PARTS AND OPERATION MANUAL

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MQ POWER WHISPERWATT™ GENERATOR MODEL DCA-45SSIU2

General Electric Equipment Rental (GEER)

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UP TO S/N7202115-Version 1999
FROM S/N7202116~ Version 2000

Revision #2 (03/14/01)

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310-537-3700
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FAX: 800/672-7877
SERVICE DEPARTMENT:
800/835-2551
FAX: 310/638-8046

⚠WARNING⚠

CALIFORNIA--Proposition 65 Warning

Engine exhaust and some of its constituents are know to the State of California to cause cancer, birth defects and other reproductive harm.

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL NUMBER ON-HAND WHEN CALLING

PARTS DEPARTMENT
800/427-1244 or 310/537-3700
FAX: 800/672-7877 or 310/637-3284

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NOTE

Specification and part number are subject to change without notice.

- **Dealer account number**
- **Dealer name and address**
- **Shipping address (if different than billing address)**
- **Return fax number**
- **Applicable model number**
- **Quantity, part number and description of each part**
- **Specify preferred method of shipment:**
  - UPS Ground
  - UPS Second Day or Third Day*
  - UPS Next Day*
  - Federal Express Priority One (please provide us with your Federal Express account number)*
  - Airborne Express*
  - Truck or parcel post

**Normally shipped the same day the order is received, if prior to 2PM west coast time.*

Earn Extra Discounts when you order by FAX!

All parts orders which include complete part numbers and are received by fax qualify for the following extra discounts:

Number of line items ordered	Additional Discount
1-9 items	3%
10+ items**	5%

Extra Fax Discount for Domestic USA Dealers Only

Up to 5% extra savings!

UPS Special
For faxed orders only

Get special freight allowances when you order 10 or more line items via FAX!**

- UPS Ground Service **at no charge for freight**
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No other allowances on freight shipped by any other carrier.

**Common nuts, bolts and washers (all items under $1.00 list price) do not count towards the 10+ line items.

DISCOUNTS ARE SUBJECT TO CHANGE

Fax order discount and UPS special programs revised June 1, 1995

Now! Direct TOLL-FREE access to our Parts Department!

Toll-free nationwide:

800-421-1244

Toll-free FAX:

800/6-PARTS-7 • 800-672-7877

CAUTION:

Failure to follow instructions in this manual may lead to serious injury or even death! This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following safety guidelines should always be used when operating the DCA-45SSIU2 portable generator:

GENERAL SAFETY

- **DO NOT** operate or service this equipment before reading this entire manual.

- This equipment should not be operated by persons under 18 years of age.

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.

- **NEVER** operate this equipment when not feeling well due to fatigue, illness or taking medicine.

- **NEVER** operate this equipment under the influence or drugs or alcohol.

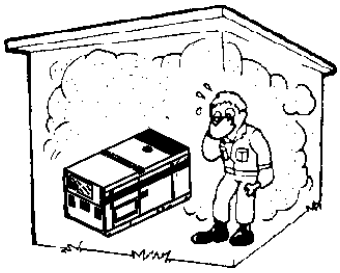
- **NEVER** use accessories or attachments, which are not recommended by MQ Power for this equipment. Damage to the equipment and/or injury to user may result.
- Manufacturer does not assume responsibility for any accident due to equipment modifications.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Always check the machine for loosened threads or bolts before starting.

CAUTION:

NEVER touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing engine or generator.

- **High Temperatures** – Allow the engine to cool before adding fuel or performing service and maintenance functions. Contact with *hot* components can cause serious burns.

- The engine of this generator requires an adequate free flow of cooling air. Never operate the generator in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause serious damage to the generator or engine and may cause injury to people. The generator engine gives off DEADLY carbon monoxide gas.



CAUTION:

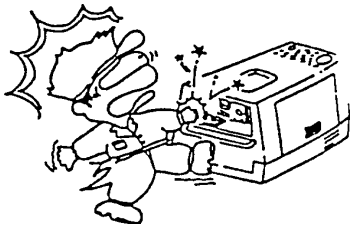
Always refuel in a well-ventilated area, away from sparks and open flames.

- Always use extreme **CAUTION** when working with **flammable** liquids. When refueling, **stop the engine** and allow it to cool. **DO NOT** smoke around or near the machine. Fire or explosion could result from fuel vapors, or if fuel is spilled on a hot engine.

- **NEVER** operate the generator in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe *bodily harm or even death.*

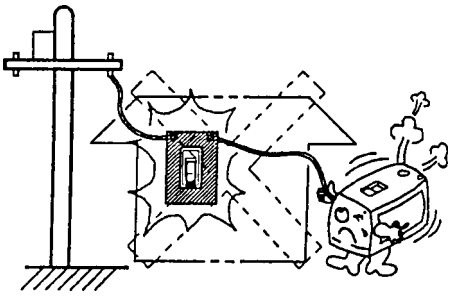
- Topping-off to filler port is dangerous, as it tends to spill fuel.

CAUTION:



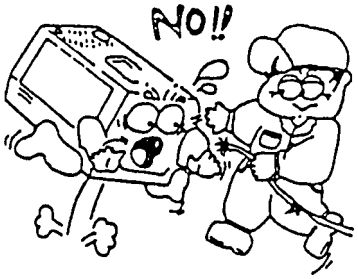
■ **NEVER** touch output terminals during operation. This is extremely dangerous. Always stop the machine when contact with the output terminals.

CAUTION:



■ **Backfeed to a utility system can cause electrocution and.or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is opened.**

CAUTION:



■ **Never** use damaged or worn cables when connecting power tools or equipment to the generator. Make sure power connecting cables are securely connected to the generator's output terminals, insufficient tightening of the terminal connections may cause damage to the generator and electrical shock.

CAUTION:

DO NOT touch or open any of the below mentioned components while the generator is running. Always allow sufficient time for the engine and generator to cool before performing maintenance.

Radiator

1. **Radiator Cap -** Removing the radiator cap while the engine is hot will result in high pressurized, boiling water to gush out of the radiator, therefore causing severe scalding to any persons in the general area of the generator.

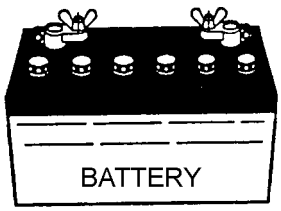
2. **Coolant Drain Plug -** Removing the coolant drain plug while the engine is hot will result in hot coolant to gush out of the coolant drain plug, therefore causing severe scalding to any persons in the general area of the generator.
3. **Engine Oil Drain Plug -** Removing the engine oil drain plug while the engine is hot will result in hot oil to gush out of the oil drain plug, therefore causing severe scalding to any persons in the general area of the generator.

Battery

CAUTION:

Never over fill the battery with water above the upper limit.

The battery contains acids that can cause injury to the eyes and skin. To avoid eye irritation, always wear safety glasses. Use well insulated gloves when picking up the battery. Use the following guidelines when handling the battery:



1. **DO NOT** drop the battery. There is the possibility of risk that the battery may explode.
2. **DO NOT** expose the battery to open flames, sparks, cigarettes etc. The battery contains combustible gases and liquids. If these gases and liquids come in contact with a flame or spark, an explosion could occur.
3. Always keep the battery charged. If the battery is not charged a buildup of combustible gas will occur.
4. Always keep battery charging and booster cables in good working condition. Repair or replace all worn cables.
5. Always recharge the battery in an open air environment, to avoid risk of a dangerous concentration of combustible gases.
6. In case the battery liquid (dilute sulfuric acid) comes in contact with ***clothing or skin***, rinse skin or clothing immediately with plenty of water.
7. In case the battery liquid (dilute sulfuric acid) comes in contact with your **eyes**, rinse eyes immediately with plenty of water, then contact the nearest doctor or hospital, and seek medical attention.

- **NEVER** Run engine without air filter. Severe engine damage may occur.
- Always service air cleaner frequently to prevent carburetor malfunction.
- Always disconnect the battery before performing service on the generator.
- Always be sure the operator is familiar with proper safety precautions and operations techniques before using generator.
- Always store equipment properly when not in use. Equipment should be stored in a clean, dry location out of the reach of children.
- **DO NOT** leave the generator running in the manual mode unattended.
- **DO NOT** allow unauthorized people to operate this equipment.
- Always read, understand, and follow procedures in Operator's Manual before attempting to operate equipment.
- Refer to the ***Isuzu Engine Owner's Manual*** for engine technical questions or information.

Loading and Unloading (Crane)

- Before lifting, make sure the generator's lifting hook is secure and that there is no apparent damage to the generator itself (loose screws, nuts and bolts). If any part is loose or damaged, please take corrective action before lifting.
- Always drain fuel prior to lifting.
- Always make sure crane or lifting device has been properly secured to the hook of guard frame on generator.
- **NEVER** lift the machine while the engine is running.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- When lifting the generator, always use the balanced center-point suspension hook and lift straight upwards.
- **NEVER** allow any person or animal to stand underneath the machine while lifting.
- When loading the generator on a truck, be sure to use the front and back frame bars as a means to secure the generator during transport.

Transporting

- Always shutdown engine before transporting.
- Tighten fuel tank cap securely.
- Drain fuel when transporting generator over long distances or bad roads.
- Always tie-down the generator during transportation by securing the generator.
- If generator is mounted on a trailer, make sure trailer complies with all local and state safety transportation laws. See page 10 for basic towing procedures.

Emergencies

- Always know the location of the nearest ***fire extinguisher*** and ***first aid kit.*** Know the location of the nearest telephone. Also know the phone numbers of the nearest ***ambulance***, ***doctor*** and ***fire department***.

Maintenance Safety

- **NEVER** lubricate components or attempt service on a running machine.
- Always allow the machine a proper amount of time to cool before servicing.
- Keep the machinery in proper running condition.
- Fix damage to the machine immediately and always replace broken parts.
- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, coolant, fuel, and fuel filters.
- **DO NOT** use plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil, coolant or fuel directly onto the ground, down a drain or into any water source

Towing Safety Precautions

CAUTION :

Check with your county or state safety towing regulations department before towing your generator.

To reduce the possibility of an accident while transporting the generator on public roads, always make sure the trailer (Figure 1) that supports the generator and the towing vehicle are in good operating condition and both units are mechanically sound.

The following list of suggestions should be used when towing your generator:

- Make sure the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer "gross vehicle weight rating" (GVWR).
- **ALWAYS** inspect the hitch and coupling for wear. **NEVER** tow a trailer with defective hitches, couplings, chains etc.
- Check the tire air pressure on both towing vehicle and trailer. Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a "**Safety Chain**".
- **ALWAYS** attach trailer's safety chain to bumper of towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake, and trailer lights are connected and working properly.
- Remember the maximum speed unless otherwise posted for highway towing is **45 MPH**. Recommended off-road towing is not to exceed **10 MPH** or less depending on type of terrain.
- Place *chocked blocks* underneath wheel to prevent ***rolling***, while parked.
- Place *support blocks* underneath the trailer's bumper to prevent ***tipping***, while parked.
- Use the trailer's hand winch to adjust the height of the trailer, then insert locking pin to lock wheel stand in place, while parked.
- Avoid sudden stops and starts. This can cause skidding, or jackknifing. Smooth, gradual starts and stops will improve gas milage.
- Avoid sharp turns to prevent rolling.
- Remove wheel stand when transporting.
- **DO NOT** transport generator with fuel in tank.

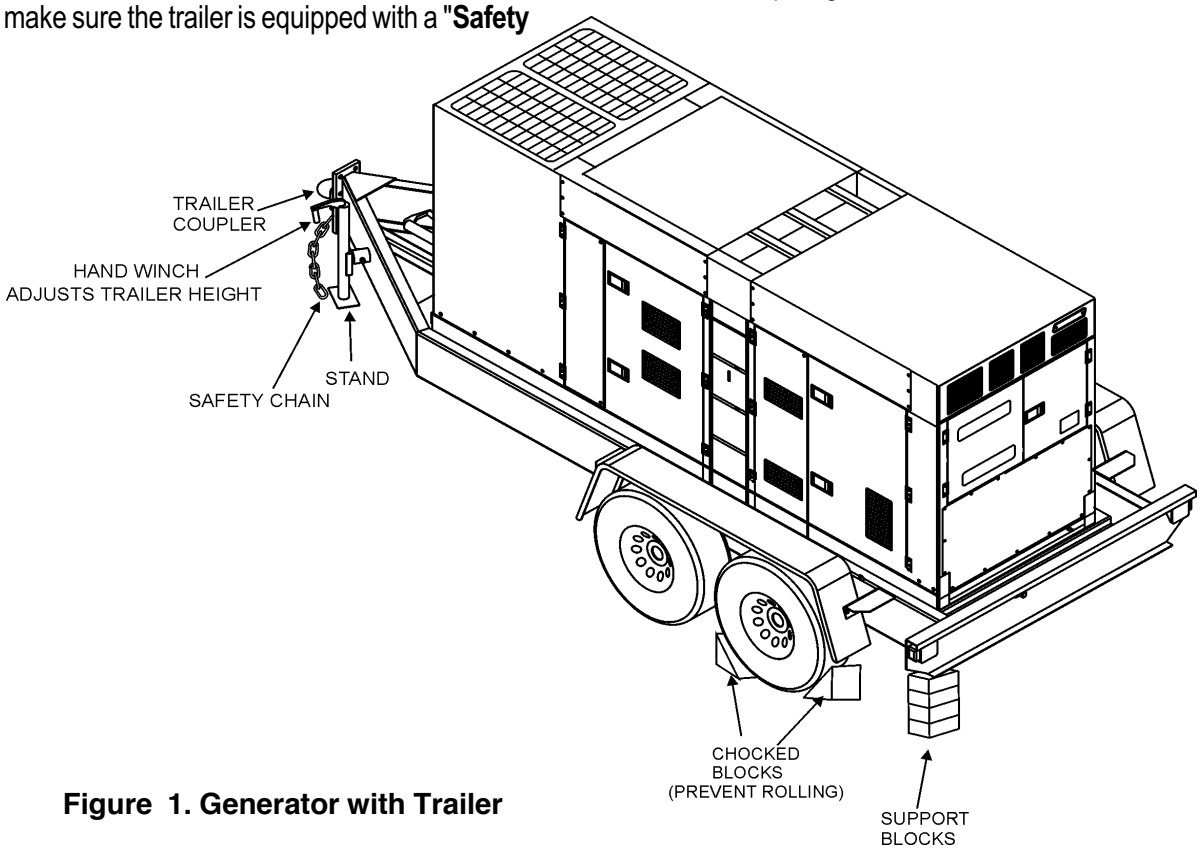


Figure 1. Generator with Trailer

CAUTION:

ALWAYS make sure the trailer is in good operating condition. Check the tires for proper inflation and wear. Also check the wheel lug nuts for proper tightness.

Explanation of Chart:
This section is intendedto provide the user with trailer service and maintenance information. The service and maintenance guidelines referenced in this section apply a wide range of trailers. Remember periodic inspection of the trailer will ensure safe towing of the equipment and will prevent damage to the equipment and personal injury.

It is the purpose of this section to cover the major maintenance components of the trailer. The following trailer components will be discussed in thie section:

- Brakes
- Tires
- Lug Nut Torquing
- Suspension
- Electrical
- Brake Troubleshooting Tables

Use the following definitions with reading Table1.

1. **Fuel Cell -** Provides an adequate amount of fuel for the equipment in use. fuel cells must be empty when transporting equipment.
2. **Braking System -** System employed in stopping the trailer. Typical braking systems are electric, surge, hydraulic, hydraulic-surge and air.
3. **GVWR-** Gross Vehicle Weight Rating (GVWR), is the maximum number of pounds the trailer can carry, including the fuel cell (empty).
4. **Frame Length -** This measurment is from the ball hitch to the rear bumper (reflector).
5. **Frame Width -** This measurement is from fender to fender.
6. **Jack Stand -** Trailer support device with maximum pound requirement from the tongue of the trailer.
7. **Coupler -** Type of hitch used on the trailer for towing.
8. **Tire Size -** Indicates the diameter of the tire in inches (10,12,14, etc.), and the width in millimeters (175,185,205, etc.). The tire diameter must match the diameter of the tire rim.
9. **Tire Ply -** The tire ply (layers) number is rated in letters; 2-ply,4-ply,6-ply, etc.
10. **Wheel Hub -** The wheel hub is connected to the trailer's axle.
11. **Tire Rim -** Tires mounted on a tire rim. The tire rim must match the size of the tire.
12. **Lug Nuts -** Used to secure the wheel to the wheel hub. Always use a torque wrench to tighten down the lug nuts. See Table 4 and Figure 5 for lug nut tightening and sequence.
13. **Axle -** Indicates the maximum weight the axle can support in pounds, and the diameter of the axle expressed in inches (see Table 3). Please not that some trailers have a double axle. this will be shown as 2-6000 lbs., meaning two axles with a total weight capacity of 6000 pounds.
14. **Suspension -** Protects the trailer chassis from shocks transmitted through the wheels. Types of suspension used are leaf, Q-flex, and air ride.
15. **Electrical -** Electrical connectors (looms) are provided with the trailer so the brake lights and turn signals can be connected to the towing vehicle.
16. **Application -** Indicates which units can be employed on a particular trailer.

Table 1. Specifications							
MODEL	**APPLICATION**	**FUEL CELL**	**BRAKE SYSTEM**	**GVWR**	**FRAME LENGTH**	**FRAME WIDTH**	**JACK STAND**
TRLR-10-15	TLG-12, DCA15, TLW-300	NO	NO	1900LBS	96"	50"	800LB. FULL TILT WHEEL
TRLR-10X	TLG-12, DCA15, TLW-300	NO	NO	1900LBS	96"	50"	800LB. FULL TILT WHEEL
TRLR-10XF	TLG-12, DCA15, TLW-300	51 GAL	NO	1900LBS	96"	50"	800LB. FULL TILT WHEEL
TRLR-225W	DCA-10	NO	NO	2200LBS	85"	42"	800LB. FULL TILT WHEEL
BLW-400	BLW-400	NO	ELECTRIC	2700LBS	W/MAST 154" W/O 124"	55" (78" TALL)	800LB. FULL TILT WHEEL
TRLR-15XF	DCA-15	41 GAL	NO	2700LBS	124"	55"	800LB. FULL TILT WHEEL
TRLR-50X	DCA-25	NO	NO	2700LBS	124"	55"	800LB. FULL TILT WHEEL
TRLR-50XF	DCA-25	41 GAL	NO	2700LBS	124"	55"	800LB. FULL TILT WHEEL
TRLR-25SBT	DCA-25	NO	NO	2990LBS	120"	66"	800LB. FULL TILT WHEEL
TRLR-70W	DCA-45, -60, 70	NO	SURGE	7000LBS	186"	77"	2000LB. FLAT PAD
TRLR-70X	DCA-45, -60, 70	OPT	SURGE	7000LBS	138"	66"	2000LB. FLAT PAD
TRLR-70XF	DCA-45, -60, 70	53 GAL	SURGE	7000LBS	138"	66"	2000LB. FLAT PAD
TRLR-100XF	DCA-100, 125	150 GAL	HYDRAULIC SURGE	7000LBS	190"	76"	2000LB. FLAT PAD
TRLR-85/125	DCA-85, 100, 125	145 GAL	HYDRAULIC	10000LBS	186"	77"	2000LB. FLAT PAD
TRLR-150XF	DCA-150, 180	200 GAL	HYDRAULIC SURGE	11160LBS	204"	84"	5000 LB. FLAT PAD
TRLR-220XF	DCA-220	250 GAL	HYDRAULIC SURGE	14000LBS	222"	83"	5000 LB. FLAT PAD
TRLR-300XF	DCA-300	250 GAL	HYDRAULIC SURGE	18000LBS	238"	83"	5000 LB. FLAT PAD
TRLR-400XF	DCA-400	350 GAL	ELECTRIC	18000LBS	238"	83"	5000 LB. FLAT PAD
TRLR-600XF	DCA-600, 800	550 GAL	AIR	30000LBS	384"	96"	5000 LB. FLAT PAD
TRLR-800SX	DCA-600, 800	550 GAL	AIR	30000LBS	384"	96"	5000 LB. FLAT PAD

Table 1. Specifications (Con't)							
MODEL	**COUPLER**	**TIRES**	**WHEELS**	**AXLE**	**HUBS**	**SUSPENSION**	**ELECTRICAL**
TRLR-10-15W	2" BALL CLASS 2 ADJUSTABLE	175-13C	13"X4.50"	2200# 2X2	5 LUG	3 LEAF	4 WIRE LOOM W/ 4 POLE FLAT
TRLR-10X	2"BALL CLASS 2 ADJUSTABLE	175-13C	13"X4.5"	2200#2X2	5 LUG	3 LEAF	4 POLE FLAT
TRLR-10XF	2"BALL CLASS 2 ADJUSTABLE	175-13C	13"X4.5"	2200#2X2	5 LUG	3 LEAF	4 POLE FLAT
TRLR-225W	2"BALL CLASS 2 ADJUSTABLE	175-13B	13X4.5"	2200#2X2	5 LUG	Q FLEX	4 POLE FLAT
BLW 400	2"BALL CLASS 2 ADJUSTABLE	175-13C	13 X 4.5"	2200#2X2	5 LUG	3 LEAF	4 POLE FLAT
TRLR-15XF	2" BALL CLASS	B78-13LRC	13"X4.50"	3500# 2-1/2"	5 LUG	4 LEAF	4 POLE RUBBER FLAT
TRLR-50X	2" BALL CLASS	B78-13LRC	13"X4.50"	3500lbs. 2-3/8"	5 LUG	4 LEAF	4 POLE RUBBER FLAT
TRLR-50XF	2" BALL CLASS	B78-13LRC	13"X4.50"	3500lbs. 2-3/8"	5 LUG	4 LEAF	4 POLE RUBBER FLAT
TRLR-70W	2" BALL CLASS 3" ADJUSTABLE	205-14C BIAS (4)	14"X5"	3500lbs. 3"	5 LUG	5 LEAF	4 POLE RUBBER FLAT
TRLR-70X	2" BALL CLASS 3" ADJUSTABLE	205-14C BIAS (4)	14"X5"	3500lbs 3"	5 LUG	5 LEAF	4 POLE RUBBER FLAT
TRLR-70XF	2" BALL CLASS 3" ADJUSTABLE	205-14C BIAS (4)	14"X5"	3500lbs. 3"	5 LUG	5 LEAF	4 POLE RUBBER FLAT
TRLR-100XF	ADJUSTABLE 2-5/6 OPT 3" EYE	205-15C BIAS (4)	14"X5.5"	3500lbs 3"	5 LUG	5 LEAF	4 WIRE LOOM
TRLR-85/125	ADJUSTABLE 2-5/6 OPT 3" EYE	ST225/75R15D RADIAL (4)	14"x6"	(2)-6000lbs	6 LUG	7 LEAF	4 WIRE LOOM
TRLR-150XF	3" BALL EYE	750-16 E BIAS (4)	16"X7"	(2)-6000lbs	8 LUG	7 LEAF	4 WIRE LOOM
TRLR-220XF	3" EYE ADJUSTABLE	ST235/85R16E RADIAL(4)	16"X7"	(2)-7000lbs	8 LUG	Q FLEX	4 WIRE LOOM
TRLR-300XF	3" EYE ADJUSTABLE	ST235/85R16E RADIAL(6)	16"X7"	(2)-6000lbs	8 LUG	Q FLEX	4 WIRE LOOM
TRLR-400XF	3" EYE ADJUSTABLE	ST235/85R16E RADIAL(6)	16"X7"	(3)-7000lbs.	8 LUG	Q FLEX	4 WIRE LOOM
TRLR-600XF	5TH WHEEL	ST215/75R17.5H RADIAL (8)	16"X7"	(3)-10000lbs	8 LUG	7 LEAF	6 WIRE LOOM
TRLR-800AR	5TH WHEEL	ST215/75R17.5H RADIAL (8)	16"X7"	(3)-10000lbs	8 LUG	AIR-RIDE	6 WIRE LOOM

Brakes

If your trailer has a braking system, the brakes should be inspected the first 200 miles of operation. This will allow the brake shoes and drums to seat properly. After the first 200 mile interval, inspect the brakes every 3,000 miles. If driving over rough terrain, inspect the brakes more frequently.

