mm Flange	Grade 8.8
6	452398	6	Screw, M10-1.5 x 20 mm Flange	Grade 8.8
7	450454	8	Nut, M10-1.5 Hex Flange	
8	450455	16	Nut, M12-1.75 Hex Flange	
9	452410	12	Screw, M12-1.75 x 30 mm Flange	
10	309067	2	Lockwasher, 1/2 Shakeproof	
11	452415	8	Screw, M12-1.75 x 80 mm Flange	
12	894581	1	Mount, Left Side Diesel Engine	Diesel Units
12	894998.7	1	Mount, Left Side Gas Engine	Gas Units
13	894582	1	Mount, Right Side Diesel Engine	Diesel Units
13	2701697.7	1	Mount, Right Side Gas Engine	Gas Units
14	842870	1	Angle, Support	
15	844647G01	1	Angle, Hold Down	
16	4185841	1	Battery Tray	
17	N/S	1	Battery	
18	844601	1	Battery, Clamp	
19	452389	1	Screw, M8-1.25 x 25 mm Flange	
20	4174281	1	Transmission Mount	Diesel Units
20	4179803	1	Transmission Mount	Gas Units
21	452405	2	Screw, M10-1.5 x 80 mm Flange	
22	809180	8	Flat Washer	
23	2701693.7	1	Bracket, Fuel System	Gas Units
24	601585	1	Box, Air	Diesel Units Only, See 21.1
25	800909	10	Nut, M12-1.5 Wheel Lug	
26	4139806G02	2	Wheel and Tire, USA Trail	
	4139793	1	• Rim, 10.00 x 7 in. Five Bolt	3.94 in. Bolt Circle
	N/S	1	• Tire, 20.5 x 8.00 - 10 USA Trail	Obtain Locally
	11657G3	1	• Valve Stem	
27	452389	4	Screw, M8-1.25 x 25 mm Flange	
28	450453	4	Nut, M8-1.25 Hex Flange	
29	810437	1	Clamp, Tube	
30	4145325	1	Bracket, Solenoid	Gas Units Only

> Change from previous revision

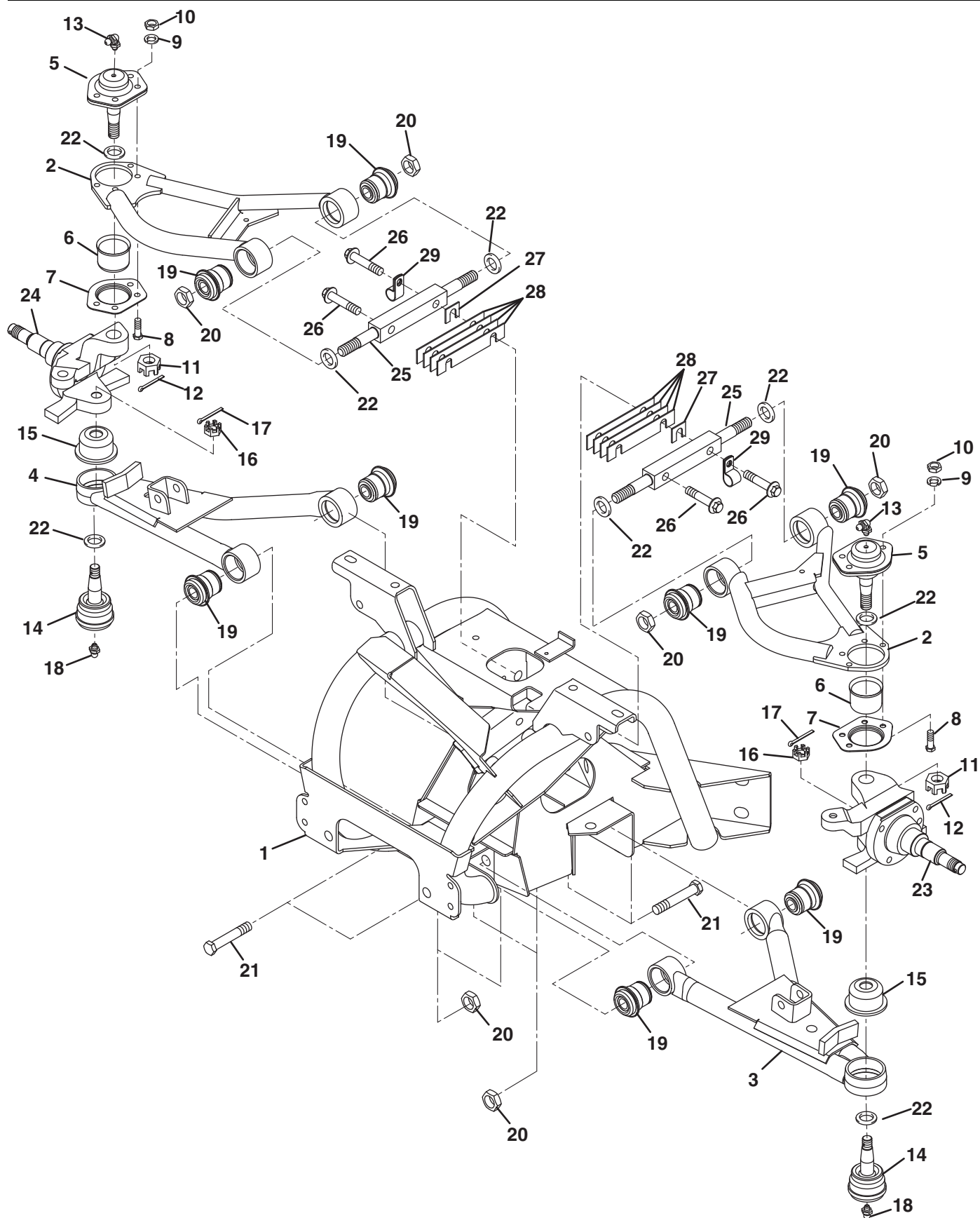


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	2701165	1	11.16:1 Rear Differential Assembly	See 39.1
2	800198	1	Locknut, 1/2-20	
3	809180	1	Flat Washer, 1/2	
4	893862	2	Spring, Leaf	
5	843238	2	• Bushing, Nylatron	
6	893613	2	Upstop	
7	813850	2	Bumper, Travel Limiting	
8	829044	4	U-Bolt, 2 x 5-1/4 in.	
9	548061	8	Nut, 7/16-14	
10	800909	10	Nut, M12-1.5 Wheel Lug	
11	4139806G02	2	Wheel and Tire, USA Trail	
	4139793	1	• Rim, 10.00 x 7 in. Five Bolt	3.94 in. Bolt Circle Obtain Locally
	N/S	1	• Tire, 20.5 x 8.00 - 10 USA Trail	
	11657G3	1	• Valve Stem	
12	311398	6	Screw, 1/2-13 x 3-1/2 in. Hex Head	
13	800602	6	Nut, 1/2-13 Nylon Insert	
14	843876	4	Shackle, Rear Spring	
15	843238	2	Bushing, Nylatron	
16	829045	2	U-Bolt, 2-1/2 in.	
17	4174288	1	Driveshaft, Complete	Diesel Engine
17	4144334	1	Driveshaft, Complete	Gas Engine, MT
17	4140071	1	Driveshaft, Complete	Gas Engine, AT
18	4174287	1	• Shaft, Drive	Diesel Engine
18	4144345	1	• Shaft, Drive	Gas Engine, MT
18	4140067	1	• Shaft, Drive	Gas Engine, AT
19	554663	2	• Cross and Bearing Kit	Includes Grease Fitting
20	4140069	1	• Yoke, Differential	
21	4140075	1	• Yoke, Transmission	Diesel Engine
21	4140072	1	• Yoke, Transmission	Gas Engine

> Change from previous revision

## 17.1 Front Control Arms

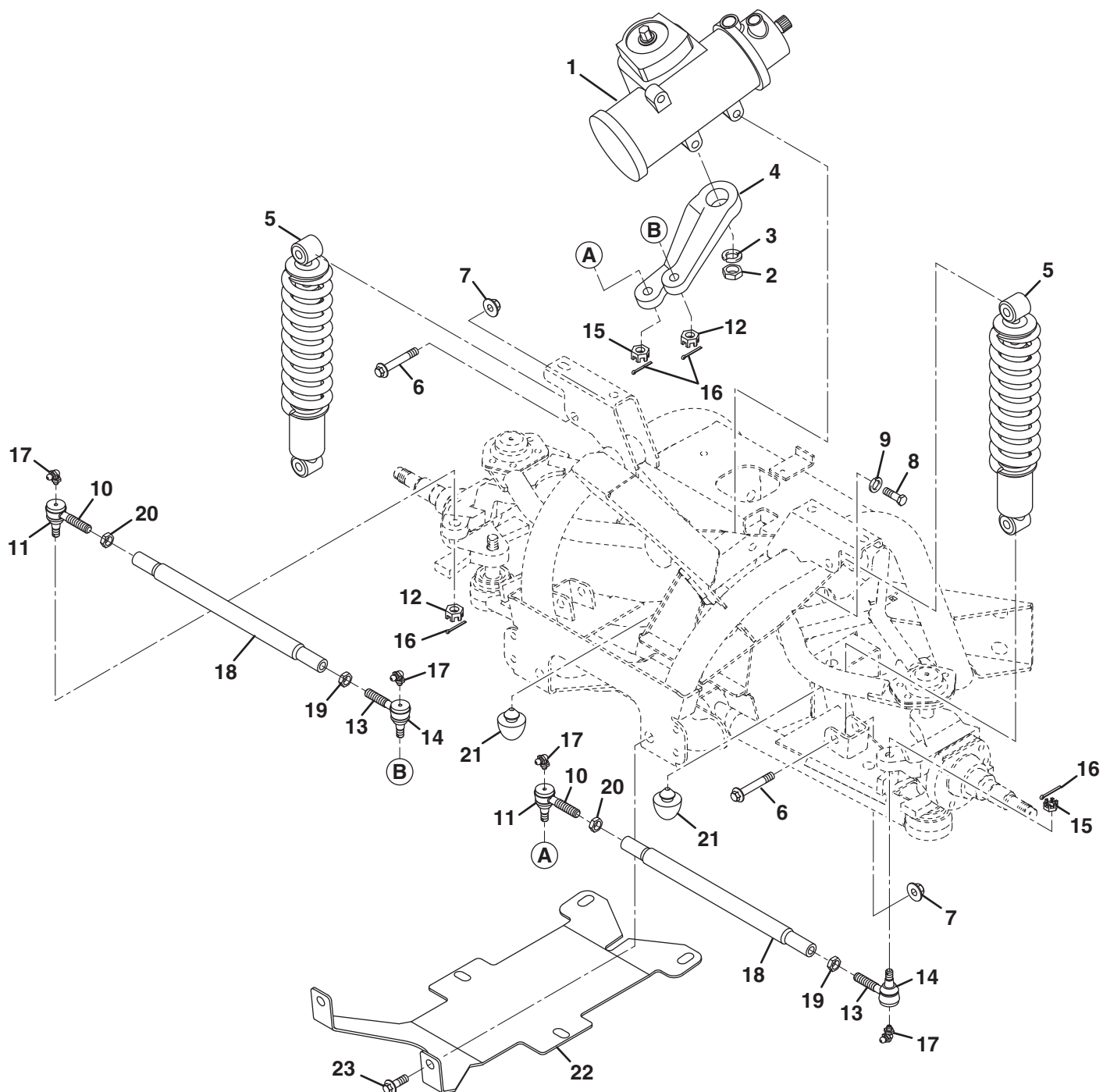
Serial No. All



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## 18.1 Steering Linkage

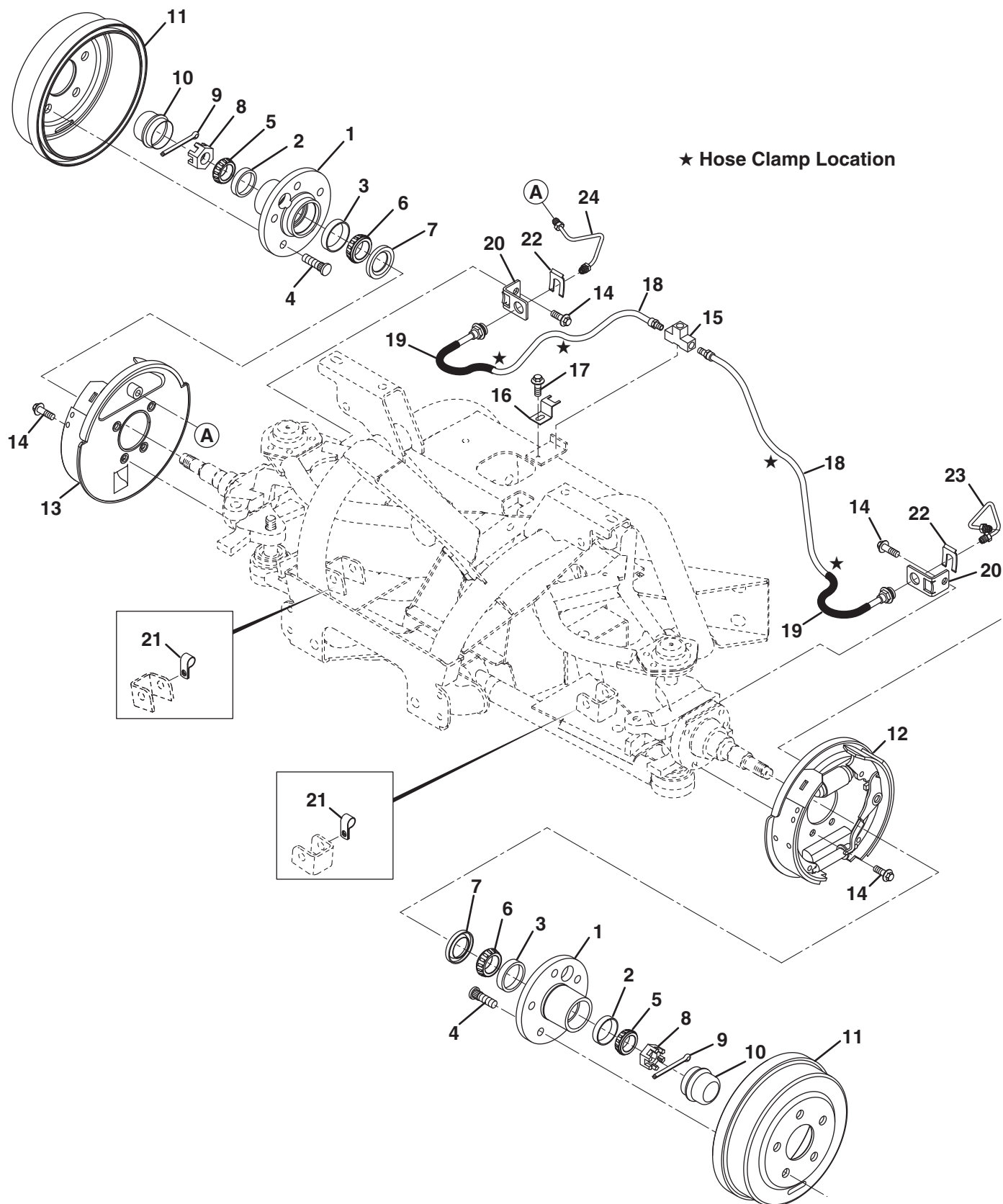
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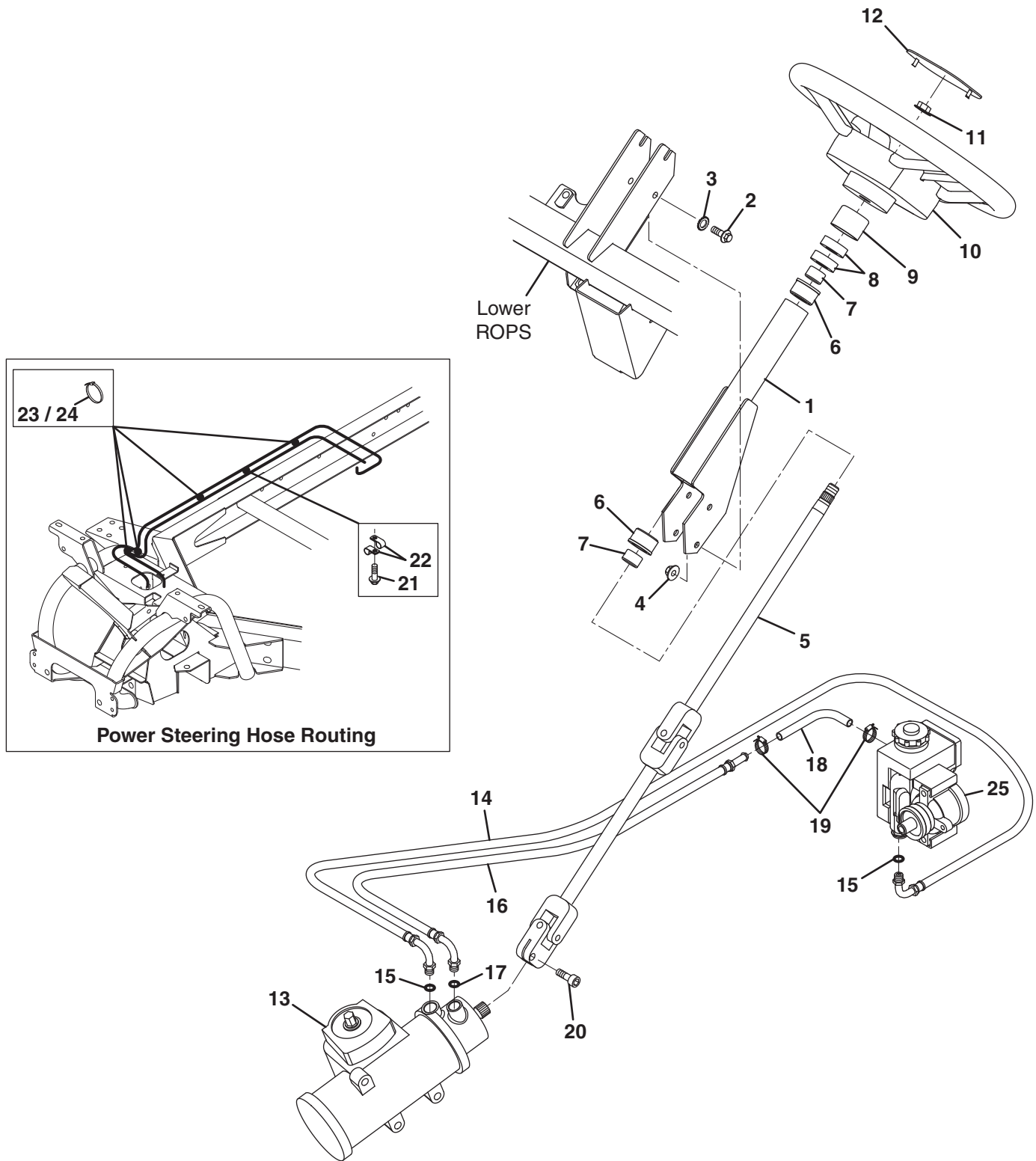
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	841255	1	Steering Gear	Grade 10.9
2	305134	1	• Nut, 7/8-14 Hex Jam	
3	308008	1	• Lockwasher, 7/8	
4	841336	1	Arm, Pitman	
5	894635	2	Strut Assembly	
6	452413	4	Screw, M12-1.75 x 60 mm Hex Head	
7	450455	4	Nut, M12-1.75 Hex Flange	
8	311392	3	Screw, 7/16-14 x 2 in. Hex Head	
9	303269	3	Lockwasher, 7/16	
10	889681	2	End, Left Hand Thread Tie Rod	
11	816586	1	• Retainer, Grease	
12	306825	1	• Nut, 7/16-20 Castle	
13	889682	2	End, Right Hand Thread Tie Rod	
14	816586	1	• Retainer, Grease	
15	306825	1	• Nut, 7/16-20 Castle	
16	304636	4	Cotter Pin, 1/8 x 1-1/8 in.	
17	831405	4	Grease Fitting	
18	841404	2	Tie Rod	
19	800485	2	Nut, 9/16-18 Left Hand Thread Jam	
20	302944	2	Nut, 9/16-18 Right Hand Thread Jam	
21	813850	2	Bumper, Travel Limiting	
22	842033	1	Plate, Skid	
23	452408	6	Screw, M10-1.75 x 20 mm	Grade 10.9

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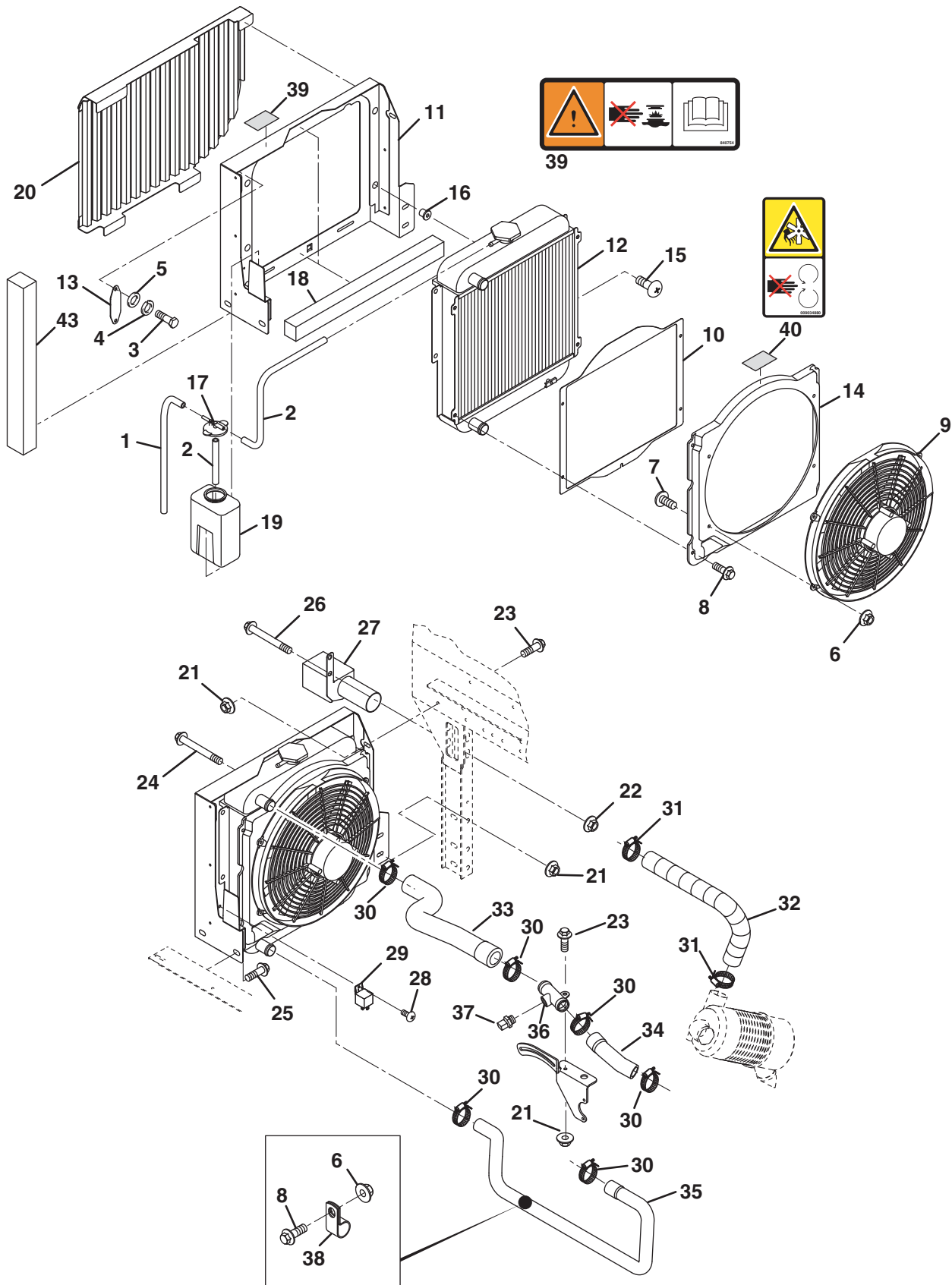
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	2702257.7	2	Front Hub	
2	808088	1	• Outer Bearing Cup	
3	814474	1	• Inner Bearing Cup	
4	800908	4	• Bolt, M12-1.5 x 42 mm Wheel	
5	385174	2	Outer Bearing Cone	
6	815403	2	Inner Bearing Cone	
7	817928	2	Seal, Grease	
8	2702247	2	Nut, 3/4-16 Castle	
9	304636	2	Cotter Pin, 1/8 x 1-1/8 in.	
10	817250	2	Cap, Grease	
11	841430	2	Brake Drum	
12	893585	1	Front Left Side Brake Assembly	
	894930	1	• Kit, Brake Cylinder	Replacement of Cylinder
	894931	1	• Kit, Brake Cylinder Repair	Repair of Cylinder
	894932	1	• Kit, Brake Shoe	Includes Left and Right sides
	894933	1	• Kit, Left Side Spring	
	894935	1	• Kit, Left Side Adjuster Repair	
13	893586	1	Front Right Side Brake Assembly	
	894930	1	• Kit, Brake Cylinder	Replacement of Cylinder
	894931	1	• Kit, Brake Cylinder Repair	Repair of Cylinder
	894932	1	• Kit, Brake Shoe	Includes Left and Right sides
	894934	1	• Kit, Right Side Spring	
	894936	1	• Kit, Right Side Adjuster Repair	
14	452398	10	Screw, M10-1.5 x 20 mm Hex Flange	Grade 8.8
15	841842	1	Tee, M10-1.0 Flare Union	
16	843418	1	Clamp, Tee	
17	452692	1	Screw, M6-1.0 x 12 mm Taptite	
18	841841	2	Hose, Brake	
19	2703081	2	Protector, Brake Hose	
20	842104	2	Bracket, Brake Tube	
21	810437	2	Clamp, Hose	
22	809137	2	Clip, Brake Hose Retaining	
23	2702217	1	Tube, Left Front Brake	
24	841839	1	Tube, Right Front Brake	

> Change from previous revision



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	893571	1	Tube, Steering Mount	See 18.1
2	800930	4	Screw, M8-1.25 x 16 mm Flange	
3	306799	4	Lockwasher, 5/16 External Tooth	
4	450453	4	Nut, M8-1.25 Flange	
5	893344	1	Shaft, Steering	
	887259	2	Bearing Assembly	
6	828590	1	• Housing, Bearing	
7	808060	1	• Bearing, Needle	
8	819923	2	Collar, Foam	
9	2700453	1	Cover, Steering Tube	
10	892228	1	Steering Wheel	
11	450457	1	Nut, M16-2 Flange	
12	840017	1	Cover, Steering Wheel	
13	841255	1	Gear, Steering	
14	843767	1	Hose, Power Steering Pressure	
15	111838	2	• O-Ring	
16	843768	1	Hose, Power Steering Return	
17	111838	1	• O-Ring	
18	840222	1	Hose, Formed	
19	830930	2	Clamp, Hose	
20	450739	1	Screw, M10-1.5 x 30 mm Socket	
21	800943	1	Screw, #10-14 x 5/8 in. Self Tapping	
22	809092	2	Clamp, Tube	
23	320107	3	Cable Tie, 7-1/2 in.	
24	823549	4	Cable Tie, 15-1/2 in.	
25	892534	1	Power Steering Pump with Reservoir	Secure hoses together Secure hoses to frame  See 26.1 or 27.1 for mounting. Service parts for pump are available at most automotive parts centers. Refer to 1991-1992 Buick Regal with a 3.8 liter V6 Engine. (Saginaw Pump # 26025515)
26	2700573	1	• Cap, Steering Reservoir	