Electric Brakes

Electrically actuated brakes (Figure 2) are similar to hydraulic brakes. The basic difference is that hydraulic brakes are actuated by an electromagnet.

Listed below are some of the advantages that electric brakes have over hydraulic brakes:

- Brake system can be manually adjusted to provide the corrected braking capability for varying road and load conditions
- Brake system can be modulated to provide more or less braking force, thus easing the brake load on the towing vehicle
- Brake system has very little lag time between the time the vehicle's brakes are actuated and the trailer's brakes are actuated
- Brake system can provide an independent emergency brake system

Remember in order to properly synchronize the tow vehicle's braking to the trailer's braking, can only be accomplished by road testing. Brake lockup, grabbiness or harshness is due to lack of synchronization between the tow vehicle and the trailer being towed or under-adjusted brakes.

Before any brake synchronizations adjustments can be made, the trailer brakes should be burnished-in by applying the brakes 20-30 times with approximately a 20 m.p.h. decrease in speed, e.g. 40 m.p.h. to 20 m.p.h. Allow ample time for brakes to cool between application. This allows the brake shoes to slightly be seated into the brake drum surface.

Figure 2 displays the major electric brake components that will require inspection and maintenance. Please inspect these components as required. Reference Table 5 for electric brake troubleshooting guidelines.

Electric Brake Adjustment

1. Place the trailer on jack stands. Make sure the jack stands are placed on secure level ground.
2. Check the wheel and drum for free rotation.
3. Remove the adjusting hole cover from the adjusting slot at the bottom brake backing plate.
4. With a screwdriver or standard adjusting tool, rotate the star wheel of the adjuster assembly to expand the brake shoes.
5. Adjust the brake shoes outward until the pressure of the lining against the wheel drum makes the wheel difficult to turn.
6. Rotate the star wheel in the opposite direction until the wheel rotates freely with slight lining drag.
7. Replace the adjusting hole cover and lower the trailer to the ground.
8. Repeat steps 1 through 6 on the remaining brakes.

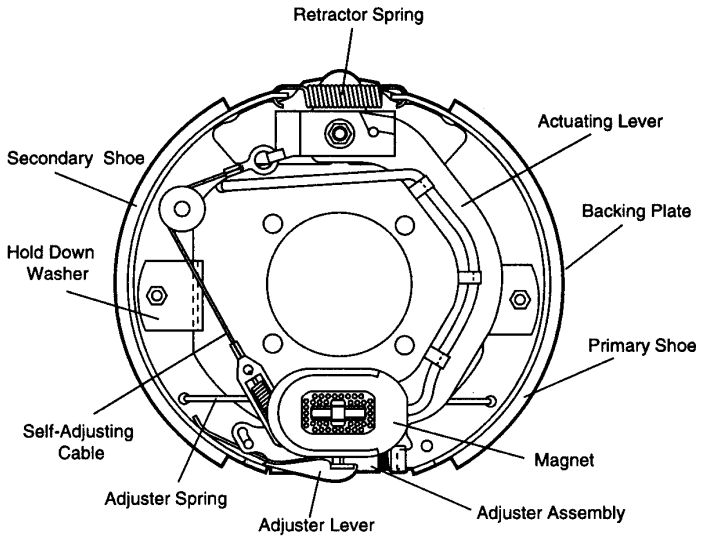


Figure 2. Electrical Brake Components

Hydraulic/Air/Surge Brakes

Hydraulic brakes (Figure 3) should not require any special attention with the exception of routine maintenance such as shoe and lining replacement. These brakes can be adjusted in the same manner as electric brakes. Brake lines should be periodically checked for cracks, kinks, or blockage.

Figure 3 below displays the major hydraulic/air/surge brake components that will requrie inspection and maintenance. Please inspect these components as required using steps 1 through 6 as referenced in the electric brake adjustments section. Reference Table 6 for hydraulic brake troubleshooting guidelines.

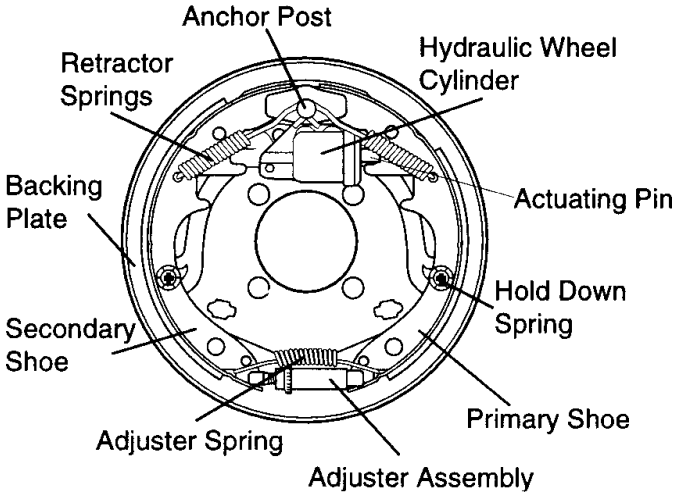


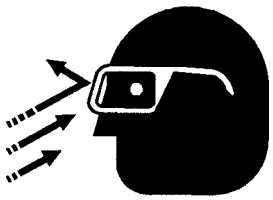
Figure 3. Hydraulic Brake Components

Tires/Wheels/Lug Nuts

Tires and wheels are a very important and critical components of the trailer. When specifying or replacing the trailer wheels it is important the wheels, tires, and axle are properly matched.

CAUTION:

DO NOT attemp to repair or modify a wheel. DO NOT install in inner tube to correct a leak through the rim. If the rim is cracked, the air pressure in the inner tube may cause pieces of the rim to explode (break off) with great force and cause serious eye or bodily injury.

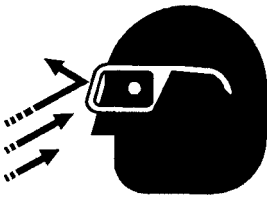


Tire Wear/Inflation

Tire inflation pressure is themost important factor in tire life. Pressure should be checked cold before operation DO NOTbleed air from tires when they ar hot. Check inflation pressure weekly during use to insure the maximum tire life and tread wear.

Table 2 (Tire Wear Troubleshooting) will help pinpoint the causes and solutions of tire wear problems.

CAUTION:



NOTE

ALWAYS wear safety glasses when removing or installing force fitted parts. Failure to comply may result in serious injury.

TABLE 2. TIRE WEAR TROUBLESHOOTING

WEAR PATTERN		CAUSE	SOLUTION
	Center Wear	Over Inflation.	Adjust pressure to particular load per tire manufacturer.
	Edge Wear	Under Inflation.	Adjust pressure to particular load per tire manufacturer.
	Side Wear	Loss of camber or overloading.	Make sure load does not exceed axle rating. Align wheels.
	Toe Wear	Incorrect toe-in.	Align wheels.
	Cupping	Out-of-balance.	Check bearing adjustment and balance tires.
	Flat Spots	Wheel lockup & tire skidding.	Avoid sudden stops when possible and adjust brakes.

Suspension

The leaf suspension springs and associated components (Figure 4 should be visually inspected every 6,000 miles for signs of excessive wear, elongation of bolt holes, and loosening of fasteners. Replace all damaged parts (suspension) immediately. Torqued suspension components as detailed in Table 3.

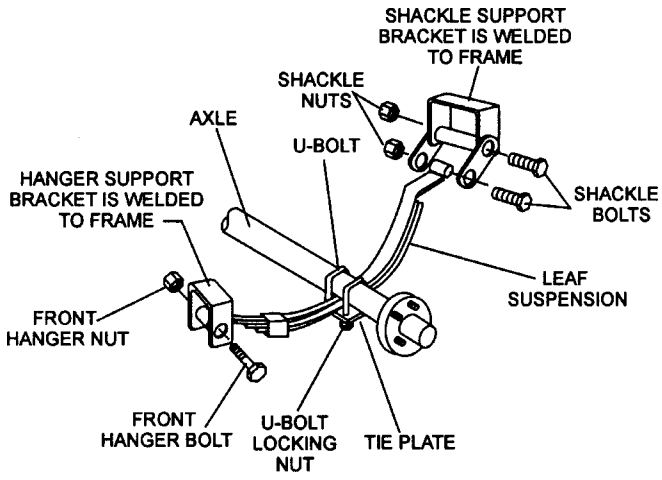


Figure 4. Suspension Components

Table 3. Suspension Torque Requirements	
Item	**Torque (Ft.-Lbs.)**
3/8" U-BOLT	MIN-30 MAX-35
7/16" U-BOLT	MIN-45 MAX-60
1/2" U-BOLT	MIN-45 MAX-60
SHACKLE BOLT SPRING EYE BOLT	SNUG FIT ONLY. PARTS MUST ROTATE FREELY. LOCKING NUTS OR COTTER PINS ARE PROVIDED TO RETAIN NUT-BOLT ASSEMBLY.
SHOULDER TYPE SHACKLE BOLT	MIN-30 MAX-50

It is extremely important to apply and maintain proper wheel mounting torque on the trailer. Be sure to use only the fasteners matched to the cone angle of the wheel. Proper procedure for attachement of the wheels is as follows:

1. Start all wheel lug nuts by hand.
2. Torque all lug nuts in sequence. See Figure 5. DO NOT torque the wheel lug nuts all the way down. Tighten each lug nut in 3 separate passes as defined by Table 4.
3. After first road use, retorque all lug nuts in sequence. Check all wheel lug nuts periodically

Table 4. Tire Torque Requirements			
Wheel Size	First Pass FT-LBS	Second Pass FT-LBS	Third Pass FT-LBS
12"	20-25	35-40	50-65
13"	20-25	35-40	50-65
14"	20-25	50-60	90-120
15"	20-25	50-60	90-120
16"	20-25	50-60	90-120

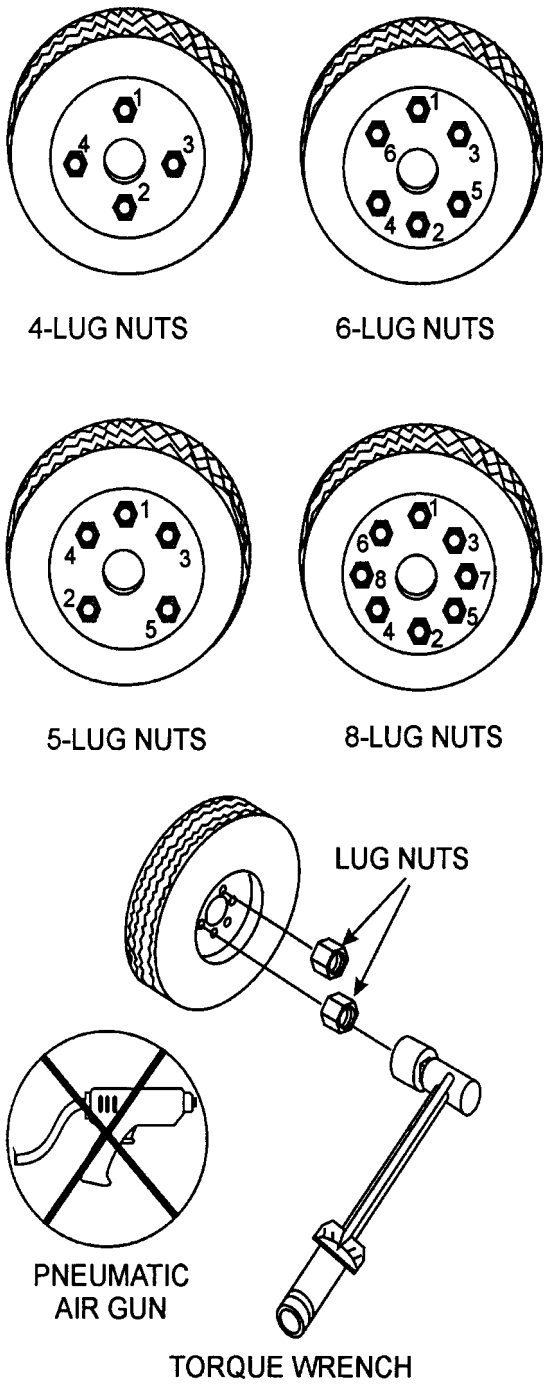
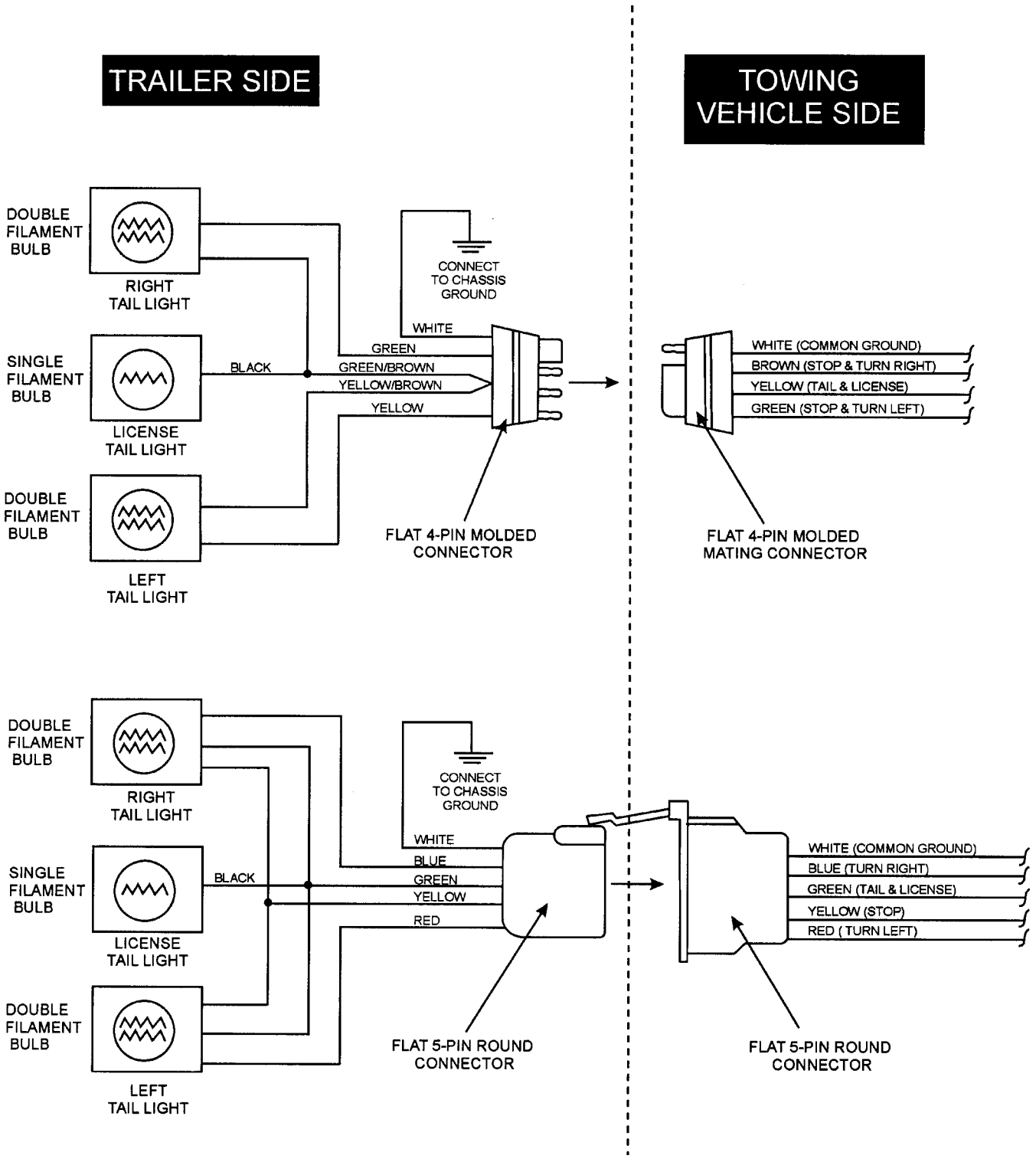


Figure 5. Lug Nut Tightening Sequence

NOTE

NEVER use an pneumatic air gun to tighten wheel lug nuts.

DCA-45SSIU2 — TRAILER WIRING DIAGRAM



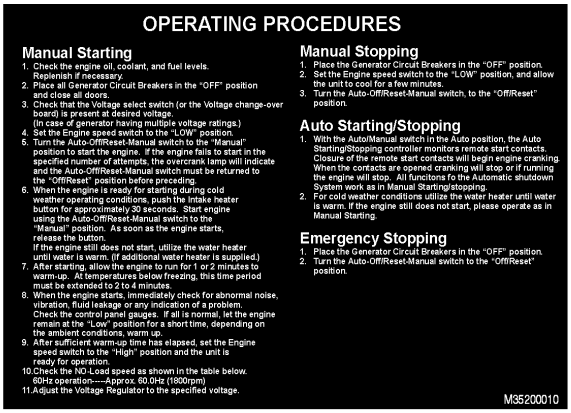
NOTE:
LIGHTS ARE ORIENTED FROM THE DRIVER'S SEAT

Table 5. Electric Brake Troubleshooting		
Symptom	**Possible Cause**	**Solution**
No Brakes or Intermittent Brakes	Any open circuits or broken wires?	Find and correct.
	Any short circuits?	Find and correct.
	Faulty controller?	Test and correct.
	Any loose connections?	Find and repair.
	Ground wire secure?	Find and secure.
Weak Brakes or Brakes Pull to One Side	Grease or oil on magnets or linings?	Clean or replace.
	Connections corroded?	Clean and correct cause of corrosion.
	Brake drums scored or grooved?	Machine or replace.
	Brakes synchronized?	Correct.
Locking Brakes	Brake components loose, bent or broken?	Replace components.
	Brake drums out-of-round?	Replace.
Noisy Brakes	System lubricated?	Lubricate.
	Brake components correct?	Replace and correct.
Dragging Brakes	Bearings of the wheel adjusted?	Adjust.

Table 6. Hydraulic Brake Troubleshooting		
Symptom	**Possible Cause**	**Solution**
No Brakes	Brake line broken or kinked?	Repair or replace.
Weak Brakes or Brakes Pull to One Side	Brake lining glazed?	Reburnish or replace.
	Trailer overloaded?	Correct weight.
	Brake drums scored or grooved?	Machine or replace.
	Tire pressure correct?	Inflate all tires equally.
	Tires unmatched on the same axle?	Match tires.
Locking Brakes	Brake components loose, bent or broken?	Replace components.
	Brake drums out-of-round?	Replace.
Noisy Brakes	System lubricated?	Lubricate.
	Brake components correct?	Replace and correct.
Dragging Brakes	Brake lining thickness correct or in right wrong position?	Install new shoes and linings.
	Enough brake fluid or correct fluid?	Replace rubber parts fill with dot4 fluid.

Machine Safety Decals

The DCA-45SSIU2 generator is equipped with a number of safety decals. These decals are provided for operator safety and maintenance information. The illustration below and on the preceding pages shows the decals as they appear on the machine. Should any of these decals become unreadable, replacements can be obtained from your dealer.



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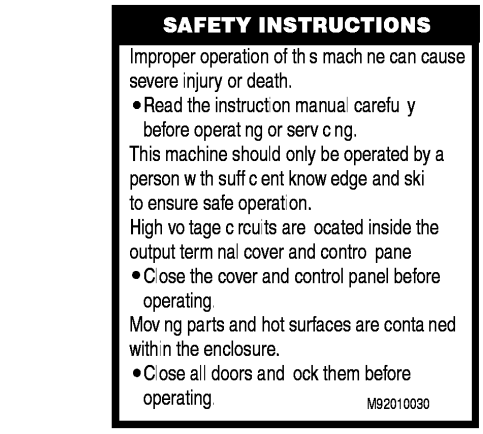

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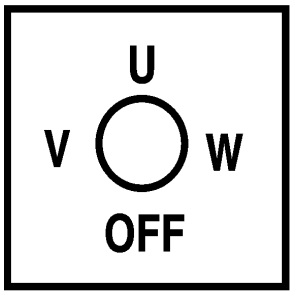

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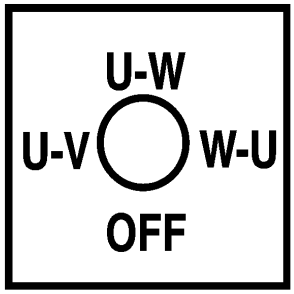

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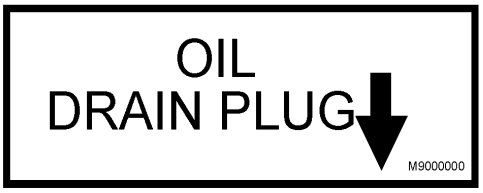

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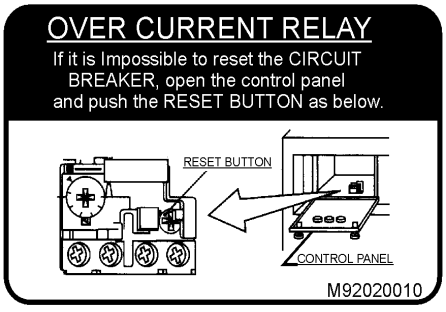

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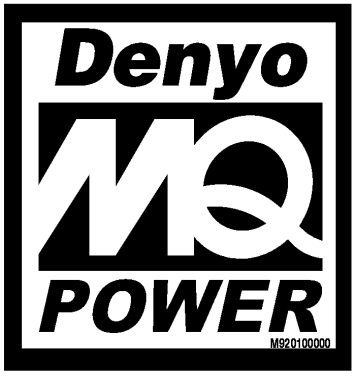

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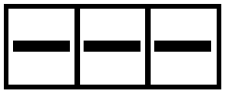

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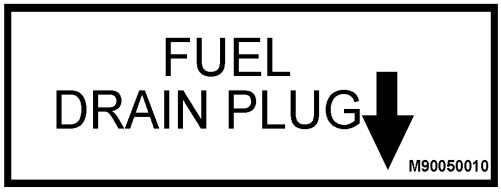

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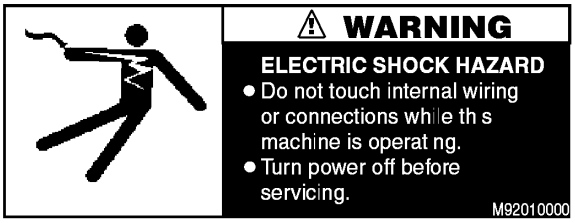

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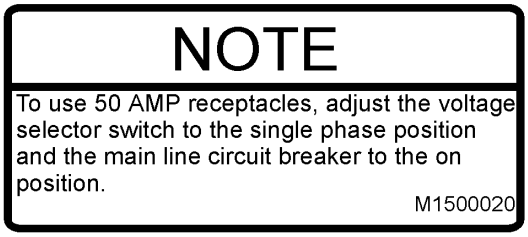

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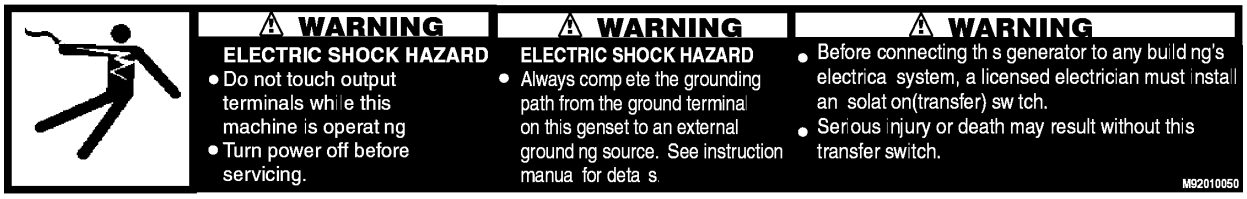

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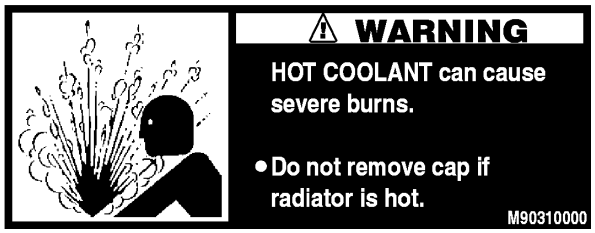

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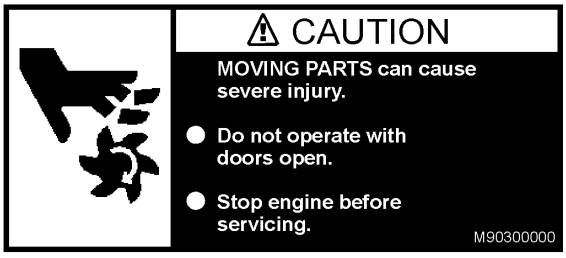

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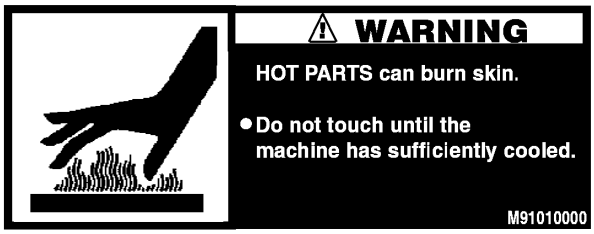

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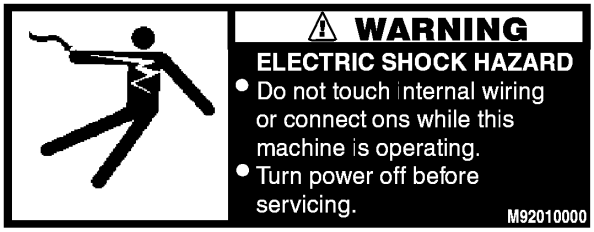

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Table 7. Specifications		
Generator Specifications		
Model	DCA-45SSIU2	
Type	Revolving field, self ventilated, open protected type synchronous generator	
Armature Connection	Star with Neutral	Zig Zag
Phase	3	Single
Standby Output	47.7 KVA (38.2 KW)	27.6 KW
Prime Output	45 KVA (36 KW)	26 KW
Voltage	240V or 480V	240/120V
Frequency	60 Hz	
Speed	1800 rpm	
Power Factor	0.8	1
Aux. AC Power	Single Phase, 60 Hz	
Voltage	120 V	
Output	4.8 KW (2.4 KW x 2)	
Engine Specifications		
Model	ISUZU B-4BG1	
Type	4 Cycle, water-cooled, direct injection	
No. of Cylinders	4 cylinders	
Bore x Stroke	4.13 in. x 4.92 in. (105 mm x 125 mm)	
Rated Output	55.2 HP/1800 rpm	
Displacement	268 cu. in. (4392 cc)	
Starting	Electric	
Coolant Capacity	5.3 gal. (20 liters)	
Lube Oil Capacity	3.4 gal. (12.9 liters)	
Fuel Consumption	2.7 gal. (10.3L)/hr at full load	2.0 gal. (7.6L)/hr at 3/4 load
	1.5 gal. (5.7L)/hr at 1/2 load	1.1 gal. (4.2L)/hr at 1/4 load
Battery	12V- 100AH	
Fuel	#2 Diesel Fuel	

DCA-45SSIU2 FAMILIARIZATION

Generator

The MQ Power Model DCA-45SSIU2 is a 36 kW ***generator*** that is designed as a high quality portable (requires a trailer for transport) power source for telecom sites, lighting facilities, power tools, submersible pumps and other industrial and construction machinery.

Engine Control Panel

The "Engine Control Panel" is provided with the following:

- Tachometer
- Water Temperature Gauge
- Oil Pressure Gauge
- Charging Ammeter Gauge
- Engine SpeedSwitch(2000 version)
- Ignition Switch and Key
- Engine Speed Control Lever
- Engine Control Unit (2000 version)
- Pre-Heat Lamp

Generator Control Panel

The "Generator Control Panel" is provided with the following:

- Output Voltage Adjustment Knob
- Frequency Meter (Hz)
- AC Ammeter (Amps)
- AC Voltmeter (Volts)
- Ammeter Change-Over Switch
- Voltmeter Change-Over Switch
- Panel Light
- Panel Light Switch

Output Terminal Panel

The "Output Terminal Panel" is provided with the following:

- Three 240/139V output receptacles, 50 amp
- Two 120V input receptacles, 20 amp
- Two additonal receptacles for jacket water heater and battery charger
- 3 Load Circuit Breakers 265V @50 amps
- 2 Load GFCI Circuit Breakers 265V@ 20amps

Control Box

The "Control Box" is provided with the following:

- Main Circuit Breaker 110 amps
- Over-Current Relay

Microprocessor Controlled Alarm System (2000 version)

The DCA-45SSIU2 generator is equipped with various alarms and LED status indicators. These alarms and status indicators are provided to add safety to the generator when operating under normal conditions. The DCA-45SSIU2 generator is designed to shutdown in the event of low oil, high coolant temperature, low battery and other operation conditions that may cause severe damage to the generator.

Open Delta Excitation System

The DCA-45SSIU2 generator is equipped with the state of the art "***Open-Delta***" excitation system. The open delta system consist of an electrically independent winding wound among stationary windings of the AC output section.

There are four leads: A, B, C and D. During light loads, the power to the ***Automatic Voltage Regulator*** (AVR) is supplied from the leads parallel connections of B&C. When loads increase, the AVR switches and accepts power from leads A&D. The output of leads A&D increase proportionally with load. This of adding the voltages to each phase provides better voltage response during heavy loads.

The connections of the AVR to the AC output windings are for sensing only. No power is required from these windings.

The open-delta design provides virtually unlimited excitation current, offering maximum motor starting capabilities. The excitation does not have a "***fixed ceiling***" and responds according the demands of the required load.

Engine

The **DCA-45SSIU2** is powered by a 4 cycle, water cooled, Isuzu Model 4BG1 ***diesel*** engine. This engine is designed to meet every performance requirement for the generator. Reference Table 1, page 16 for engine specifications.

In keeping with MQ Power's policy of constantly improving its products, the specifications quoted herein are subject to change without prior notice.

The basic controls and indicators for the DCA-45SSIU2 generator are addressed on the following pages.

Mechanical Governor System

The mechanical governor system control the RPM of the engine. When the engine demands increase or decrease, the mechanical governor system regulates the frequency variation to ±1.5%. The electronic governor option increases frequency variation to ±.25%.

Jacket Water Heater

The jacket water heater is a 1500-watt heater designed to keep the coolant warm in the engine block for fast starts and load acceptance. The heater is thermostatically controlled and once an acceptable engine temperature is achieved it will cycle on and off, operating only about 1/3 of the time, which makes it more efficient than the direct block type heater. It is designed to keep the engine coolant between 100 and 120 degrees fahrenheit.

Under normal conditions, 20 to 15 minutes is required to raise the engine temperature of a cold engine to 100 degrees fahrenheit.

NOTE:

The jacket water heater can be serviced if not functioning propertly.

CAUTION :

ALWAYS unplug the jacket water heater before servicing.

Battery Charger

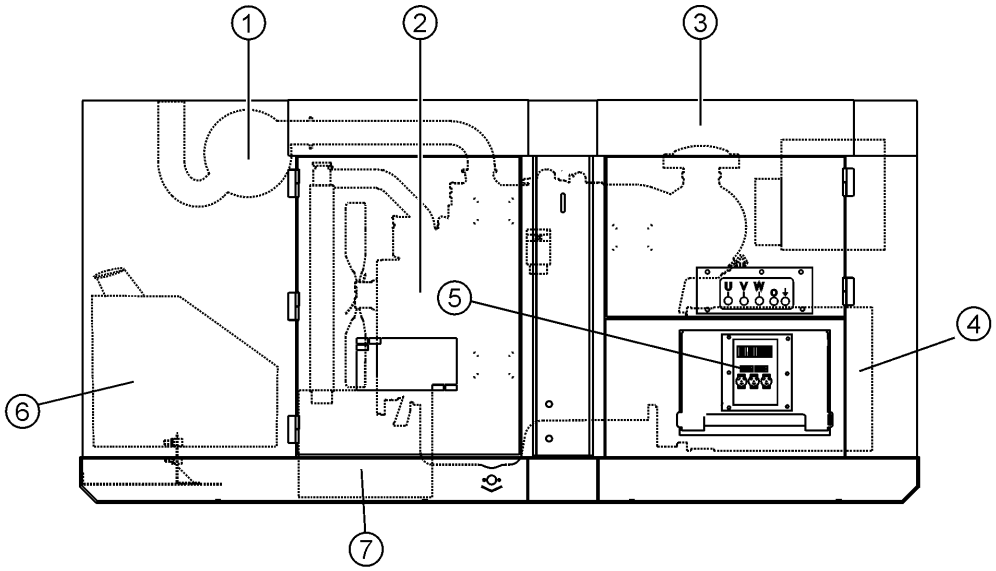
The battery charger will operate in a 'BOOST' mode until the battery's current acceptance falls to 70% of the charger's rating. The charger will then go into a 'FLOAT' mode, where it discharges a lower voltage until an AC failure, or the battery is discharged.

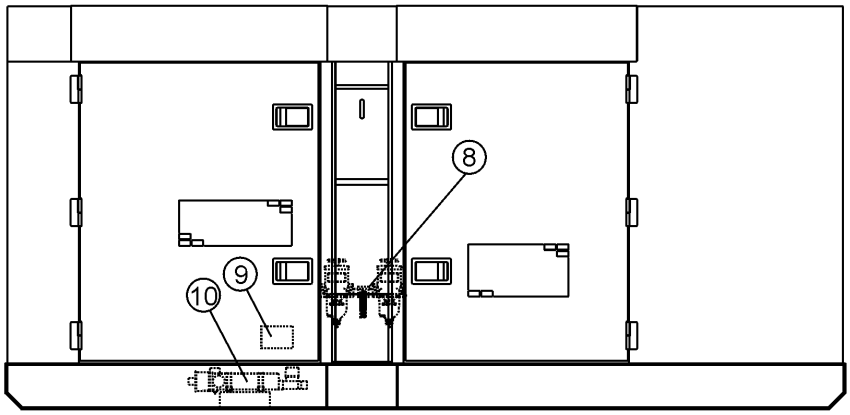
Magnetic Fuel Conditioner

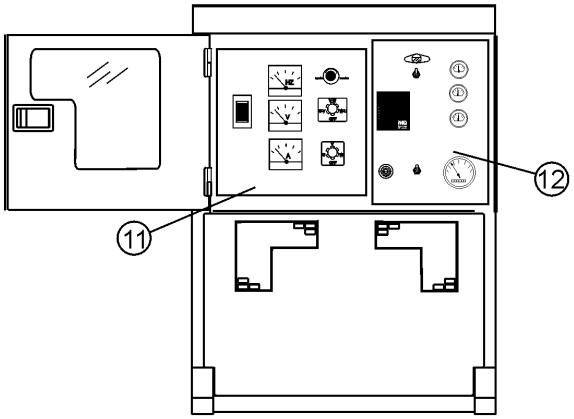
The magnetic fuel conditioner helps protect the engine from bacteria and fungi growth. This will help extend fuel life and reduce rust and sludge accumulating in the engine.

Water Separator Filter

The DCA-45SSIU2 generator is equipped with a water fuel separator. This unit is designed to prevent dirt, rust, algae, varnishes and water from entering the fuel system.







ITEM	DESCRIPTION
1	MUFFLER ASSEMBLY
2	ENGINE & RADIATOR ASSEMBLY
3	ENCLOSURE ASSEMBLY
4	GENERATOR ASSEMBLY
5	OUTPUT TERMINAL ASSEMBLY
6	FUEL TANK ASSEMBLY
7	BATTERY ASSEMBLY
8	FUEL WATER SEPARATOR ASSEMBLY
9	FUEL CONDITIONER
10	JACKET WATER HEATER
11	CONTROL PANEL ASSEMBLY
12	ENGINE OPERATING PANEL ASSEMBLY

Figure 6. Major Components

NOTE PAGE

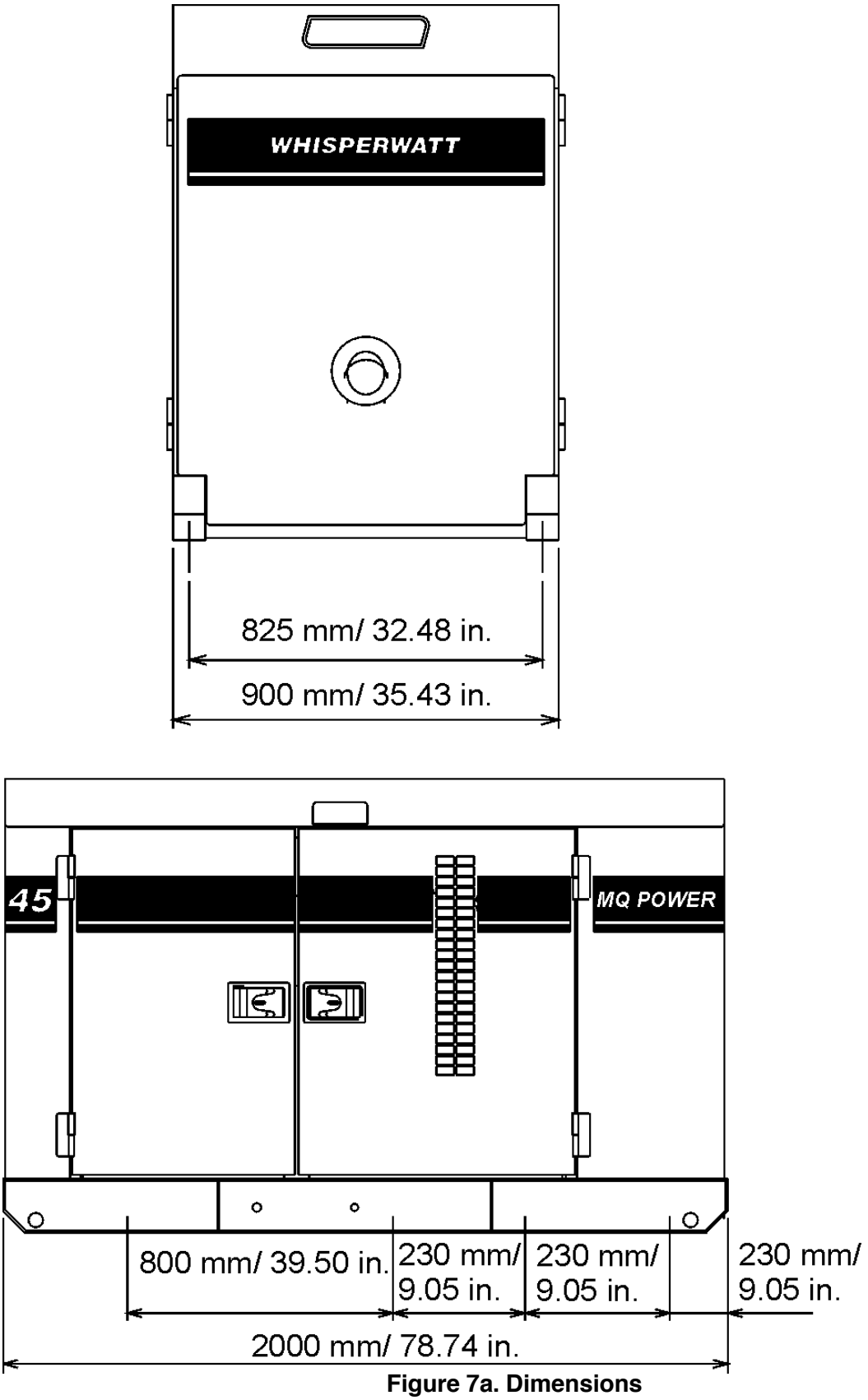


Figure 7a. Dimensions

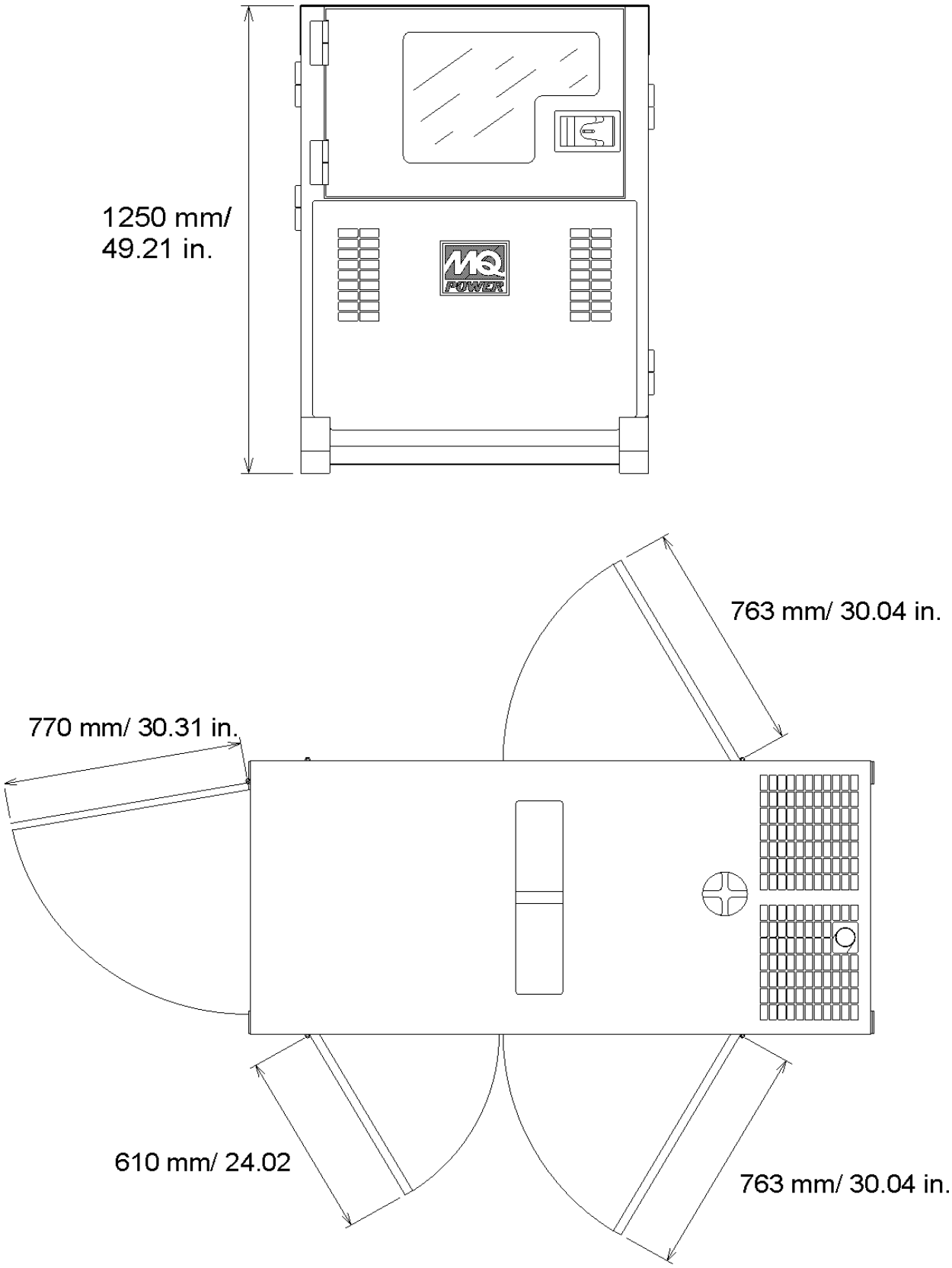
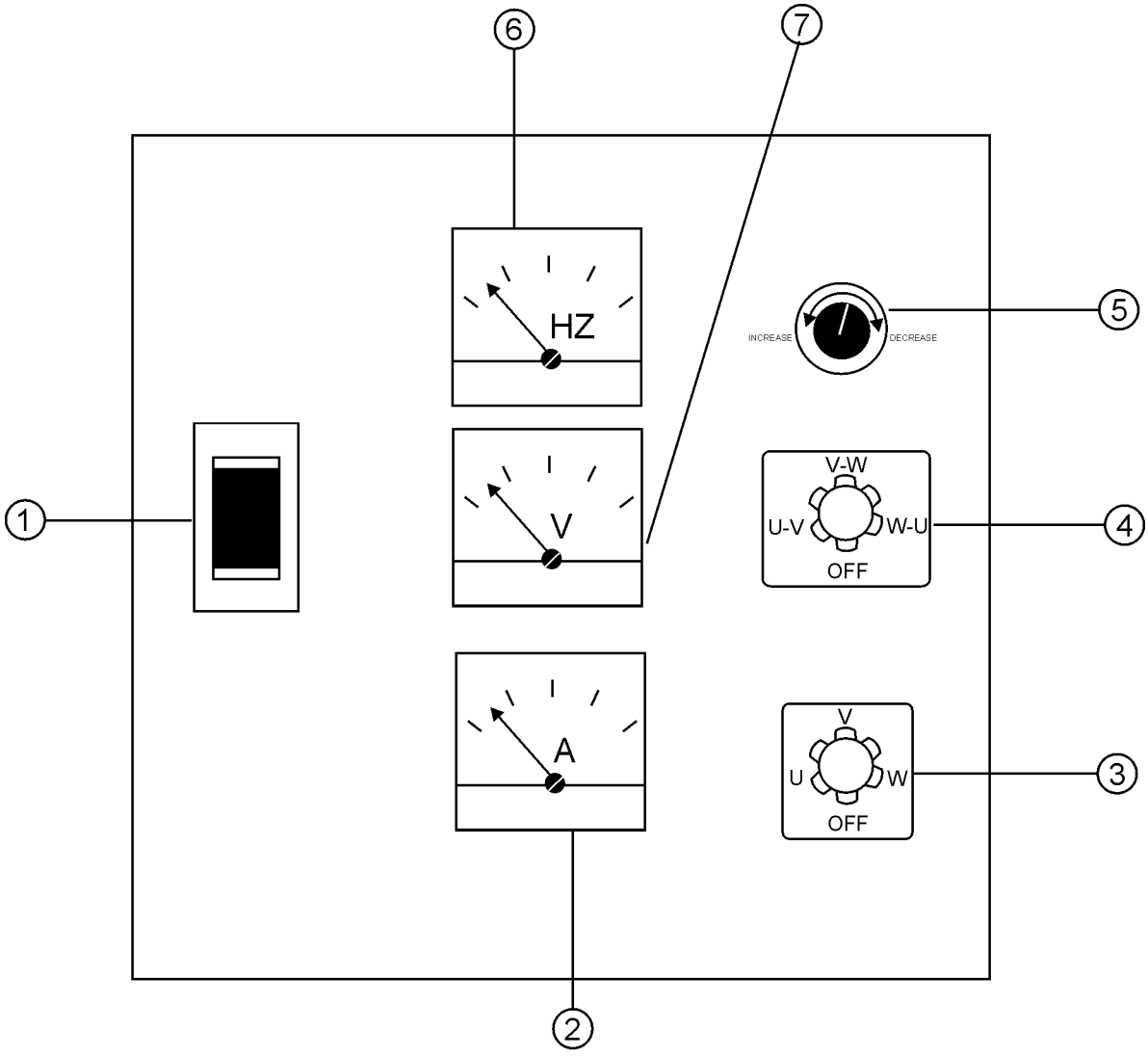