> Change from previous revision

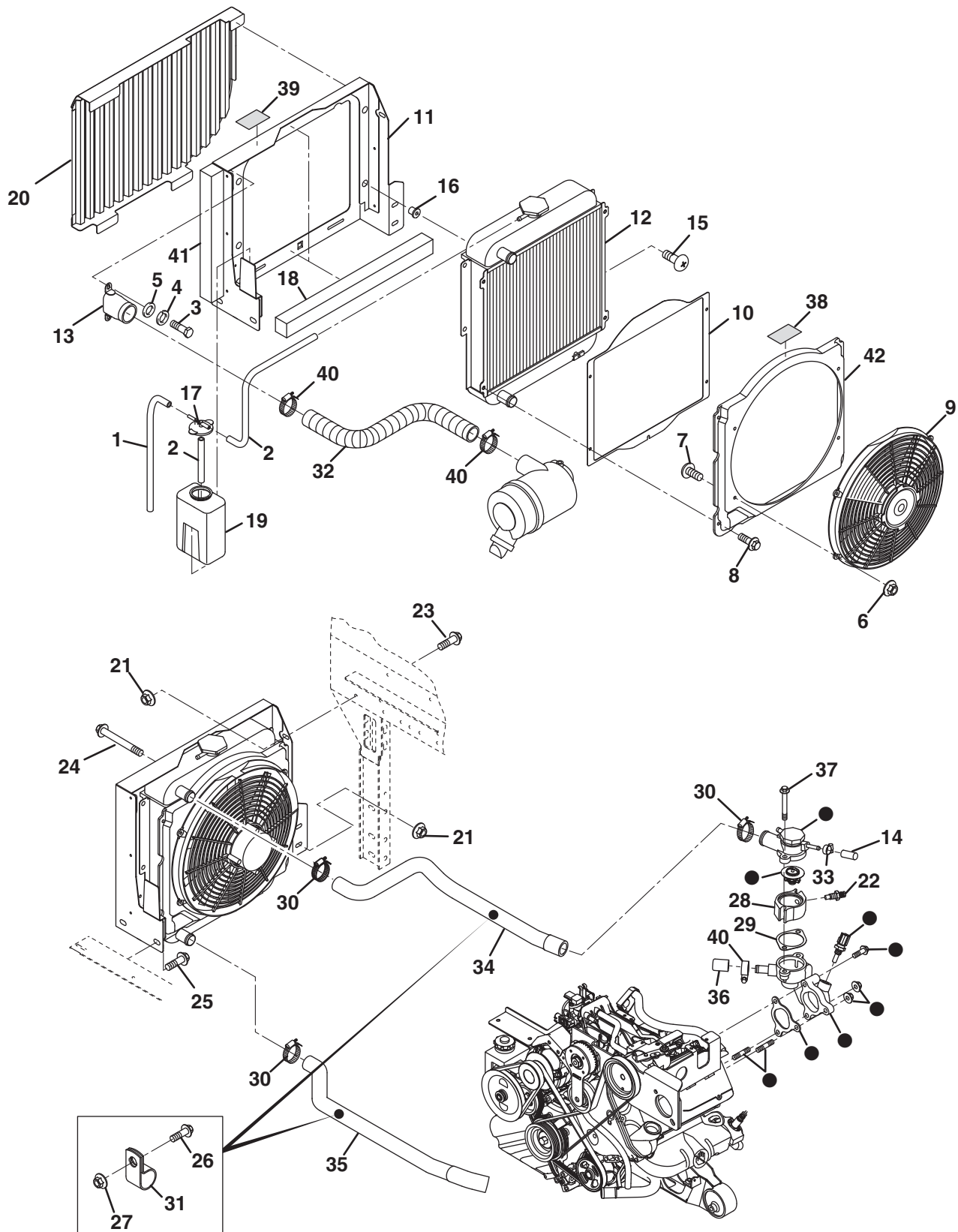


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	843862	AR	Tube, 1/4 in. I.D. Clear Vinyl	10 Foot Length, Cut to 12 in.
2	835805	AR	Hose, Radiator Overflow	
3	300646	2	Screw, 1/4-20 x 3/4 in. Hex Head	
4	306396	2	Lockwasher, 1/4	
5	308090	2	Flat Washer, 1/4	
6	450452	6	Nut, M6-1 Hex Flange	
7	450541	4	Screw, M6-1 x 16 mm Hex Flange	
8	452378	6	Screw, M6-1 x 20 mm Hex Flange	
9	4176887	1	Fan, 12 in. Hi-Perf Puller	
10	600992	1	Panel, Shroud	
11	601591	1	Frame, Radiator	
12	601592	1	Radiator	
13	601595	1	Plate, Blockoff	
14	4177253	1	Shroud, 12 in. Fan	
15	800177	4	Screw, 5/16-18 x 3/4 in.	
16	831846	4	Nut, Isolation	
17	833440	1	Cap, Overflow Bottle	
18	833512	2	Seal, Radiator Foam	
19	889050	1	Overflow Bottle	
20	4175402	1	Screen, Right Side	
21	450453	3	Nut, M8-1.25 Hex Flange	See 15.1 for Mounting Hardware
22	450454	2	Nut, M10-1.5 Hex Flange	
23	452388	2	Screw, M8-1.25 x 20 mm Hex Flange	
24	452395	1	Screw, M8-1.25 x 80 mm Hex Flange	
25	452398	2	Screw, M10-1.5 x 20 mm Hex Flange	
26	452405	2	Screw, M10-1.5 x 80 mm Hex Flange	
27	601585	1	Box, Air	
28	800146	1	Screw, #10 x 3/4 Thread Cutting	
29	2700867	1	Relay, 12V 70A	
30	820889	6	Clamp, Hose	
31	11391G7	2	Clamp, Hose	Not Shown, See 49.1
32	36092-G01	1	Hose, 2 in. x 16 in. High Temp Air	
33	4174820	1	Hose, Upper Radiator	
34	4174660	1	Hose, Upper	
35	4174563	1	Hose, Lower Radiator	
36	894348	1	Tube, Fan Switch	
37	17680-50F70	1	Switch, Fan	
38	825884	2	Clamp, Hose	
39	840754	1	Decal, Radiator Pressure Warning	
40	009034880	1	Decal, Fan Warning	
41	4179801	1	Harness, Radiator Fan Wiring	Not Shown, See 49.1
42	4174321	1	Harness, Kubota Engine Wiring	
43	4140090	1	Foam 1.25 x 1.00 x 13.50	Not Shown, See 49.1
44	4179800	1	Harness, Oil Cooler Fan Wiring	

> Change from previous revision

## 22.1 Gas Radiator

Serial No. 84058 All  
Serial No. 84059 All  
Serial No. 84060 All



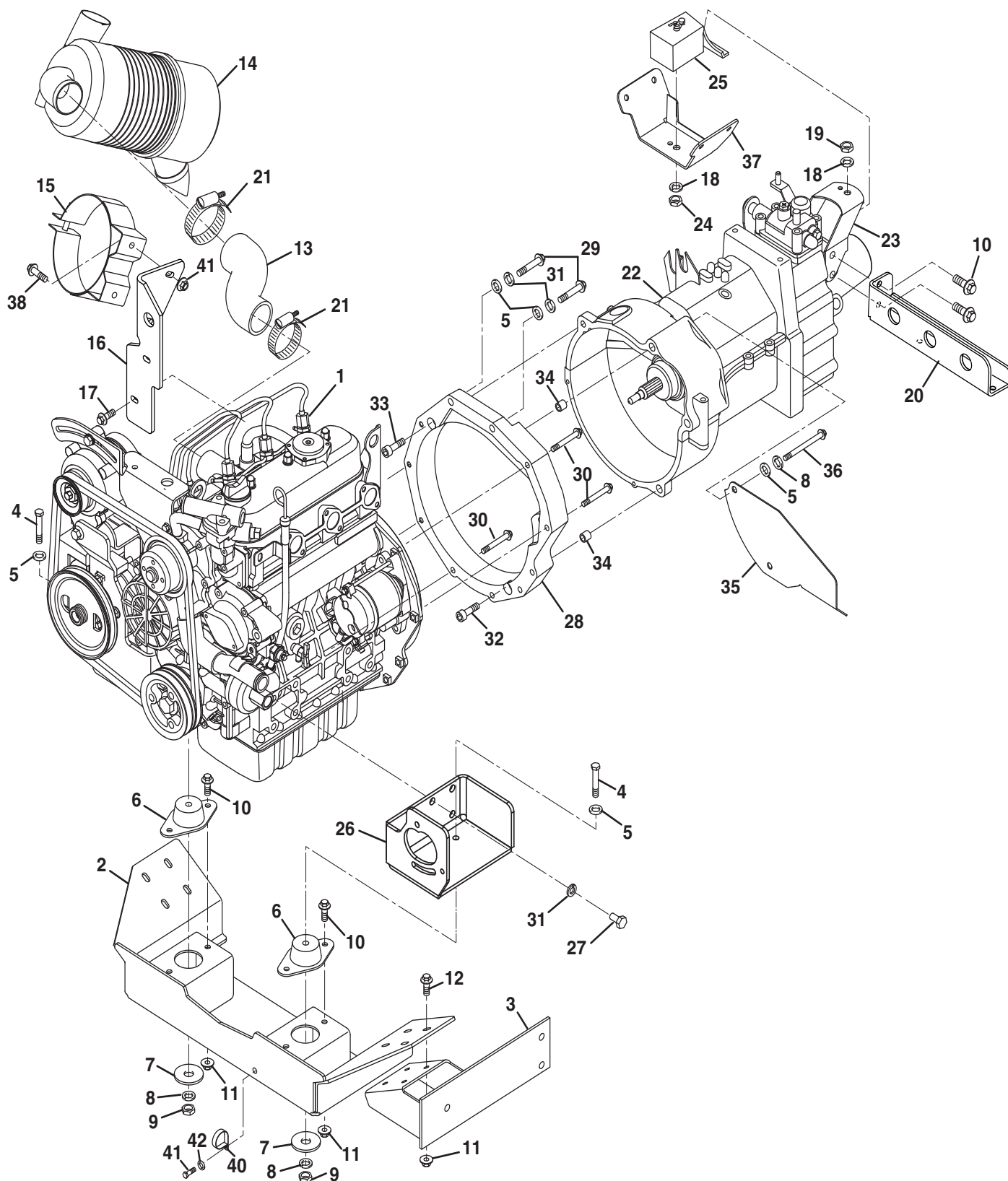


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	7033	AR	Tube, 1/4 in. I.D. Clear Vinyl	10 Foot Length, Cut to 12 in.
2	7162	AR	Hose, Radiator Overflow	
3	300646	2	Screw, 1/4-20 x 3/4 in. Hex Head	
4	306396	2	Lockwasher, 1/4	
5	308090	2	Flat Washer, 1/4	
6	450452	4	Nut, M6-1 Hex Flange	
7	450541	4	Screw, M6-1 x 16 mm Hex Flange	
8	452378	4	Screw, M6-1 x 20 mm Hex Flange	
9	4115033	1	Fan, 13 in. Radiator	
10	600992	1	Panel, Shroud	
11	601591	1	Frame, Radiator	
12	601592	1	Radiator	
13	888549	1	Connector, Hose	
14	845224	1	Cap, 1/4 x 1 in.	
15	800177	4	Screw, 5/16-18 x 3/4 in.	
16	831846	4	Nut, Isolation	
17	833440	1	Cap, Overflow Bottle	
18	833512	2	Seal, Radiator Foam	
19	889050	1	Overflow Bottle	
20	4175402	1	Screen, Right Side	
21	450453	3	Nut, M8-1.25 Hex Flange	
22	843857	1	Sender, Temperature	
23	452388	2	Screw, M8-1.25 x 20 mm Hex Flange	
24	452395	1	Screw, M8-1.25 x 80 mm Hex Flange	
25	452398	2	Screw, M10-1.5 x 20 mm Hex Flange	
26	548827	2	Screw, 1/4-20 x 1/2 in. Hex Flange	
27	548910	2	Nut, 1/4-20 Hex Flange	
28	2701442	1	Housing, Temperature Sender	
29	2701513	1	Gasket, Thermostat	
30	820889	4	Clamp, Hose	
31	2701108	2	Clamp, Hose	
32	36092G01	1	Hose, 2 in. x 16 in. High Temp Air	
33	825624	1	Clamp, 1/4 to 5/8 in. Worm Drive	
34	4139442	1	Hose, Upper	
35	4115400	1	Hose, Lower Radiator	
36	833715	1	Plug, Tube	
37	452392	2	Screw, M8-1.25 x 50 mm Flange	
38	009034880	1	Decal, Fan Warning	
39	840754	1	Decal, Radiator Pressure Warning	
40	11391G7	3	Clamp, Hose	
41	4140090	2	Foam	
42	601596	1	Fan Shroud	
●	Included with engine. See engine parts catalog for service			

> Change from previous revision

## 23.1 Diesel Engine and Transmission Mounting

Serial No. 84065 All

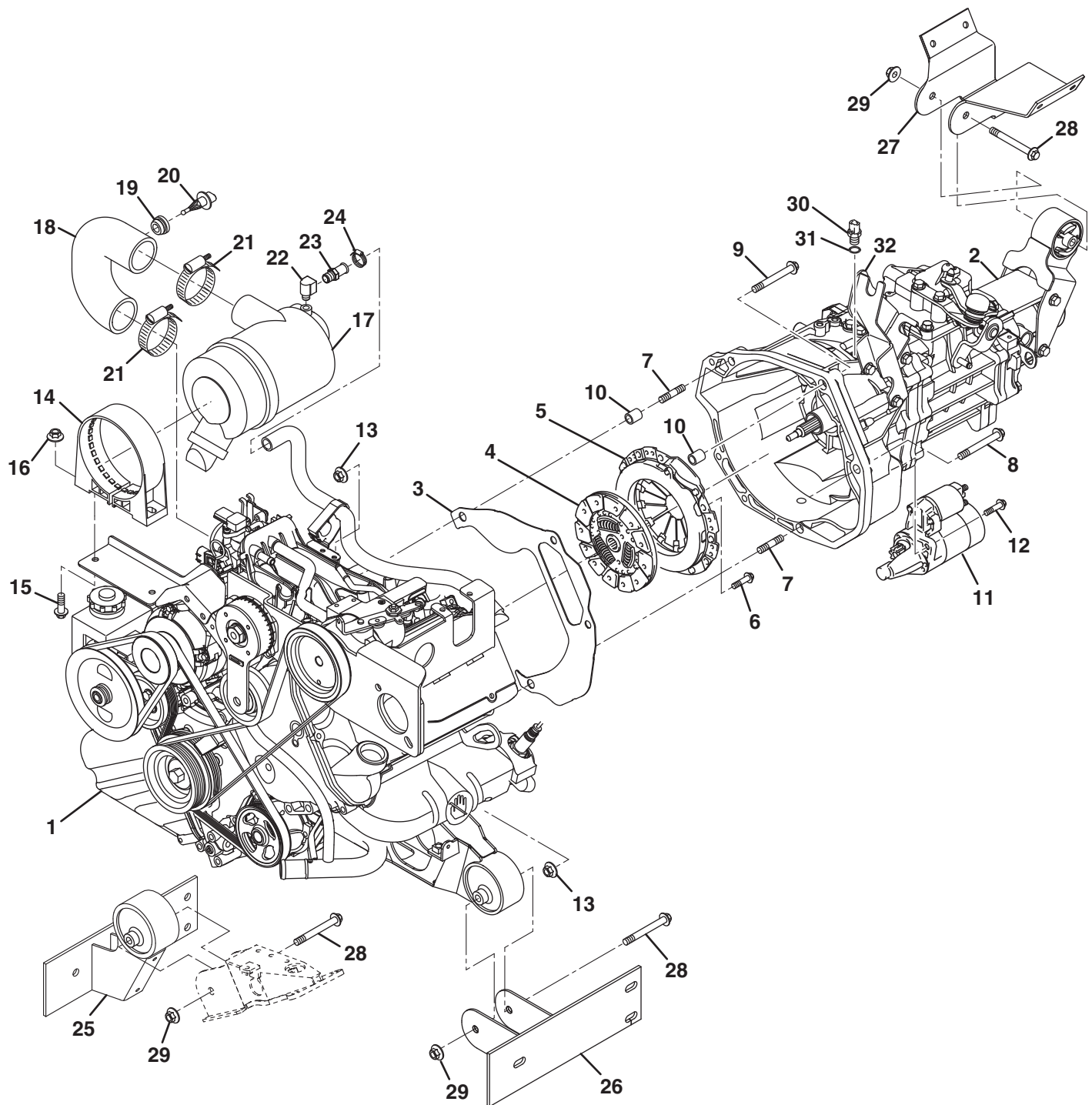


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	REF	1	Engine and Clutch	See 26.1
2	4192125	1	Frame, Engine Mount	
3	REF	1	Mount, Engine	
4	306836	2	Screw, 3/8-16 x 2-1/4 in. Hex Head	
5	306981	6	Flat Washer, 3/8	
6	841885	2	Mount, Engine Isolation	
7	809174	2	Washer, Isolator	
8	120177	4	Lockwasher, 3/8	
9	306562	2	Nut, 3/8-16 Hex	
10	452388	6	Screw, M8-1.25 x 20 mm Flange	
11	450453	14	Nut, M8-1.25 Flange	
12	452389	13	Screw, M8-1.25 x 25 mm Flange	
13	4174620	1	Hose, Intake	
14	3001965	1	Air Filter	
	5000919	1	• Element, Air Filter	See 14.1, Left shown, right similar
	5000920	1	• Cover	
	5000921	1	• Valve	
15	3001388	1	Bracket, Air Filter	
16	4174285	1	Bracket, Air Filter Mount	
17	452390	3	Screw, M8-1.25 x 30 mm Flange	
18	450412	2	Lockwasher, M10	
19	800571	1	Nut, M10-1.25 Hex	
20	4191140	1	Bracket, Muffler	
21	11391G7	2	Clamp, Hose	
22	894066	1	Transmission Assembly, MT5	
23	11741-85200	1	• Support, Transmission	Includes Clutch Disc and Cover
24	08310-00103	1	• Nut	
25	11710-77100	1	• Bracket, Rear Mount	
26	800547	4	Bolt M10-1.25 x 20mm Hex Head	
27	452388	4	Screw, M8 - 1.25 x 20mm Hex Flange	
28	4173062	1	Adapter, Transmission	
29	838602	2	Screw, M10-1.25 x 50 mm Flange	
30	452392	2	Screw, M8-1.25 x 60 mm Flange	
31	303269	6	Lockwasher, 5/16	
32	800949	1	Screw, M10-1.25 x 50 mm Flange	
33	800948	1	Screw, M10-1.25 x 35 mm Flange	
34	842961	2	Sleeve, Alignment	
35	4174286	1	Cover, Starter Hole	
36	548849	2	Screw, 3/8-16 x 4-3/4 in. Hex Head	See 14.1
37	4174281	1	Mount, Transmission	
38	400184	2	Screw, 5/16-18 x 3/4 in. Hex Head	
39	4174200	1	Mount, Hydraulic Pump	
40	825884	1	Clamp	
41	400108	1	Screw, 1/4-20 x 3/4" Hex Head	
41	452004	1	Flat Washer, 1/4	

> Change from previous revision

## 24.1 Gas Engine and MT Mounting

Serial No. 84058 All  
Serial No. 84060 All

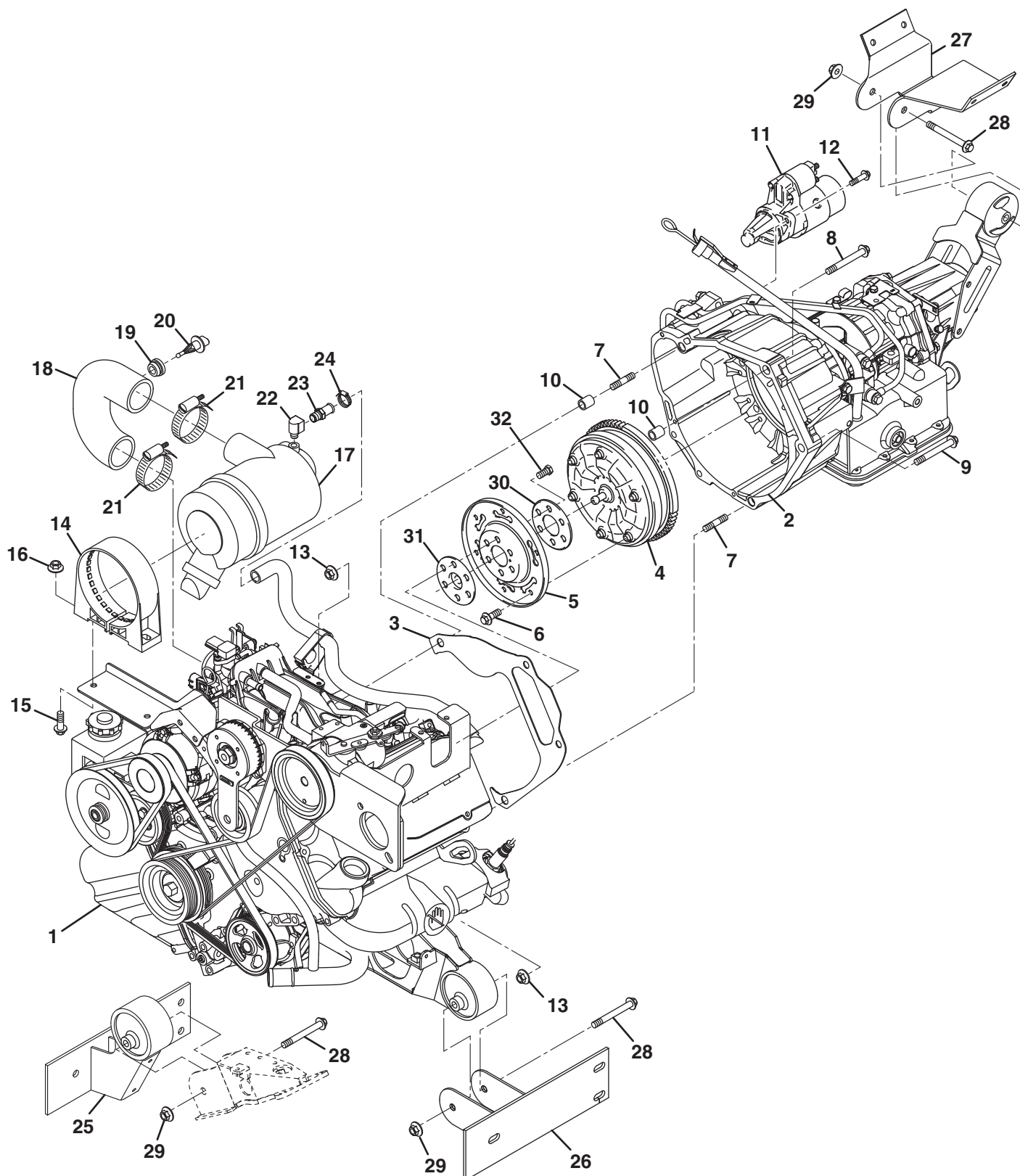


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	REF	1	Engine Assembly	See 27.1
2	N/S	1	Manual Transmission	Order with engine
3	4140899	1	Plate, Clutch Housing	
4	2702548	1	Clutch Disc	
5	4117900	1	Pressure Plate	
6	2702547	6	Screw, M8-1.25 x 16 mm Lockwasher	
7	2702688	2	Stud, M10-1.25 x 65 mm	
8	2702687	1	Screw, M10-1.25 x 75 mm Flange	
9	2702686	1	Screw, M10-1.25 x 55 mm Flange	
10	2702690	2	Alignment Pins	
11	4148360	1	Starter, Manual Transmission	
12	2702470	2	Screw, M8-1.25 x 30 mm Hex Flange	
13	2702689	2	Nut, M10-1.25 Hex Flange	
14	842915	1	Bracket, Air Filter	
15	452389	2	Screw, M8-1.25 x 25 mm Hex Flange	
16	450453	2	Nut, M8-1.25 Hex Flange	
17	4118027	1	Air Filter	
	840352	1	• Element, Air Filter	
18	4139211	1	Hose, Engine Air Intake	
19	4140617	1	Grommet	
20	4140618	1	Sensor, Air Temp	
21	11391G7	2	Clamp, 2-3/4 in. Worm Drive	
22	4118423	1	Elbow, 1/4 NPT Street	
23	4118422	1	Hose Fitting, 1/4 NPT Brass	
24	2702484	1	Clamp	
25	894998.7	1	Left Engine Mount	See 15.1
26	2701697.7	1	Right Engine Mount	See 15.1
27	4179803	1	Transmission Mount	See 15.1
28	452405	3	Screw, M10--1.5 x 80 mm Flange	
29	450454	3	Nut, M10-1.5 Hex Flange	
30	4138391	1	Switch, Reverse	
31	4148082	1	O-Ring	
32	4142772	1	Bracket, Cable Mount	

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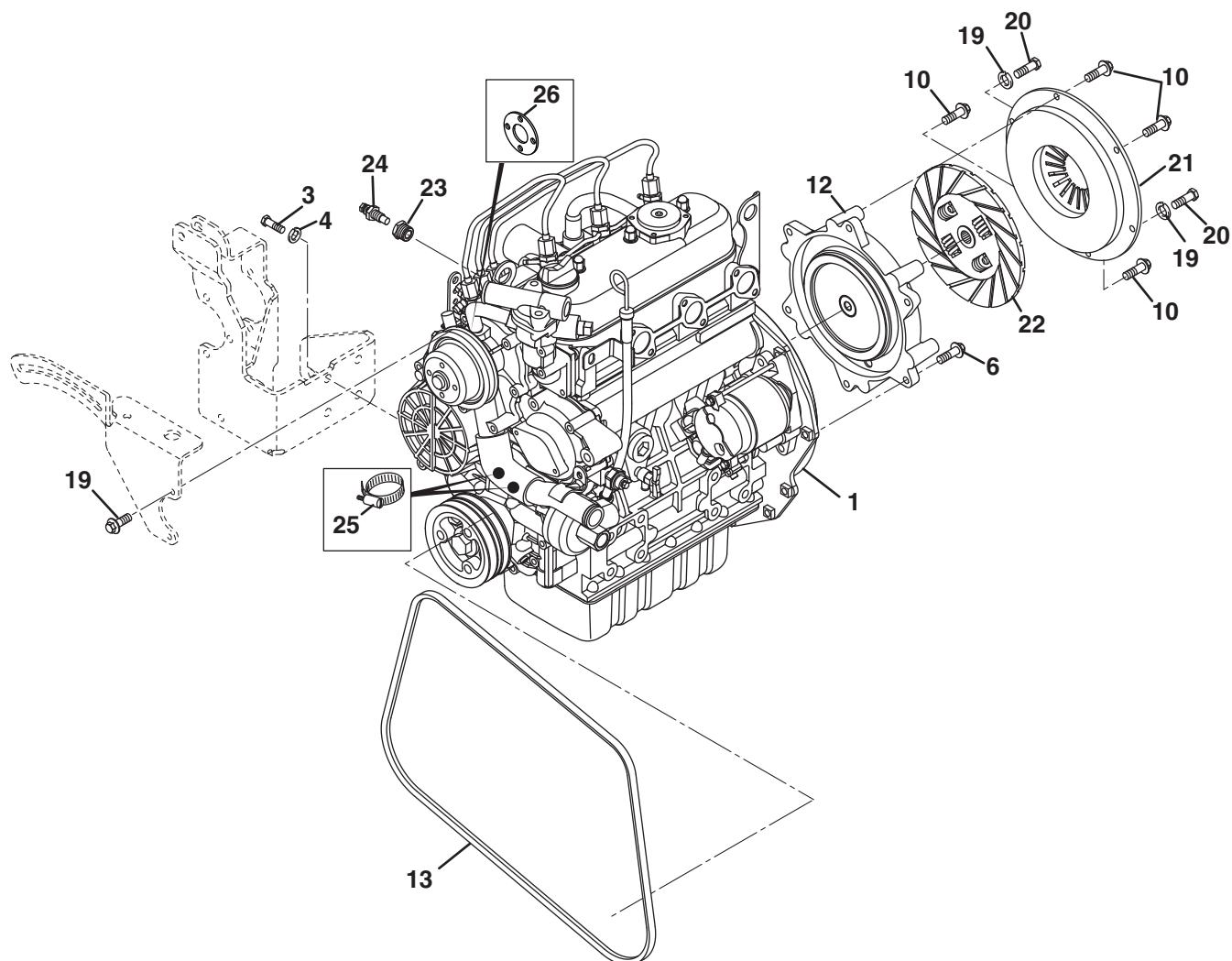
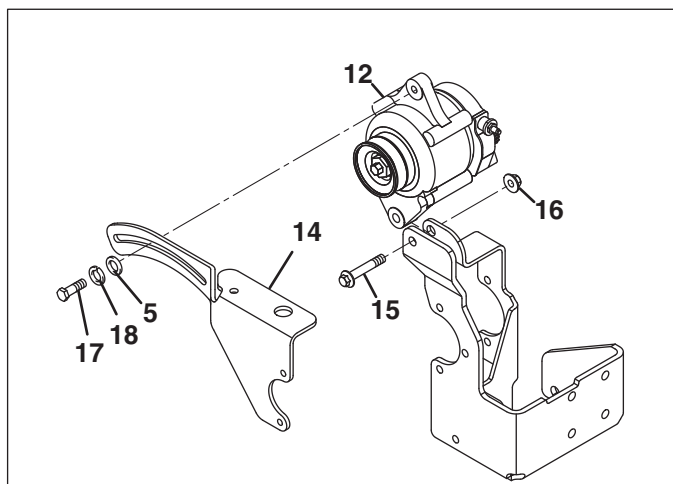
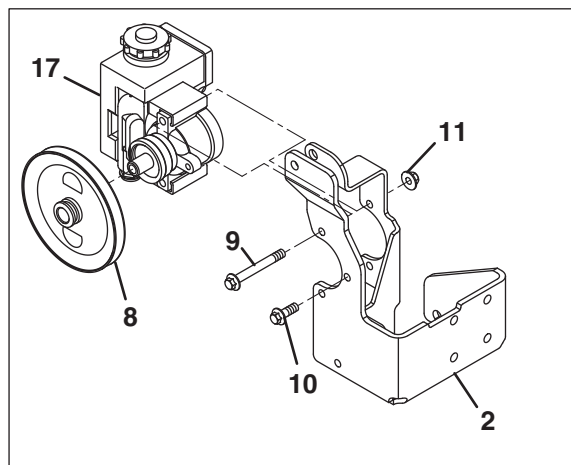
## 25.1 Gas Engine and AT Mounting

Serial No. 84059 All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	REF	1	Engine Assembly	See 27.1
2	4148212	1	Automatic Transmission	
3	4140900	1	Plate, Transmission Housing	
4	4148213	1	Torque Converter	
5	4120097	1	Plate, Drive	
6	4148065	6	Screw, M8-1.25 x 9.5 mm Flange	
7	2702688	2	Stud, M10-1.25 x 65 mm	
8	2702686	1	Screw, M10-1.25 x 55 mm Flange	
9	2702756	1	Screw, M10-1.25 x 50 mm Flange	
10	2702690	2	Alignment Pins	
11	4148361	1	Starter, Automatic Transmission	
12	2702470	2	Screw, M8-1.25 x 30 mm Hex Flange	
13	2702689	2	Nut, M10-1.25 Hex Flange	
14	842915	1	Bracket, Air Filter	
15	452389	2	Screw, M8-1.25 x 25 mm Hex Flange	
16	450453	2	Nut, M8-1.25 Hex Flange	
17	4118027	1	Air Filter	
	840352	1	• Element, Air Filter	
18	4139210	1	Hose, Engine Air Intake	
19	4140617	1	Grommet	
20	4140618	1	Sensor, Air Temp	
21	11391G7	2	Clamp, 2-3/4 in. Worm Drive	
22	4118423	1	Elbow, 1/4 NPT Street	
23	4118422	1	Hose Fitting, 1/4 NPT Brass	
24	2702484	1	Clamp	
25	894998.7	1	Left Engine Mount	See 15.1
26	2701697.7	1	Right Engine Mount	See 15.1
27	4179803	1	Transmission Mount	See 15.1
28	452405	3	Screw, M10--1.5 x 80 mm Flange	
29	450454	3	Nut, M10-1.5 Hex Flange	
30	4120098	1	Plate, Rear Drive	
31	4120096	1	Flange, Drive Plate	
32	4119955	6	Screw, M10-1.25 x 18.5 mm	