Figure 7b. Dimensions

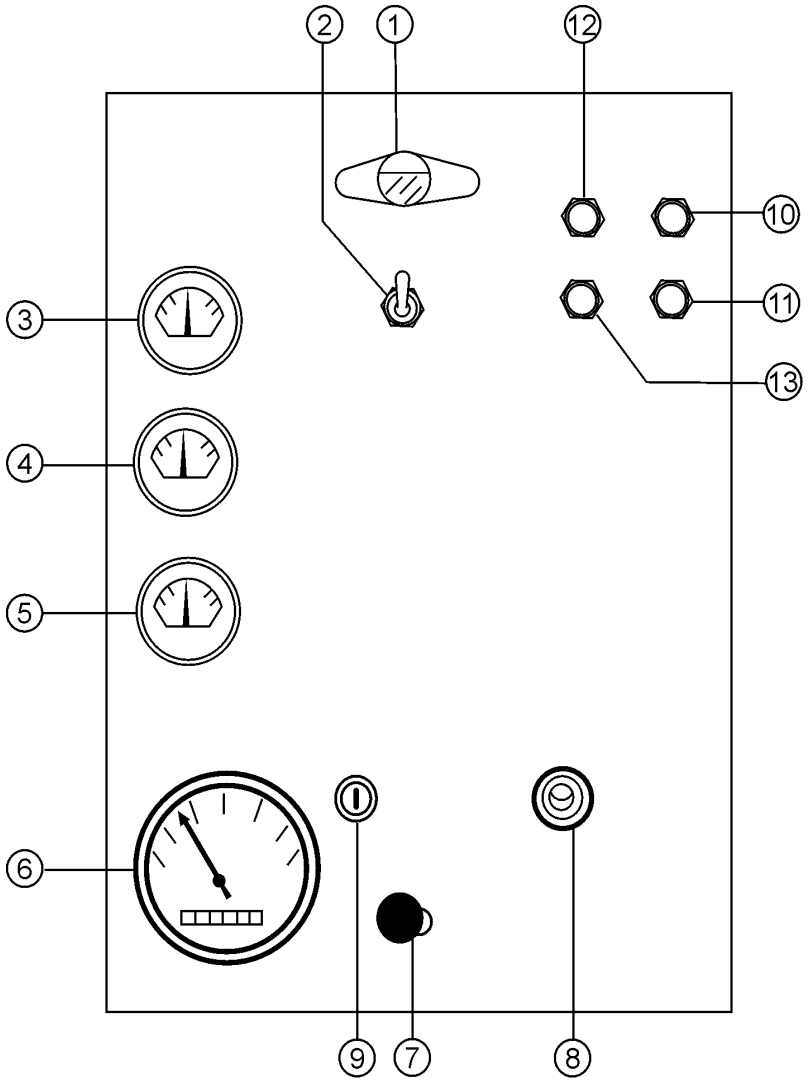


NO	DESCRIPTION
1	CIRCUIT BREAKER
2	AC AMMETER
3	AMMETER CHANGE-OVER SWITCH
4	VOLTMETER CHANGE-OVER SWITCH
5	VOLTAGE REGULATOR
6	FREQUENCY METER
7	AC VOLTMETER

Figure 8. Control Panel

The definitions below describe the controls and functions of the DCA-45SSIU2 " ***Control Panel*** "(Figure 8).

1. **Main Circuit Breaker –** This three-pole, 110 amp main breaker is provided to protect the UNV voltage output terminals from overload.
2. **AC Ammeter –** Indicates the amount of current the load is drawing from the generator.
3. **Ammeter Change-Over Switch –** This switch allows the AC ammeter to indicate the current flowing to the load connected to any phase of the output terminals, or to be switched off.
4. **Voltmeter Change-Over Switch –** This switch allows the AC voltmeter to indicate phase to phase voltage between any two phases of the output terminals or to be switched off.
5. **Voltage Regulator Control –** Allows manual adjustment of the generator's output voltage.
6. **Frequency Meter –** Indicates the output frequency in hertz (Hz). Normally 60 Hz ±1 Hz .**Pilot Lamp –** Indicates that the generator is working properly.
7. **AC Voltmeter –** Indicates the single phase output voltage present at the UNV terminals.



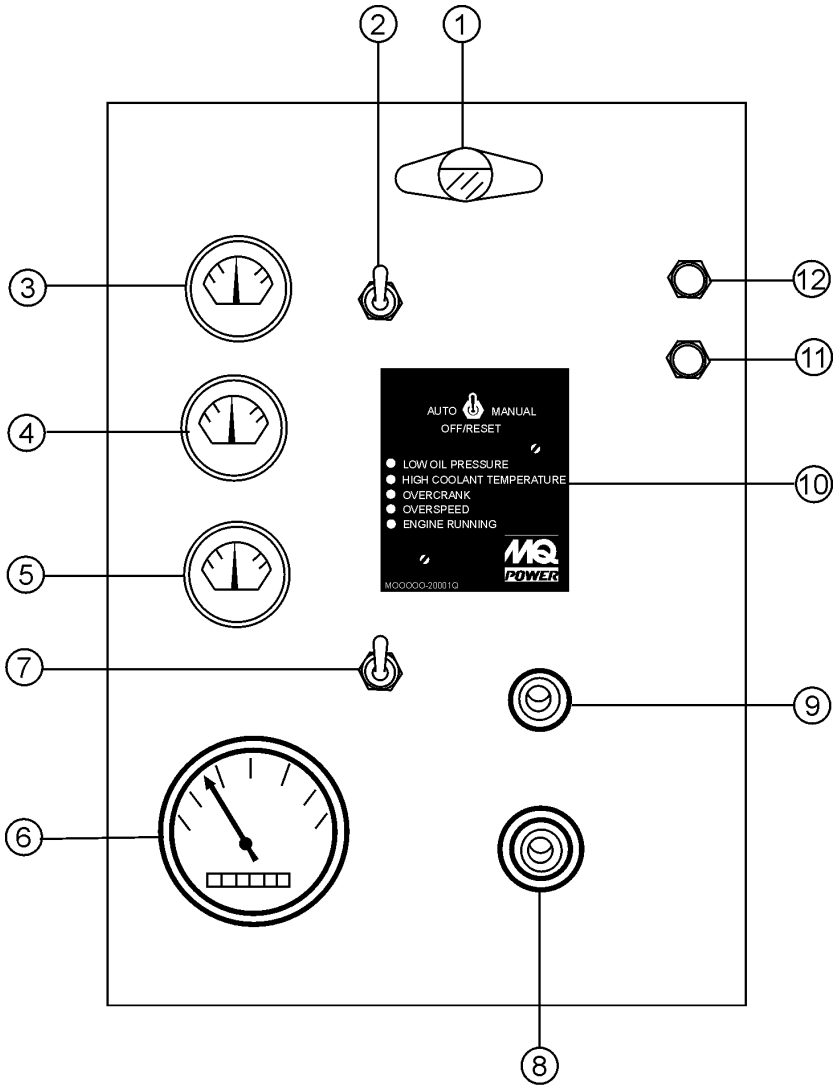
NO	DESCRIPTION
1	PANEL LIGHT
2	PANEL LIGHT SWITCH
3	OIL PRESSURE GAUGE
4	WATER TEMPERATURE GAUGE
5	CHARGING AMMETER
6	TACHOMETER
7	ENGINE THROTTLE LEVER
8	PREHEAT LAMP
9	IGNITION SWITCH
10	OIL PRESSURE ALARM INDICATOR
11	WATER TEMPERATURE ALARM INDICATOR
12	FUEL LEAK DETECTION INDICATOR
13	LOW FUEL DETECTION INDICATOR

Figure 9. Engine Operating Panel

DCA-45SSIU2 — ENGINE OPERATING PANEL (1999 VERSION)

The definitions below describe the controls and functions of the DCA-45SSIU2 " ***Engine Operating Panel*** "(Figure 9).

1. **Panel Light –** Normally used in dark areas or at night time. When activated, panel lights will illuminate. When the generator is not in use be sure to turn the panel light switch to the OFF position.
2. **Panel Light Switch –** When activated will turn on control panel light.
3. **Oil Pressure Gauge –** During normal operation this gauge be should read in the “GREEN” zone. When starting the generator the oil pressure mar read a little bit higher, but after the engine warms up the oil pressure should return to the green zone.
4. **Water Temperature Gauge –** During normal operation this gauge be should read in the “GREEN” zone.
5. **Charging Ammeter -** Indicates the amount of power the generator is being used from the load.
6. **Tachometer –** Indicates engine speed in RPM’s for 60 Hz operation. This meter should indicate 1800 RPM’s when the rated load is applied. In addition a built in hour meter will record the number of operational hours that the generator has been in use.
7. **Engine Throttle Lever -** This lever is used to control the speed of the engine from an idle to operating speed.
8. **Preheat lamp -** This lamp indicates if the engine is heated for operation.
9. **Ignition Switch -** This is used to turn preheat, turn on and turn off the engine.
10. **Oil Pressure Alarm Indicator-** This indicator lets the operator know the oil pressure was too high or too low for normal operation and will shut down the engine.
11. **Water Temperature Alarm Indicator -** This indicator lets the operator know the water temperature is too high for operation and will shut down the engine.
12. **Fuel Leak Detection Indicator -** This indicator detected a leak between the fuel cells and will shut down the engine.
13. **Low Fuel Detection Indicator -** This indicator is warning the operator the fuel level is dangerously low and will shut down the engine.



NO	DESCRIPTION
1	PANEL LIGHT
2	PANEL LIGHT SWITCH
3	OIL PRESSURE GAUGE
4	WATER TEMPERATURE GAUGE
5	CHARGING AMMETER
6	TACHOMETER
7	ENGINE SPEED SWITCH
8	PREHEAT BUTTON
9	PREHEAT LAMP
10	AUTO START/STOP CONTROLLER
11	FUEL LEAK DETECTION INDICATOR
12	LOW FUEL DETECTION INDICATOR

Figure 10. Engine Operating Panel

DCA-45SSIU2 — ENGINE OPERATING PANEL (2000 VERSION)

The definitions below describe the controls and functions of the DCA-45SSIU2 " ***Engine Operating Panel*** "(Figure 10).

1. **Panel Light –** Normally used in dark areas or at night time. When activated, panel lights will illuminate. When the generator is not in use be sure to turn the panel light switch to the OFF position.
2. **Panel Light Switch –** When activated will turn on control panel light.
3. **Oil Pressure Gauge –** During normal operation this gauge be should read in the “GREEN” zone. When starting the generator the oil pressure mar read a little bit higher, but after the engine warms up the oil pressure should return to the green zone.
4. **Water Temperature Gauge –** During normal operation this gauge be should read in the “GREEN” zone.
5. **Charging Ammeter -** Indicates the amount of power the generator is being used from the load.
6. **Tachometer –** Indicates engine speed in RPM’s for 60 Hz operation. This meter should indicate 1800 RPM’s when the rated load is applied. In addition a built in hour meter will record the number of operational hours that the generator has been in use.
7. **Engine Speed Switch -** This switch is used to change the engine speed from an idle to normal operation.
8. **Pre-Heat Button –** Press hold this button until the pre-heat lamp is lit (ON).
9. **Preheat lamp -** This lamp indicates the engine is ready for normal operation.

PRE-HEAT BUTTON

10. **MPEC – Microprocessor Engine Control Module –** (MPEC) has a vertical row of status LED's (Figure 11), that when lit, indicate that an engine malfunction (fault), has been detected. When a fault has been detected the MPEC will evaluate the fault and all major faults will shutdown the generator.

Figure 11. MPEC Module

During ***cranking cycle*** , The MPEC will attempt to crank the engine for 10 seconds before disengaging. If the engine does not engage (start) by the third attempt, the engine will be shut-down by the MPEC's " Over Crank Protection" mode. If the engine engages at a speed (RPM's) that is not safe, the MPEC will shut-down the engine by initializing the "Over Speed Protection" mode.

Also the MPEC will shut-down the generator in the event of low oil pressure, high coolant temperature, low coolant level, and loss of magnetic pickup. These conditions can be observed by monitoring the LED status indicators on the front of the MPEC module.

A. **Off/Manual/Auto Switch –** This switch controls the running of the generator. If this switch is left in the "OFF" position, the generator will not run. When this switch is set to the ***manual*** position, the generator will start immediately.

   If the generator is to be connected to a building's AC power source via a transfer switch (isolation), place the switch in the ***auto*** position. In this position the generator will monitor the AC line output from the building's power source.

B. **Low Oil Pressure –** Indicates the engine pressure has fallen below 15 psi. The oil pressure is detected using variable resistive values from the oil pressure sending unit. This is considered a ***major*** fault.

C. **High Coolant Temperature –** Indicates the engine temperature has exceeded 215°F. The engine temperature is detected using variable resistive values from the temperature sending unit. This is considered a ***major*** fault.

D. **Overcrank Shutdown –** Indicates the unit has attempted to start a pre- programmed number of times, and has failed to start. The number of cycles and duration are programmable. It is pre-set at 3 cycles with a 10 second duration. This is considered a ***major*** fault.

E. **Overspeed Shutdown –** Indicates the engine is running at an unsafe speed. This is considered a ***major*** fault.

F. **Engine Running –** Indicates that engine is running at a safe operating speed.

12. **Fuel Leak Detection Indicator -** This indicator detected a leak between the fuel cells and will shut down the engine.
13. **Low Fuel Detection Indicator -** This indicator is warning the operator the fuel level is dangerously low and will shut down the engine.

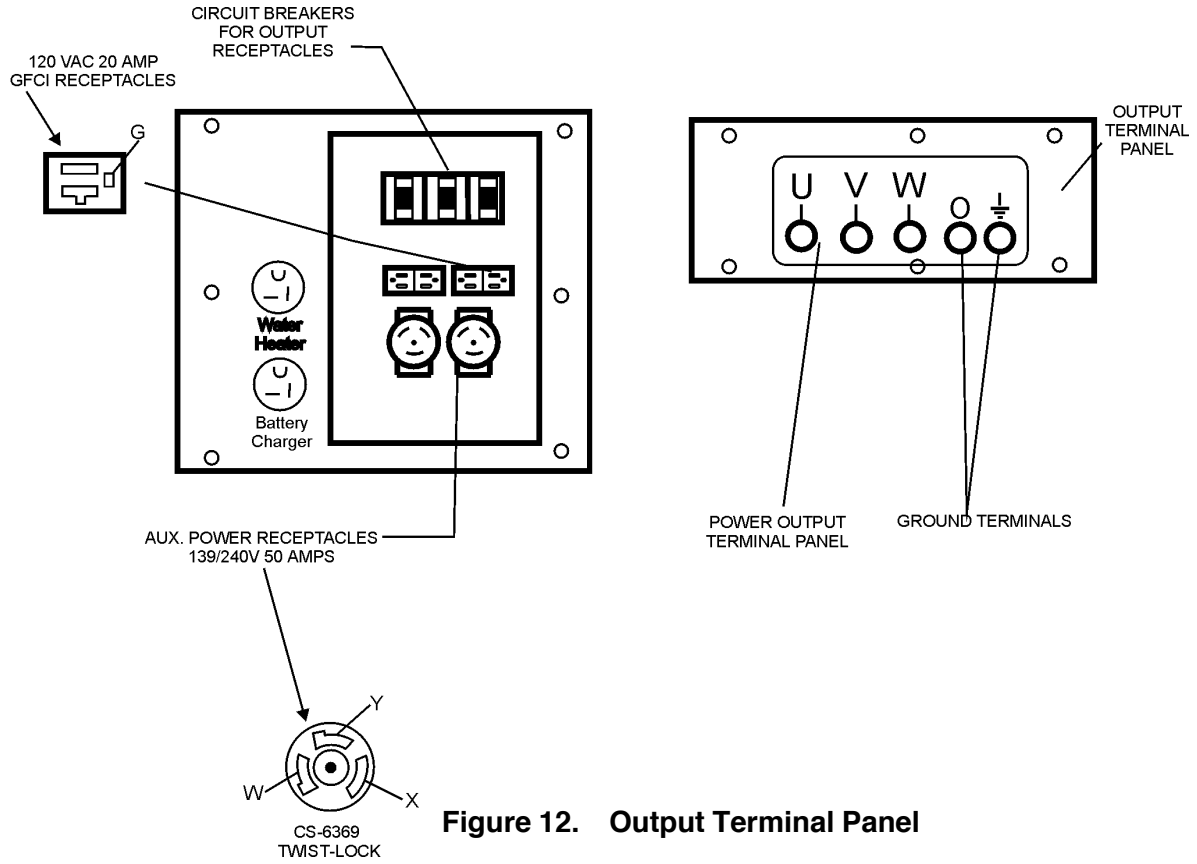


Figure 12. Output Terminal Panel

120V Receptacles - These receptacles can be used anytime the generator is in operation. They are controlled by the circuit breakers above them.

Twist Lock Dual Voltage Receptacles - To use these receptacles, place the voltage selector switch in the single phase 240/120 voltage position and adjust the output voltage to 240 volts with the voltage regulator on the Control Panel (see figure 8). Place the voltmeter change-over switch to the U-W positon and the ammeter change-over switch to the U or W to read the output.

Table 8. Receptacle Use

Power in Use		Receptacle Power Available
240/480V 3-Phase	240/120V Single Phase or Twist Lock CS6369	Duplex NEMA 5-20R 120V
45	26	0
40.9	24.8	1.2
36.7	23.6	2.4
32.6	22.4	3.6
28.4	21.2	4.8

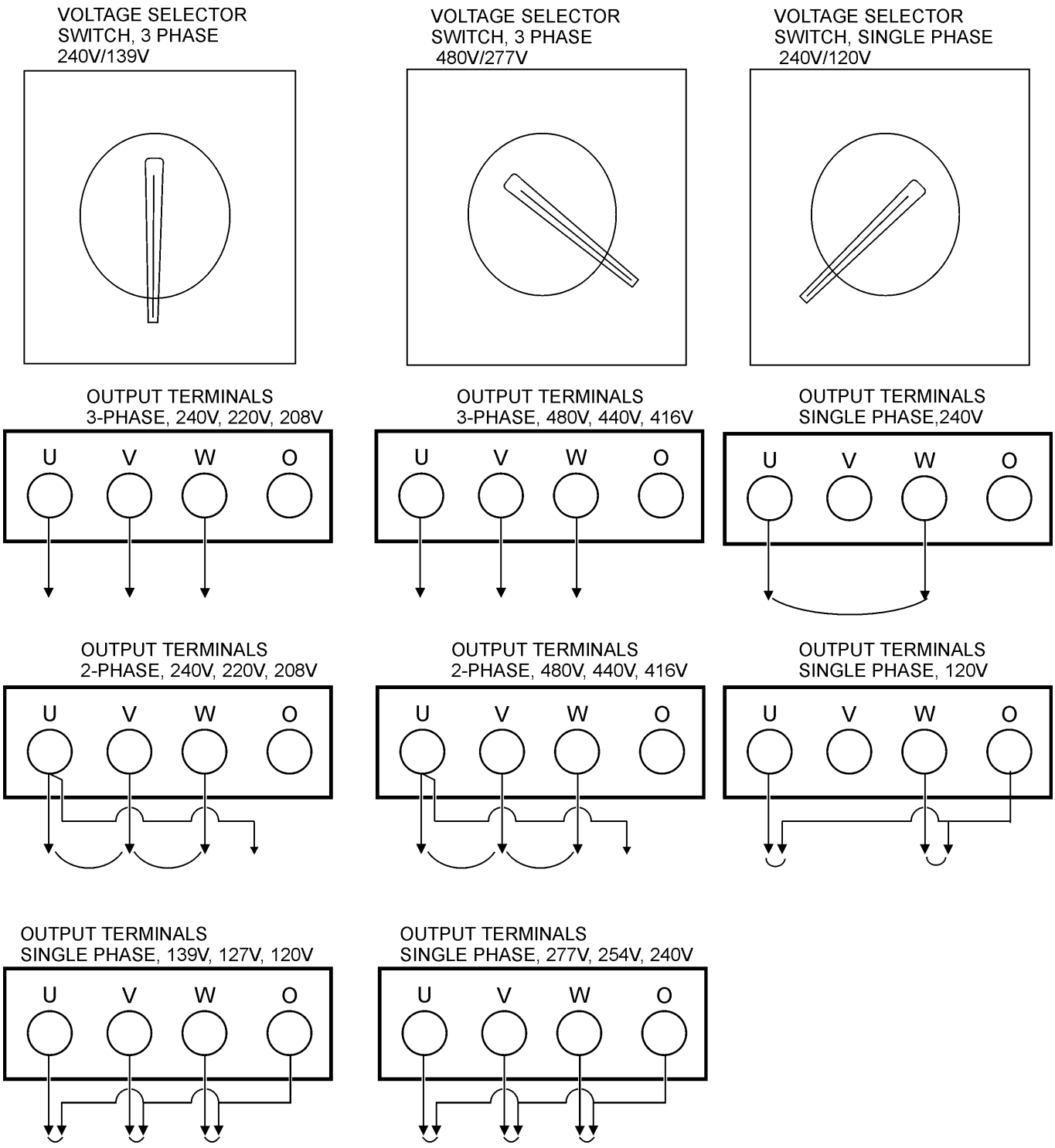


Figure 13. Output Terminal Voltage Selection

Outdoor Installation

Install the generator in a location where it will not be exposed to rain or sunshine. Make sure the generator is on secure level ground so it cannot slide or shift around. Also install the generator so the exhaust will not be discharged in the direction of nearby homes.