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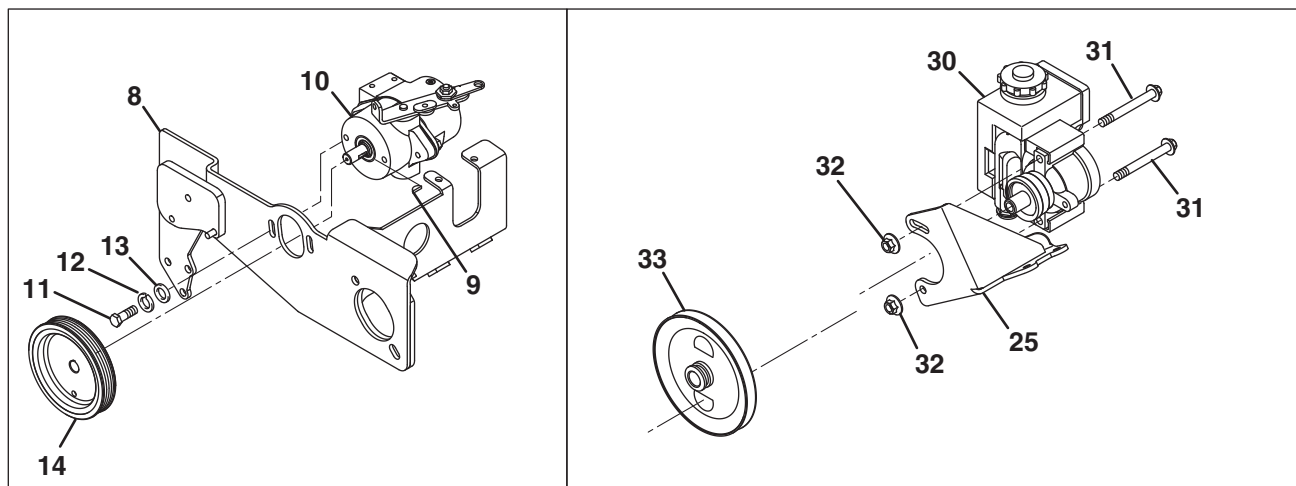
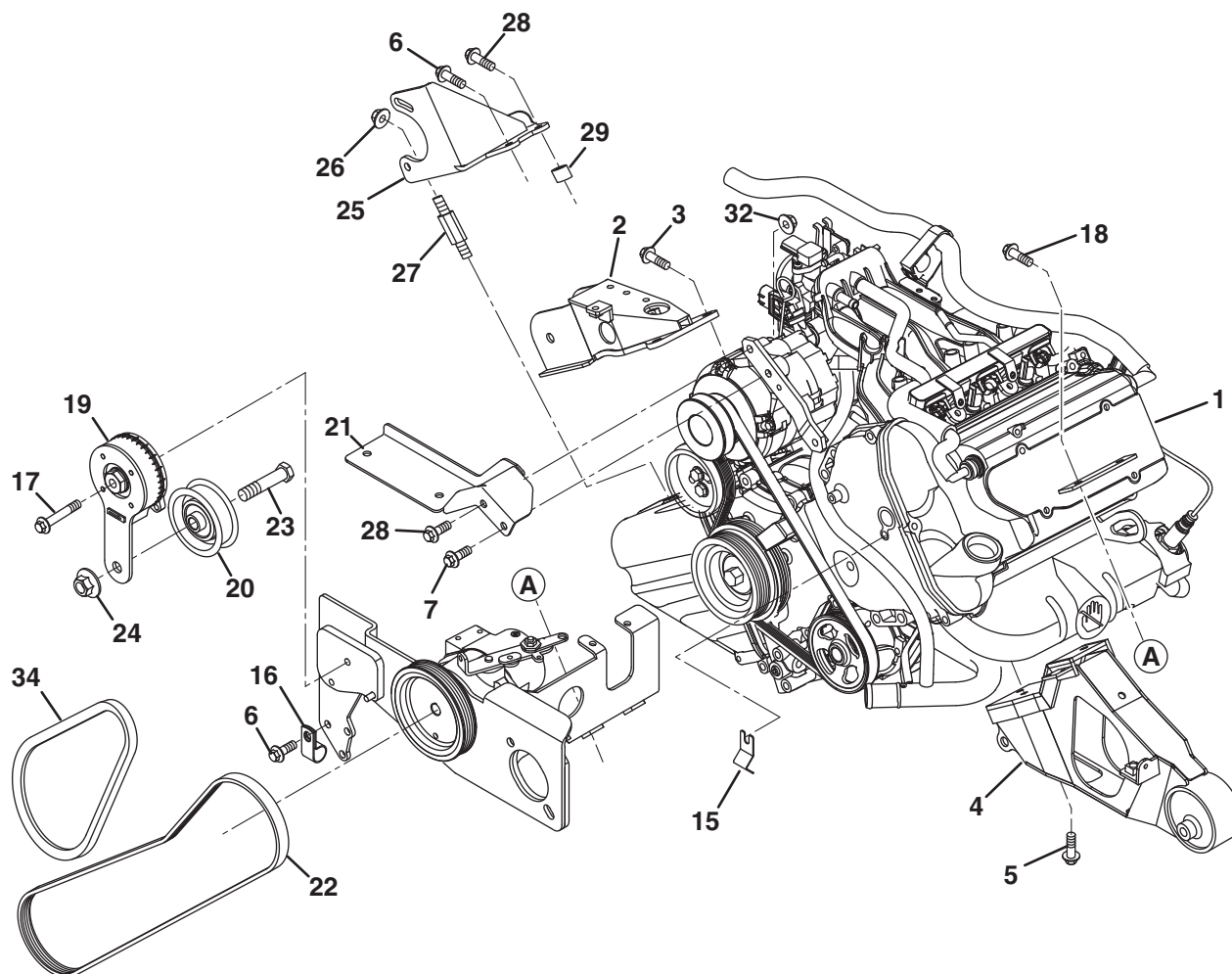




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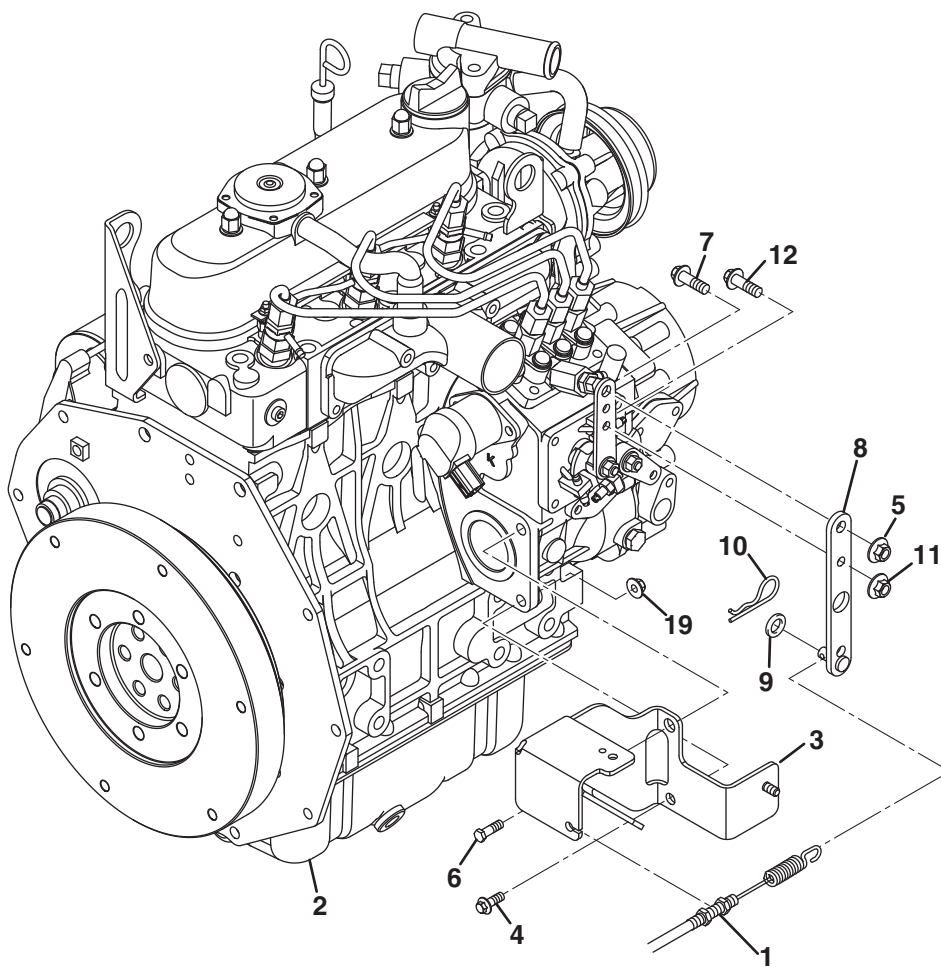
## 27.1 Suzuki Gas Engine

Serial No. 84058 All  
Serial No. 84059 All  
Serial No. 84060 All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	N/S	1	Suzuki K6 Engine	See Engine Parts Manual
	2701908	1	• Oil Filter	
	4140919	1	• Belt, Water Pump and Alternator	
2	4120017	1	• Right Side Engine Mount	
3	4140905	3	• Bolt, Right Side Engine Mount	
4	4120018	1	• Left Side Engine Mount	
5	2701827	4	• Bolt, Left Side Engine Mount	
6	2702469	4	• Bolt	
7	830425	AR	Fuel Hose, 1/4 in.	25 Foot Roll, Cut to 24 Inches
8	4188387	1	Bracket, Governor	<b>See 32.1</b>
9	2702249	1	Key, Woodruff 1/8 x 1/2 in.	
10	4141425	1	Governor	<b>See 31.1</b>
11	306450	2	Screw, 5/16-18 x 3/4 in. Hex Head	
12	306325	2	Lockwasher, 5/16	
13	548155	2	Flat Washer, 5/16	
14	4139288	1	Pulley, 4 Groove Micro-V 4.4 in. Dia.	Includes two set screws
15	4146490	1	Plate, Hose Clamp	
16	831225	1	Clamp, Hose	
17	4150138	1	Screw, 3/8-16 x 2-1/4 in. Hex Flange	
18	548971	2	Screw, 5/16-18 x 5/8 in. Hex Flange	
19	4143072	1	Tensioner, Rotary	
20	4144332	1	Pulley, 2-3/4 in. Idler	
21	4140241	1	Bracket, Air Cleaner	
22	4142186	1	Belt, 45.3 in. Micro-V	
23	312176	1	Screw, 1/2-13 x 1-3/4 in. Hex Head	
24	800602	1	Nut, 1/2-13 Nylon Insert	
25	4139259	1	Bracket, Power Steering Pump	
26	450452	1	Nut, M6-1 Hex Flange	
27	4147588	1	Stand Off, M6-1	
28	452389	2	Screw, M8-1.25 x 25 mm Hex Flange	
29	4140264	1	Spacer, 7/16 x 25/64 in.	
30	REF	1	Pump, Power Steering	<b>See 20.1</b>
31	452395	2	Screw, M8-1.25 x 80 mm Hex Flange	
32	450453	3	Nut, M8-1.25 Hex Flange	
33	600993	1	Pulley, 5.80 in. Diameter	
34	4139265	1	Belt, 7/16 x 26-1/2 in. V	Alternator and Power Steering

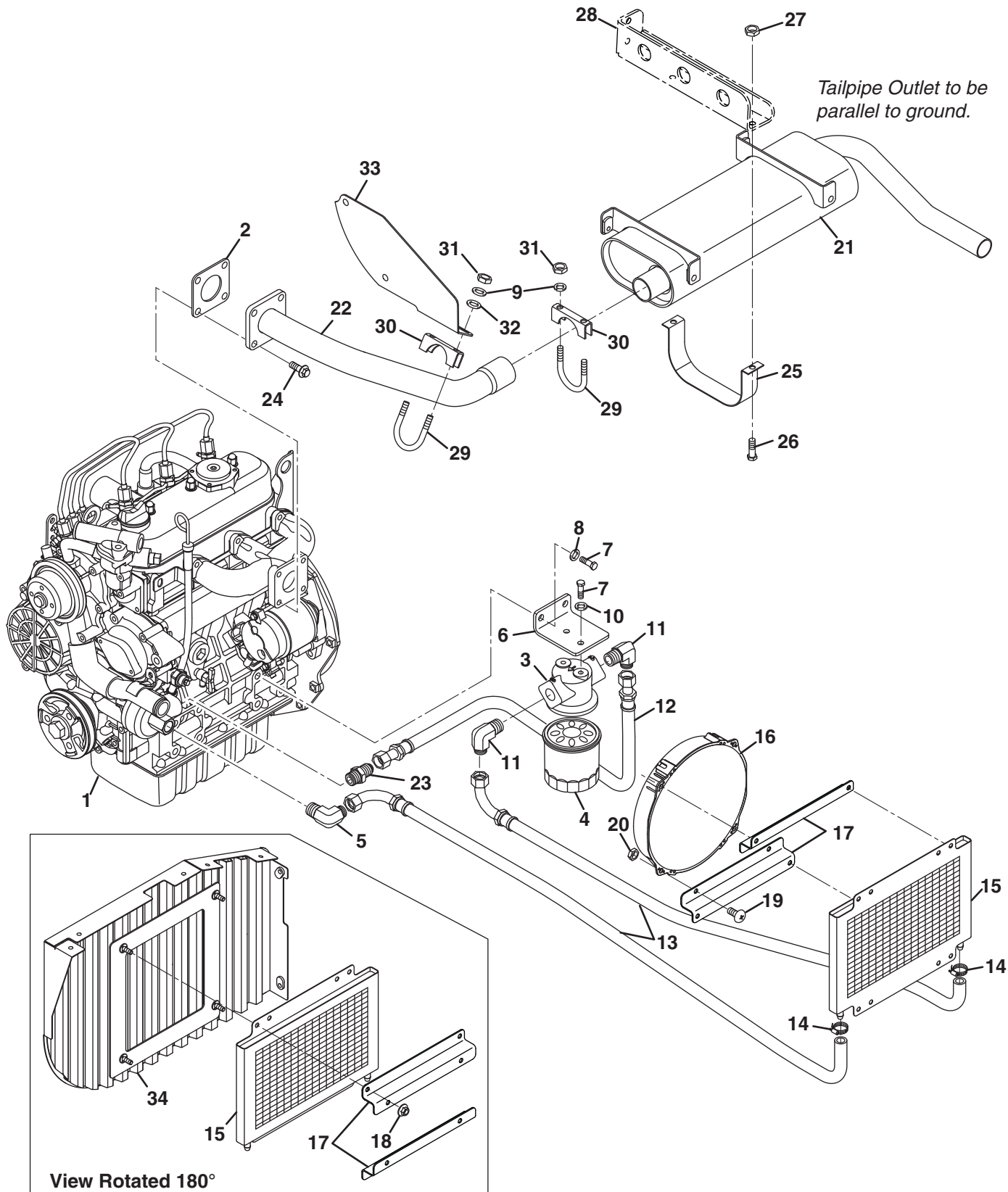
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Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	2703683	1	Throttle Cable	See 5.1 for other end of cable
2	REF	1	Kubota Diesel Engine	See 26.1
3	4174720	1	Bracket, Throttle	
4	452390	1	Screw, M8-1.25 x 30 mm Flange	
5	450453	2	Nut, M8-1.25 Flange	
6	800547	1	Screw, M8-1.25 x 16 mm Hex Head	
7	452388	1	Screw, M8-1.25 x 20 mm Flange	
8	4175021	1	Lever, Throttle	
9	103867	1	Flat Washer, 5/16	
10	821164	1	Hair Pin	
11	450452	1	Nut, M6-1 Flange	
12	452738	1	Screw, M6-1 x 20 mm Flange	

> Change from previous revision

## 29.1 Diesel Engine Exhaust and Remote Oil Filter

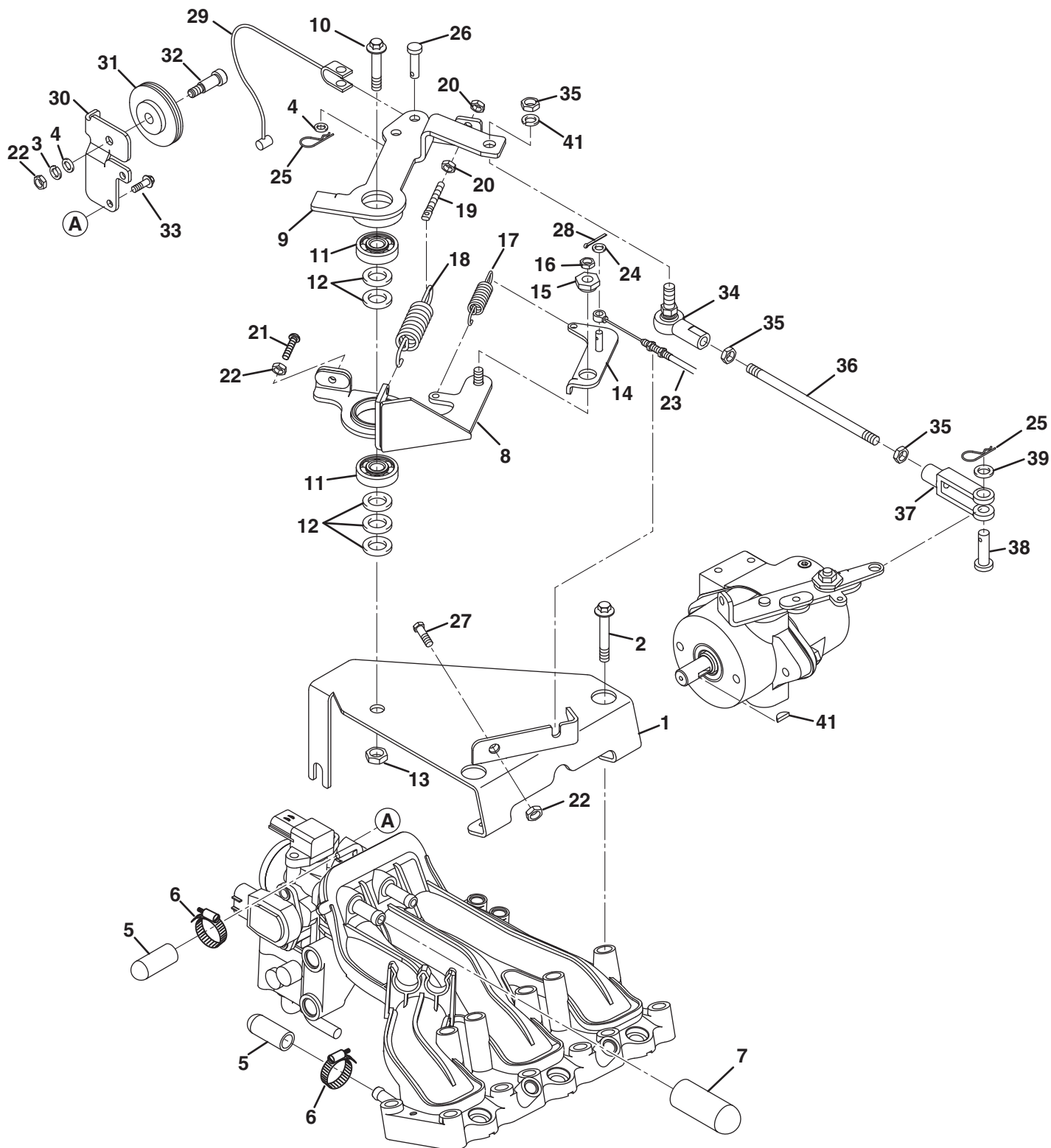


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	REF	1	Kubota Engine	See 26.1
2	553020	1	• Gasket, Exhaust	
3	4183634	1	• Head, Remote Filter	
4	4113986	1	• Engine Oil Filter	
5	4190701	1	Fitting, 90°	
6	4174290	1	Bracket, Remote Filter	
7	800547	4	Screw, M10-1.25 x 20 mm Hex Head	
8	303269	2	Lockwasher, 7/16	
9	306325	4	Lockwasher, 5/16	
10	120177	2	Lockwasher, 3/8	
11	4175620	2	Fitting, 90°	
12	4175561	1	Hose, Remote Oil Filter	
13	4175562	2	Hose, Remote Oil Cooler	
14	48540-01	2	Clamp, Hose	
15	4176960	1	Remote Oil Cooler	
16	4177560	1	Fan, 7-1/2 in. Push	
17	4185240	2	Bracket, Fan Mount	
18	548910	4	Nut, 1/4-20 Hex Flange	
19	800017	4	Screw, 1/4-20 x 1 in. Pan Head	
20	443102	4	Nut, 1/4-20 Hex	
21	4179161	1	Muffler	
22	4174560	1	Tube, Exhaust Inlet	
23	4190700	1	Fitting, Straight	
24	452389	4	Screw, M8-1.25 x 25 mm Flange	
25	838295.8	1	Strap, Muffler Hanger	
26	450193	2	Screw, M8-1.25 x 30 mm Hex Head	
27	450378	2	Locknut, M8-1.25	
28	REF	1	Bracket, Muffler	See 23.1
	841982	2	Clamp, 1-1/2 in. Exhaust	
29	N/S	1	• U-Bolt	
30	N/S	1	• Bracket	
31	N/S	2	• Nut, 5/16-18 Hex	
32	103867	2	Flat Washer, 5/16	
33	REF	1	Cover, Starter Hole	See 23.1
34	REF	1	Left Side Screen	See 14.1

> Change from previous revision

## 30.1 Governor Linkage

Serial No. 84058 All  
Serial No. 84059 All  
Serial No. 84060 All





Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4139208	1	Plate, Governor	Included with Engine
2	4141031	2	Bolt, Intake Manifold	
3	306396	1	Lockwasher, 1/4	
4	308090	1	Flat Washer, 1/4	
5	845224	2	Plug, Tube	
6	825624	2	Clamp, 1/4 in. to 5/8 in. Worm Drive	
7	4144145	1	Plug, 3/8 x 1 in. Tube	
8	2700540	1	Lever, Governor	
9	2700859	1	Lever, Governor Arm	
10	01116G01	1	Screw, M10-1.5 x 40 mm Hex Flange	
11	830140	2	Ball Bearing	
12	306981	5	Flat Washer, 3/8	
13	450454	1	Nut, M10-1.5 Hex Flange	
14	2701129	1	Arm, Throttle	
15	835271	1	Nut, Governor	
16	130728	3	Nut, 1/4-20 Hex Jam	
17	2700335	1	Spring, Governor	
18	2700334	1	Spring, Governor	
19	111893	1	Screw, #10-32 Special	
20	2702244	2	Nut, #10-32 Hex	
21	800024	1	Screw, 1/4-20 x 1-1/2 in. Truss Head	See 4.1
22	306375	3	Nut, 1/4-20 Hex	
23	2703684	1	Throttle Cable	
24	308089	1	Flat Washer, M6	
25	821164	2	Hair Pin, 1/4 x 1-1/8 in.	
26	818395	1	Clevis Pin, 1/4 x 1/2 in.	
27	302288	1	Screw, 1/4-20 x 1 in.	
28	306372	1	Cotter Pin, 3/32 x 1/2 in.	
29	4139209	1	Cable, Throttle	
30	2701510	1	Bracket, Throttle Cable	
31	843013	1	Pulley, Governor	Part of Engine
32	800927	1	Shoulder Bolt, 1/4-20 x 5/8 in.	
33	REF	2	Bolt	
34	831586	1	Ball Joint	
35	306320	3	Nut, 5/16-24 Hex	
36	4139210	1	Rod, Governor	
37	810722	1	Yoke	
38	806703	1	Clevis Pin, 5/16 x 31/32 in.	
39	103867	1	Flat Washer, 5/16	
40	306325	1	Lockwasher, 5/16 Special	
41	2702249	1	Woodruff Key .12 x .50 PS	

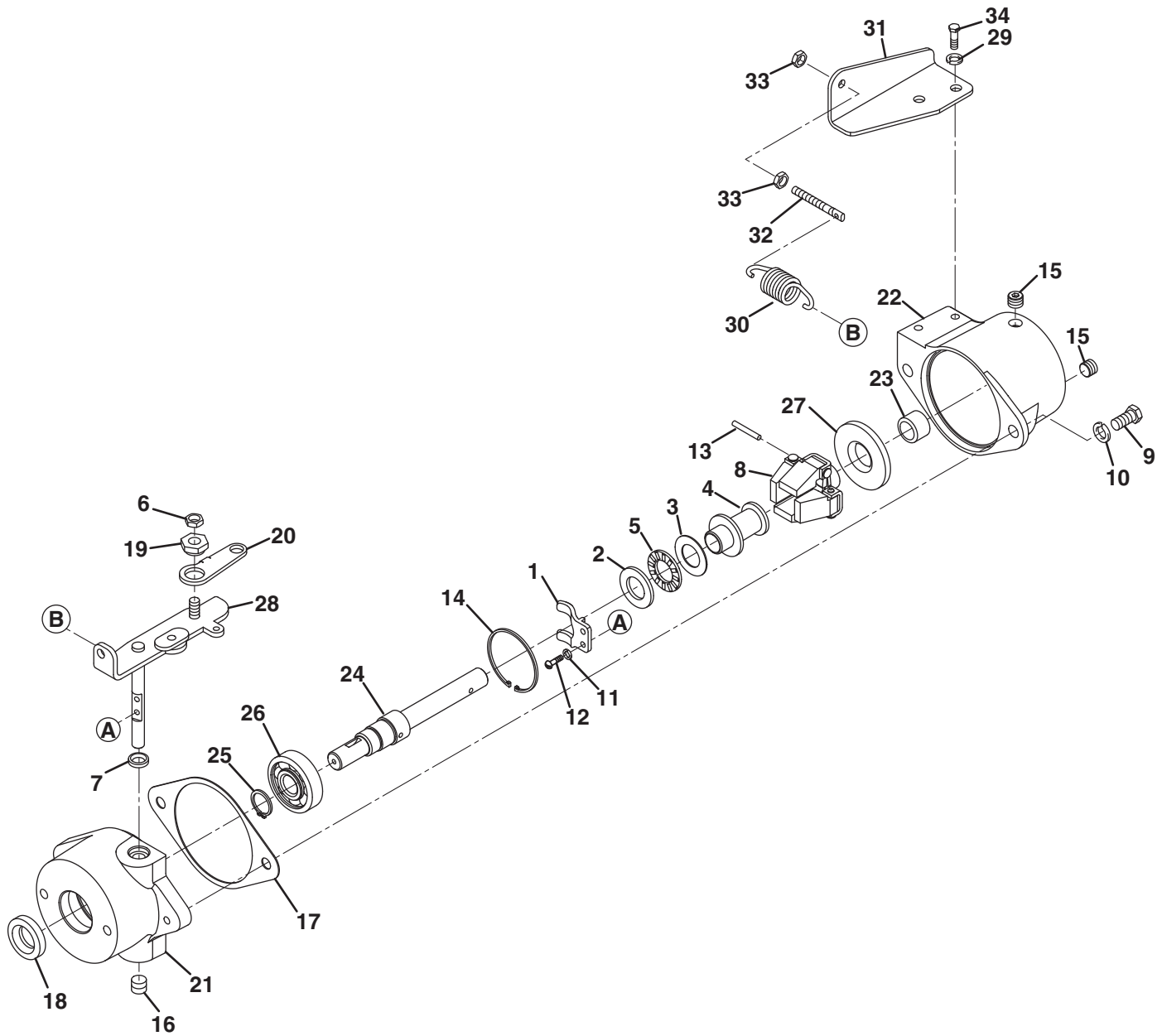
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## 31.1 Governor

Serial No. 84058 All

Serial No. 84059 All

Serial No. 84060 All

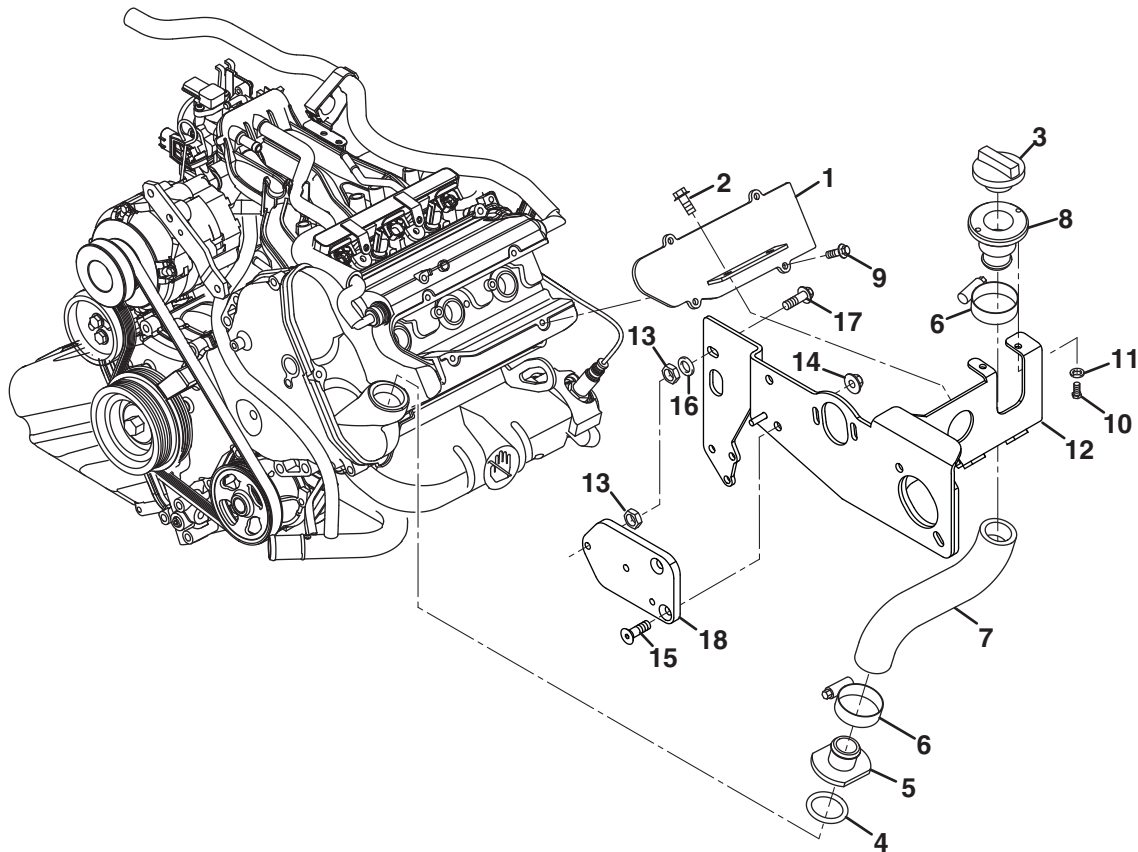


Item	Part No.	Qty.	Description	Serial Numbers/Notes
	4141425	1	Governor	
1	111812	1	• Yoke, Spool	
2	111814	1	• Washer, Thrust	
3	111816	1	• Washer, Thrust	
4	111817	1	• Spool, Governor	
5	112840	1	• Bearing, Thrust	
6	130728	1	• Nut, 1/4-20 Hex Jam	
7	111813	1	• Seal, Shaft	
8	160410	1	• Carrier & Weights	
9	302288	2	• Screw, 1/4-20 x 1 in. Hex Head	
10	306396	2	• Lockwasher, 1/4	
11	306506	2	• Lockwasher, #6	
12	306915	2	• Screw, #6-32 x 5/16 in. Machine	
13	603102	1	• Roll Pin, 1/8 x 3/4 in.	
14	548325	1	• Ring, Retaining	
15	800227	2	• Plug, 1/8 NPT	
16	800558	1	• Set Screw, 3/8-16 x 5/16 in.	
17	833056	1	• Gasket, Governor	
18	4189960	1	• Seal, Oil	
19	835271	1	• Nut, Governor Arm	
20	843537	1	• Bracket, Governor Knee	
21	4114867	1	• Head, Governor	
22	894471	1	• Reservoir, Governor	
23	833103	1	• • Bearing, Needle	
24	4119678	1	• Shaft, Governor Complete	
25	833104	1	• • Ring, Retaining	
26	833345	1	• • Bearing, Ball	
27	4115584	1	• Ring, Support	
28	2700525	1	• Lever, Governor Control	
29	306396	2	Lockwasher, 1/4	
30	833101	1	Spring, Extension	
31	833366	1	Bracket, Governor Spring	
32	111893	1	Screw, #10-32 Special	
33	2702244	2	Nut, #10-32 Hex	
34	00414G5	2	Screw, Hex Head	

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## 32.1 Gas Engine Remote Oil Fill

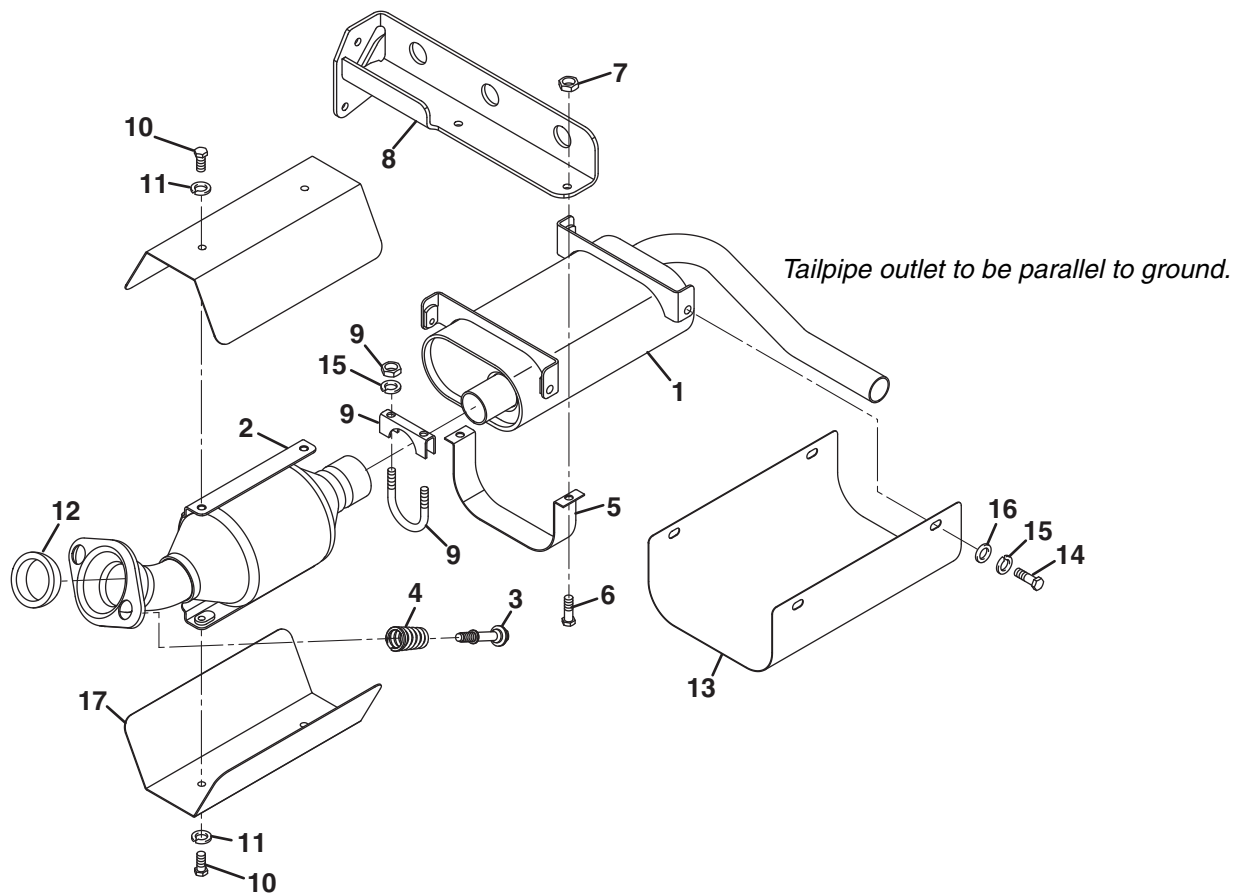
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Serial No. 84059 All  
Serial No. 84060 All



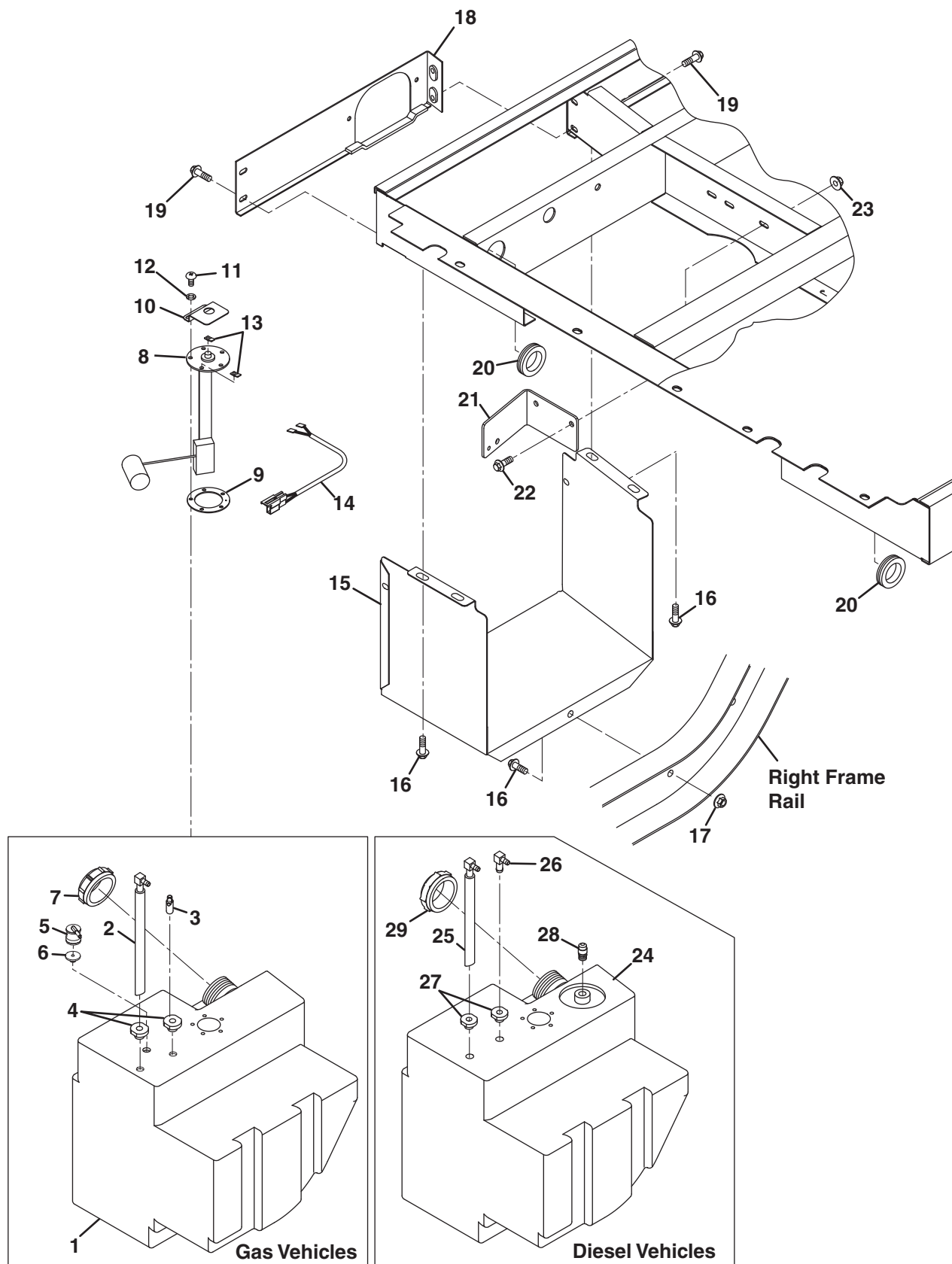
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4188041	1	Bracket, Valve Cover	Included with Engine
2	548971	2	Screw, 5/16-18 x 5/8" Hex Flange	
3	4148202	1	Cap, Oil Fill	
4	843420	1	O-Ring	
5	843399	1	Adapter, Valve Cover	
6	836206	2	Clamp, 1-7/8" Worm Drive	
7	4139271	1	Hose, Remote Oil Fill	
8	2701640	1	Adapter, Oil Cap	
9	4117892	4	Screw, M6-1 x 16 mm Hex Flange	
10	800425	2	Screw, M6-1 x 12 mm Hex Head	
11	306396	2	Lockwasher, 1/4	See 27.1
12	4188387	1	Bracket, Governor	
13	304632	2	• Nut, 3/8-16 Hex Jam	
14	548804	2	• Nut, 3/8-16 Whizlock	
15	548041	2	• Screw, 3/8-16 x 1" Flat Socket Head	
16	306981	1	• Flat Washer, 3/8	
17	800711	1	• Screw, 3/8-16 x 1-3/4" Hex Flange	
18	N/S	1	• Plate, Tensioner	

> Change from previous revision

## 33.1 Gas Engine Exhaust

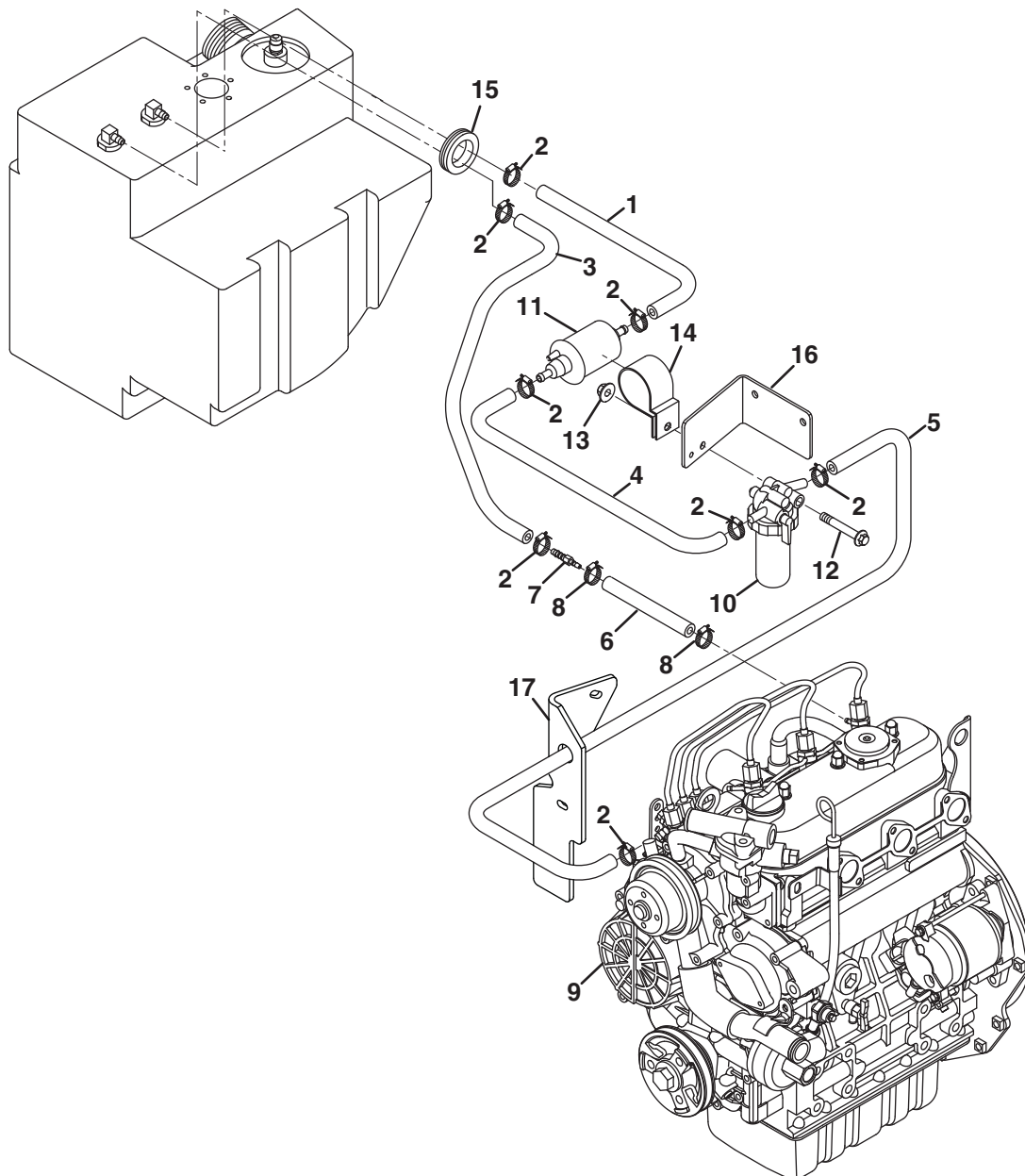


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4142914	1	Muffer	Attaches to Transmission Case
2	4144338	1	Catalytic Converter	
3	2702502	2	Bolt, Muffler Flange	
4	2702501	2	Spring, Muffler Flange	
5	838295.8	1	Strap, Muffler Hanger	
6	450193	2	Screw, M8-1.25 x 30 mm Hex Head	
7	450378	2	Locknut, M8-1.25	
8	4150237	1	Bracket, Muffler	
9	841982	1	Clamp, 1-1/2 in. Exhaust	
10	306419	4	Screw, 1/4-20 x 1/2 in. Hex Head	
11	306396	4	Lockwasher, 1/4	
12	4148153	1	Ring, Muffler Flange	
13	4121517.8	1	Shield, Muffler	
14	306450	4	Screw, 5/16-18 x 3/4 in. Hex Head	
15	306325	6	Lockwasher, 5/16	
16	103867	4	Flat Washer, 5/16	
17	4144336	2	Shield, Catalytic Converter	
				> Change from previous revision



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4166842	1	Fuel Tank	Gas Vehicles Only
2	843726	1	• Tube, Fuel Pick Up	Gas Vehicles Only
3	4166841	1	• Elbow, 90° 1/4	Gas Vehicles Only
4	361117	2	• Bushing	Gas Vehicles Only
5	4170840	1	• Rollover Valve	Gas Vehicles Only
6	4168131	1	• Grommet, Fuel Tank	Gas Vehicles Only
7	4166840	1	Cap, Unvented Fuel Ratchet	Gas Vehicles Only
8	843298	1	Sender, Fuel Level	
9	829954	1	Gasket, Fuel Tank	
10	833953	1	Cover, Fuel Sender	
11	800021	5	Screw, #10-32 x 1/2 in. Pan Head	
12	120052	5	Lockwasher, #10	
13	829787	2	Terminal, 1/4 in. Male	
14	894201	1	Harness, Fuel Sender	
15	843078	1	Support, Fuel Tank	
16	452398	5	Screw, M10-1.5 x 20 mm Flange	
17	450454	1	Nut, M10-1.5 Hex Flange	
18	894922	1	Panel, Fuel Tank	
18	894922G	1	Panel, Galvanized Fuel Tank	Optional Galvanized Panel
19	800930	4	Screw, M8-1.25 x 16 mm Flange	
20	829997	2	Grommet	
21	4174289	1	Bracket, Fuel Filter	Diesel Vehicles Only
22	452378	2	Screw, M6-1 x 20 mm Flange Head	Diesel Vehicles Only
23	450452	2	Nut, M6-1 Hex Flange	Diesel Vehicles Only
24	841969	1	Fuel Tank	Diesel Vehicles Only
25	843726	1	• Tube, Fuel Pick Up	Diesel Vehicles Only
26	843727	1	• Elbow, 90° Fuel	Diesel Vehicles Only
27	84310	2	• Grommet, Fuel Tank	Diesel Vehicles Only
28	836852	1	• Breather	Diesel Vehicles Only
29	4179802	1	Cap, Diesel Fuel	Diesel Vehicles Only

> Change from previous revision





Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	826590	1	Hose, Fuel Tank to Fuel Pump 5/16 in.	25 Foot Roll, Cut to 13 in.
2	4113022	8	Clamp, Hose	
3	826590	1	Hose, Fuel Return	25 Foot Roll, Cut to 21-1/2 in.
4	826590	1	Hose, Pump to Fuel Filter 5/16 in.	25 Foot Roll, Cut to 7 in.
5	826590	1	Hose, Fuel Filter to Engine 5/16 in.	25 Foot Roll, Cut to 19-1/2 in.
6	831039	1	Hose, Engine Fuel Return 3/16 in.	25 Foot Roll, Cut to 2-3/4 in.
7	4139967	1	Connector, 5/16 to 3/16 in. Hose	
8	825264	2	Clamp, Hose	
9	REF	1	Engine	
10	5001947	1	• Fuel Filter	
	550489	1	• • Element, Fuel Filter	
11	894638	1	Pump, Electric Fuel	
12	452394	1	Screw, M8-1.25 x 70 mm Flange	
13	450453	1	Nut, M8-1.25 Flange	
14	838154	1	Bracket, Fuel Pump Mounting	
15	REF	1	Grommet	See 34.1
16	REF	1	Bracket, Fuel System	See 34.1
17	REF	1	Bracket, Air Filter Mount	See 23.1

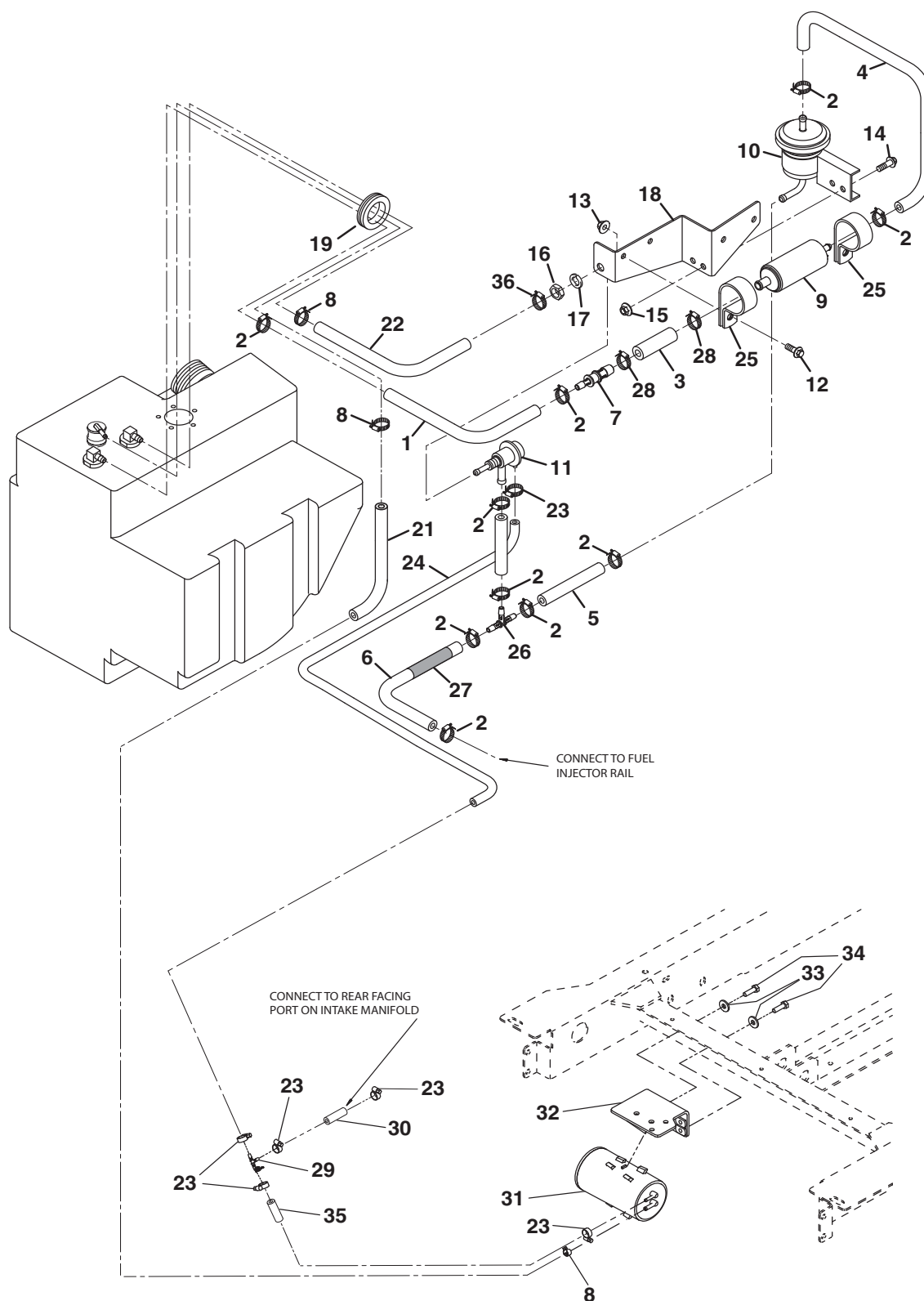
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## 36.1 Gas Fuel System

Serial No. 84058 All

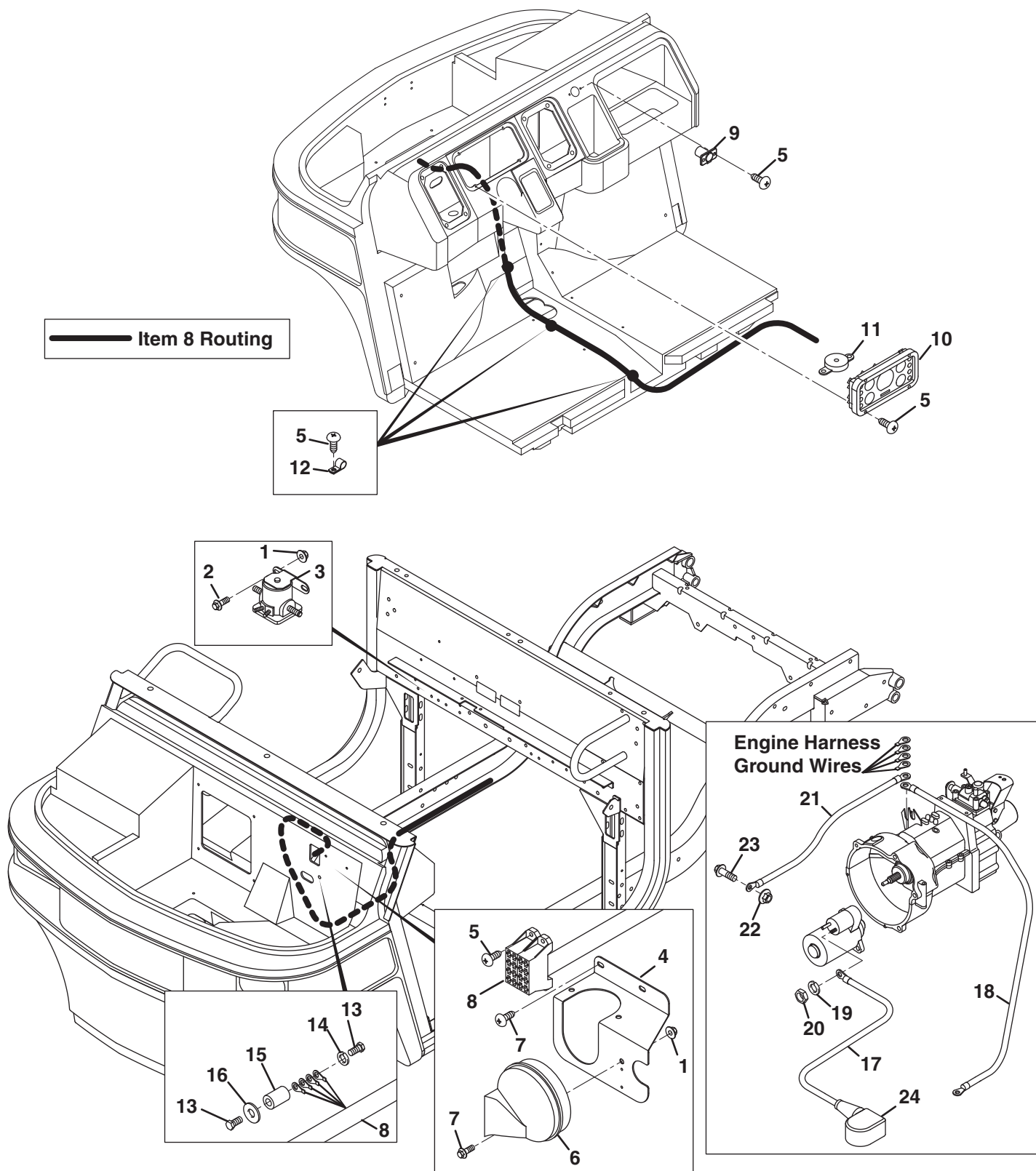
Serial No. 84059 All

Serial No. 84060 All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4166085	1	Hose, Fuel Tank to Adapter 5/16 in.	10 Foot Roll, Cut to 58-1/4 in.
2	4113022	10	Clamp, Hose	
3	4166086	1	Hose, Adapter to Pump 7/16 in.	Cut to 3 in.
4	4166085	1	Hose, Pump to Fuel Filter 5/16 in.	10 Foot Roll, Cut to 9 in.
5	4166085	1	Hose, Fuel Filter to Tee 1/4 in.	10 Foot Roll, Cut to 4-1/4 in.
6	4166085	1	Hose, Tee to Engine 1/4 in.	10 Foot Roll, Cut to 29 in.
7	4113019	1	Adapter, 5/16 to 7/16 in. Hose	
8	4113022	4	Clamp, Hose	
9	2700174	1	Pump, Electric Fuel	
10	2700176	1	Fuel Filter	
11	2700177	1	Regulator, Fuel	
12	452378	2	Screw, M6-1 x 20 mm Hex Flange	
13	450452	2	Nut, M6-1 Hex Flange	
14	800930	2	Screw, M8-1.25 x 16 mm Hex Flange	
15	450453	2	Nut, M8-1.25 Hex Flange	
16	800875	1	Nut, M12-1.25 Hex	
17	309067	1	Lockwasher, 1/2 in. External Tooth	
18	REF	1	Bracket, Fuel System	See 15.1
19	REF	1	Grommet	See 34.1
20				
21	4166084	1	Hose, Rollover Valve to Canister	10 Foot Roll, Cut to 27 in.
22	4166084	1	Hose, Tank Return to Regulator	10 Foot Roll, Cut to 20 in.
23	825624	6	Clamp, Hose	
24	7326	1	Hose, Regulator to Tee	6Foot Roll, Cut to 2 in.
25	2700166	1	Clamp, Filter	
26	4113020	1	Adapter, 5/16 in. Tee	
27	7301	1	Flex Guard	Cut to 5 in.
28	830930	2	Hose Clamp	
29	4168143	1	Adapter, 5/32 in. Tee	
30	7326		Hose, Tee to Engine	Cut to 20 in.
31	4170802	1	Canister, Carbon	
32	4172648	1	Bracket, Canister Mtg.	
33	452006	2	Washer, Flat 5/16 in.	
34	400108	2	Screw, 5/16 - 18 x 1	
35	7326	1	Hose, Tee to Canister	Cut to 14 in.
36	18292-G1	1	Clamp	

> Change from previous revision



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	450452	3	Nut, M6-1 Hex Flange	
2	452378	2	Screw, M6-1 x 20 mm Hex Flange	
3	2701465	1	Solenoid, Starter	
	120052	2	• Lockwasher, #10	
	132520	2	• Nut, #10-32 Hex	
	306325	2	• Lockwasher, 5/16	
	306932	2	• Nut, 5/16-18 Hex	
4	844167	1	Bracket, Horn, Brake Fluid Reservoir	See 48.1
5	800943	15	Screw, #10-16 x 3/4 in. Thread Cutting	
6	886425	1	Horn	
7	800934	3	Screw, M6-1 x 16 mm Hex Flange	
8	894266	1	Harness, Main	
9	843942	1	Socket, 12V Accessory Plug	Located inside front clip, behind dash panel
10	4152157	1	Panel, Instrument with Tachometer	
11	890000	1	Buzzer, High Temperature	
12	831225	3	Clamp, Wire Harness	
13	306419	2	Screw, 1/4-20 x 1/2 in. Hex Head	
14	306488	1	Lockwasher, 1/4 External Tooth	Battery to Transmission
15	828231	1	Insulator	
16	548175	1	Flat Washer, 1/4	
17	4183304	1	Positive (RED) Battery Cable	
18	4183301	1	Negative (BLACK) Battery Cable	
19	306325	1	Lockwasher, 5/16	Transmission to Right Frame Rail
20	450324	1	Nut, M8-1.25 Hex	
21	894602	1	Cable, Ground	
22	450453	1	Nut, M8-1.25 Hex Flange	
23	452388	1	Screw, M8-1.25 x 20 mm Flange	