The installation site must be relatively free from moisture and dust. All electrical equipment should be protected from excessive moisture. Failure to do will result in deterioration of the insulation and will result in short circuits and grounding.

Foreign materials such as dust, sand, lint and abrasive materials have a tendency to cause excessive wear to the engine parts and alternator.

CAUTION :

Pay close attention to ventilation when operating the generator inside tunnels and caves. The engine exhaust contains noxious elements. Engine exhaust must be routed to a ventilated area.

Indoor Installation

Exhaust gases from diesel engines are extremely poisonous. Whenever an engine is installed indoors the exhaust fumes must be vented to the outside. The engine should be installed at least two feet from any outside wall. Using an exhaust pipe which is too long or too small can cause excessive back pressure which will cause the engine to heat excessively and possibly burn the valves.

CAUTION :

An electric shock may happen when vibrators are used. Pay close attention to handling when operating vibrators and always use rubber boots and gloves to insulate the body from electrical shock.

Generator Grounding

To guard against electrical shock and possible damage to the equipment, it is important to provide a good **EARTH** ground.

Article 250 (Grounding) of the National Electrical Code (NEC) provides guide lines for proper grounding and specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

NEC articles 250-64(b) and 250-66 set the following grounding requirements:

1. Use one of the following wire types to connect the generator to earth ground.
   a. Copper - 10 AWG (5.3 mm^2) or larger.
   b. Aluminum - 8 AWG (8.4 mm^2) or larger.
2. When grounding the generator (Figure 14) connect the ground cable between the lock washer and the nut on the generator and tighten the nut fully. Connect the other end of the ground cable to earth ground.
3. NEC article 250-52(c) specifies that the earth ground rod should be buried a minimum of 8 ft. into the ground.

NOTE

When connecting the generator to any buildings electrical system **ALWAYS** consult with a licensed electrician.

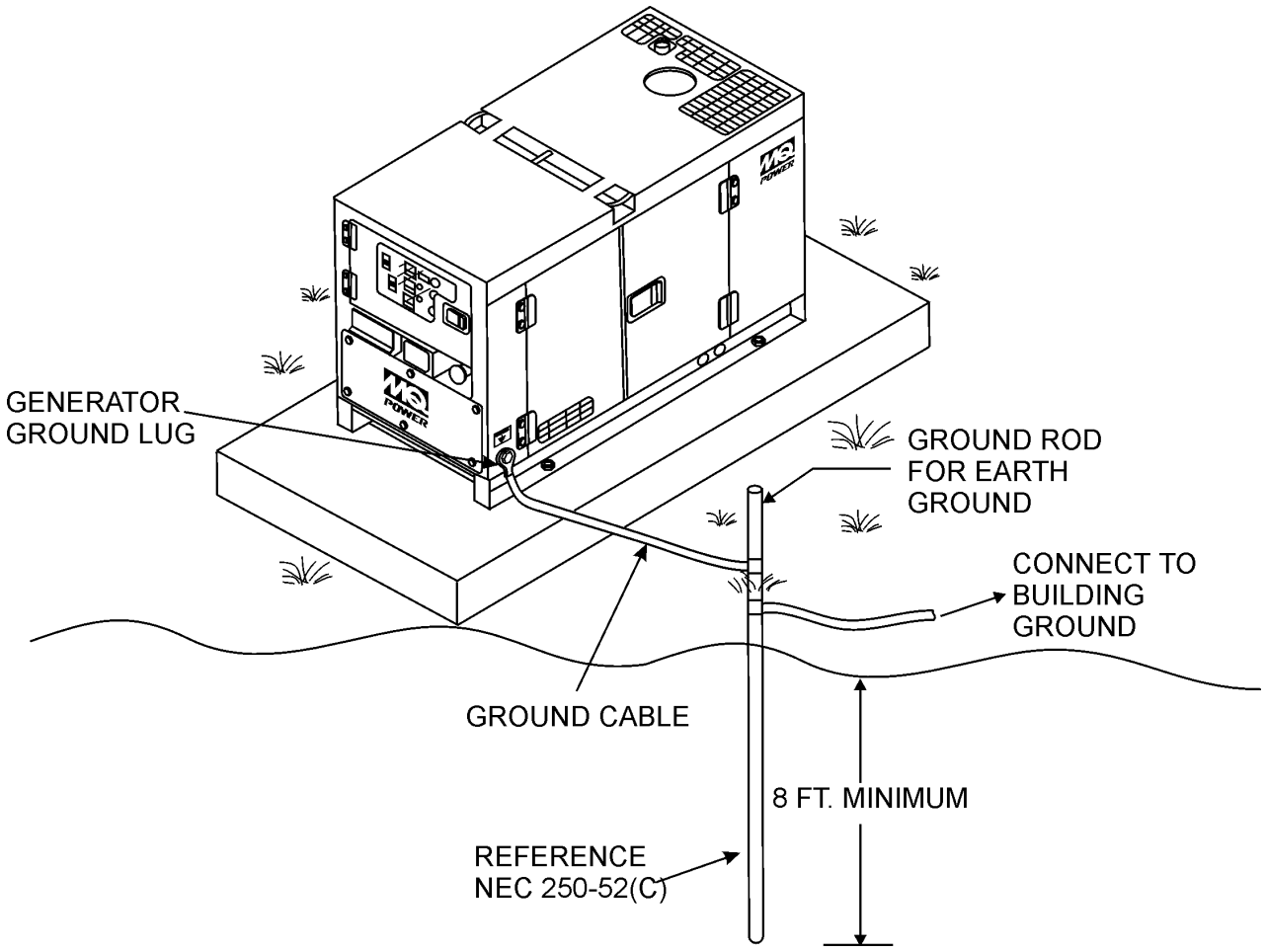


Figure 14. Typical Generator Grounding Application

General Inspection Prior to Operation

The DCA-45SSIU2 generator has been thoroughly inspected and accepted prior to shipment from the factory. However, be sure to check for damaged parts or components, or loose nuts and bolts, which could have occurred in transit.

Extension Cable

When electric power is to be provided to various tools or loads at some distance from the generator, extension cords are normally used. Cables should be sized to allow for distance in length and amperage so that the voltage drop between the generator and point of use (load) is held to a minimum. Use the Cable Selection Guide (Table 9) as a guide for selecting proper cable size.

Circuit Breakers

To protect the generator from an overload, a 3-pole,110 amp, ***main*** circuit breaker is provided to protect the UNV output terminals from overload. In addition two single-pole, 20 amp ***GFCI*** circuit breakers are provided to protect the GFCI receptacles from overload. Three 50 amp ***load*** circuit breakers have also been provided to protect the load side of the generator from overload. Make sure to switch ***ALL*** circuit breakers to the "OFF" position prior to starting the engine.

NOTE

ALWAYS consult with a licensed electrician for correct extension cord wire size.

Table 9. Cable Selection (60 Hz, Single Phase Operation)

Current in Amperes	Load In Watts		Maximum Allowable Cable Length			
	At 120 Volts	At 240 Volts	#10 Wire	#12 Wire	#14 Wire	#16 Wire
2.5	300	600	1000 ft.	600 ft.	375 ft.	250 ft.
5	600	1200	500 ft.	300 ft.	200 ft.	125 ft.
7.5	900	1800	350 ft.	200 ft.	125 ft.	100 ft.
10	1200	2400	250 ft.	150 ft.	100 ft.	
15	1800	3600	150 ft.	100 ft.	65 ft.	
20	2400	4800	125 ft.	75 ft.	50 ft.	
CAUTION: Equipment damage can result from low voltage.						

Lubrication Oil

Fill the engine crankcase with lubricating oil through the filler hole, but do not overfill. Make sure the generator is level. With the dipstick inserted all the way, but without being screw into the filler hole, verify the oil level is maintained between the two notches (Figure 15) on the dipstick. See Table 10 for proper selection of engine oil.

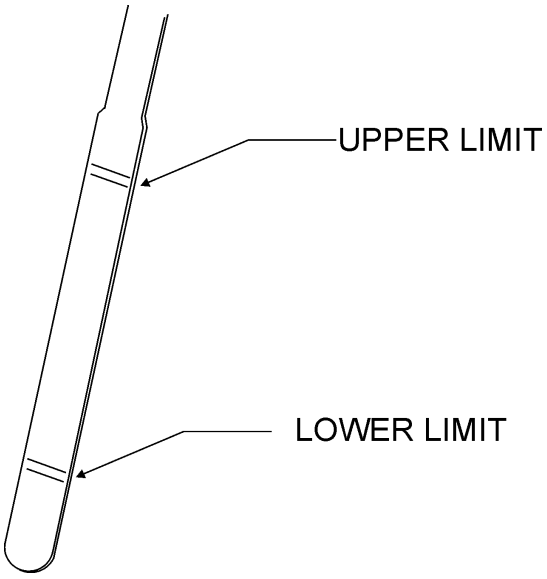


Figure 15. Engine Oil Dipstick

When checking the engine oil, be sure to check if the oil is clean and viscous. If the oil is not clean, drain the oil by removing the oil drain plug, and refill with the specified amount of oil as outlined in the **Isuzu Engine Owner's Manual.**

Fuel

Fill the fuel tank with clean and fresh ***diesel fuel.*** **DO NOT** fill the tank beyond capacity.

Pay attention to the fuel tank capacity when replenishing fuel. Refer to the fuel tank capacity listed on page 23, Specification Table 7.

The fuel tank cap must be closed tightly after filling. Handle fuel in a safety container. If the container does not have a spout, use a funnel. Wipe up any spilled fuel immediately.

CAUTION:

Never fill the fuel tank while the engine is running or in the dark. Diesel spillage on a hot engine can cause a fire or explosion. If diesel spillage occurs, wipe up the spilled diesel completely to prevent fire hazards.

Coolant

Use only drinkable tap water. If hard water or water with many impurities is used, the inside of the engine and radiator may become coated with deposits and cooling efficiency will be reduced.

An anticorrosion additive added to the water will help prevent deposits and corrosion in the cooling system. See the engine manual for further details.

Table 10. Recommended Motor Oil

Temperature Range	Type Oil
104° F ~ 23° F (40° C ~ -5°C)	SAE 30
23° F ~ 5° F (-5° C ~ -15°C)	SAE 20 or SAE 10W-30
Below 5° C (-15°)	SAE 10W or SAE 10W-30

CAUTION :

When adding coolant or antifreeze to the radiator, do not remove the radiator cap until the unit has completely cooled.

Day-to-day addition of coolant is done from the reserve tank. When adding coolant to the radiator, **DO NOT** remove the radiator cap until the unit has completely cooled. See Table 11 for engine, radiator, and reserve tank coolant capacities. Make sure the coolant level in the reserve tank is always between the "H" and the "L" markings.

Table 11. Coolant Capacity	
Engine and Radiator	5.3 Gal.
Reserve Tank	0.26 Gal.

Operation in Freezing Weather

When operating in freezing weather, be certain the proper amount of antifreeze (Table 12) has been added.

Table 12. Anti-Freeze Operating Temperatures				
Vol % Anti-Freeze	Freezing Point		Boiling Point	
	°C	°F	°C	°F
40	-24	-12	106	222
50	-37	-34	108	226

NOTE

When the anti-freeze is mixed with water, the anti-freeze mixing ratio must be less than 50%.

Cleaning the Radiator

The engine may overheat if the radiator fins become overloaded with dust or debris. Periodically clean the radiator fins with compressed air. Cleaning inside the machine is dangerous, so clean only with the engine turned off and the battery disconnected.

Air Cleaner

Periodic cleaning/replacement is necessary. Inspect it in accordance with the **Isuzu Engine Owner's Manual.**

Fan Belt Tension

A slack fan belt may contribute to overheating, or to insufficient charging of the battery. Inspect the fan belt for damage and wear and adjust it in accordance with the **Isuzu Engine Owner's Manual.**

The fan belt tension is proper if the fan belt bends 7 to 10 mm (Figure 16) when depressed with the thumb as shown below.

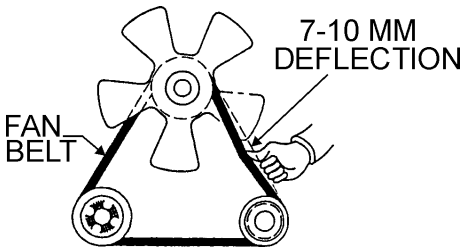


Figure 16. Fan Belt Tension

CAUTION :

Never place hands near the belts or fan while the generator set is running.

Battery

This unit is of negative ground. **DO NOT** connect in reverse. Always maintain battery fluid level between the specified marks. Battery life will be shortened, if the fluid level is not properly maintained. Add only distilled water when replenishment is necessary.

The battery is sufficiently charged if the specific gravity of the battery fluid is 1.28 (at 68° F). If the specific gravity should fall to 1.245 or lower, it indicates that the battery is dead and needs to be recharged or replaced.

Check to see whether the battery cables are loose. Poor contact may result in poor starting or malfunctions. Always keep the terminals firmly tightened. Coating the terminals with a thin film of grease will help to inhibit corrosion.

Battery Cable Installation

ALWAYS be sure the battery cables (Figure 17) are properly connected to the battery terminals as shown below. The ***RED*** cable is connected to the positive terminal of the battery, and the **BLACK** cable is connected to the negative terminal of the battery.

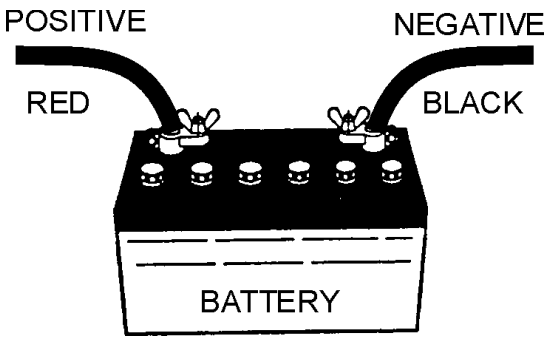


Figure 17. Battery Connections

CAUTION :

If the battery cable is connected incorrectly, electrical damage to the generator will occur. Pay close attention to the polarity of the battery when connecting the battery.

When connecting battery do the following:

1. **DO NOT** connect the battery cables to the battery terminals when the ***Off/Manual/Auto*** switch is in either the manual or auto position (ON). **ALWAYS** make sure that the Off/ Manual/Auto switch is in the OFF position when connecting the battery..
2. Place a small amount of grease around both battery terminals. This will ensure a good connection and will help prevent corrosion around the battery terminals.

CAUTION :

Inadequate battery connections may cause poor starting of the generator, and create other malfunctions.

Wiring

Inspect the entire generator for bad or worn electrical wiring or connections. If any wiring or connections are exposed (insulation missing) replace wiring immediately.

Piping and Hose Connection

Inspect all piping, oil hose, and fuel hose connections for wear and tightness. Tighten all hose clamps and check hoses for leaks.

If any hose (fuel or oil) lines are defective replace them immediately.

Single Phase Load

Always be sure to check the nameplate on the generator and equipment to insure the wattage, amperage and frequency requirements are satisfactorily supplied by the generator for operating the equipment.

Generally, the wattage listed on the nameplate of the equipment is its rated output. Equipment may require 130—150% more wattage than the rating on the nameplate, as the wattage is influenced by the efficiency, power factor and starting system of the equipment.

NOTE

If wattage is not given on the equipment's name plate, approximate wattage may be determined by multiplying nameplate voltage by the nameplate amperage.

WATTS = VOLTAGE x AMPERAGE

The power factor of this generator is 1.0. See Table 13. below when connecting loads.

Table 13. Power Factor By Load

Type Of Load	Power Factor
Single-phase induction motors	0.4 - 0.75
Electric heaters, incandescent lamps	1.0
Fluorescent lamps, mecury lamps	0.4 - 0.9
Electronic devices, communication equipment	1.0

Three Phase Load

When calculating the power requirements for 3-phase power use the following equation:

$$KVA = \frac{VOLTAGE \times AMPERAGE \times \sqrt{3}}{1000}$$

CAUTION:

Motors and motor-driven equipment draw much greater current for starting than during operation.

An inadequate size connecting cable which cannot carry the required load can cause a voltage drop which can burn out the appliance or tool and overheat the cable.

- When connecting a resistance load such as an incandescent lamp or electric heater, a capacity of up to the generating set's rated output (kW) can be used.
- When connecting a fluorescent or mercury lamp, a capacity of up to the generating set's rated output (kW) multiplied by 0.6 can be used.
- When connecting an electric drill or other power tools, pay close attention to the required starting current capacity.

When connecting ordinary power tools, a capacity of up to the generating set's rated output (kW) multiplied by 0.8 can be used.

CAUTION:

Before connecting this generator to any building's electrical system, a licensed electrician must install an isolation (transfer) switch. Serious injury or death may result without this transfer switch.

NOTE

If output (kVA) is not given on the equipment nameplate, approximate output may be determined by multiplying voltage by amperage by $\sqrt{3}$.

WARNING:

The engine's exhaust contains harmful emissions. ***ALWAYS*** ventilate the exhaust when operating inside tunnels, excavations or buildings. Direct exhaust away from nearby personnel.

Before Starting

Engine

1. Check the lubricating oil level prior to starting the engine. Make sure the generator is level. The oil level must be maintained between two notches on the dipstick.
2. When there is not enough lubricating oil, fill the crankcase with high grade motor oil. Use a high quality detergent oil classified CC or higher (See Table 10 on page 41).
3. Check the coolant level in the radiator and subtank. Replenish with antifreeze as necessary. Always maintain the coolant level between the **FULL** and **LOW** markings on the coolant container. Be sure that the radiator cap is fastened securely.
4. Fill the tank with diesel fuel. Wipe any spills immediately.

Before Starting

Generator and Control Panel

CAUTION:

NEVER start the engine with the ***main, GFCI*** or ***load*** circuit breakers in the **ON** position.

1. Be sure to disconnect the electrical load and switch the ***main, load*** and ***G.F.C.I.*** circuit breakers (Figure 18) to the “OFF” position prior to starting the engine.

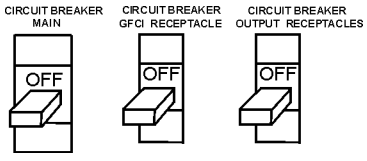


Figure 18. Main, GFCI and Load Circuit Breakers

Jacket Water Heater and Internal Battery Charger 120 VAC Output Receptacles

This generator is equipped with two 120 VAC, 20 amp output receptacles located on the output terminal panel, page 36, Figure 12.

The purpose of these receptacles is to provide power via commercial power to the jacket water heater and internal battery charger.

These receptacles will **ONLY** function when commercial power has been supplied to them (Figure 18). To apply commercial power to these receptacles, a power cord of adequate size will be required.

When using the generator in ***hot*** climates there is no reason to apply power to jacket water heater. However, if the generator will be used in ***cold*** climates it is always a good idea to apply power to the jacket water heater at all times. To apply power to the jacket water heater simply apply power to the jacket water heater receptacle via commercial power using an power cord of adequate size.

If the generator will be used daily, the battery should normally not require charging. If the generator will be idle (not used) for long periods of time, apply power to the battery charger receptacle via commercial power using an power cord of adequate size.

When connecting the generator to a isolation (transfer) switch, **ALWAYS** have power applied to the generator's internal battery charger. This will ensure that the engine will not fail due to a dead battery.

CAUTION:

ALWAYS have power applied to the generator's internal battery charger when connecting the generator to a isolation (transfer) switch. Remember before connecting this generator to any buildings electrical system, have a ***licensed*** electrician perform the installation of the transfer switch.

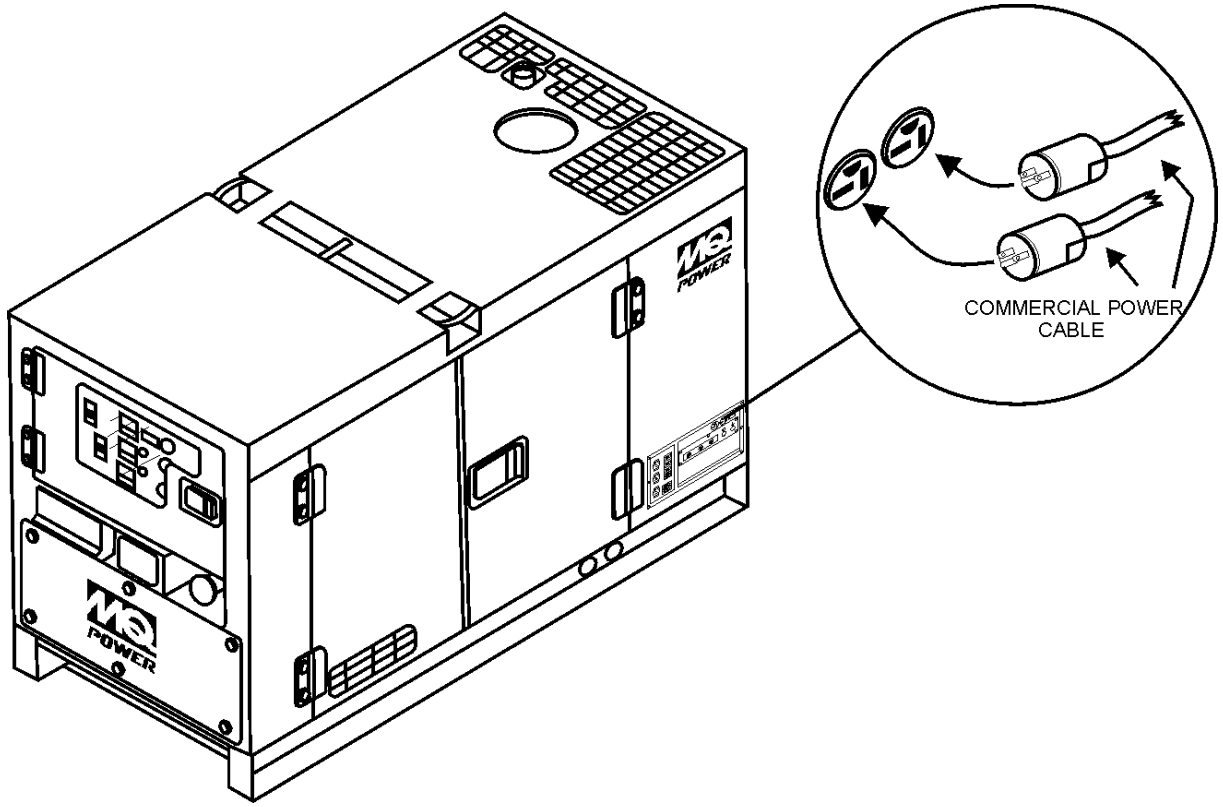


Figure 19. 120 VAC Accessory Receptacle/Cable

2. Once it is determined if commercial power is required, connect the load to the UNV terminals as shown in Figure 20. These terminals can be found on the output terminal panel, see page 38 Figure 12. To gain access to the output terminals lift the UNV cover. Make sure to tighten terminal nuts securely to prevent load wires from slipping out.

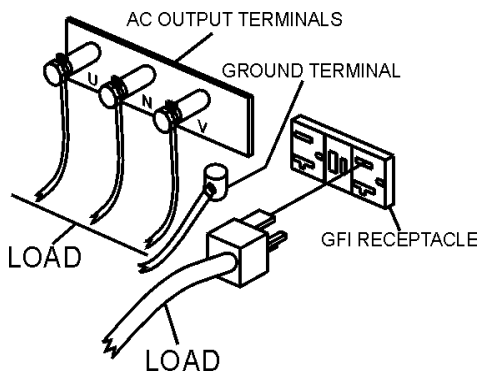


Figure 20. UNV Terminal Lugs (Load)

3. Connect the negative battery cable (BLACK) to the negative post on the battery (Figure 21).

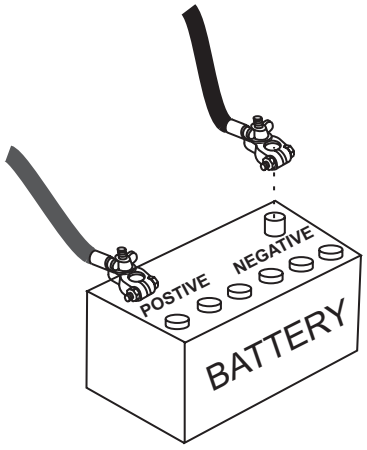


Figure 21. Battery Connections

4. Close all engine enclosure doors (Figure 22).

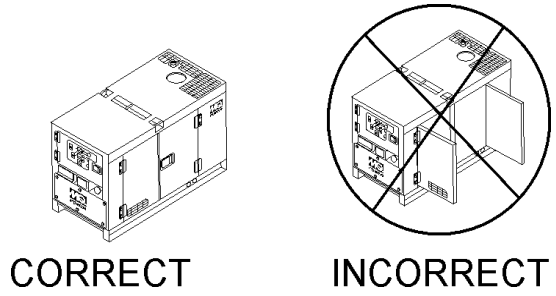


Figure 22. Engine Enclosure Doors

5. For 2000 Version: Set the battery ON/OFF switch (Figure 23) to the ON position. (Located inside door by battery)

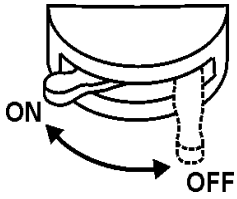


Figure 23. Battery ON/OFF Switch

6. When starting the generator in **COLD** weather conditions, press and hold the engine preheat button (Figure 24) until the pre-heat lamp (Figure 26) is lit (ON).

Figure 24. Engine Pre-Heat Button

7. For 1999 Version: Turn the ignition switch to "Preheat".

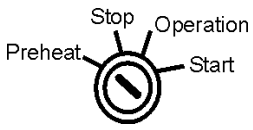


Figure 25. Ignition Switch (Preheat)

Figure 26. Engine Pre-Heat Lamp

8. For 2000 Version: Place the Off/Manual/Auto switch (Figure 27) in the **MANUAL** position (down). Observe that the engine begins to crank.

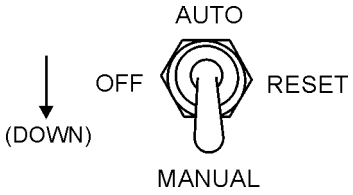


Figure 27. Off/Manual/Auto Switch (Manual)

9. After engine starts, verify that the "**Engine Running**" status LED (Figure 28) on the Microprocessor Engine Control Module (MPEC) display is "ON" (lit).

Figure 28. MPEC Engine Running Status LED

10. For 1999 Version: Turn the ignition key to the rright until the engine cranks (Figure 29). Then release the key to 'operation'.

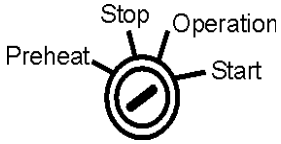


Figure 29. Ignition Switch (start)

11. The generator's frequency meter (Figure 30) displays the 60 cycle output frequency in **HERTZ**.

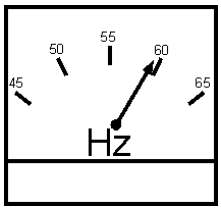


Figure 30. Frequency Meter (Hz)

12. The generator's voltage meter (Figure 31) displays the 120 VAC in **VOLTS**. If the voltage is not within the specified frequency tolerance, use the voltage adjustment control knob (Figure 32) to increase or decrease the desired voltage.

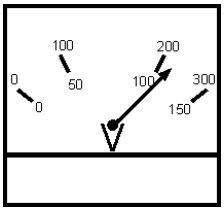


Figure 31. Voltage Meter (Volts)

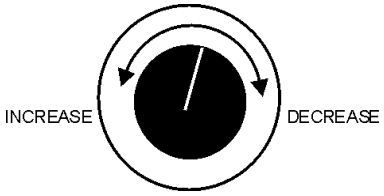


Figure 32. Voltage Adjust Control Knob

13. The ammeter (Figure 33) will indicate zero amps with no load applied. When a load is applied, this meter will indicate the amount of current that the load is drawing from the generator.

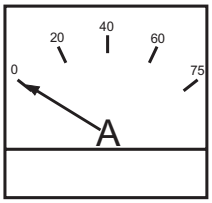


Figure 33. Ammeter (No Load)

14. The engine oil pressure gauge (Figure 34) will indicate the oil pressure (kg/ cm^2) of the engine. Under normal operating conditions the oil pressure should be approximately 25 psi.

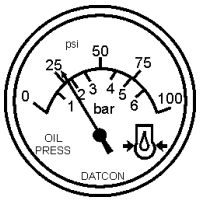


Figure 34. Oil Pressure Gauge

15. The coolant temperature gauge (Figure 35) will indicate the coolant temperature. Under normal operating conditions the coolant temperature should be between 165 and 215 degrees fahrenheit (Green Zone).

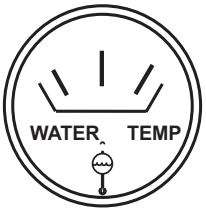


Figure 35. Coolant Temperature Gauge

16. For 2000 Version: Set the engine speed switch (Figure 36) set to high when a load is being applied.

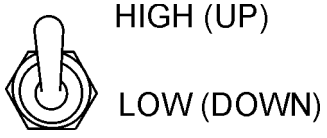


Figure 36. Engine Speed Switch

17. For 2000 Version: Pull the throttle lever and turn to the right when a load is being applied (Figure 37).

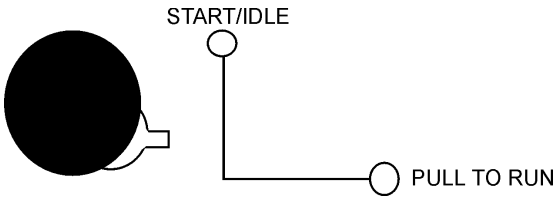


Figure 37. Engine Throttle Lever (up)

18. The tachometer (Figure 38) will indicate the speed of the engine when the generator is operating. Under normal operating conditions this speed should be approximately 1800 RPM's.

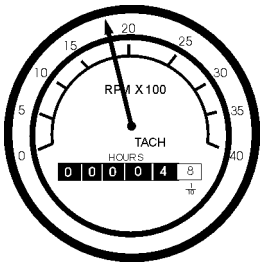


Figure 38. Engine Tachometer

19. If the engine speed is too high or low, use the high idle adjust trimmer (Figure 39) located in the control box to adjust the rated speed of the engine.

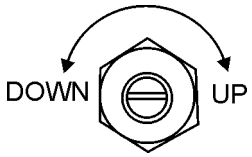


Figure 39. Engine Idle Adjust Trimmer

20. For Version 2000: After the engine has been running for a few minutes, look at the status LED'S on the **"MPEC"** display (Figure 27) and check it for any abnormal conditions. If any abnormal conditions exist, shut down the engine and take corrective action to solve the problem.
21. If there are no abnormal problems shown on the "MPEC" LED display, turn the MAIN, GFCI and LOAD circuit breakers to their ON position (Figure 40).

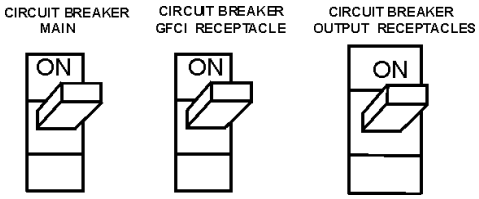


Figure 40. Main and GFCI Circuit Breakers

22. Observe the generator's ammeter (Figure 41) and verify that it reads the anticipated amount of current with respect to the load. Remember the ammeter will only display a current reading if the load is in use.

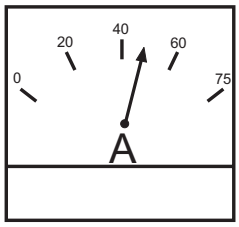


Figure 41. Ammeter (Load)

23. The generator will run until manually stopped or an abnormal condition occurs.

CAUTION:

Before connecting this generator to any building's electrical system, a **licensed electrician** must install an isolation (transfer) switch. Serious ***injury*** or ***death*** may result without this transfer switch.

CAUTION:

When connecting the generator to a isolation (transfer) switch, **ALWAYS** have power applied to the generator's internal battery charger. This will ensure that the engine will not fail due to a dead battery.

Starting the generator in the "**AUTO**" mode is similar to starting the generator in the "**MANUAL"** mode, with a few exceptions.

CAUTION:

When running the generator in the **AUTO** mode, remember the generator can start up at any time without warning. **NEVER** attempt to perform any maintenance when the generator is in the auto mode.

When starting generator in Auto mode use the "Manual Start-up" procedure except where noted (see below).

1. Perform steps 1 through 6 (Before Starting, page 47-99) as outlined in the manual starting procedure.
2. Apply commercial power to the internal battery charger receptacle (to ensure good starting) via commercial power. An external power cord will be required.
3. Apply commercial power to the jacket water heater receptacle (not necessary for warm climates) via commercial power. An external power cord will be required.
4. Place the Off/Manual/Auto switch (Figure 42) in the **AUTO** position (up).

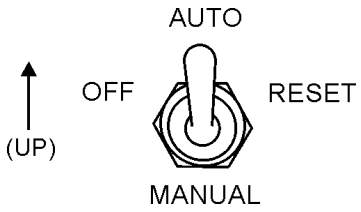


Figure 42. Off/Manual Auto Switch (AUTO)

5. Continue to follow the steps outline in the manual start-up procedure (start at step 11, page 48).

Engine Shutdown

To shut-down the generator use the following procedure:

1. Place both the **MAIN**, **GFCI** and **LOAD** circuit breakers to the "OFF position".

2. For 2000 Version: Set the engine speed switch (Figure 43) to the idle (low) position.

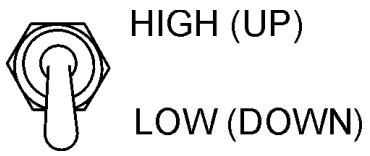


Figure 43. Engine Speed Switch

3. For 1999 Version: Turn and push the engine throttle lever to (Figure 44) to the idle (low) position.

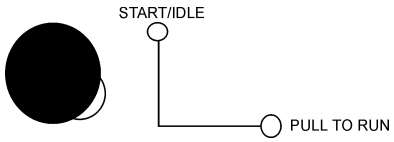


Figure 44. Engine Speed Switch

4. Let the engine cool by running it for 3-5 minutes with no load applied.

5. For 2000 Version: Place the Off/Manual/Auto Switch (Figure 45) in the "**OFF/RESET**" position

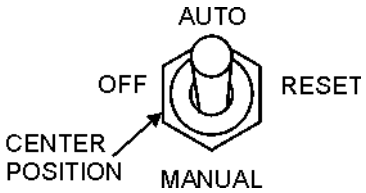


Figure 45. Off/Manual Auto Switch (OFF)

6. For 1999 Version: Turn the ignition switch to the left tostop the engine. Remove the ignition key.

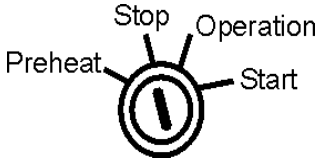


Figure 46. Ignition Switch (Stop)

7. Verify that the "Engine Running" status LED (Figure 47) on the Microprocessor Engine Control Module (MPEC) display is "OFF" (not lit).

Figure 47. MPEC Engine Running Status LED (OFF)

8. Remove the load from the UNV terminal strip (Figure 20).

Emergency Stop

1. To stop the engine in the event of an emergency, switch the main then the terminal panel circuit breakers to 'Off ' position. (For 2000 Version) Place the Off/Manual/ Auto switch to the 'Off/Reset' position. (For 1999 Version) Turn the key to the 'Stop' position.

General Inspection

Prior to each use, the generating set should be cleaned and inspected for deficiencies. Check for loose, missing or damaged nuts, bolts or other fasteners. Also check for fuel or oil leaks.

Engine Side, Fuel, Oil and Coolant (Refer to the Engine Instruction Manual)

Air Cleaner

Every 50 hours: Remove air cleaner element and clean heavy duty paper element with kerosene, or foam element with liquid detergent and hot water. Wrap foam element in a cloth and squeeze dry. For heavy duty paper element, wipe excess kerosene with towel.

Fuel Addition

Add diesel fuel (the grade may vary according to season and locations). Always pour through the mesh filter.

Removing Water from the Tank

After prolonged use, water and other impurities accumulate in the bottom of the tank. Occasionally remove the drain cock and drain the contents. During cold weather, the greater the empty volume inside the tank, the easier it is for water to condense. This can be reduced by always keeping the tank as full as possible.

Air Removal

If air enters the fuel injection system of a diesel engine, starting becomes impossible. After running out of fuel, or after disassembling the fuel system, bleed the system according to the following procedure.

To restart after running out of fuel, turn the key switch to the "START" position for 15-30 seconds. Try again, if needed. This unit is equipped with an automatic air bleeding system.

Service Daily

If engine is operating in very dusty and dry grass conditions, a clogged air cleaner will result in high fuel consumption, loss of power and excessive carbon buildup in the combustion chamber.

Cleaning the Fuel Strainer

Clean the fuel strainer if it contains dust or water. Remove dust or water in the strainer cap and wash it in diesel. Securely fasten the fuel strainer cap so that fuel will not leak. Check the fuel strainer every 200 hours of operation or once a month.

Check Oil Level

Check the crankcase oil level prior to each use, or when the fuel tank is filled. Insufficient oil may cause severe damage to the engine. Make sure the generator is level. The oil level must be between the two notches on the dipstick as shown in Figure 15, page 43.

Generator Storage

For storage of the generator for over 30 days, the following is required:

- Drain the fuel tank completely.
- Completely drain the oil from the crankcase and refill with fresh oil.
- Clean all external parts of the generator with a cloth.
- Cover the generating set and store in a clean, dry place.

Water Separator Filter

Replace the water separator filter (Figure 48) every 500 hours if two filters are being used. If one filter is being used, replace every 250 hours.

The filters should also be replace if the vacuum gauge indicates between 6 to 10 inches of mercury (in Hg.)

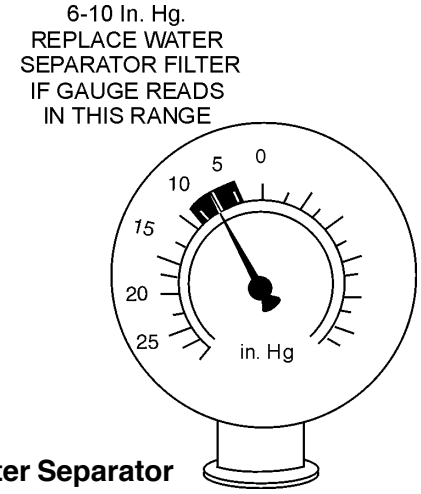


Figure 48. Water Separator Gauge

To replace the ***water separator filter*** element perform the following:

1. Remove the lid from the filter housing. Remove the element by holding the module handle and slowly pulling upward with a twisting motion.
2. Replace the lid gasket with the one supplied with the new filter element. Apply a coating of clean fuel or motor oil to seal prior to reassembly. Insert the new filter element with a slow downward twisting motion.
3. Fill the unit with clean fuel, then set the lid back on top of the filter housing, and tighten snugly using the T-bar handle.
4. Start the engine and check for any leaks. If any leaks occur with the engine running, turn the engine off and fix the leak.

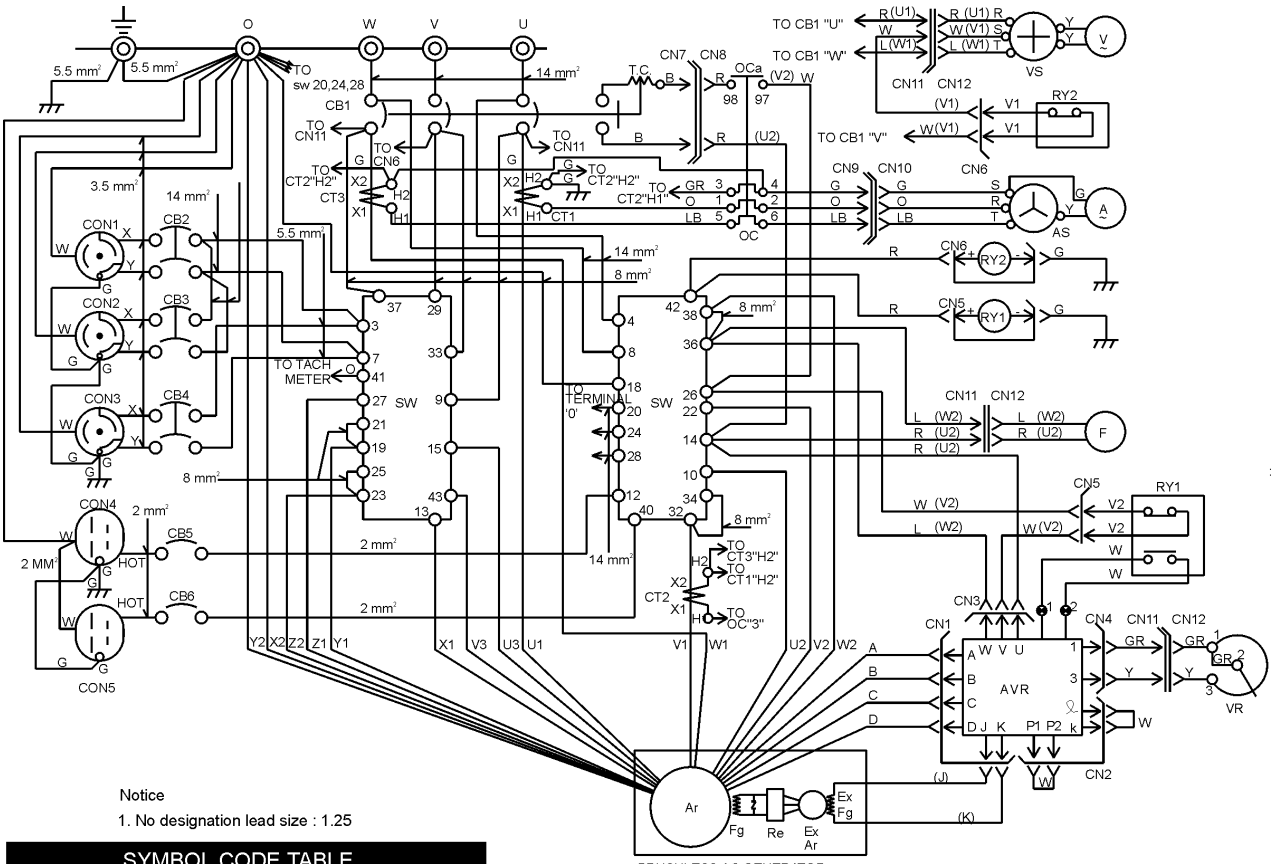
INSPECTION / MAINTENANCE		10 Hrs DAILY	250 Hrs	500 Hrs	1000 Hrs
ENGINE	Check Engine Fluid Levels	X			
	Check Air Cleaner	X			
	Check Battery Acid Level	X			
	Check Fan Belt Condition	X			
	Check for Leaks	X			
	Check for Loosening of Parts	X			
	Check Water Separator	X			
	Check Blow-by Oil Mist Tank	X			
	Replace Engine Oil and Filter *1		X		
	Clean Air Filter		X		
	Drain Bottom of Fuel Tank		X		
	Clean Unit, Inside and Outside		X		
	Change Fuel Filter *2			X	
	Replace Water Separator Element *3		(X)	X	
	Clean Radiator and Check Coolant Protection Level			X	
	Replace Air Filter Element				X
	Change Corrosion Resistor				X
	Check all Hoses and Clamps				X
	Clean Inside of Fuel Tank				X
GENERATOR	Measure Insulation Resistance Over 3M ohms		X		

*1 Replace engine oil anf filter at 100 hours, first time only.

*2 Replace fuel filter at 250 Hours, first time only.

*3 Refer to the item "Water Separator Filter".