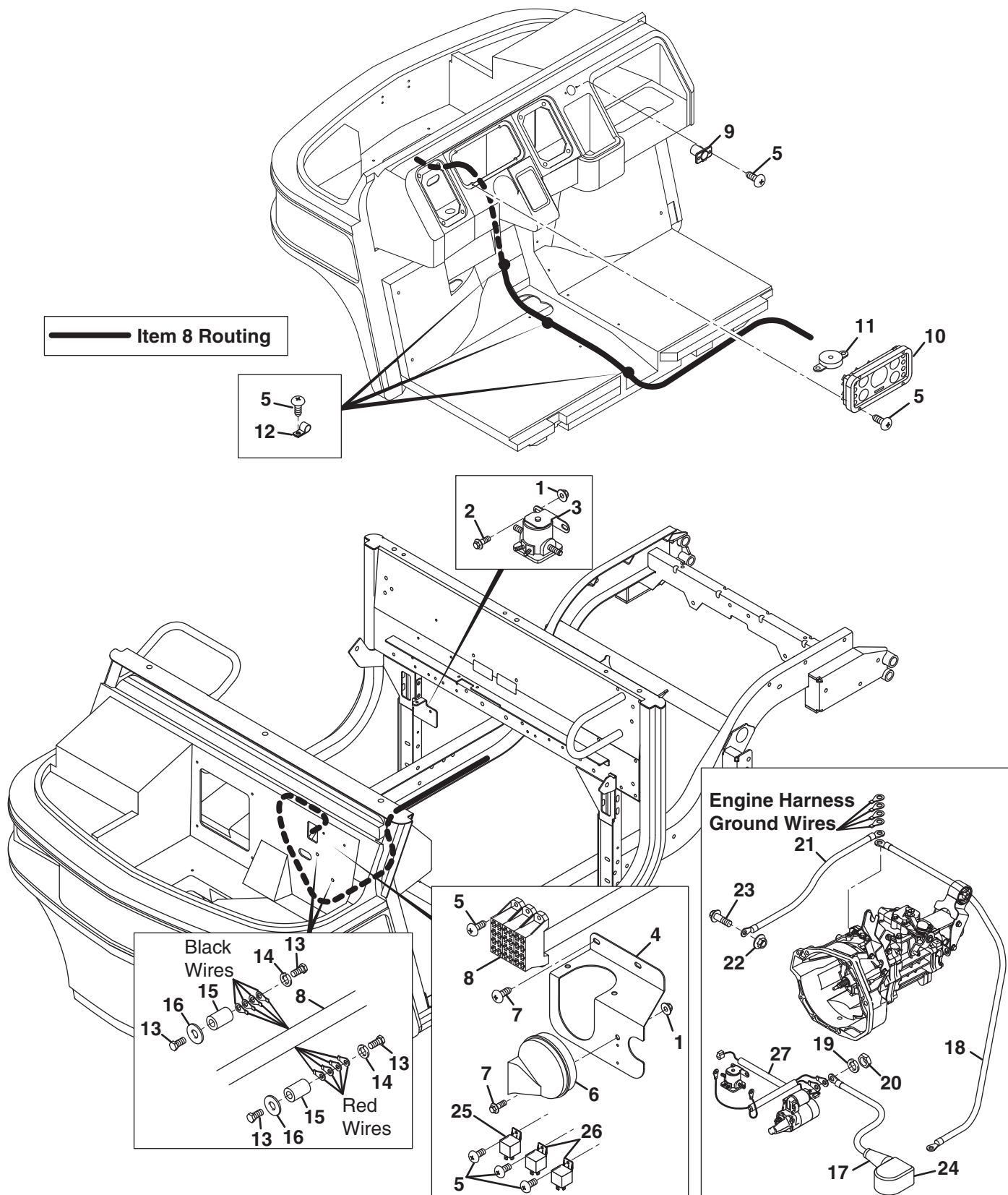
> Change from previous revision

## 38.1 Gas Electrical Components

Serial No. 84058 All

Serial No. 84059 All

Serial No. 84060 All



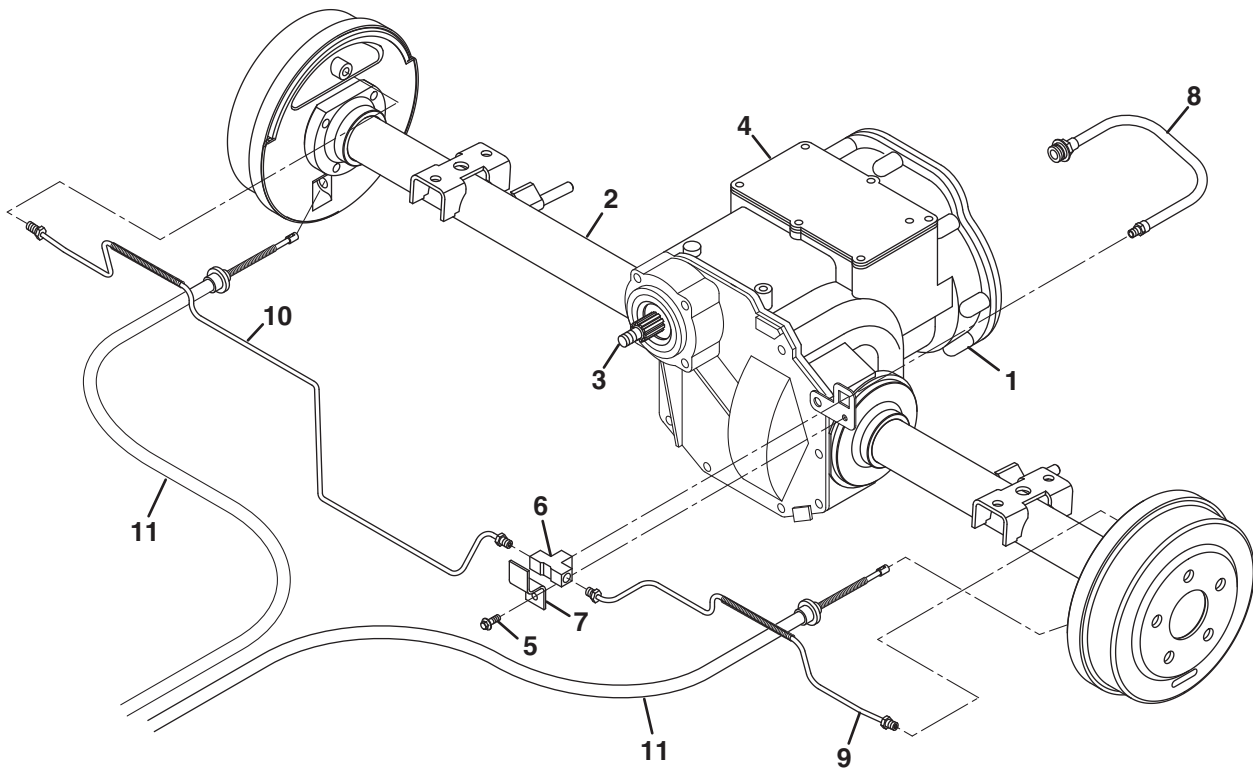
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	450452	3	Nut, M6-1 Hex Flange	See 48.1  Located inside front clip, behind dash panel  Manual Transmission Automatic Transmission Battery to Transmission  Manual Transmission Automatic Transmission
2	452378	2	Screw, M6-1 x 20 mm Hex Flange	
3	2701465	1	Solenoid, Starter	
	120052	2	• Lockwasher, #10	
	132520	2	• Nut, #10-32 Hex	
	306325	2	• Lockwasher, 5/16	
	306932	2	• Nut, 5/16-18 Hex	
4	844167	1	Bracket, Horn, Brake Fluid Reservoir	
5	800943	15	Screw, #10-16 x 3/4 in. Thread Cutting	
6	886425	1	Horn	
7	800934	3	Screw, M6-1 x 16 mm Hex Flange	
8	4115709	1	Harness, Main	
9	843942	1	Socket, 12V Accessory Plug	
10	4152157	1	Panel, Instrument with Tachometer	
11	890000	1	Buzzer, High Temperature	
12	831225	3	Clamp, Wire Harness	
13	306419	2	Screw, 1/4-20 x 1/2 in. Hex Head	
14	306488	1	Lockwasher, 1/4 External Tooth	
15	828231	1	Insulator	
16	548175	1	Flat Washer, 1/4	
17	4183304	1	Positive (RED) Battery Cable	
17	4183303	1	Positive (RED) Battery Cable	
18	4183301	1	Negative (BLACK) Battery Cable	
19	306325	1	Lockwasher, 5/16	
20	450324	1	Nut, M8-1.25 Hex	
21	894602	1	Cable, Frame Ground	
21	884513	1	Cable, Frame Ground	
22	450453	1	Nut, M8-1.25 Hex Flange	
23	452388	1	Screw, M8-1.25 x 20 mm Flange	
24	4154081	1	Cover, Positive Battery Terminal	
25	2700867	1	Relay, EFI 12 V 70A SP	
26	843167	2	Relay, 12V 15A DPST	
27	4116017	1	Harness, Generator	

> Change from previous revision

## 39.1 Differential Assembly

Part Number 2701165

Serial No. All





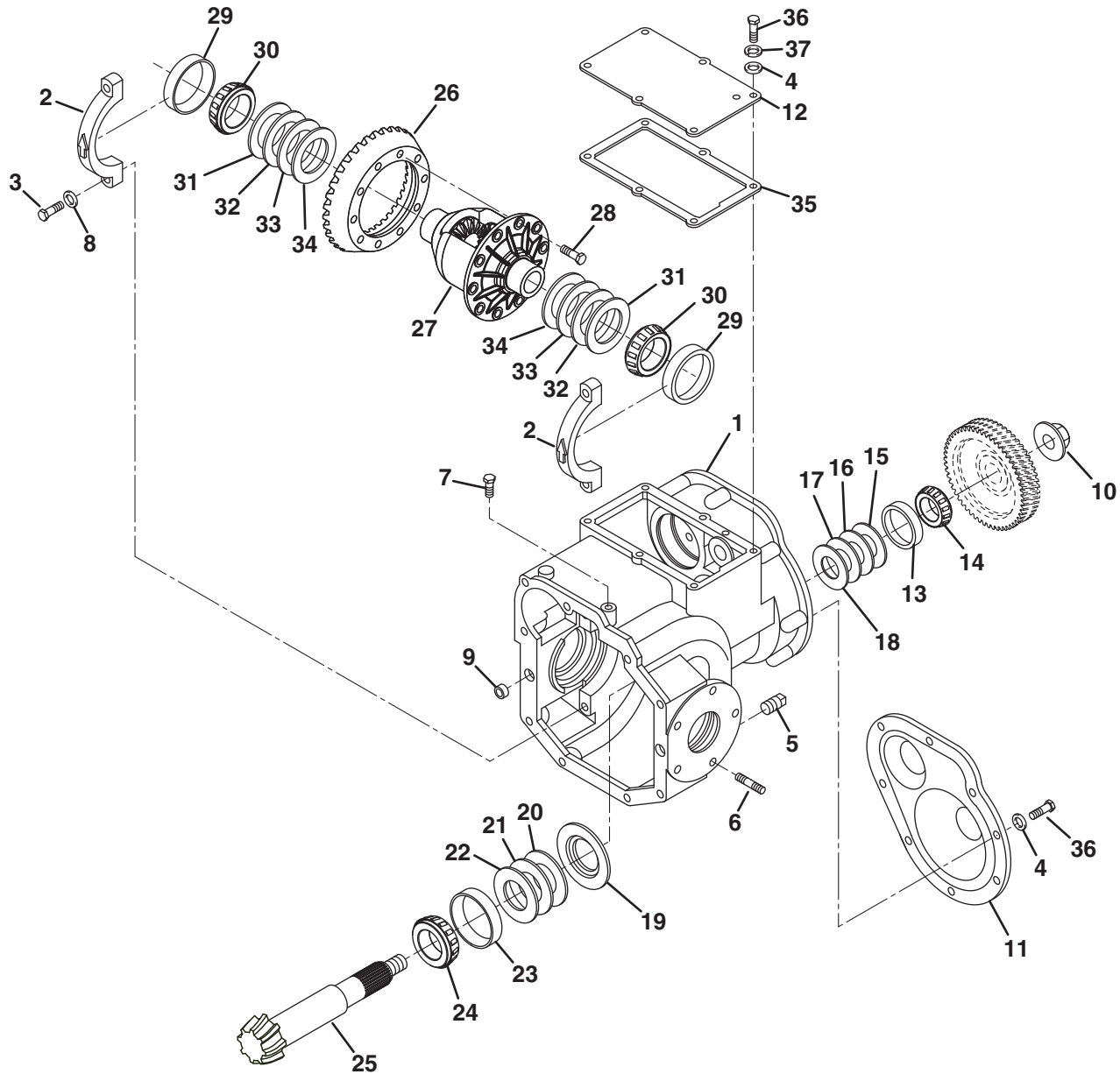
Item	Part No.	Qty.	Description	Serial Numbers/Notes
	2701165	1	Differential Assembly	<b>11.16:1 Differential</b>
1	891829	1	• Differential Housing	See 40.1
2	N/S	1	• Axle Tubes and Shafts	See 41.1
3	N/S	1	• Input Shaft	See 43.1
4	N/S	1	• Front Cover	See 42.1
5	112050	1	• Screw, 1/4-20 x 5/8 in. Self Tap	
6	820008	1	• Fitting, Hydraulic Brake Tee	
7	832584	1	• Clamp, Tee Fitting	
8	832587	1	• Hose, Brake	
9	2703170	1	• Tube, Left Side Brake	
10	2703171	1	• Tube, Right Side Brake	
11	893583	2	• Cable, Parking Brake	

> Change from previous revision

## 40.1 Differential Housing

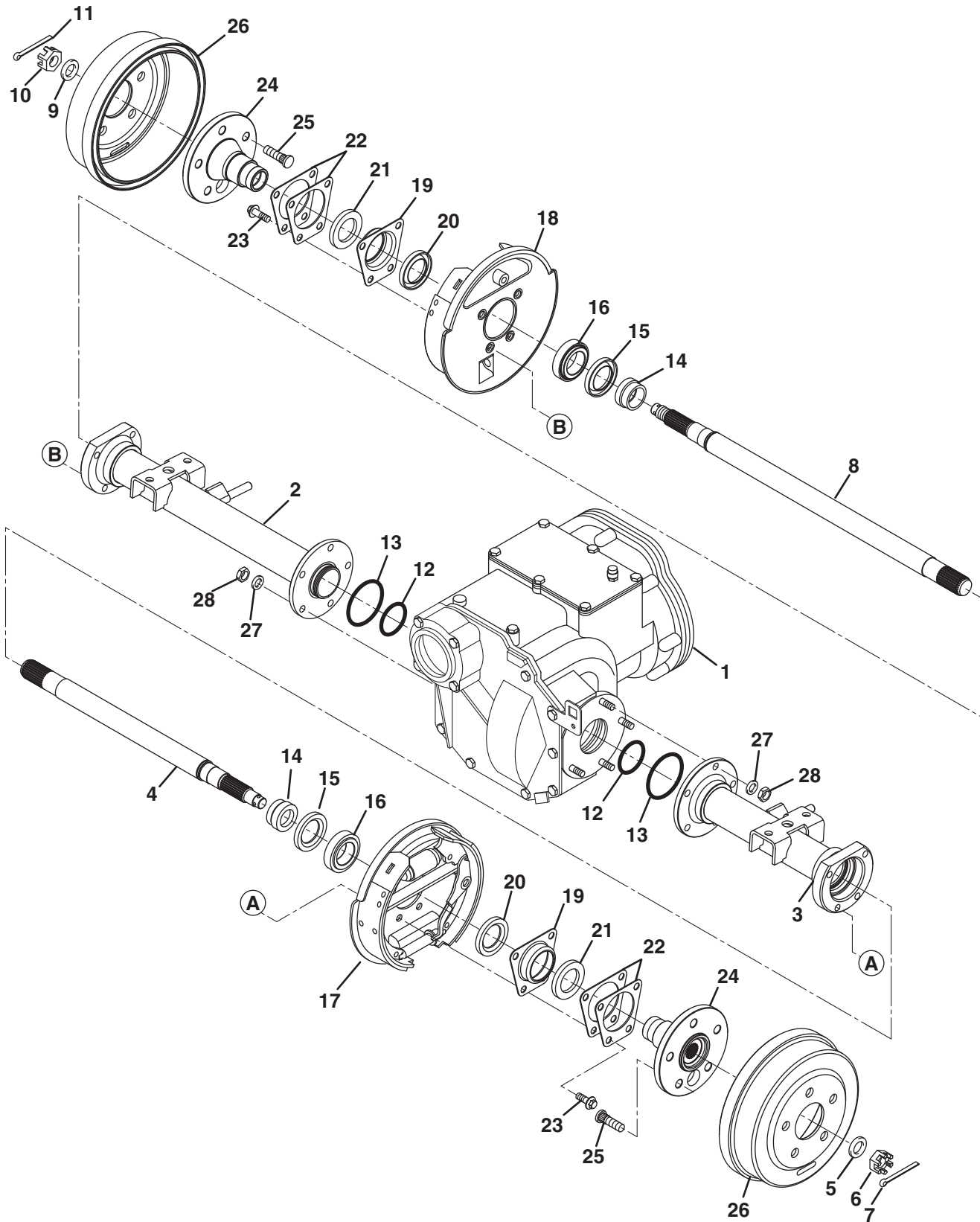
Part Number 891829

Serial No. All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	891829	1	Differential Housing	
2	N/S	2	• Bearing Caps	
3	306829	4	• Screw, 7/16-14 x 2 in. Hex Head	
4	103867	14	• Flat Washer, 5/16	
5	111074	1	• Plug, Drain	
6	111758	10	• Stud, 3/8-16 & 3/8-24 x 1-23/32	
7	306322	1	• Screw, 5/16-18 x 7/8 in. Hex Head	
8	306982	4	• Flat Washer, 7/16	
9	517226	2	• Bushing	
10	800973	1	• Nut, 3/4-16 Hex Lock	
11	836443	1	• Rear Cover	
12	836665	1	• Top Cover	
13	814476	1	• Cup, Bearing (2-17/32 in. O.D.)	
14	836680	1	• Cone, Bearing (1-1/8 in. I.D.)	
15	836688	AR	• Shim, .003 Thick	Add or remove shims as required to adjust gear backlash
16	836689	AR	• Shim, .005 Thick	
17	836690	AR	• Shim, .010 Thick	
18	836691	AR	• Shim, .030 Thick	
19	836692	1	• Baffle, Oil	
20	836685	AR	• Shim, .003 Thick	
21	836686	AR	• Shim, .005 Thick	Add or remove shims as required to adjust gear backlash
22	836687	AR	• Shim, .010 Thick	
23	836677	1	• Cup, Bearing (2.84 in. O.D.)	
24	836678	1	• Cone Bearing (1-3/8 in. I.D.)	
	889870	1	• Gear Set	
25	N/S	1	• • Pinion Gear and Shaft	
26	N/S	1	• • Ring Gear	
27	N/S	1	• Differential Carrier	
28	800717	10	• Screw, 3/8-24 x 13/16 Hex Head	
29	836675	2	• Cup, Bearing (2.89 in. O.D.)	
30	836676	2	• Cone, Bearing, (1-5/8 in. I.D.)	
31	836681	AR	• Shim, .003 Thick	Add or remove shims as required to adjust gear backlash
32	836682	AR	• Shim, .005 Thick	
33	836683	AR	• Shim, .010 Thick	
34	836684	AR	• Shim, .030 Thick	
35	836671	1	Gasket, Top Cover	
36	306322	14	Screw, 5/16-18 x 7/8 in. Hex Head	
37	306325	6	Lockwasher, 5/16	

> Change from previous revision



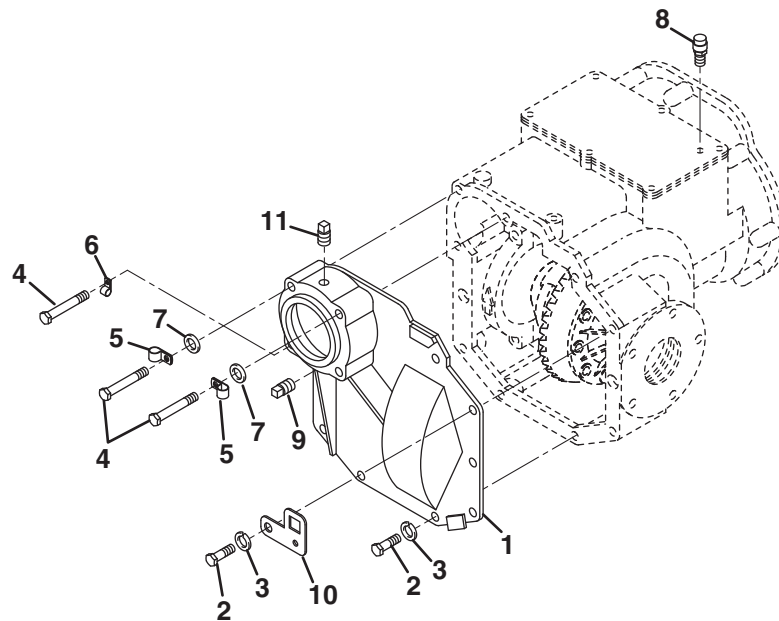
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	2701165	1	Differential Assembly	<b>11.16:1 Differential</b>
2	2703507.7	1	• Tube, Right Side Axle	
3	2703506.7	1	• Tube, Left Side Axle	
4	2700528	1	• Left Side Axle Assembly	
	2700510	1	• • Shaft, Left Side Axle	
5	845356	1	• • Washer	
6	800743	1	• • Nut, 3/4-16 Slotted Hex	
7	304636	1	• • Cotter Pin, 1/8 x 1-1/8 in.	
8	2700529	1	• Right Side Axle Assembly	
	2700513	1	• • Shaft, Right Side Axle	
9	845356	1	• • Washer	
10	800743	1	• • Nut, 3/4-16 Slotted Hex	
11	304636	1	• • Cotter Pin, 1/8 x 1-1/8 in.	
12	836694	2	• Seal, 1-3/4 in. I.D. O-Ring	
13	2703481	2	• Seal, 2 in. I.D. O-Ring	
14	836426	2	• Collar, Axle Bearing	
15	838539	2	• Seal, Oil	
16	836695	2	• Bearing, Tapered Roller	
17	893581	1	• Left Side Brake Assembly	
	894930	1	• • Kit, Brake Cylinder	
	894931	1	• • Kit, Brake Cylinder Repair	
	894932	1	• • Kit, Brake Shoe	
	894933	1	• • Kit, Left Side Spring	
	894935	1	• • Kit, Left Side Adjuster Repair	
18	893582	1	• Right Side Brake Assembly	
	894930	1	• • Kit, Brake Cylinder	
	894931	1	• • Kit, Brake Cylinder Repair	
	894932	1	• • Kit, Brake Shoe	
	894934	1	• • Kit, Right Side Spring	
	894936	1	• • Kit, Right Side Adjuster Repair	
19	893519	2	• Retainer , Complete	
20	838539	1	• • Seal, Oil	
21	2703309	2	• Washer, Hardened	
22	844813	4	• Ring, Backing	
23	800944	8	• Screw, M10-1.5 x 25 mm	
24	2701408	2	• Hub, Rear Wheel	
25	800908	5	• • Bolt, Wheel	
26	841430	2	• Drum, Brake	
27	306405	10	• Washer, 3/8	
28	805837	10	• Locknut, 3/8-24 Special	

> Change from previous revision

## 42.1 Front Cover

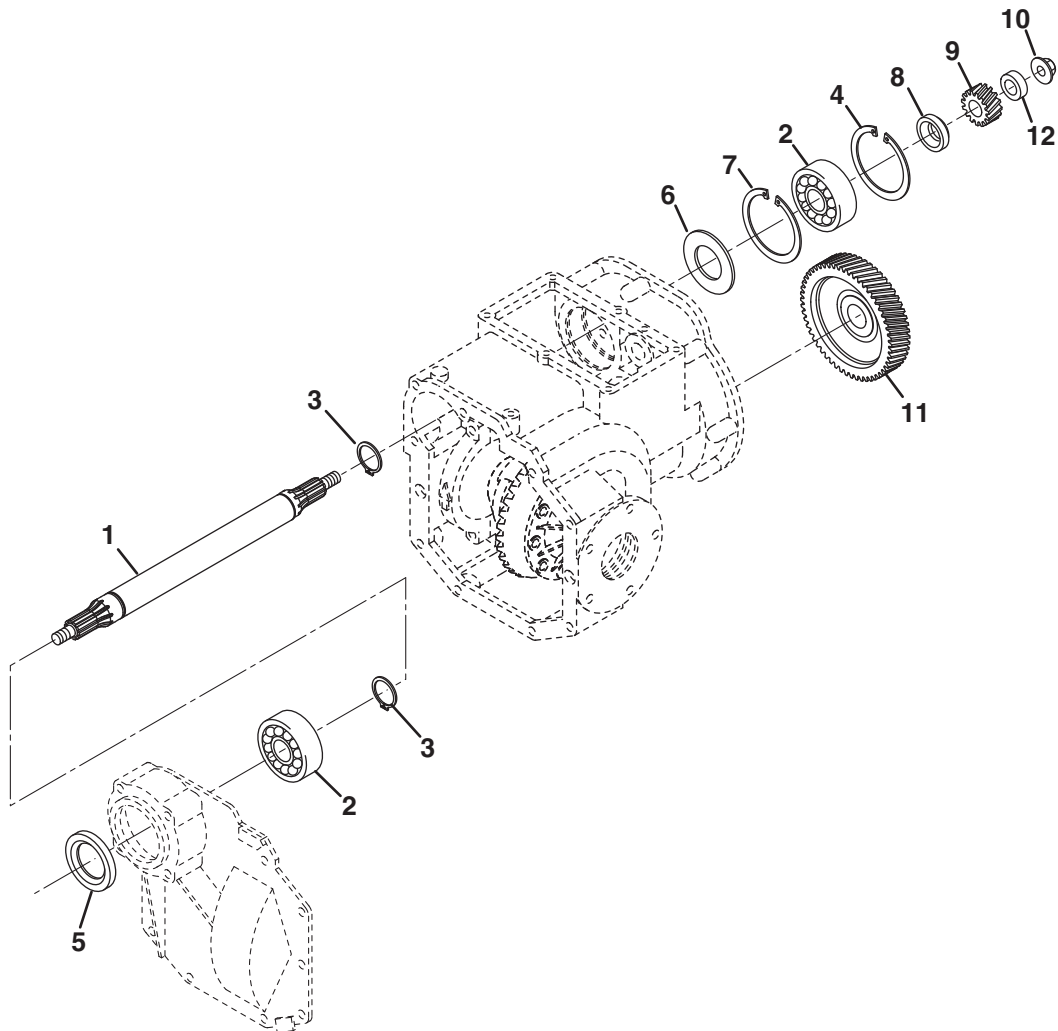
Serial No. All

11.16:1 Differential (2701165)



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	836431	1	Cover, Front	Right Side Brake Tube
2	306322	9	Screw, 5/16-18 x 7/8 in. Hex Head	
3	103867	8	Flat Washer, 5/16	
4	307776	3	Screw, 3/8-16 x 2-3/4 in. Hex Head	
5	810437	2	Clamp, 1/2 in. P	
6	810435	1	Clamp	
7	306981	2	Flat Washer, 3/8	
8	836852	1	Breather	
9	111074	1	Plug, Fill	
10	836959	1	Bracket, Brake Tee Mounting	
11	800227	1	Plug, 1/2 NPT	

> Change from previous revision





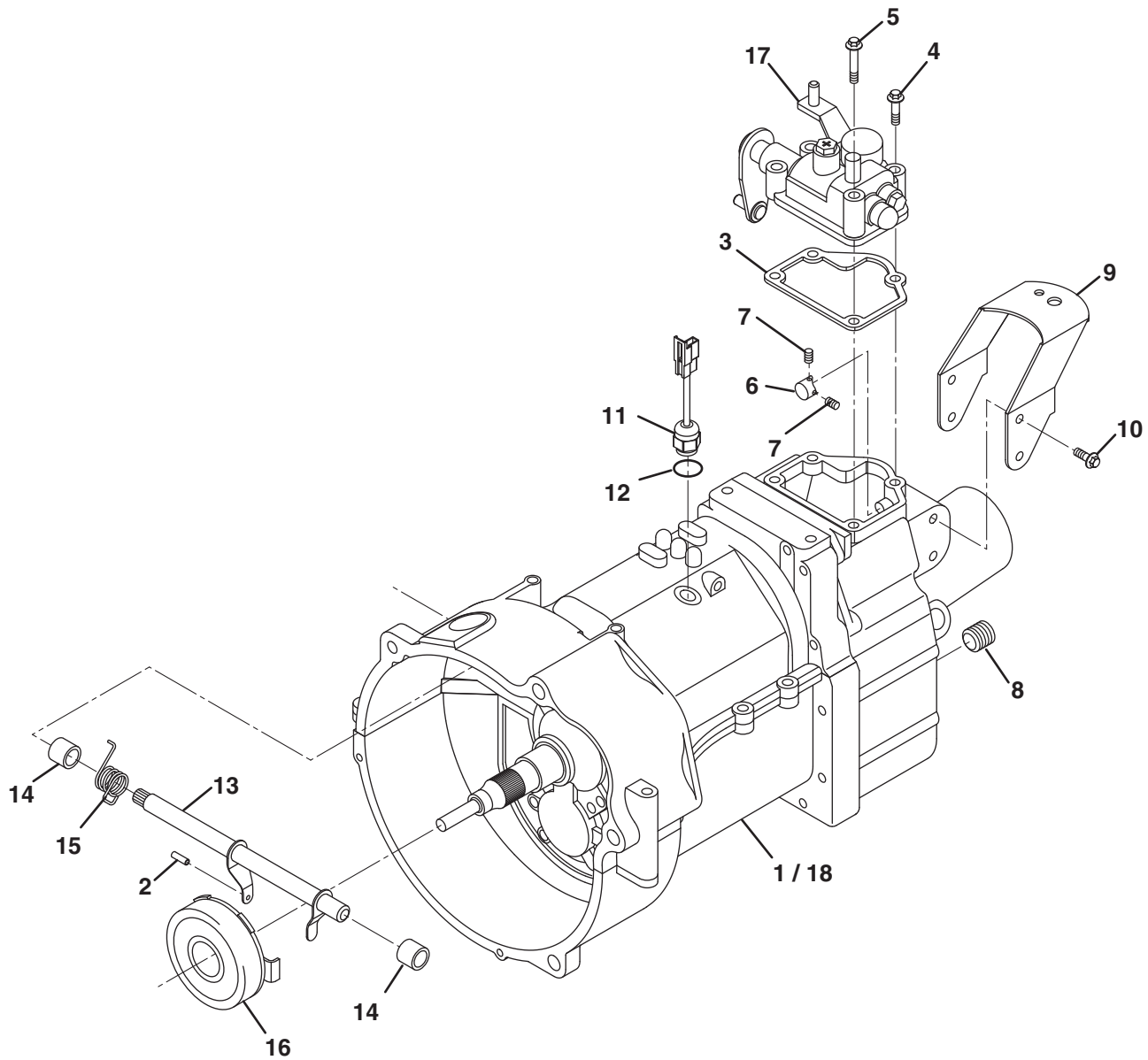
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	836423	1	Shaft, Input	
2	836693	2	Bearing, Ball	
3	800695	2	Ring, External Retaining	
4	800737	1	Ring, Internal Retaining	
5	812335	1	Seal, Oil	
6	836428	1	Spacer, Bearing	
7	548952	1	Lockring	
8	836420	1	Spacer, Pinion	
9	836440	1	Pinion, 18 Tooth	
10	800559	1	Nut, 1/2-20 Crown Lock	
11	836441	1	Gear, 49 Tooth	
12	809180	1	Spacer	