DCA-45SSIU2 — GENERATOR WIRING DIAGRAM



Notice

1. No designation lead size : 1.25

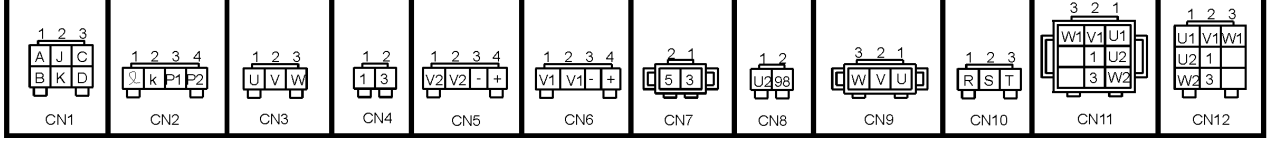
SYMBOL CODE TABLE

SYMBOL	DESIGNATION
Ar	MAIN GENERATOR ARMATURE WINDING
Fg	MAIN GENERATOR FIELD WINDING
ExAr	EXCITER ARMATURE WINDING
ExFg	EXCITER FIELD WINDING
Re	RECTIFIER
AVR	AUTOMATIC VOLTAGE REGULATOR
VR	VOLTAGE REGULATOR (RHEOSTAT)
CT 1,2,3	CURRENT TRANSFORMER
AS	CHANGE-OVER SWITCH,AMMETER
A~	AC.AMMETER
VS	CHANGE-OVER SWITCH,VOLTMETER
V~	AC.VOLTMETER
F	FREQUENCY METER
Cb1	CIRCUIT BREAKER
CB 2,3,4	CIRCUIT BREAKER
CB 5,6	CIRCUIT BREAKER
CON 1,2,3	RECEPTACLE
CON 4,5	RECEPTACLE
OC	OVER CURRENT RELAY
SW	SELECTOR SWITCH
RY1,2	RELAY UNIT

COLOR CODE TABLE

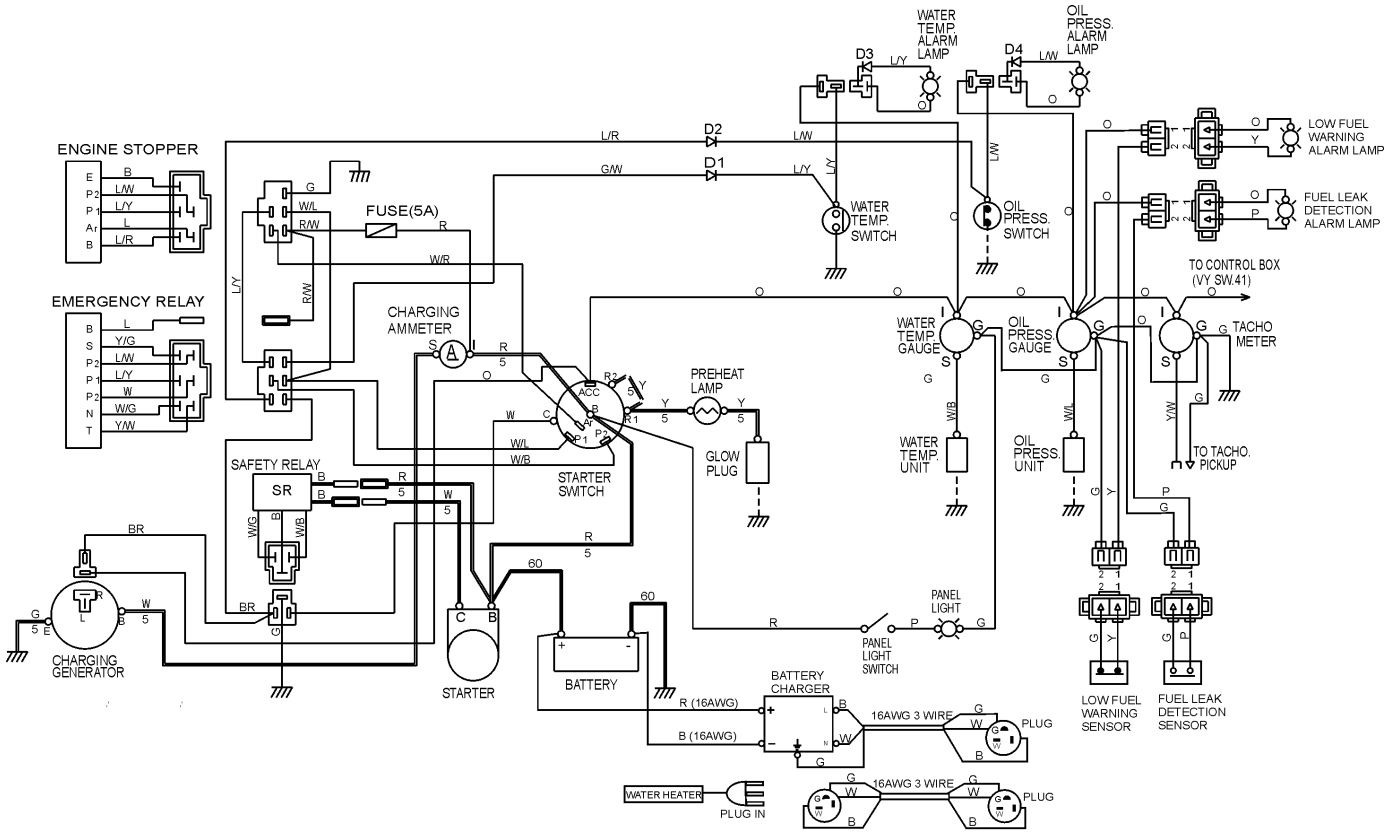
CODE/ WIRE COLOR			
B	BLACK	R	RED
L	BLUE	W	WHITE
BR	BROWN	Y	YELLOW
G	GREEN	LB	LIGHT BLUE
GR	GRAY	LG	LIGHT GREEN
V	VIOLET	O	ORANGE
P	PINK		

CONNECTER ARRANGEMENT (WIRING VIEW)

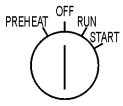


NOTE PAGE

DCA-45SSIU2 — ENGINE WIRING DIAGRAM (1999 VERSION)



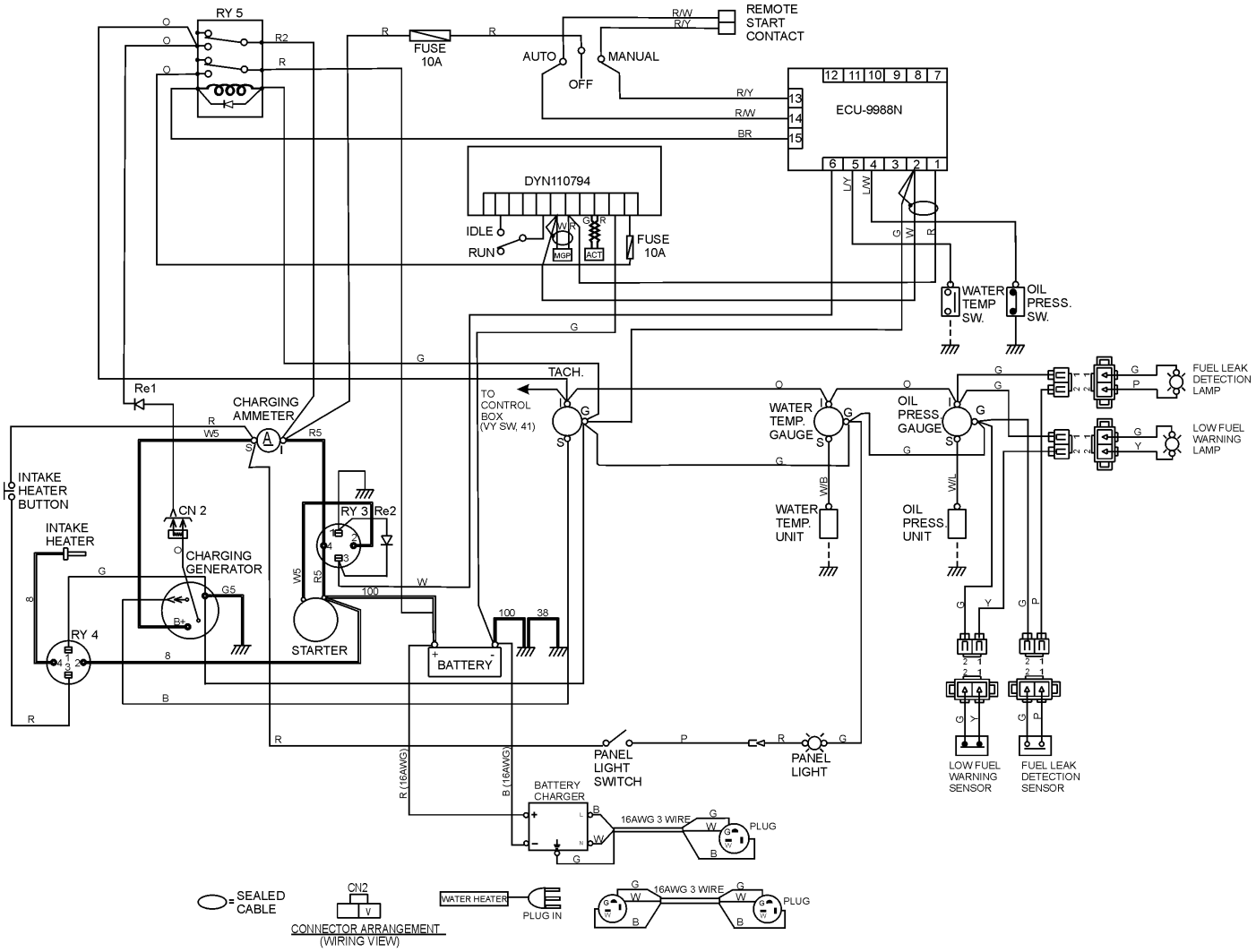
WIRE SIZE		COLOR CODE		
60: 60 ㎟		WIRE COLOR		WIRE COLOR
5: 5 ㎟	B	BLACK	R	RED
No. 1.25 ㎟	L	BLUE	W	WHITE
	BR	BROWN	Y	YELLOW
	G	GREEN	LB	LIGHT BLUE
	GR	GRAY	LG	LIGHT GREEN
	V	VIOLET	O	ORANGE
	P	PINK	WIRE COLOR/LINE COLOR	



KEY CONNECTION DIAGRAM	B	R1	ACC	R2	C	Ar	P1	P2
OFF	○					○	○	
PREHEAT	○	○				○	○	
RUN	○		○			○		○
START	○			○	○	○		○

CONNECTOR:view from inserting wire side

DCA-45SSIU2 — ENGINE WIRING DIAGRAM (2000 VERSION)



WIRE SIZE		COLOR CODE		
60: 60 mm²		WIRE COLOR		WIRE COLOR
38: 38 mm²	B	BLACK	R	RED
5: 5 mm²	L	BLUE	W	WHITE
2: 2 mm²	BR	BROWN	Y	YELLOW
No: 1.25 mm²	G	GREEN	LB	LIGHT BLUE
	GR	GREY	LG	LIGHT GREEN
	V	VIOLET	O	ORANGE
	P	PINK		

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, use the tables shown for diagnosis based on the Engine Troubleshooting (Table 14). If the problem cannot be remedied, consult our company's business office or service plant.

TABLE 14. ENGINE TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Engine does not start.	No fuel?	Replenish fuel.
	Air in the fuel system?	Bleed system.
	Water in the fuel system?	Remove water from fuel tank.
	Fuel pipe clogged?	Clean fuel pipe.
	Fuel filter clogged?	Clean or change fuel filter.
	Excessively high viscosity of fuel or engine oil at low temperature?	Use the specified fuel or engine oil.
	Fuel with low cetane number?	Use the specified fuel.
	Fuel leak due to loose injection pipe retaining nut?	Tighten nut.
	Incorrect injection timing?	Adjust.
	Fuel cam shaft worn?	Replace.
	Injection nozzle clogged?	Clean injection nozzle.
	Injection pump malfunctioning?	Repair or replace.
	Seizure of crankshaft, camshaft, piston, cylinder liner or bearing?	Repair or replace.
	Compression leak from cylinder?	Replace head gasket, tighten cylinder head bolt, glow plug and nozzle holder.
	Improper valve timing?	Correct or replace timing gear.
	Piston ring and liner worn?	Replace.
	Excessive valve clearance?	Adjust.
Starter does not run.	Starter malfunctioning?	Repair or replace.
	Wiring disconnected?	Connect wiring.

TABLE 14. ENGINE TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Engine revolution is not smooth.	Fuel filter clogged or dirty?	Clean or change.
	Air cleaner clogged?	Clean or change.
	Fuel leak due to loose injection pipe retaining nut?	Tighten nut.
	Injection pump malfunctioning?	Repair or replace.
	Incorrect nozzle opening pressure?	Adjust.
	Injection nozzle stuck or clogged?	Repair or replace.
	Fuel over flow pipe clogged?	Clean.
	Governor malfunctioning?	Repair.
Either white or blue exhaust gas is observed.	Excessive engine oil?	Reduce to the specified level.
	Piston ring and liner worn or stuck?	Repair or replace.
	Incorrect injection timing?	Adjust.
	Deficient compression?	Adjust top clearance.
Either black or dark gray exhaust gas is observed.	Overload?	Lessen the load.
	Low grade fuel used?	Use the specified fuel.
	Fuel filter clogged?	Clean or change.
	Air cleaner clogged?	Clean or change.
	Deficient nozzle injection?	Repair or replace the nozzle.
Deficient output.	Incorrect injection timing?	Adjust.
	Engine's moving parts seem to be seizing?	Repair or replace.
	Uneven fuel injection?	Repair or replace the injection pump.
	Deficient nozzle injection?	Repair or replace the nozzle.
	Compression leak?	Replace head gasket, tighten cylinder head bolt, glow plug and nozzle holder.

DCA-45SSIU2 — TROUBLESHOOTING (GENERATOR/ENGINE)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, use the tables shown for diagnosis based on the Engine and Radiator Troubleshooting (Table15). If the problem cannot be remedied, consult our company's business office or service plant.

TABLE 15. ENGINE & GENERATOR TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Engine fails to start and starter does not rotated.	Dead battery?	Replace battery.
	Defective starter switch?	Replace switch.
	Fuse F5 burned out?	Replace fuse.
Engine fails to start and starter rotates.	Broken pre-heat circuit?	Check pre-heat circuit.
	No fuel?	Add fuel.
	Defective wiring?	Check wiring.
Engine starts and remains at low speed.	Clogged fuel strainer?	Clean or replace.
	Clogged air cleaner?	Clean or replace.
	Disconnected wiring?	Check and repair wiring.
Engine speed rises and no voltage is present in AC power source.	No voltage present in AC power source?	Replace rectifier (RE1).
	Defective rotor?	Replace rotor.
	Defective voltmeter?	Replace voltmeter.
	Disconnected wiring?	Check and repair wiring.
	Layer short-circuit in armature winding?	Replace armature.
Engine speed rises and AC power voltage is too low or cannot be used.	Defective circuit breaker (protector)?	Replace circuit breaker (protector).
	Layer short-circuit, broken wires in armature winding?	Repair or replace armature.
Engine speed rises and battery discharges too soon.	Defective engine regulator?	Replace regulator.
	Defective wiring?	Repair or replace wiring.
Engine speed rises and engine seems overloaded.	Defective alternator?	Repair or replace alternator.
	Damaged alternator bearing?	Replace alternator bearings.

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, use the tables shown for diagnosis based on the MPEC Troubleshooting (Table16). If the problem cannot be remedied, consult our company's business office or service plant.

TABLE 16. MPEC TROUBLESHOOTING

Sympton	Possible Cause	Solution
Low oil pressure light is on.	Low oil level?	Fill oil level.
	Oil pressure sending unit failure?	Replace oil pressure sending unit.
	Time delay malfuntion in MPEC?	Refer to dealer.
	Wire shorted?	Inspect/repair wire.
Low coolant level light is on.	Low coolant level?	Fill coolant level.
	Sending unit failure?	Replace sending unit.
	Low battery voltage?	Replace/charge battery.
High coolant temperture light is on.	Fan belt tension incorrect?	Tighten/replace fan belt.
	Air flow is not circulation through radiator?	Clean/repair radiator grill.
	Doors open?	Close doors.
	Exhaust leaking?	Replace/repair gaskets or faulty part.
	Generator being overloaded?	Check/reduce load.
	Thermostat failure?	Replace thermostat.
	Air intake blocked?	Clear all air intakes.
	Temperature switch failure?	Replace temperature switch.
Overcrank light is on.	No or low Fuel?	Fill fuel level.
	MPEC needs to be calibrated?	Refer to dealer.
Overspeed light is on.	RPM engine speed too high?	Adjust RPM.
	Governor actuator needs to be adjusted?	Adjust governor actuator.
	Governor controller needs to be adjusted?	Adjust governor controller.
	MPEC needs to be calibrated?	Refer to dealer.
Loss of MPU light(s) or on.	Magnetic pick up out of adjustment?	Adjust magnetic pick up.
	Magnetic pick up dirty?	Clean magnetic pick up.

EXPLANATION OF CODE IN REMARKS COLUMN

How to read the marks and remarks used in this parts book.

Items Found In the "Remarks" Column

Serial Numbers-Where indicated, this indicates a serial number range (inclusive) where a particular part is used.

Model Number-Where indicated, this shows that the corresponding part is utilized only with this specific model number or model number variant.

Items Found In the "Items Number" Column

All parts with same symbol in the number column, *, #, +, %, or ■, belong to the same assembly or kit.

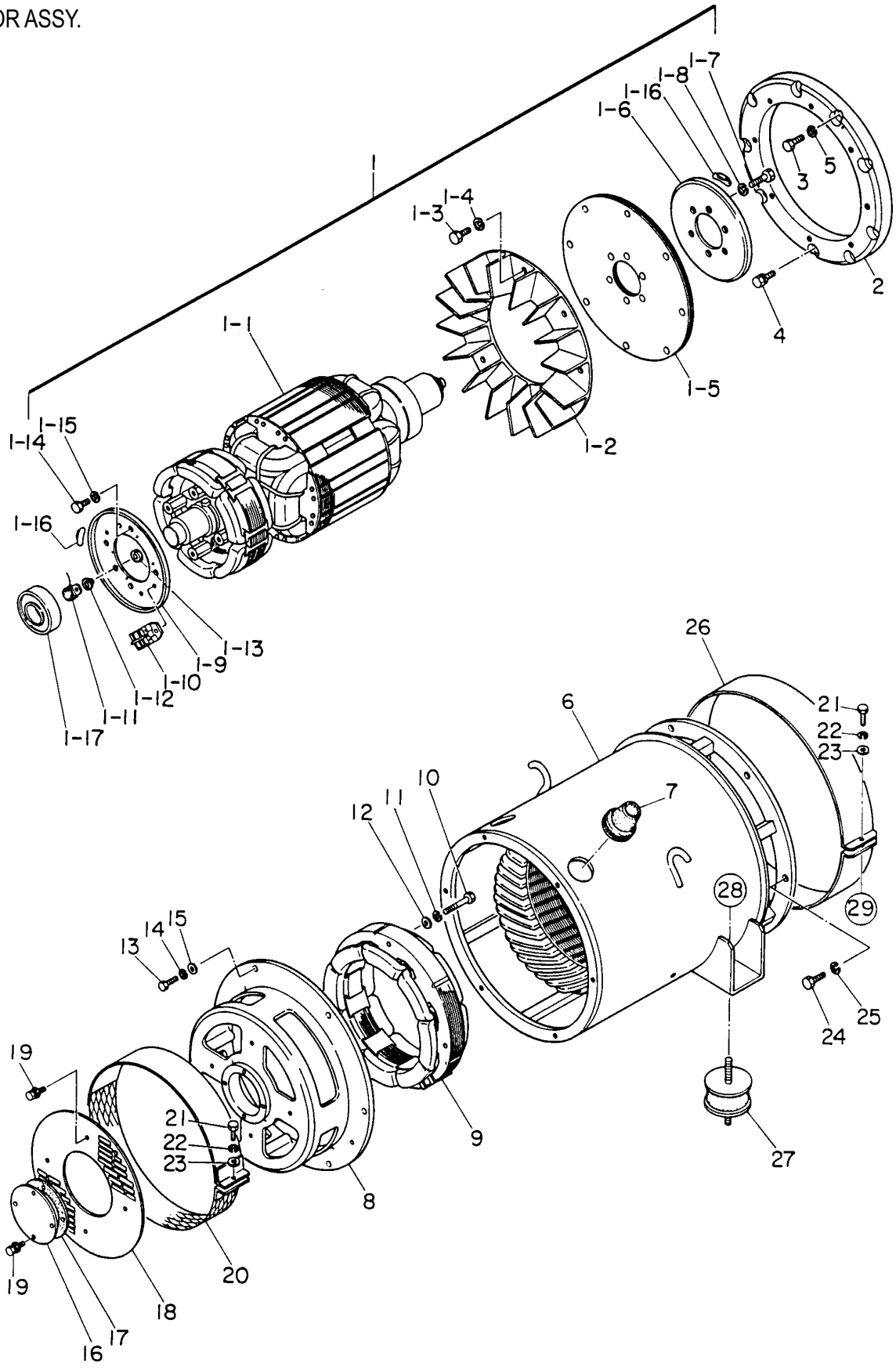
Note: If more than one of the same reference number is listed, the last one listed indicates newest (or latest) part available.