> Change from previous revision

## 44.1 Transmission Clutch Release-Shift Selector

Diesel Engine Only

Serial No. 84065 - All



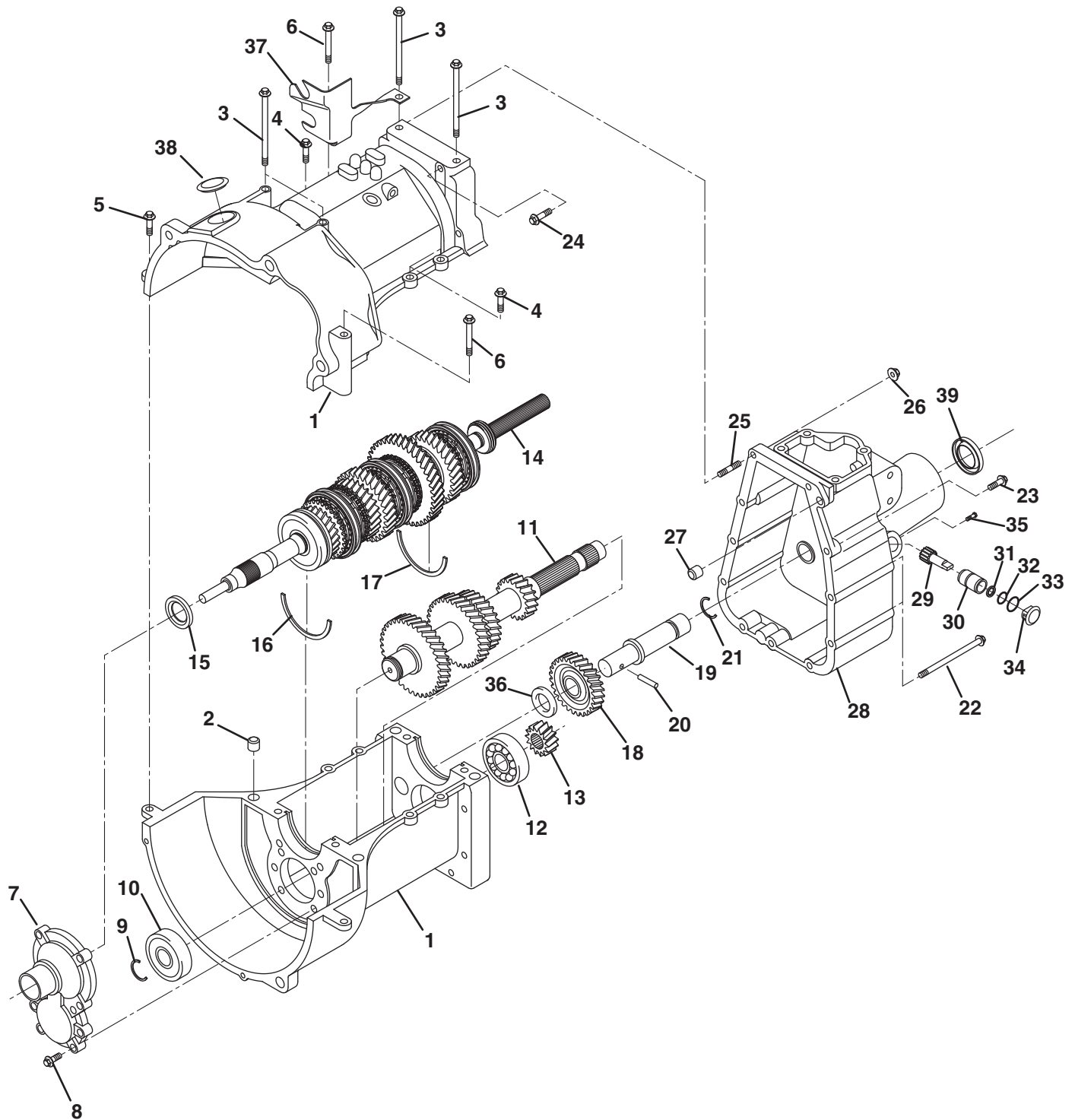
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	2701430	1	Transmission, 4 Speed Diesel	
2	09205-03019	1	• Roll Pin	
3	845223	1	• Gasket, Shift Case	
4	2702659	3	• Screw, M8-1.25 x 40 mm	
5	01550-08553	1	• Screw, M8-1.25 x 55 mm	
6	844228	1	• Stop, 5th Gear Lockout	
7	548222	2	• Set Screw, #8-32	
8	2702684	1	• Plug, Drain	
9	11741-85200	1	• Support, Transmission	
10	2702475	4	• Screw	
11	37610-80023	1	• Switch, Backup Light	
12	09280-11002	1	• • O-Ring	
13	23260-85203	1	• Shaft, Clutch Release	
14	09300-14017	2	• Bushing, Clutch Release	
15	09448-20007	1	• Spring, Clutch Release	
16	23265-85200	1	• Bearing, Clutch Release	
17	REF	1	• Shift Assembly	See 47.1
	REF	1	• Transmission Case	See 45.1

> Change from previous revision

## 45.1 Transmission Case

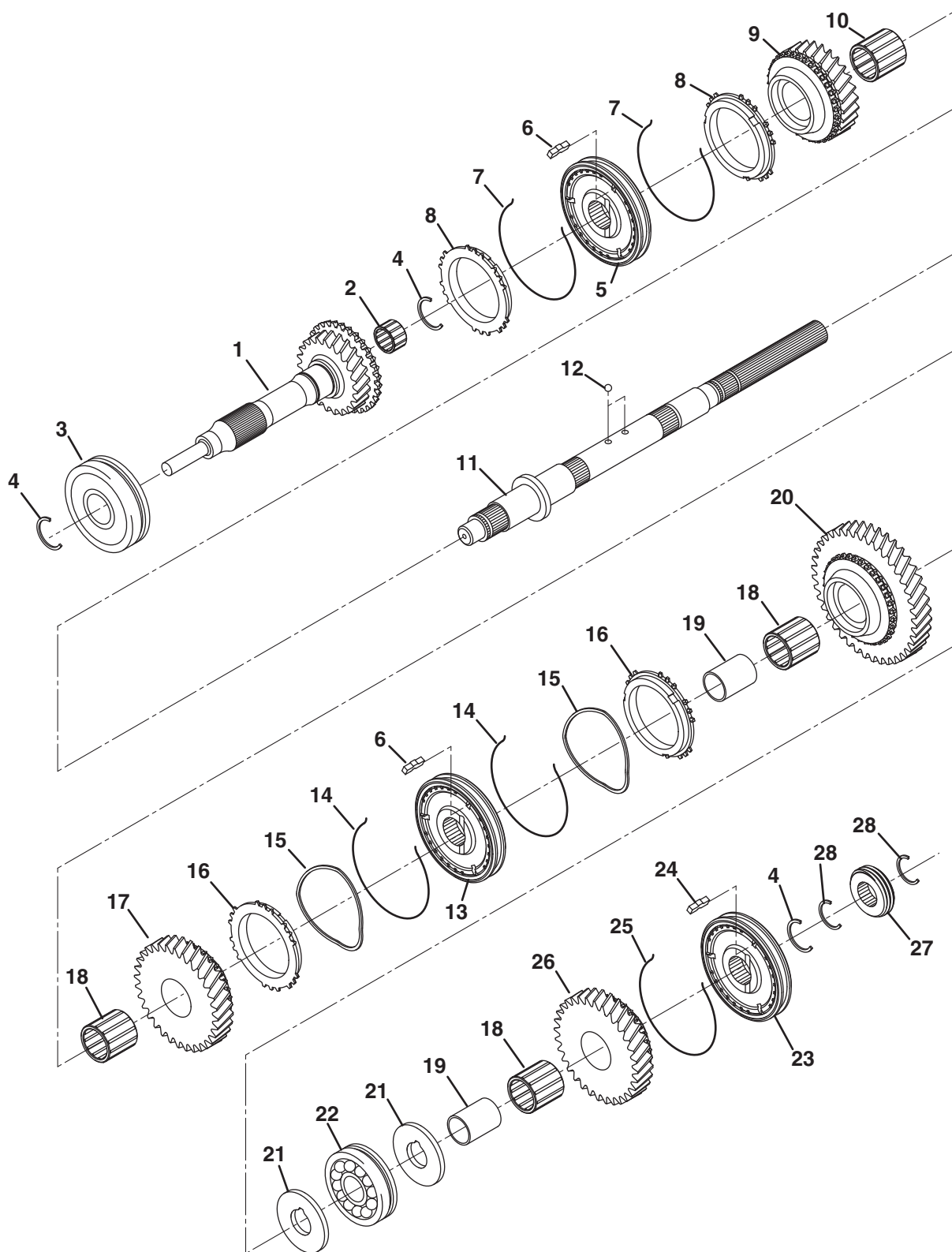
Diesel Engine Only

Serial No. 84065 - All



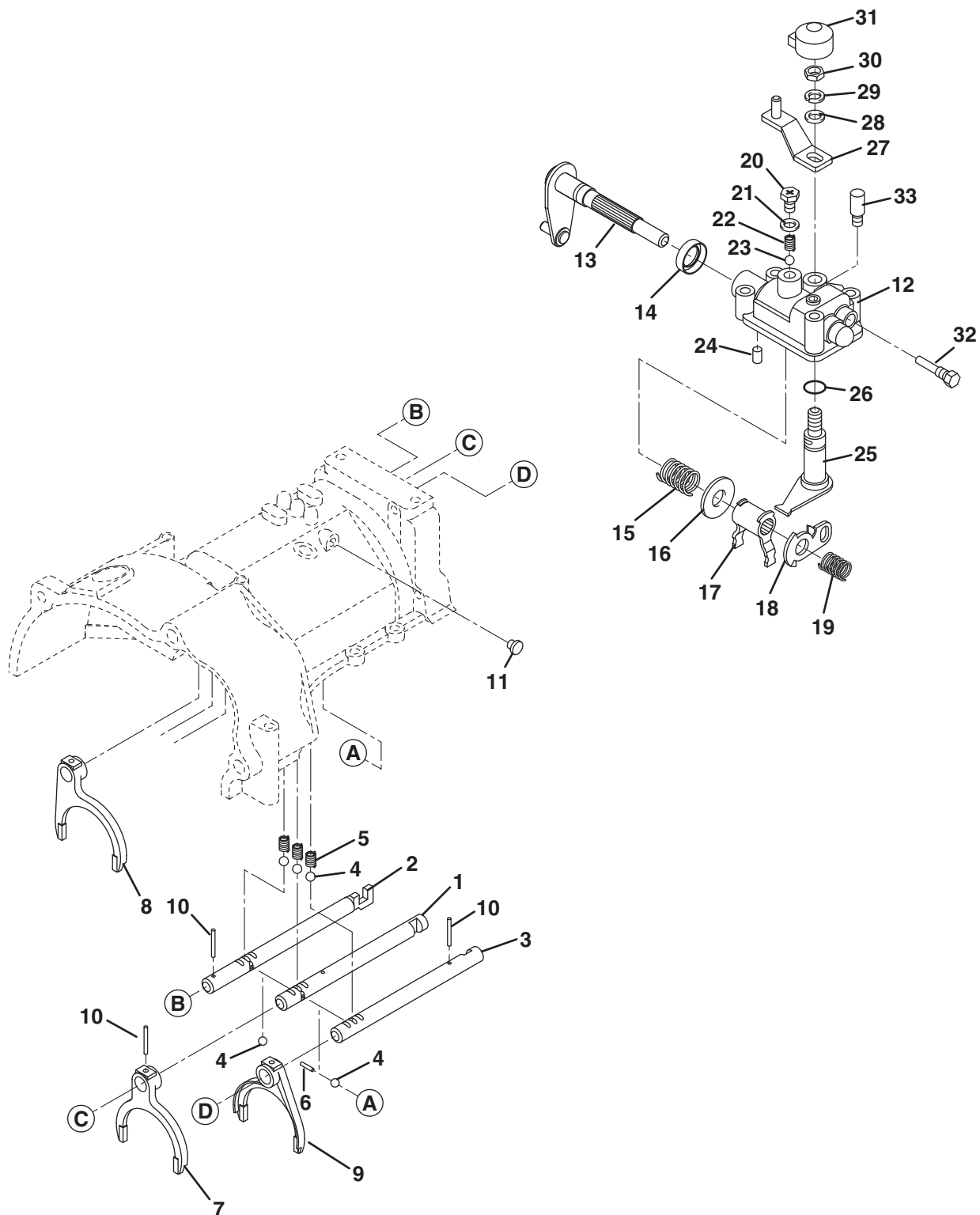
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	24700-85200	1	Case, Transmission	Upper and Lower Half
2	2702690	2	• Pin, Alignment	
3	09103-08131	4	• Screw, M8-1.25 x 120 mm Flange	
4	2702470	3	• Screw, M8-1.25 x 30 mm Flange	See 46.1
5	2702659	1	• Screw, M8-1.25 x 40 mm Flange	
6	2702471	2	• Screw, M8-1.25 Flange	
7	24741-83001	1	Retainer, Input Shaft Bearing	
8	09103-08152	8	Screw, M8-1.25 x 25 mm Flange	
9	09380-28007	1	Cir CLip	
10	09262-28019	1	Bearing, Front	
11	24131-83002	1	Counter Shaft	
12	09262-28020	1	Bearing, Center	
13	24671-83000	1	Gear, Countershaft Reverse	
14	REF	1	Input and Main Shaft	
15	09283-25088	1	Seal, Oil	
16	09390-68002	1	C-Ring	
17	09390-62010	1	C-Ring	
18	24560-83001	1	Gear, Reverse Idle	
19	24551-83010	1	Shaft, Reverse Idle Gear	
20	09261-06003	1	Pin	
21	2702586	1	Cir Clip	
22	09103-08132	3	Screw, M8-1.25 x 100 mm Flange	
23	01550-08353	5	Screw, M8-1.25 Flange	
24	2702659	4	Screw, M8-1.25 x 40 mm Flange	
25	01421-08303	1	Stud, M8-1.25	
26	2703002	1	Nut, M8-1.25 Hex Flange	
27	2702690	2	Pin, Alignment	
28	24770-85252	1	Case, Extension	
29	26131-85201	1	Gear, Speedometer Driven	
30	29431-85400	1	Case, Seepometer Gear	
31	09282-08001	1	Seal, Oil	
32	09280-19001	1	O-Ring	
33	09280-21014	1	O-Ring	
34	843754	1	Plug	
35	09128-06032	1	Bolt, Retaining	
36	09166-16014	1	Washer	
37	28391-85202	1	Bracket, Shift Cables	
38	2702662	1	Plug, Inspection Timing	
39	24780-83010	1	Seal, Extension Case	

> Change from previous revision



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	24110-80410	1	Shaft, Input	4th Gear
2	2702561	1	Bearing, Needle	
3	4141037	1	Bearing, Input Shaft Ball	
4	09380-28007	3	Cir Clip	
5	24410-83000	1	High Speed Synchroniser	Includes Hub and Sleeve
6	24471-60A00	6	Key, Synchronizer	
7	24442-81A20	2	Spring, High Speed Synchronizer	
8	24432-83001	3	Ring, Synchronizer	
9	24230-83001	1	Gear, Main Shaft 3rd	3rd Gear
10	09263-30031	1	Bearing, Needle	
11	24121-85252	1	Shaft, Main	
12	06111-06003	2	Ball	
13	24400-83000	1	Low Speed Synchronizer	Includes Hub and Sleeve
14	24436-83000	2	Spring, Low Speed Synchronizer	
15	24441-85F41	2	Spring, Low Speed	
16	24431-83001	2	Ring, Low Speed Synchronizer	
17	24220-60A01	1	Gear, Main Shaft 2nd	2nd Gear
18	09263-35015	3	Bearing, Needle	
19	09300-30003	2	Bushing	
20	24211-83011	1	Gear, Main Shaft Low	
21	09166-30007	2	Washer	1st Gear
22	09262-30086	1	Bearing, Ball	
23	24420-83000	1	Synchronizer, Reverse Drive	
24	24473-70D10	3	Key, Synchronizer	
25	2703581	1	Spring, Reverse Synchronizer	Reverse Gear
26	24681-83000	1	Gear, Main Shaft Reverse	
27	26121-85202	1	Gear, Speedometer Drive	
28	2702559	2	Cir Clip	

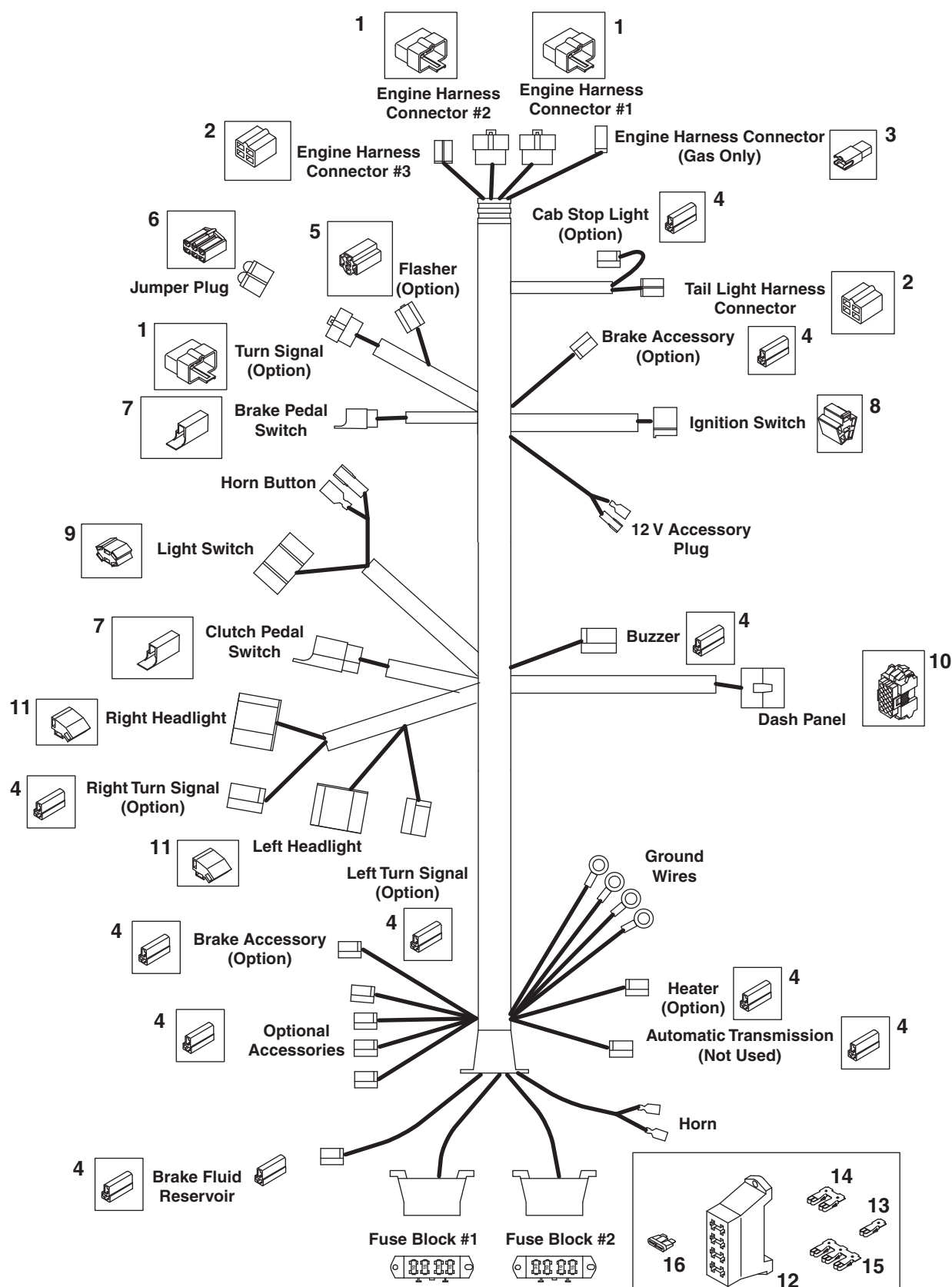
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Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	25411-85201	1	Shaft, Low Speed Fork	1st and 2nd Gear
2	25420-85201	1	Shaft, High Speed Fork	3rd and 4th Gear
3	25451-85261	1	Shaft, Reverse Fork	Reverse
4	06111-12004	5	Ball	
5	25415-83000	3	Spring, Detent	
6	09261-03017	1	Roller	
7	25211-85201	1	Fork, Low Gear Shift	1st and 2nd Gear
8	25221-85202	1	Fork, High Gear Shift	3rd and 4th Gear
9	25221-83002	1	Fork, Reverse Gear Shift	Reverse
10	09205-05012	3	Pin, 4 x 25 mm Spring	
11	09250-10006	1	Plug, Locating	
12	25121-85051	1	Case, Gear Shift Lever	
13	25520-85203	1	Shaft. Gear Shift Lever	
14	09284-17004	1	Seal, Oil	
15	25576-70D00	1	Spring	
16	09160-17035	1	Washer, 17 x 32 x 1.2 mm	
17	25541-85201	1	Lever, Gear Select	
18	25545-85055	1	Dog, Reverse Shift Limit	
19	25546-60C01	1	Spring	
20	09128-10002	1	Bolt, M10 x 9 mm Retaining	
21	09168-10007	1	Gasket	
22	25547-70D00	1	Spring	
23	09135-08005	1	Ball	
24	2701953	1	Pin	
25	25530-79501	1	Shaft, Gear Select	
26	09286-09001	1	Seal, Oil	
27	25535-85412	1	Arm, Gear Select	
28	09162-08008	1	Washer	
29	2702883	1	Washer	
30	2702494	1	Nut, M8-1.25 Hex	
31	25536-84200	1	Boot, Gear Select	
32	09135-08005	1	Bolt, Retaining	
33	24821-09001	1	Plug, Breather	

> Change from previous revision



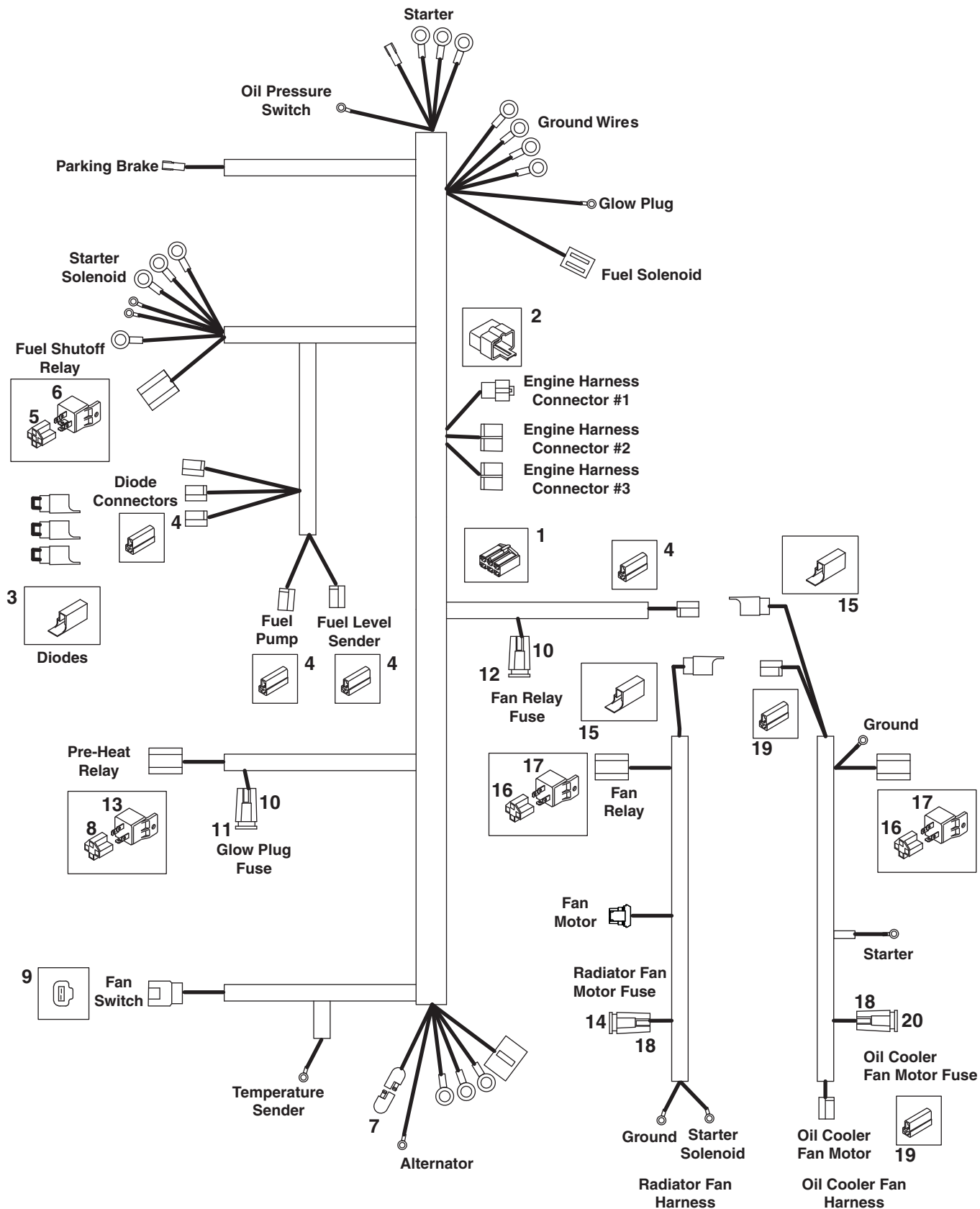
Item	Part No.	Qty.	Description	Serial Number / Notes
1	825973	3	Connector, Six Male Terminal	
	825886	AR	Terminal, 1/4 in. Male 14-16 Gauge	Single Wire
	825961	AR	Terminal, 1/4 in. Male 10 Gauge	Two Wire
2	829630	2	Connector, Four Female Terminal	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	825878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
3	826726	1	Connector, One Female Terminal	
	825886	AR	Terminal, 1/4 in. Male 14-16 Gauge	
4	826005	13	Connector, Two Female Terminal	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	825878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
5	825894	1	Connector, Flasher	
	825899	AR	Terminal, 5/16 in. Female 14-16 Gauge	
6	825877	1	Connector, Six Female Terminal	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	825878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
7	826006	2	Connector, Two Male Terminal	
	825886	AR	Terminal, 1/4 in. Male 14-16 Gauge	
8	837296	1	Connector, Ignition Switch	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	825878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
9	843598	1	Connector, Rocker Switch	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	825878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
10	843550	1	Connector, Eighteen Terminal	
	843551	AR	Terminal	
11	837301	2	Connector, Headlight	
	825899	AR	Terminal, 5/16 in. Female 14-16 Gauge	One Wire
	828629	AR	Terminal, 5/16 in. Female 14-16 Gauge	Two Wire
12	825996	1	Fuse Holder	
13	825997	4	Fuse Clip, 1 Term., 14-16 Gauge	
14	825998	6	Fuse Clip, 1 Term, 10 Gauge	
15	825999	2	Fuse Clip, 3 Term. 14-16 Gauge	
16	836892	5	Fuse, 10 Amp	
16	842983	2	Fuse, 15 Amp	
16	826000	1	Fuse, 20 Amp	

&gt; Change from previous revision

## 49.1 Diesel Engine and Fan Harness

Part Numbers 4174321, 4179800, and 4179801

Serial No. 84065 All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4174321	1	Engine Harness	Single Wire
	825877	2	• Connector, Six Female Terminal	
	825748	AR	• Terminal, 1/4 in. Fem. 14-16 Gauge	
2	825878	AR	• Terminal, 1/4 in. Fem. 10 Gauge	Two Wire
	829630	1	• Connector, Four Male Terminal	Two Wire
	825961	AR	• Terminal, 1/4 in. Male 10 Gauge	
3	884398	3	• Diode Connector Assembly	
4	826005	6	• Connector, Two Female Terminal	Single Wire
	825748	AR	• Terminal, 1/4 in. Fem. 14-16 Gauge	
	825878	AR	• Terminal, 1/4 in. Fem. 10 Gauge	
5	843168	1	• Connector, Relay	Two Wire
	842966	AR	• Terminal, Female Relay	
6	843167	1	• Relay, 12V 15 Amp DPST	Two Wire
7	558019	1	• Resistor Plug	
8	2700868	1	• Connector, 70 Amp Relay	Single Wire
	842966	AR	• Terminal, Female Relay	
	2700869	AR	• Terminal, 3/8 in. Female Relay	
9	842959	1	• Connector, 2 Contact	Two Wire
	833257	2	• Terminal, 3/32 in. Female	
	838463	2	• Seal, Wire	
10	NS	2	• Block, Maxi Fuse	Single Wire
11		1	• Fuse, 50 Amp Maxi Fuse	
12	4113261	1	• Fuse, 25 Amp	Two Wire
13	2700867	1	Relay, 12V, 70 Amp SPST	
14	4179801	1	Radiator Fan Harness	Single Wire
	836536	1	• Fuse, 40 Amp	
	826006	1	• Connector, Two Male Terminal	
15	825886	AR	• Terminal, 1/4 in. Male 14-16 Gauge	Two Wire
	2700868	1	• Connector, 70 Amp Relay	
	842966	AR	• Terminal, Female Relay	
16	2700869	AR	• Terminal, 3/8 in. Female Relay	Single Wire
	2700867	1	• Relay, 12V, 70 Amp SPST	
	826584	2	• Block, Single Fuse	
17	825997	AR	• Fuse Clip, 1 Term., 14-16 Gauge	Two Wire
			•	
	4179800	1	Oil Cooler Fan Harness	
18	826005	1	• Connector, Two Female Terminal	Single Wire
	825748	AR	• Terminal, 1/4 in. Fem. 14-16 Gauge	
19	842983	1	Fuse, 40 Amp	Two Wire
20				

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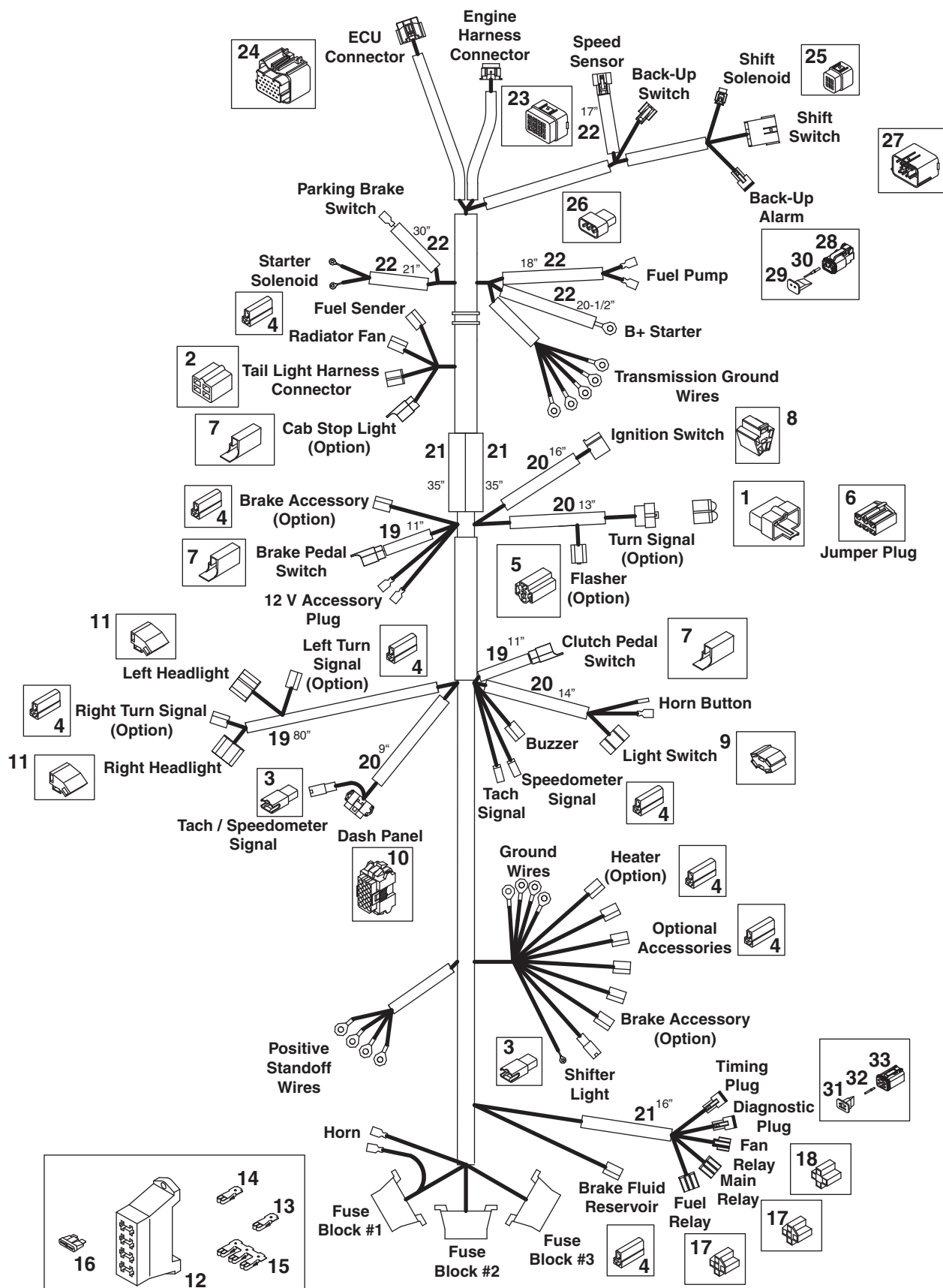
## 50.1 Gas Main Harness

Part Number 4115709

Serial No. 84058 All

Serial No. 84059 All

Serial No. 84060 All



Item	Part No.	Qty.	Description	Serial Number / Notes
1	825973	1	Connector, Six Male Terminal	
	825886	AR	Terminal, 1/4 in. Male 14-16 Gauge	Single Wire
	825961	AR	Terminal, 1/4 in. Male 10 Gauge	Two Wire
2	829631	1	Connector, Four Female Terminal	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	825878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
3	826726	2	Connector, One Female Terminal	
	825886	AR	Terminal, 1/4 in. Male 14-16 Gauge	
4	826005	12	Connector, Two Female Terminal	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	825878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
5	825894	1	Connector, Flasher	
	825889	AR	Terminal, 5/16 in. Female 14-16 Gauge	
6	2700913	1	Jumper Plug, Taillight	
	827877	1	• Connector, Six Female Terminal	
	825748	AR	• Terminal, 1/4 in. Female 14 Gauge	Single Wire
	825878	AR	• Terminal, 1/4 in. Female 10 Gauge	Two Wire
7	826006	3	Connector, Two Male Terminal	
	825886	AR	Terminal, 1/4 in. Male 14-16 Gauge	
8	837296	1	Connector, Ignition Switch	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	857878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
9	843598	1	Connector, Rocker Switch	
	825748	AR	Terminal, 1/4 in. Female 14-16 Gauge	Single Wire
	825878	AR	Terminal, 1/4 in. Female 10 Gauge	Two Wire
10	843550	1	Connector, Eighteen Terminal	
	843551	AR	Terminal	
11	837301	2	Connector, Headlight	
	825889	AR	Terminal, 5/16 in. Female 14-16 Gauge	One Wire
	828629	AR	Terminal, 5/16 in. Female 14-16 Gauge	Two Wire
12	825996	3	Fuse Holder	
13	825977	12	Fuse Clip, 1 Term., 14-16 Gauge	
14	825998	6	Fuse Clip, 1 Term, 10 Gauge	
15	825999	2	Fuse Clip, 3 Term. 14-16 Gauge	
16	836892	7	Fuse, 10 Amp	
16	842983	3	Fuse, 15 Amp	
16	826000	1	Fuse, 20 Amp	
16	4113261	1	Fuse, 25 Amp	
17	843168	2	Connector, 15 Amp Relay	
	842966	8	Terminal, Female Relay	
18	2700868	1	Connector, 70 Amp Relay	
	842966	2	Terminal, 1/4 in. Female Relay	
	2700869	2	Terminal, 3/8 in. Female Relay	
19	826190	AR	Tubing, 3/8 in. I.D. Black Convuluted	50 Foot Bulk
20	826191	AR	Tubing, 1/2 in. I.D. Black Convuluted	25 Foot Bulk

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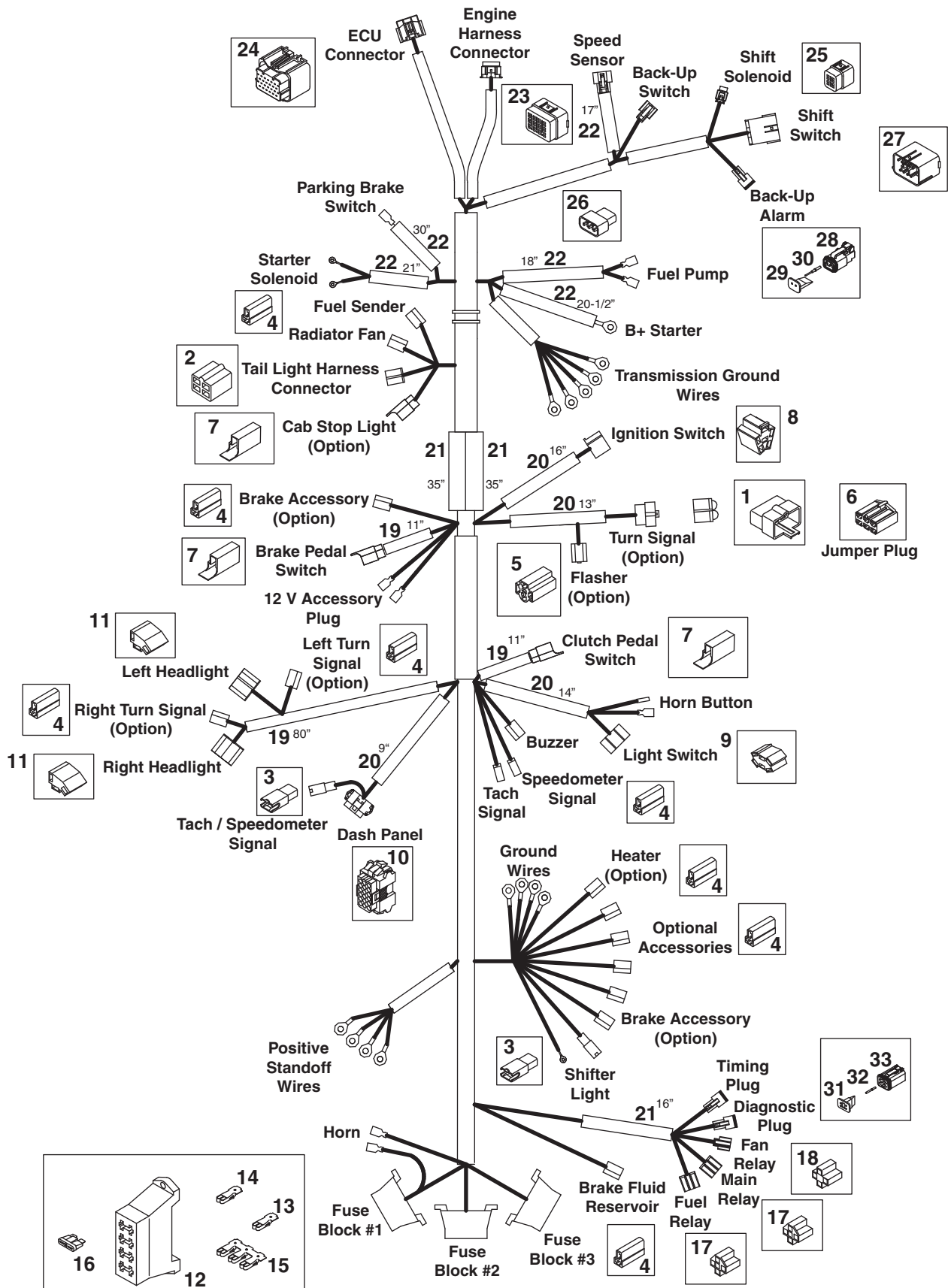
## 50.1 Gas Main Harness (Continued)

## Part Number 4115709

Serial No. 84058 All

Serial No. 84059 All

Serial No. 84060 All



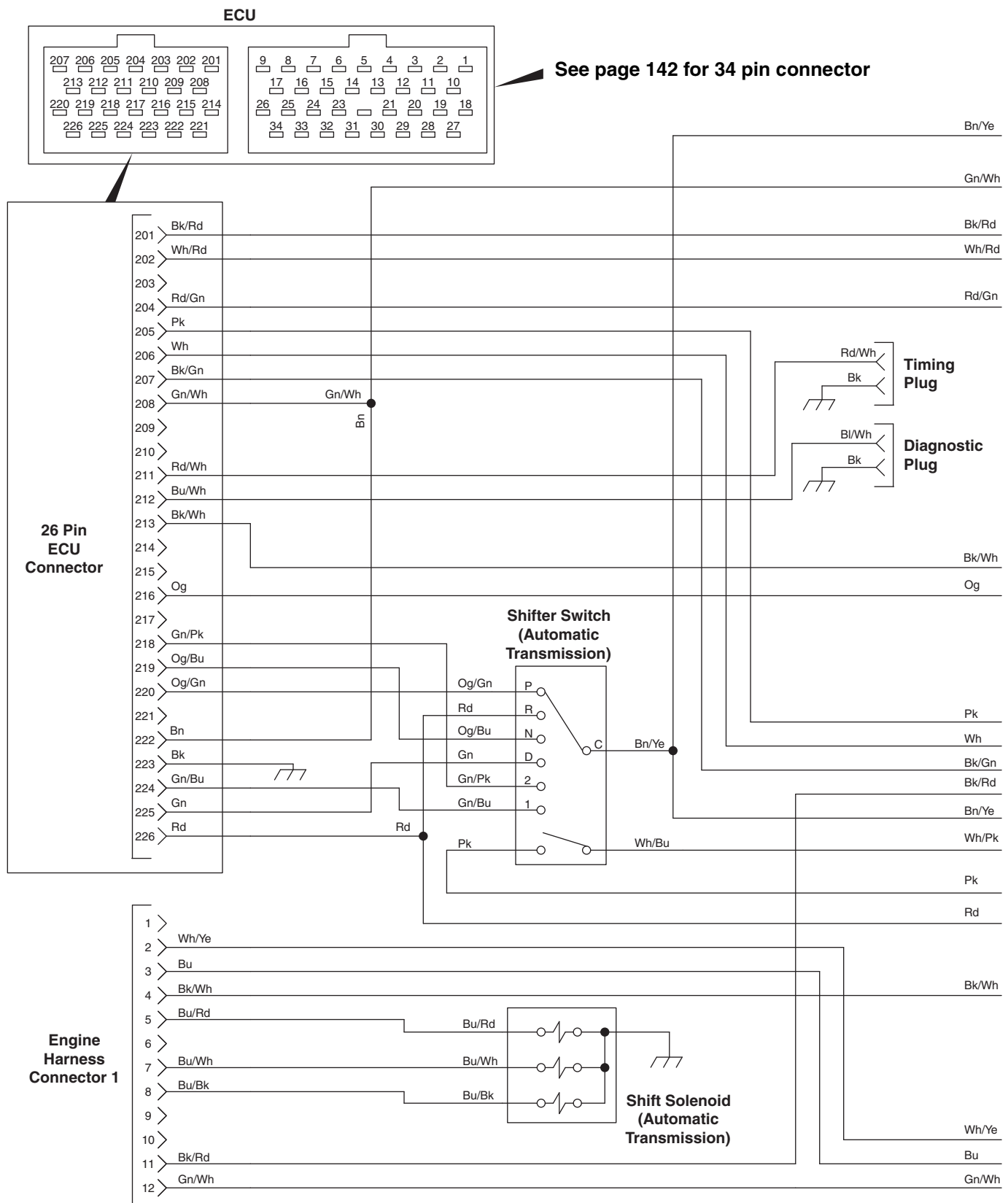


Item	Part No.	Qty.	Description	Serial Number / Notes
21	7253	AR	Tubing, 3/4 in. I.D. Black Convolute	
22	7251	AR	Tubing, 7/16 in. I.D. Green Convolute	
23	4116015	1	Connector, 12 Contact Male	
	833257	8	Terminal, Female	
	838463	8	Seal, Wire	
	2700933	4	Plug, Cavity	
24	845329	1	Connector, 26 Contact Male	
	2700852	1	Lock, 26 Contact	
	2700470	19	Terminal, Female	
	2700851	19	Seal, Wire	
	4118039	7	Plug, ECU Connector	
25	845330	1	Connector, 4 Contact Male	
	833257	4	Terminal, Female	
	838463	4	Seal, Wire	
26	845327	1	Connector, 3 Contact Female	
	2700380	3	Terminal	
	2700381	3	Seal, Wire	
27	845328	1	Connector, 9 Contact Female	
	2700385	2	Terminal	
	2700387	2	Seal, Wire	
	2700384	7	Terminal	
	2700386	7	Seal, Wire	
28	839917	1	Plug, 2 Wire Deutsch	
29	839921	1	Lock, 2 Wire Deutsch	
30	524358	2	Terminal, 18-20 AWG Male Pin	
31	838768	2	Lock, 4 Wire Deutsch	
32	838769	4	Terminal, 18-20 AWG Socket	
33	838770	2	Plug, 4 Wire Deutsch	

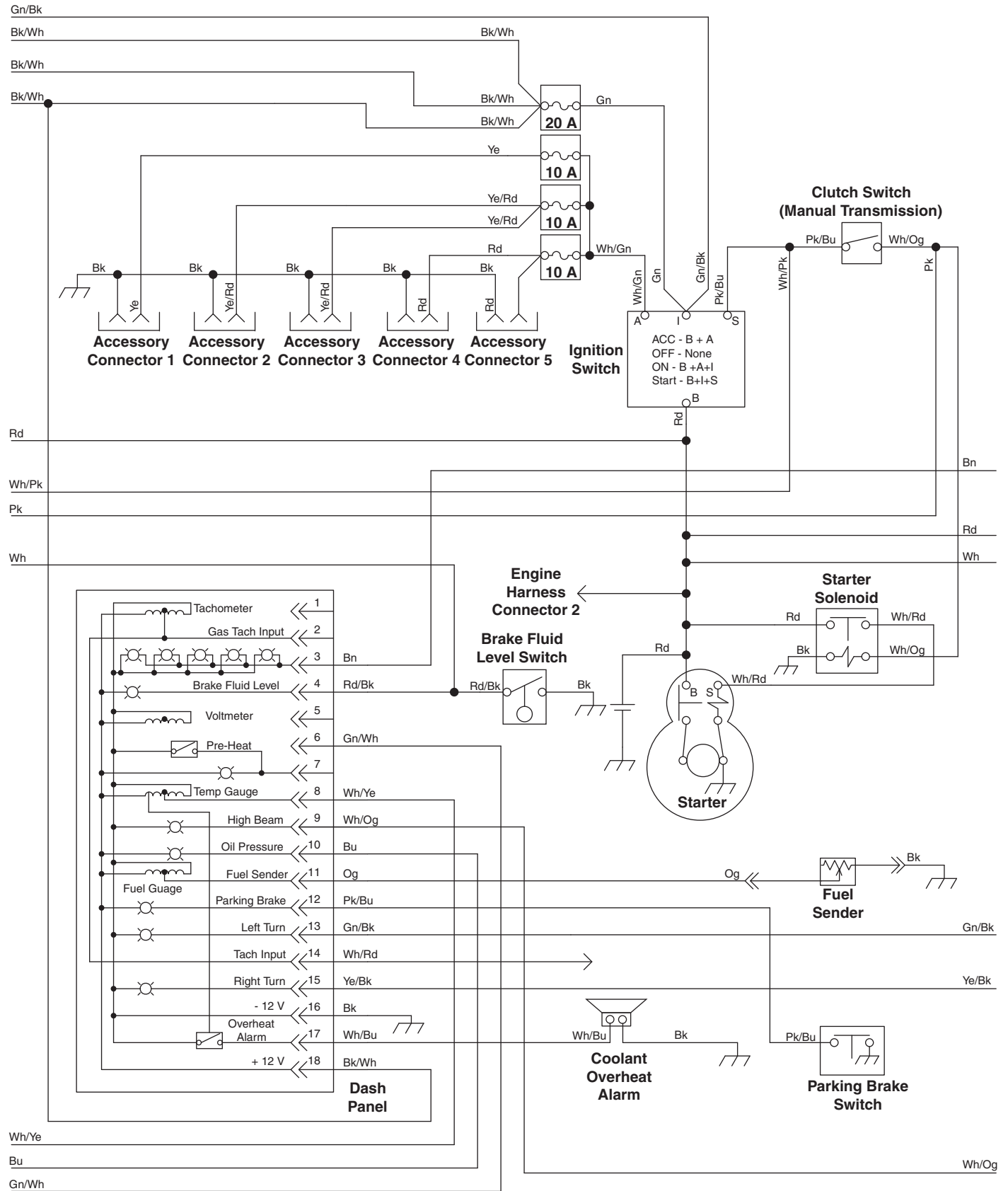
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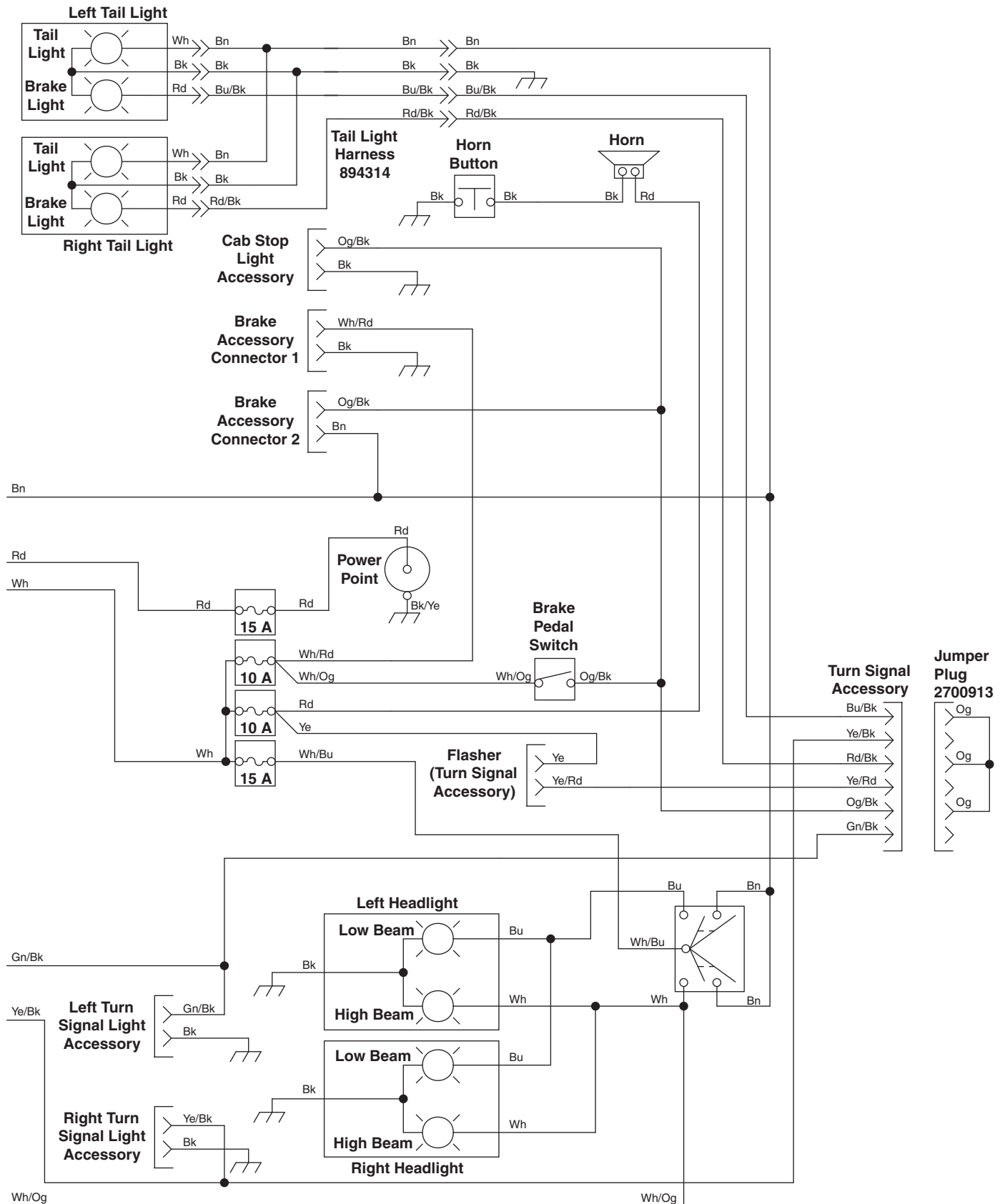
## 51.1 Gas Engine Electrical Schematic

Serial No. 84058 All  
Serial No. 84059 All  
Serial No. 84060 All



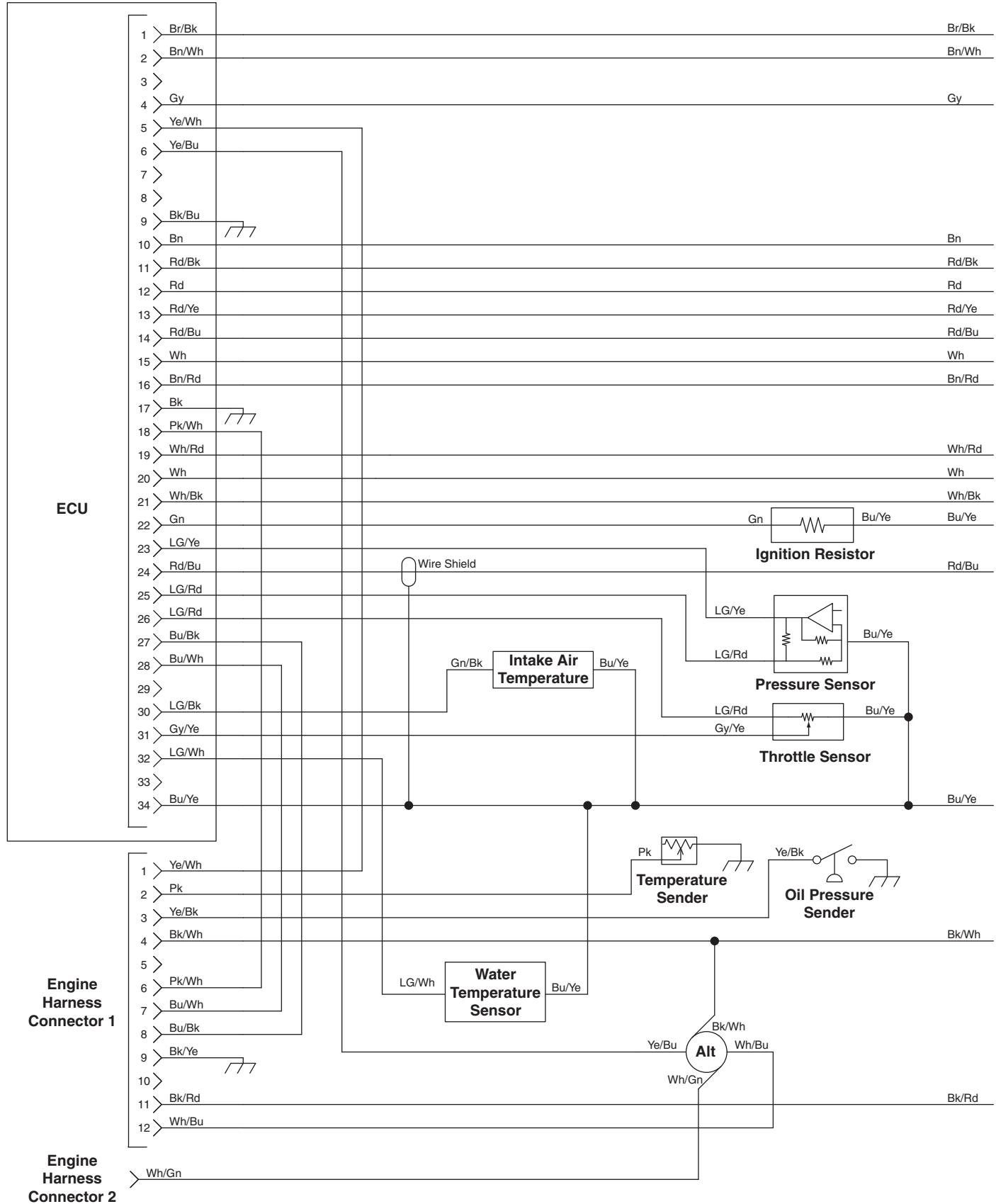


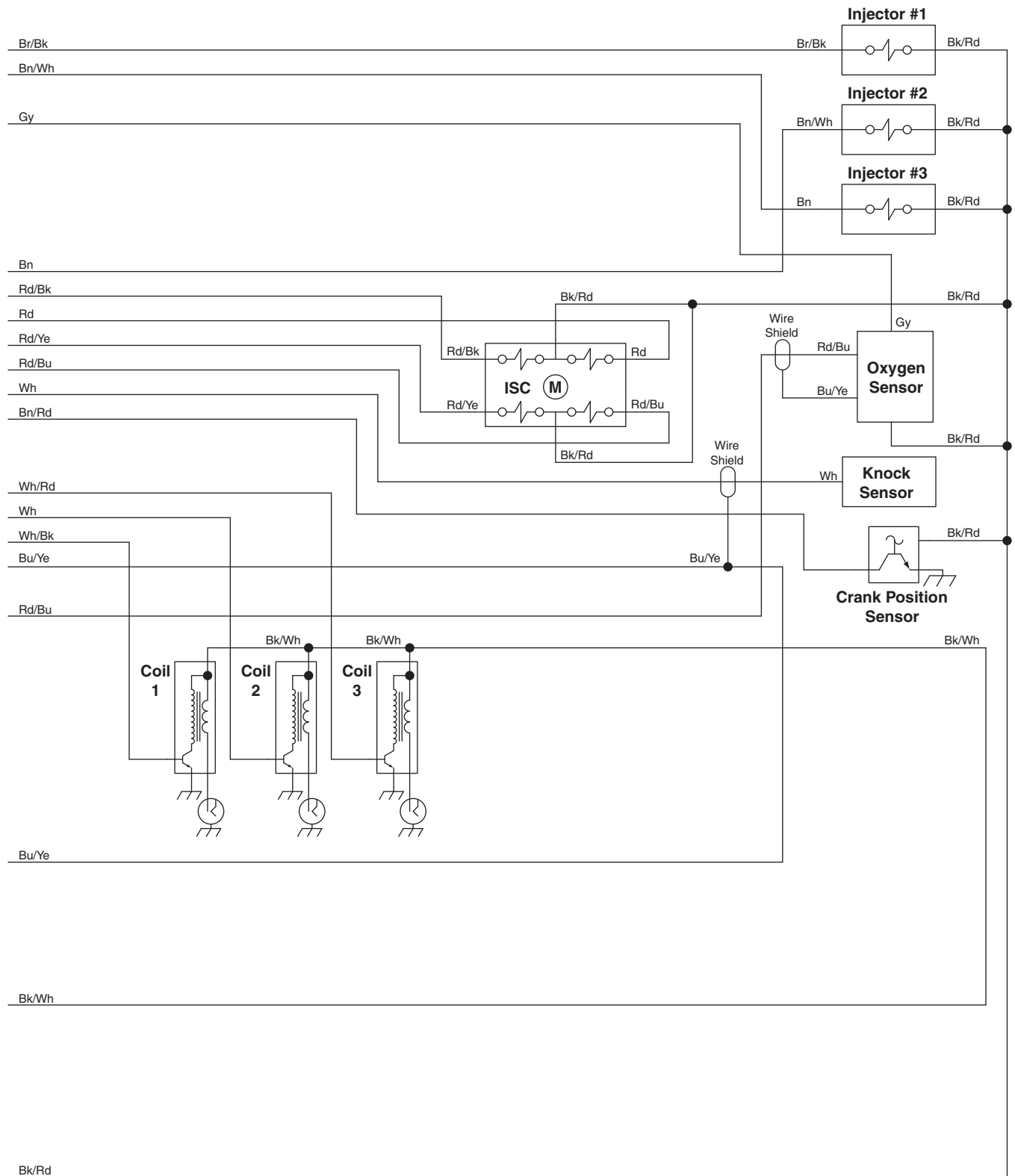


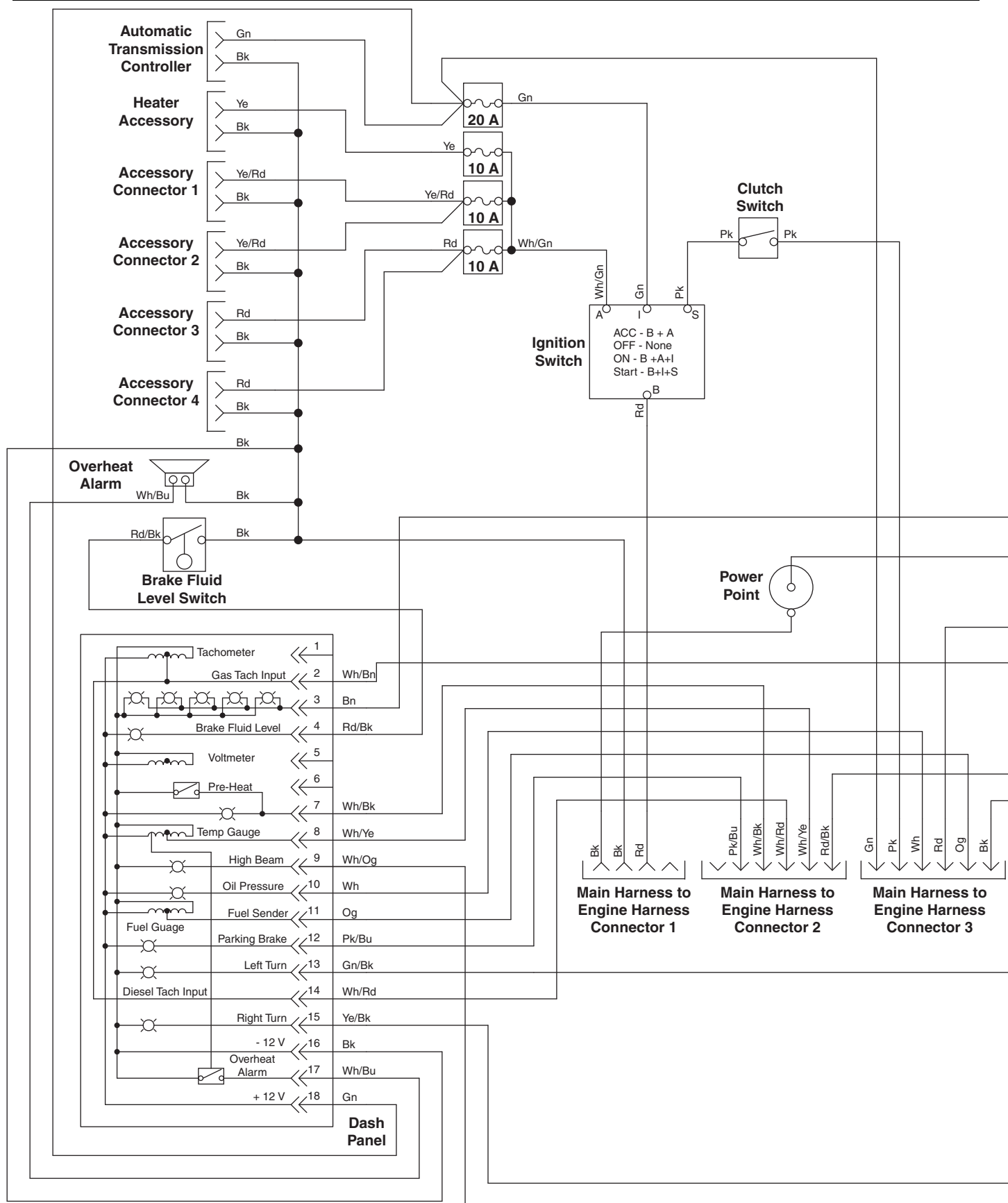


## 52.1 Gas Engine Schematic

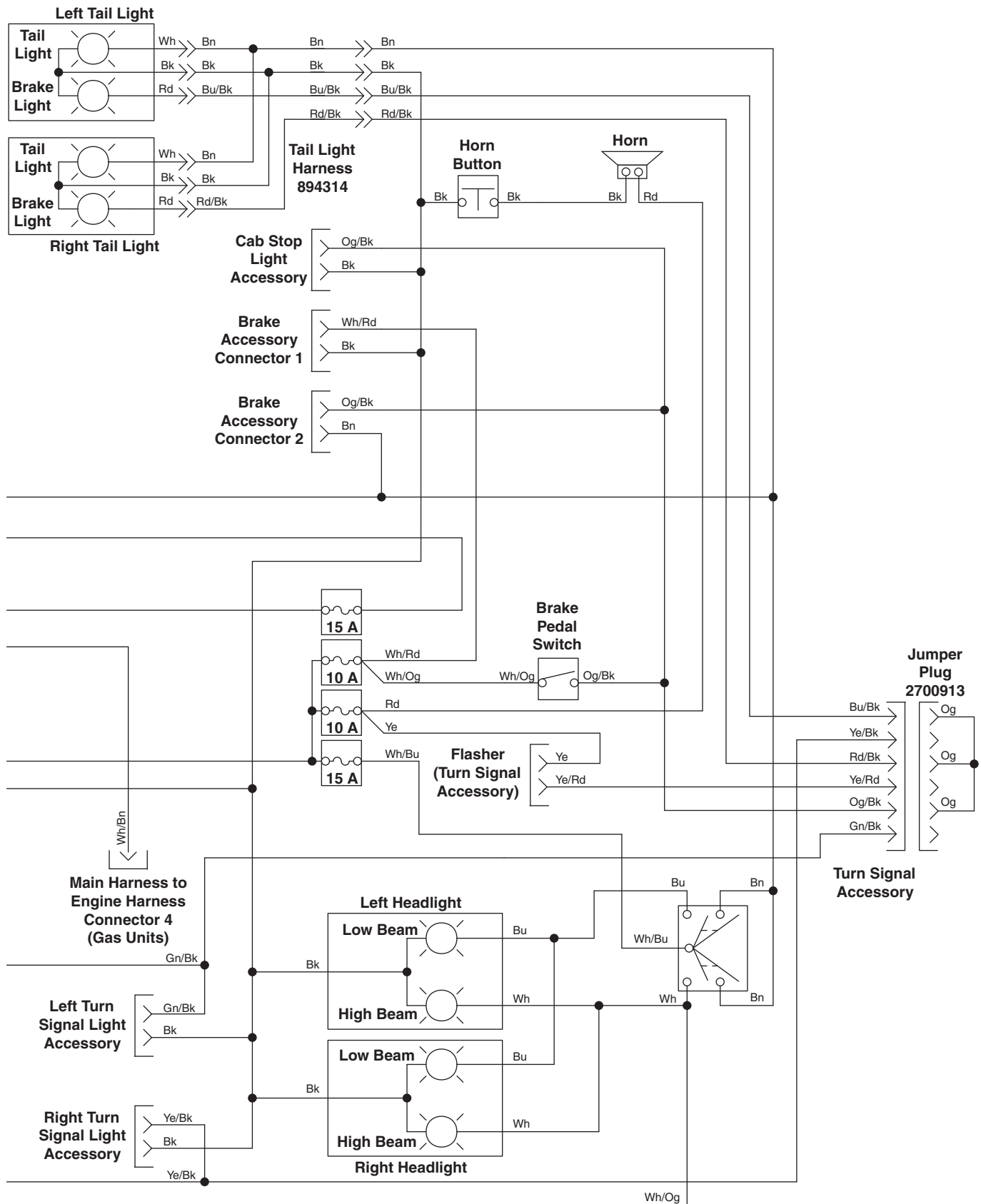
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Serial No. 84060 All

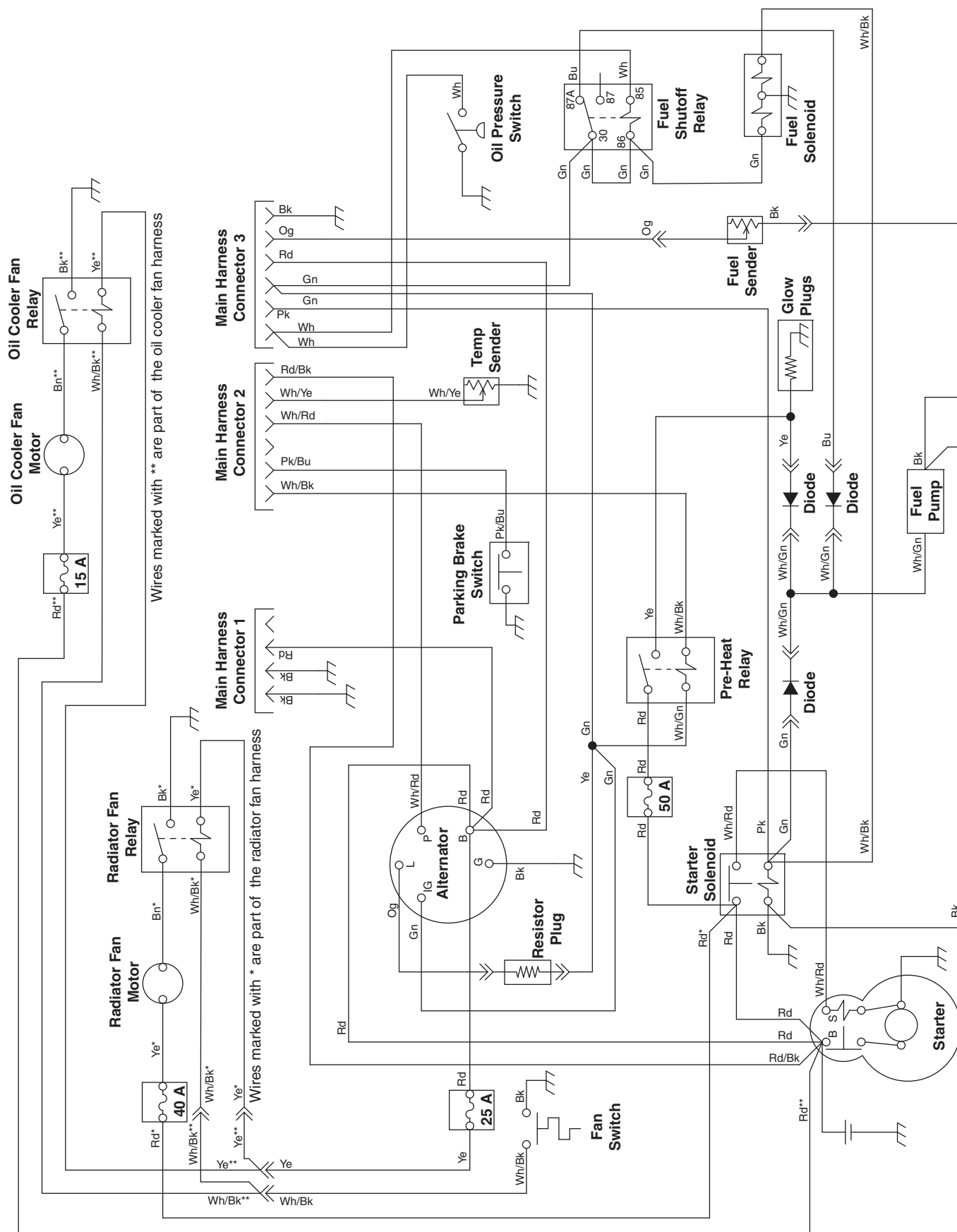












# INDEX

00414-G5.....99	112050 ..... 113	25536-84200 129	2701737.7 .... 55
009034880 ....79, 81	112840 ..... 99	25541-85201 129	2701817.7 .... 51
01116-G01 ....97	11391G7.....79, 81, 83,	25545-85055 129	2701850.7 .... 49
01421-08303.125	85	25546-60C01 129	2701953..... 129
01550-08353.57, 125	11657G3.....67, 69	25547-70D00 129	2702012..... 49
01550-08553.123	11710-77100.83	25576-70D00 129	2702014..... 49
06111-06003.127	11741-85200.83, 123	26121-85202 127	2702198..... 39
06111-12004.129	120052 ..... 103, 109,	26131-85201 125	2702199..... 41, 43
08310-00103.83	111	2700166 ..... 107	2702215..... 55
09103-08131.125	120177 .....83, 95	2700174 ..... 107	2702217..... 75
09103-08132.125	130728 .....97, 99	2700176 ..... 107	2702244..... 97, 99
09103-08152.125	132520 ..... 109, 111	2700177 ..... 107	2702247..... 75
09111-08035.89	160410 .....99	2700275 ..... 49	2702249..... 97
09128-06032.125	17680-50F70 79	2700334 ..... 97	2702257.7 .... 75
09128-10002.129	18292-G1 ..... 107	2700335 ..... 97	2702470..... 85, 87, 125
09135-08005.129	22100-85200.89	2700380 ..... 137	2702471..... 125
09160-17035.129	22400-85141.89	2700381 ..... 137	2702475..... 123
09162-08008.129	23260-85203.123	2700384 ..... 137	2702484..... 85, 87
09166-16014.125	23265-85200.123	2700385 ..... 137	2702494..... 129
09166-30007.127	23266-85002.57	2700386 ..... 137	2702501..... 101
09168-10007.129	24110-80410.127	2700387 ..... 137	2702502..... 101
09205-03019.123	24121-85252.127	2700453 ..... 77	2702547..... 85
09205-05012.129	24131-83002.125	2700470 ..... 137	2702548..... 85
09250-10006.129	24211-83011.127	2700496 ..... 49, 59, 61,	2702559..... 127
09261-03017.129	24220-60A01 127	62	2702561..... 127
09261-06003.125	24230-83001.127	2700510 ..... 117	2702586..... 125
09262-28019.125	24400-83000.127	2700513 ..... 117	2702659..... 123, 125
09262-28020.125	24410-83000.127	2700525 ..... 99	2702662..... 125
09262-30086.127	24420-83000.127	2700528 ..... 117	2702684..... 123
09263-30031.127	24431-83001.127	2700529 ..... 117	2702686..... 85, 87
09263-35015.127	24432-83001.127	2700540 ..... 97	2702687..... 85
09280-11002.123	24436-83000.127	2700573 ..... 77	2702688..... 85, 87
09280-19001.125	24441-85F41 127	2700757 ..... 57	2702689..... 85, 87
09280-21014.125	24442-81A20 127	2700792 ..... 39	2702690..... 85, 87, 125
09282-08001.125	24471-60A00 127	2700851 ..... 137	2702695..... 59
09283-25088.125	24473-70D10 127	2700852 ..... 137	2702756..... 87
09284-17004.129	24551-83010.125	2700859 ..... 97	2702883..... 129
09286-09001.129	24560-83001.125	2700867 ..... 79, 111,	2702996..... 59
09300-14017.123	24671-83000.125	133	2703002..... 57, 125
09300-30003.127	24681-83000.127	2700868 ..... 133, 135	2703081..... 75
09380-28007.125, 127	24700-85200.125	2700869 ..... 133, 135	2703158..... 39
09390-62010.125	24741-83001.125	2700913 ..... 135	2703170..... 113
09390-68002.125	24770-85252.125	2700933 ..... 137	2703171..... 113
09448-20007.123	24780-83010.125	2701105.7 .... 51	2703257.7 .... 49
103867 .....55, 57, 59,	24821-09001.129	2701129 ..... 97	2703309..... 117
89, 93, 95,	25121-85051.129	2701165 ..... 69, 113	2703481..... 117
97, 101	25211-85201.129	2701210 ..... 51, 65	2703506.7 .... 117
111074 .....115, 119	25221-83002.129	2701273 ..... 61	2703507.7 .... 117
111758 .....115	25221-85202.129	2701371 ..... 61	2703581..... 127
111812 .....99	25411-85201.129	2701408 ..... 117	2703683..... 93
111813 .....99	25415-83000.129	2701442 ..... 81	2703684..... 97
111814 .....99	25420-85201.129	2701465 ..... 109, 111	2703707..... 59
111816 .....99	25451-85261.129	2701510 ..... 97	2703931.7 .... 59, 61
111817 .....99	25520-85203.129	2701513 ..... 81	2703951..... 59, 61
111838 .....77	25530-79501.129	2701693.7 .... 67	2703953..... 59
111893 .....97, 99	25535-85412.129	2701697.7 .... 67, 85, 87	2703956.7 .... 59

# INDEX

2703964.7.....59, 61	308091 .....59, 61	4140072 .....69	4174286..... 83
28391-85202.125	309067 .....67, 107	4140075 .....69	4174287..... 69
29165G01 .....49	309488 .....41, 43	4140090 .....79, 81	4174288..... 69
29431-85400.125	311392 .....73	4140269 .....45, 47	4174289..... 103
3001388.....83	311398 .....69	4140431 .....61	4174290..... 95
3001965.....83	311763 .....59, 61	4140617 .....85, 87	4174321..... 79, 133
300646 .....79, 81	312176 .....91	4140618 .....85, 87	4174440..... 57, 89
300977 .....59, 61	320107 .....77	4140899 .....85	4174560..... 95
302030 .....62	36092-G01....79, 81	4141031 .....97	4174563..... 79
302288 .....41, 43, 97, 99	361005 .....89	4141037 .....127	4174620..... 83
302944 .....73	361117 .....103	4141425 .....91, 99	4174660..... 79
303269 .....73, 83, 89, 95	37610-80023.123	4142186 .....91	4174720..... 93
303952 .....39	38061A.....39	4142627 .....61	4174820..... 79
304632 .....100	385174 .....75	4142630 .....61	4175021..... 93
304636 .....73, 75, 117	38541 .....39	4142772 .....85	4175340..... 47
305134 .....73	400108 .....83, 107	4142796 .....61	4175402..... 79, 81
306320 .....97	400184 .....83	4143072 .....91	4175560..... 89
306322 .....115, 119	4113019 .....107	4144332 .....91	4175561..... 95
306325 .....89, 95, 97, 101, 109, 111	4113020 .....107	4144334 .....69	4175562..... 95
306328 .....41, 43, 49, 55, 57	4113022 .....105, 107	4144345 .....69	4175620..... 95
306372 .....97	4113261 .....133, 135	4145325 .....67	4176887..... 79
306375 .....62, 97	4113986 .....89, 95	4146818 .....61	4176960..... 95
306396 .....59, 61, 79, 81, 97, 99, 101	4114867 .....99	4146819 .....61	4177253..... 79
306397 .....59, 61	4115033 .....81	4147117 .....51	4177560..... 95
306405 .....117	4115400 .....81	4147118 .....51	4179800..... 79, 133
306419 .....39, 101, 109, 111	4115584 .....99	4148065 .....87	4179801..... 79, 133
306450 .....101	4115709 .....111	4148082 .....85	4179802..... 103
306463 .....39	4116015 .....137	4148153 .....101	4179803..... 67, 85, 87
306488 .....39, 109, 111	4116017 .....111	4148212 .....87	4183301..... 109, 111
306506 .....99	4117221 .....39	4148213 .....87	4183303..... 111
306562 .....83	4117900 .....85	4148360 .....85	4183304..... 109, 111
306799 .....77	4118027 .....85, 87	4148361 .....87	4183623..... 89
306825 .....73	4118039 .....137	4149981 .....51	4183634..... 95
306829 .....115	4118422 .....85, 87	4150138 .....91	4184320..... 47
306836 .....83	4118423 .....85, 87	4152157 .....109, 111	4185841..... 67
306839 .....71	4119634 .....57	4154081 .....111	4186780..... 89
306915 .....99	4119678 .....99	4154481 .....57	4188387..... 91, 100
306932 .....109, 111	4119866.8 ....95	4166084 .....107	4189960..... 99
306981 .....83, 97, 100, 119	4119955 .....87	4166085 .....107	4190700..... 95
306982 .....115	4120096 .....87	4166086 .....107	4190701..... 95
307776 .....119	4120097 .....87	4166840 .....103	4191140..... 83
308008 .....73	4120098 .....87	4166841 .....103	4192125..... 83
308089 .....97	4120138 .....71	4166842 .....103	4194420..... 55
308090 .....41, 43, 59, 61, 79, 81, 97	4138391 .....85	4168131 .....103	4194421..... 55
	4139208 .....97	4168143 .....107	4194500..... 55
	4139209 .....97	4170802 .....107	4202860..... 53
	4139210 .....97	4170840 .....103	4205580..... 45
	4139211 .....85	4172648 .....107	4207160..... 39
	4139442 .....81	4173062 .....83	4208620..... 39
	4139691 .....39, 65	4173201 .....89	443102..... 95
	4139793 .....67, 69	4173262 .....89	450077..... 71
	4139806G02.67, 69	4174200 .....83	450193..... 95, 101
	4139939 .....41, 43	4174260 .....89	450324..... 109, 111
	4140067 .....69	4174281 .....83	450377..... 53, 57
	4140069 .....69	4174282 .....89	450378..... 95, 101
	4140071 .....69	4174285 .....83	450382..... 71

# INDEX

450391 .....65	452402 .....65, 89	603102.....99	809152..... 53
450393 .....71	452405 .....67, 79, 85,	604174..... 59, 61	809156..... 65
450398 .....65	87	7033.....79, 81	809174..... 83
450400 .....39	452406 .....67	7162.....79, 81	809180..... 67, 69, 121
450401 .....45	452408 .....73	7301.....107	809231..... 63
450410 .....55	452410 .....67	7326.....107	810152..... 55, 57
450412 .....45, 83	452411 .....45, 47	800017.....95	810435..... 55, 119
450452 .....41, 43, 49,	452413 .....73	800021.....103	810437..... 67, 75, 119
51, 65, 79,	452414 .....65	800024.....97	810722..... 97
81, 93,	452415 .....67	800026.....51, 65	812335..... 121
103, 107,	452424 .....55, 57	800146.....79	812445..... 55
109, 111	452692 .....59, 61, 75	800177.....79, 81	813850..... 69, 73
450453 .....41, 43, 45,	452695 .....39, 49, 57,	800198.....69	814474..... 75
53, 55, 57,	59, 61	800227.....99, 119	814476..... 115
67, 77, 79,	452738 .....93	800344.....39	815403..... 75
81, 83, 85,	460030 .....71	800446.....53	816307..... 59, 61
87, 89, 93,	471221 .....71	800485.....73	816401..... 41, 43
105, 107,	48540-01 .....95	800547.....45, 83, 89,	816586..... 73
109, 111	5000919 .....83	93, 95	817250..... 75
450454 .....41, 53, 55,	5000920 .....83	800558.....99	817928..... 75
59, 61, 65,	5000921 .....83	800559.....121	818395..... 97
67, 79, 85,	5001947 .....105	800571.....83	819923..... 77
87, 89, 97,	515268 .....49	800582.....49, 59, 61	820008..... 113
103	517226 .....115	800602.....69	820889..... 81
450455 .....45, 65, 67,	523085 .....41, 43	800695.....121	820899..... 79, 89
73	524358 .....137	800711.....100	821071..... 49
450457 .....77	524633 .....49	800717.....115	821164..... 59, 93, 97
450510 .....57	524643 .....49	800737.....121	821893..... 63
450541 .....39, 41, 43,	548041 .....100	800743.....117	822049..... 65
79, 81	548061 .....69	800789.....63	822819..... 51
450544 .....51	548079 .....71	800861.....71	823549..... 39, 77
450739 .....77	548155 .....91	800875.....107	825264..... 105
452004 .....83	548159 .....39	800908.....75, 117	825624..... 63, 81, 107
452006 .....107	548175 .....39, 59, 61,	800909.....67, 69	825748..... 65, 131,
452378 .....49, 51, 79,	65, 109,	800927.....97	133, 135
81, 103,	111	800930.....39, 45, 47,	825866..... 131, 133
107, 109,	548222 .....123	55, 103,	825877..... 133
111	548224 .....71	107	825878..... 65, 131,
452379 .....89	548325 .....99	800934.....39, 55,	133, 135
452388 .....41, 43, 53,	548804 .....100	109, 111	825884..... 79, 83
55, 57, 79,	548849 .....83	800937.....65	825886..... 55, 65,
81, 83, 89,	548910 .....51, 95	800943.....39, 49, 55,	131, 135
93, 109,	548911 .....49	77, 109,	825889..... 135
111	548952 .....121	111	825894..... 131, 135
452389 .....67, 83, 85,	550489 .....105	800944.....117	825899..... 131, 135
87, 89, 95	553020 .....95	800945.....71	825961..... 133
452390 .....83, 93	554663 .....69	800948.....83	825973..... 131, 135
452391 .....53	558019 .....133	800949.....83	825996..... 131, 135
452392 .....81, 83	600992 .....79, 81	800973.....115	825997..... 133
452394 .....105	600993 .....89	805837.....117	825999..... 131, 135
452395 .....79, 81, 89	601585 .....67, 79	806703.....57, 97	826000..... 131, 135
452398 .....39, 41, 53,	601591 .....79, 81	806714.....49, 55	826005..... 133
55, 67, 75,	601592 .....79, 81	808060.....77	826006..... 55, 133
79, 81, 103	601595 .....79	808088.....75	826190..... 135
452399 .....65	601596 .....81	809092.....77	826191..... 135
452401 .....59, 61	601937 .....41, 43	809137.....55, 75	826584..... 133

# INDEX

826590 .....63, 105	836683 .....115	841799 .....45, 47	843792 .....59, 61
826726 .....131, 135	836684 .....115	841839 .....75	843857 .....81, 89
827182 .....53	836685 .....115	841841 .....75	843876 .....69
828231 .....109, 111	836686 .....115	841842 .....55, 75	843942 .....109, 111
828382 .....39	836687 .....115	841866 .....49	843997 .....49
828590 .....77	836688 .....115	841885 .....83	844148 .....71
828629 .....131, 135	836689 .....115	841913 .....39	844156 .....65
829044 .....69	836690 .....115	841969 .....103	844167 .....55, 109,
829045 .....69	836691 .....115	841982 .....95, 101	111
829630 .....65, 133	836692 .....115	842010 .....57	844202 .....57
829631 .....65, 135	836693 .....121	842030 .....41	844223 .....49
829787 .....103	836694 .....117	842033 .....73	844224 .....49
829954 .....103	836695 .....117	842103 .....55	844228 .....123
829997 .....103	836852 .....103, 119	842104 .....75	844293 .....39
830140 .....97	836892 .....131, 135	842740 .....62	844428 .....39
830366 .....49	836959 .....119	842773 .....59, 61	844429 .....39
830784 .....41, 43, 49	837295 .....49	842774 .....59, 61	844430 .....39
830930 .....55, 77, 107	837296 .....131, 135	842870 .....67	844601 .....67
831039 .....105	837298 .....49	842915 .....85, 87	844611 .....57
831225 .....109, 111	837301 .....131, 135	842935 .....55, 57	844647G01 ..67
831405 .....73	837303 .....39	842959 .....133	844813 .....117
831586 .....97	838154 .....105	842961 .....83	844847 .....65
831846 .....79, 81	838295.8 .....95, 101	842966 .....133, 135	844988 .....47
832584 .....113	838340 .....63	842983 .....131, 133,	845038 .....41, 43
832587 .....55, 113	838427 .....65	135	845133 .....53
833056 .....99	838463 .....133, 137	843013 .....97	845134 .....53
833101 .....99	838539 .....117	843021 .....55	845223 .....123
833103 .....99	838602 .....83	843078 .....103	845224 .....81
833104 .....99	838768 .....137	84310 .....103	845327 .....137
833257 .....133, 137	838769 .....137	843158 .....53	845328 .....137
833273 .....57	838770 .....137	843167 .....111, 133	845329 .....137
833345 .....99	839917 .....137	843168 .....133, 135	845330 .....137
833366 .....99	839921 .....137	843238 .....69	845345.7 .....62
833440 .....79, 81	840017 .....77	843298 .....103	845356 .....117
833512 .....79, 81	840222 .....77	843356 .....53	884398 .....133
833715 .....81	840352 .....85, 87	843359 .....53	884513 .....111
833953 .....103	840436 .....41, 43	843418 .....75	886425 .....109, 111
835271 .....97, 99	840508 .....39	843537 .....99	887259 .....77
836420 .....121	840725 .....55, 57	843550 .....131, 135	888549 .....81
836423 .....121	840726 .....55, 57	843551 .....131, 135	889050 .....79, 81
836426 .....117	840754 .....79, 81	843561 .....49	889681 .....73
836428 .....121	841167 .....71	843562 .....49	889682 .....73
836431 .....119	841255 .....73, 77	843563 .....49	889870 .....115
836440 .....121	841336 .....73	843568 .....67	890000 .....109, 111
836441 .....121	841404 .....73	843581 .....49	891829 .....113, 115
836443 .....115	841428 .....39	843598 .....131, 135	892164 .....62
836536 .....133	841429 .....71	843614 .....59, 61	892228 .....77
836665 .....115	841430 .....75, 117	843679 .....59, 61	892676 .....65
836671 .....115	841477G01 ...39	843685 .....59, 61	892921 .....55
836675 .....115	841630 .....71	843724 .....59, 61	892933 .....57
836676 .....115	841637 .....39	843726 .....103	893145 .....67
836677 .....115	841663 .....49	843727 .....103	893145.7 .....67
836678 .....115	841715 .....39	843754 .....125	893233 .....71
836680 .....115	841737 .....71	843767 .....77	893234 .....71
836681 .....115	841738 .....71	843768 .....77	893266 .....71
836682 .....115	841753 .....39	843778 .....59	893322 .....41, 43

# INDEX

---

893344 .....	77
893375.14.....	41, 43
893404.7.....	65
893404G.7 ....	65
893519 .....	117
893525 .....	67
893541 .....	41, 43
893571 .....	77
893581 .....	117
893582 .....	117
893583 .....	53, 113
893585 .....	75
893586 .....	75
893613 .....	69
893632 .....	43, 45, 47
893862 .....	69
894066 .....	83
894159 .....	49
894167 .....	55
894179 .....	59
894201 .....	103
894232 .....	65
894266 .....	109
894308 .....	55, 57
894314 .....	65
894348 .....	79
894456 .....	55
894471 .....	99
894508 .....	62
894573 .....	71
894574 .....	71
894581 .....	67
894582 .....	67
894584 .....	62
894602 .....	109, 111
894635 .....	73
894638 .....	105
894922 .....	103
894922G.....	103
894930 .....	75, 117
894931 .....	75, 117
894932 .....	75, 117
894933 .....	75, 117
894934 .....	75, 117
894935 .....	75, 117
894936 .....	75, 117
894998.7.....	67, 85, 87
895113 .....	55

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