DCA-45SSIU2 W/ISUZU B-4BG1 DIESEL ENGINE

1 to 5 Units

Qty.	P/N	Description	
10	0602046368	AIR FILTER	
10	X132400240	FUEL FILTER	
10	8943212191	OIL FILTER	
5	0602042283	CARTRIDGE, CORROSION RESISTOR	
1	0601805950	MAIN CIRCUIT BREAKER	
1	0602103092	PILOT LAMP, ENGINE TROUBLE	
2	0601810141	BULB	
2	8970208220	ENGINE FAN BELT	
1	1823100080	SWITCH, STARTER	
5	KEYISUZUF	KEY SET, STARTER SWITCH (2)	S/N UP TO 7202115
1	ECU8899N	ENGINE CONTROLLER	S/N FROM 7202116~
2	6008711170	OIL SWITCH	
1	M1310500403	RADIATOR HOSE (UPPER)	
1	M1310500303	RADIATOR HOSE (LOWER)	
1	0601820671	AUTOMATIC VOLTAGE REGULATOR	
1	0601808811	MAIN CIRCUIT BREAKER	
1	0601840073	VOLTAGE REGULATOR (RHEOSTAT)	
1	0601840121	KNOB, VOLTAGE REGULATOR	
2	0601810245	BULB, PILOT LAMP	
1	0602011065	CAP, RADIATOR	
1	0602122272	UNIT, OIL PRESSURE	
1	0602123260	UNIT, WATER TEMPERATURE	
1	0602121080	CHARGING AMMETER	

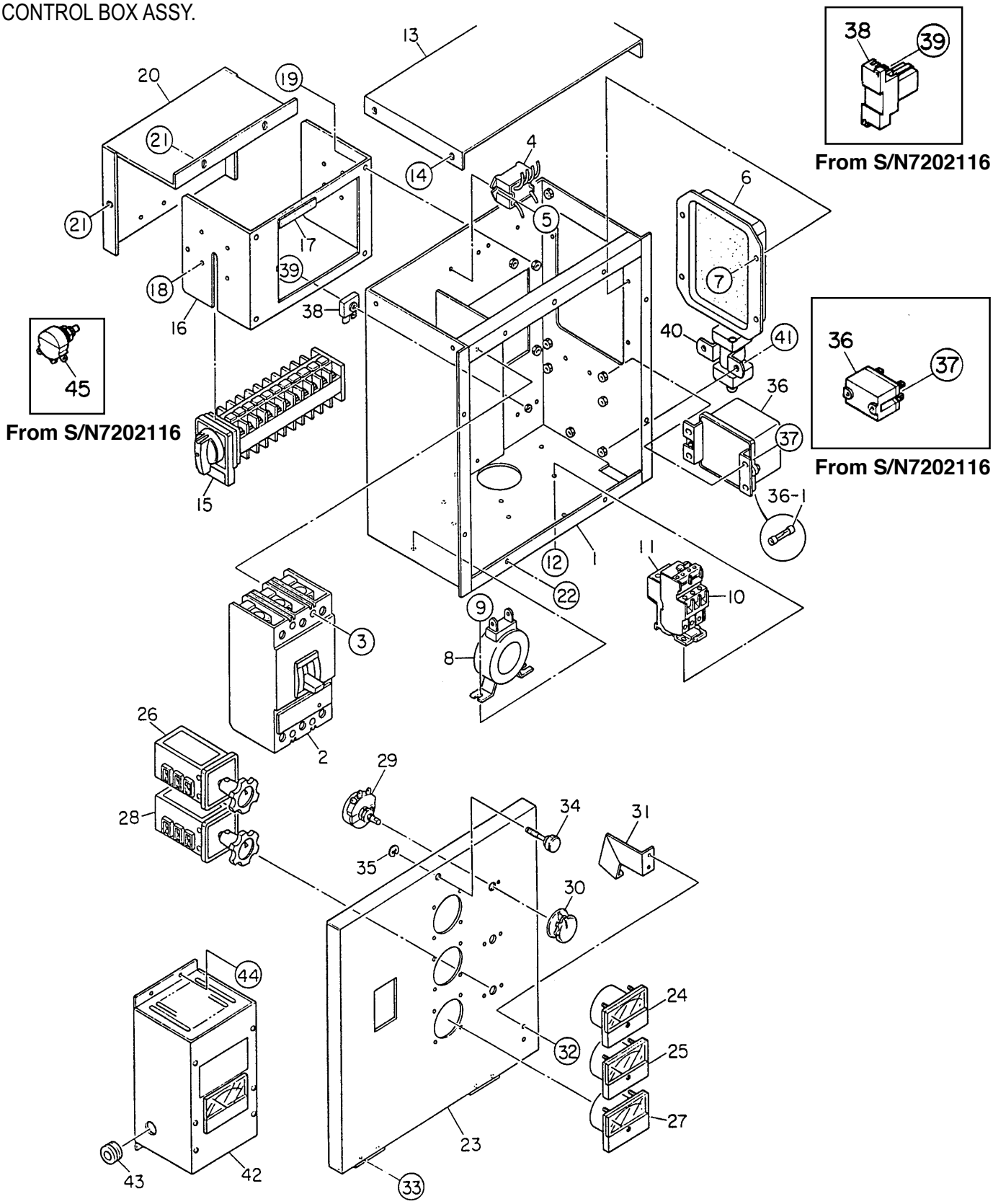
GENERATOR ASSY.



GENERATOR ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	8051000042	ROTOR ASSY.	1	
1-1		FIELD ASSY.	1	
1-2	8051070003	FAN	1	
1-3	0012110035	HEX. HEAD BOLT	8	
1-4	030210250	LOCK WASHER	8	REPLACES 0042510000
1-5	8041611004	COUPLING DISK	4	
1-6	8041015003	BALANCING PLATE	1	
1-7	0105091025	HEX. HEAD BOLT	6	REPLACES 0010310025
1-8	030210250	LOCK WASHER	6	REPLACES 0042510000
1-9	8001026013	SET PLATE, RECTIFIER	1	
1-10	0601821349	RECTIFIER	2	PT3610
1-11	0601822601	SURGE ABSORBER	1	ERZM14JK621A
1-12	8001020004	INSULATOR WASHER	1	
1-13	8001020504	INSULATOR WASHER	1	
1-14	011008020	HEX. HEAD BOLT	4	REPLACES 0010108020
1-15	0040008000	LOCK WASHER	4	
1-16	0601000209	BALANCING WEIGHT KIT	1	
1-17	0071906310	BEARING	1	6310DDUC3
2	8051614003	COUPLING RING	1	REPLACES M11634002031
3	0801831704A	REAMER BOLT	2	REPLACES M9200100204
4	0012810030	HEX. HEAD BOLT	7	
5	030210250	LOCK WASHER	2	REPLACES 0042510000
6	8051340503	STRATOR ASSY.	1	
7	0845041904	GROMMET	2	
8	8041315202	END BRACKET	1	
9	8041350013	FIELD ASSY. EXCITER	1	
10	0010308065	HEX. HEAD BOLT	4	
11	0042608000	LOCK WASHER	4	
12	031108160	PLAIN WASHER	4	REPLACES 0041208000
13	0010108030	HEX. HEAD BOLT	6	
14	0040008000	LOCK WASHER	6	
15	031108160	PLAIN WASHER	6	REPLACES 0041208000
16	8041310024	COVER, BEARING	1	
17	8041312014	GASKET, BEARING	1	
18	8041331014	COVER, END BRACKET	1	
19	0105050616	HEX. HEAD BOLT	8	REPLACES 0017106012
20	8001333003	COVER, END BRACKET	1	
21	0010106030	HEX. HEAD BOLT	2	
22	0040006000	LOCK WASHER	2	
23	952404470	PLAIN WASHER	2	REPLACES 0041206000
24	0105091025	HEX. HEAD BOLT	6	REPLACES 0010310025
25	030210250	LOCK WASHER	6	REPLACES 0042510000
26	8051332014	COVER, FAN	1	
27	0605000010	RUBBER SUSPENSION	2	
28	0030012000	HEX. NUT	2	
	0040012000	LOCK WASHER	2	
	031112230	PLAIN WASHER	2	REPLACES 0041212000
29	020106050	NUT	1	REPLACES 0600815000

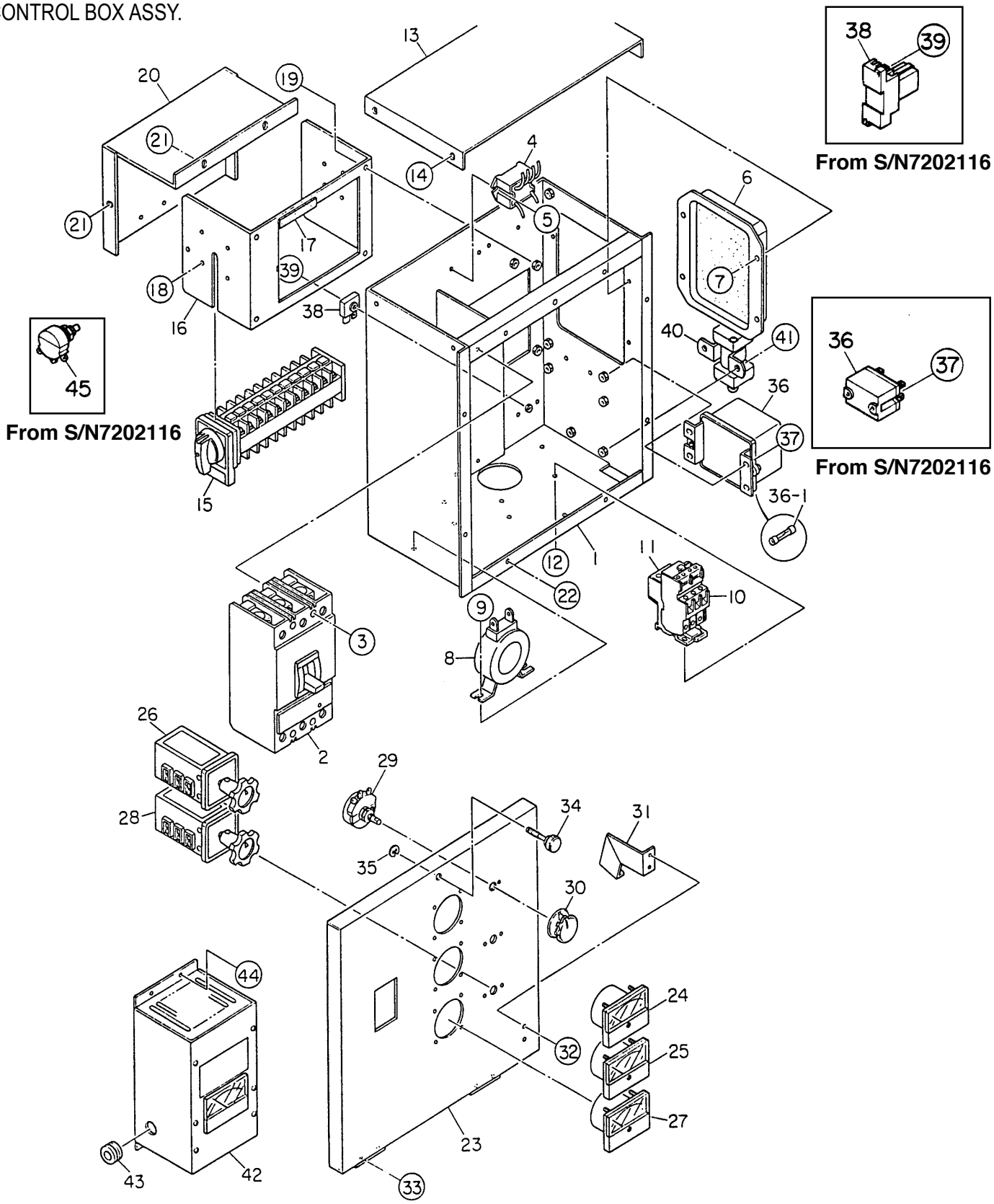
CONTROL BOX ASSY.



CONTROL BOX ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
	M1246701004	WIRE HARNESS GENERATOR	1	
1	M1213000422	CONTROL BOX	1	UP TO S/N7202115
1	M1215000103	CONTROL BOX	1	FROM S/N7202116~
2	0601808811	CIRCUIT BREAKER	1	KAF361101021 3P 110A
3	0021005080	MACHINE SCREW	4	
4	0601823863	RELAY UNIT	2	MSA9013A
5	0021304015	MACHINE SCREW	4	REPLACES 0027104015
6	0601820671	AUTOMATIC VOLTAGE REGULATOR	1	NTA-5A-2DB
7	0027105015	MACHINE SCREW	4	
8	0601806116	CURRENT TRANSFORMER	3	812-943 75/5A
9	011808015	MACHINE SCREW	6	REPLACES 0027106015
10	0601820845	OVER CURRENT RELAY	1	LR2D1308
11	0601820846	OVER CURRENT RELAY	1	LR7D1064
12	0021304015	MACHINE SCREW	2	REPLACES 0027104015
	0030004000	HEX NUT	2	REPLACES 0207004000
13	M123500303	CONTROL BOX COVER	1	
14	011106015	HEX HEAD BOLT	4	REPLACES 0016906015
15	M1923100004	SELECTOR SWITCH	1	VY-40
16	M1213600114	SWITCH BRACKET	1	UP TO S/N7202115
16	M1215600804	SWITCH BRACKET	1	FROM S/N7202116~
17	0330000530	EDGING	1	
18	0027103010	MACHINE SCREW	4	
19	011106015	HEX HEAD BOLT	4	REPLACES 0016906015
20	M1213600014	SWITCH COVER	1	
21	011106015	HEX HEAD BOLT	3	REPLACES 0016906015
22	011106015	HEX HEAD BOLT	8	REPLACES 0016906015
	0040506000	TOOTHED WASHER	1	
23	M1223000303	CONTROL PANEL	1	
24	0601807630	FREQUENCY METER	1	264250DJDJ9
25	0601808950	AC AMMETER	1	260240LSPB1
26	0601801040	CHANGE-OVER SWITCH AMMETER	1	SL-2AS
27	0601806813	AC VOLTMETER	1	260244SJSJ1
28	0601801041	CHANGE-OVER SWITCH VOLTMETER	1	SL-2VS
29	0601840073	RHEOSTAT (VOLTAGE REGULATOR)	1	RA20A2SE102BJ 2W 1K W
30	0601840121	KNOB	1	25N
31	M1223100004	STOPPER	1	
32	0027105010	MACHINE SCREW	2	
33	0027105010	MACHINE SCREW	4	
34	M9220100004	SET SCREW	1	
35	0080200007	SNAP RING	1	S-7
36	1825500732	EMERGENCY RELAY	2	REPLACES 0602200409; UP TO S/N7202115
36	0601826031	RELAY	1	AHE1231HE1 AS12V' FROM S/N7202116
36-1	0601802132	FUSE	1	10A; UP TO S/N7202115
37	011106015	HEX HEAD BOLT	4	REPLACES 0016906015 ; UP TO S/N7202115

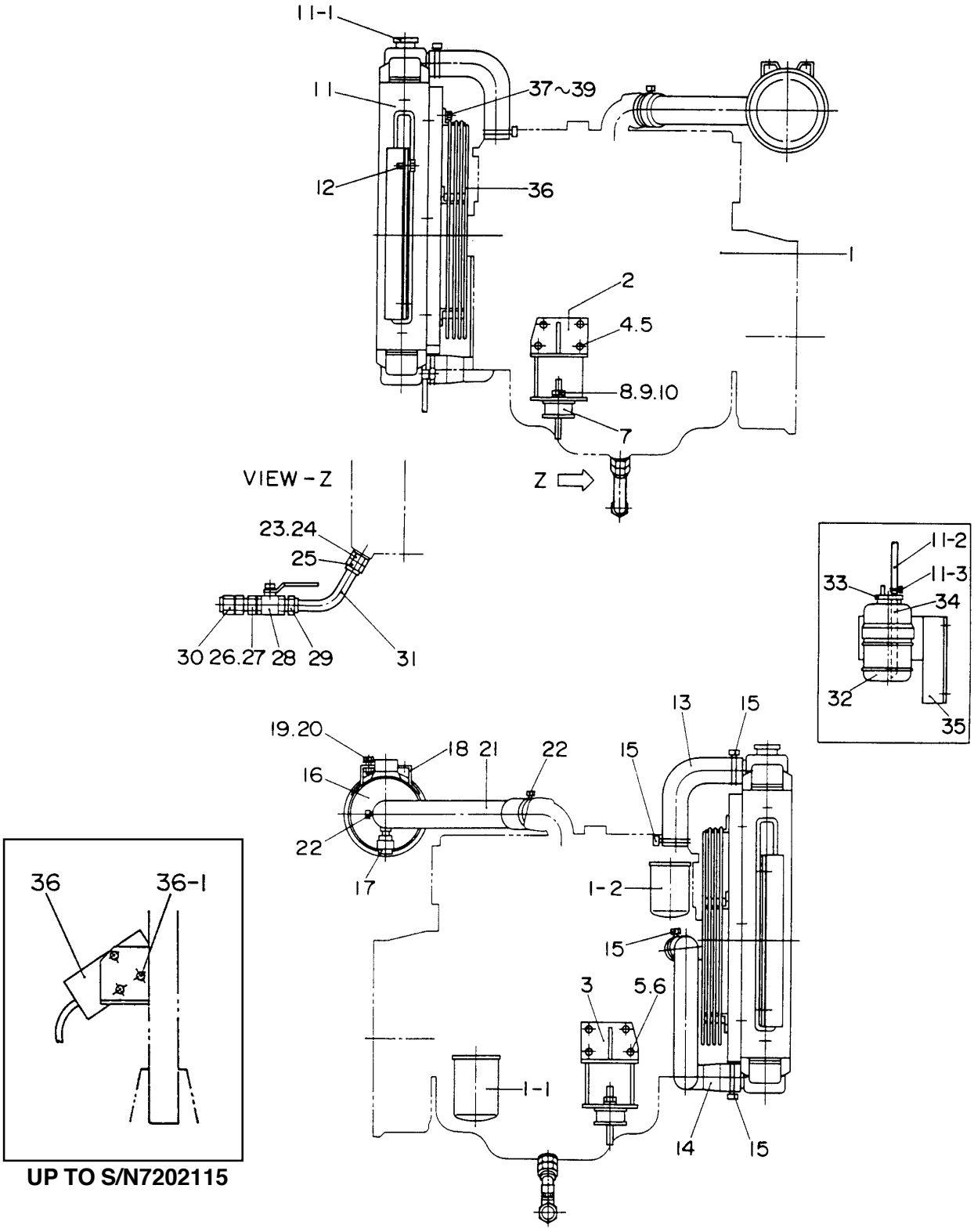
CONTROL BOX ASSY.



CONTROL BOX ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
37	0027104016	MACHINE SCREW	2	FROM S/N7202116
38	0601821370	RECTIFIER, DE4503	2	UP TO S/N7202115; REPLACES 0601823240
38	LY2D12VD	RELAY	1	REPLACES 0601827656; FROM S/N7202116
	PTF08AE	RELAY BASE	1	REPLACES 0601823109; FROM S/N7202116
	PYCA1	RELAY CLIP	2	REPLACES 0601824400; FROM S/N7202116
39	0021004040	MACHINE SCREW	1	UP TO S/N7202115
	0040004000	LOCK WASHER	1	UP TO S/N7202115
	031104080	PLAIN WASHER	1	UP TO S/N7202115; REPLACES 0041204000
39	0027104020	MACHINE SCREW	2	FROM S/N7202116
40	1825530400	SAFETY RELAY	1	REPLACES 0602200304
41	0016906015	HEX HEAD BOLT	2	
42	0601823092	BATTERY CHARGER	1	
43	0601851795	GROMMET	2	
44	0021304015	MACHINE SCREW	4	REPLACES 0027104015
	0030004000	HEX NUT	4	REPLACES 0207004000
45	0601840240	POTENTIOMETER	1	5K2W73JB5000; FROM S/N7202116

ENGINE & RADIATOR ASSY.

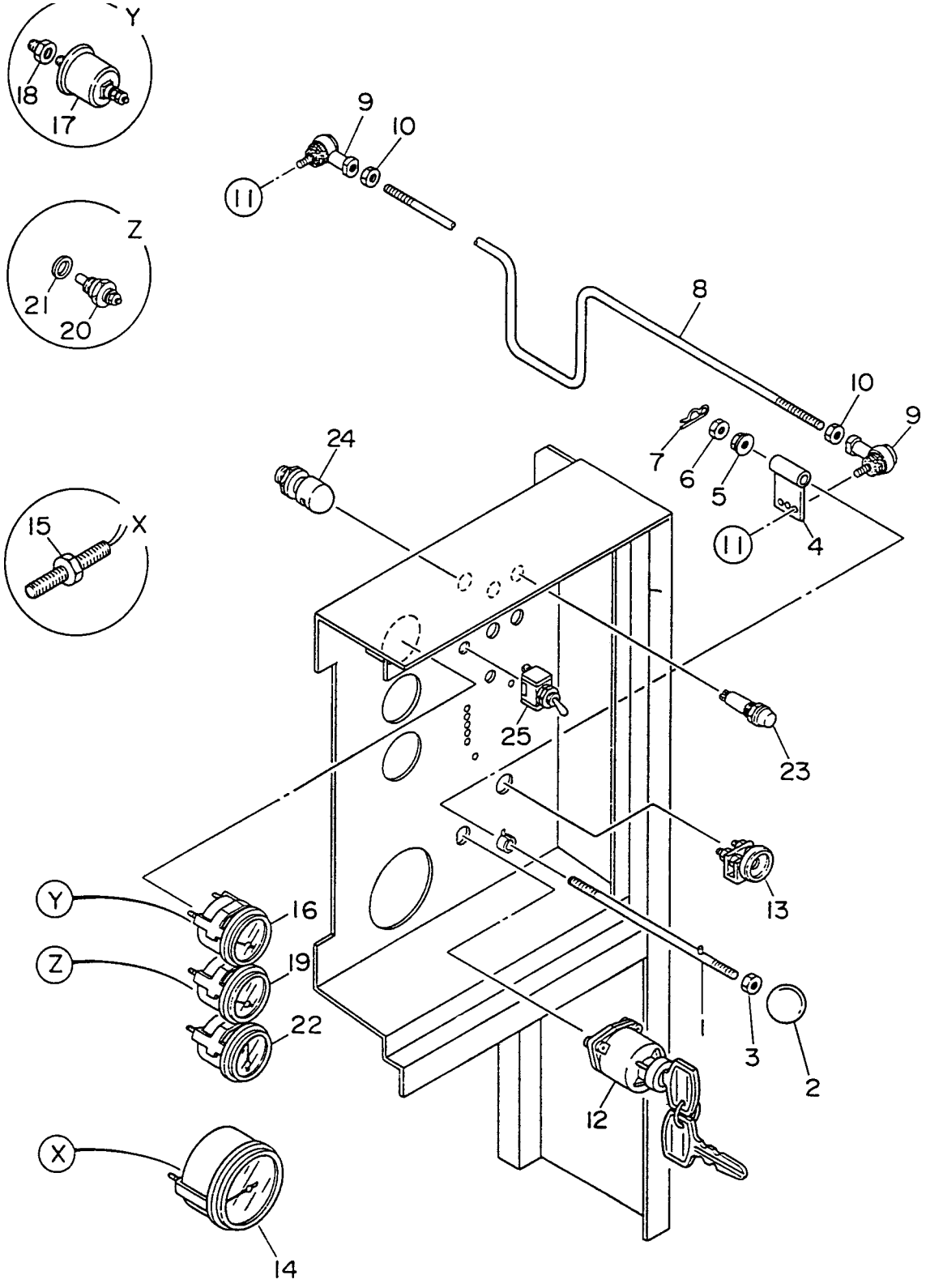


UP TO S/N7202115

ENGINE & RADIATOR ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	M1923200034	ENGINE	1	ISUZU B-4BG1
	8970208220	FAN BELT	1	REPLACES 0602011403
1-1	8943212191	CARTIDGE OIL FILTER	1	REPLACES 0602041211
1-2	X132400240	CARTRIDGE FUEL FILTER	1	REPLACES 0602042511
2	M1303200103	ENGINE FOOT	1	
3	M1303200203	ENGINE FOOT	1	
4	0105091025	HEX HEAD BOLT	7	REPLACES 0010710025
5	030210250	LOCK WASHER	8	REPLACES 0042510000
6	0030410000	HEX NUT	1	
7	0605000008	RUBBER SUSPENSION	2	
8	0030012000	HEX NUT	2	
9	0040012000	LOCK WASHER	2	
10	031112230	PLAIN WASHER	2	REPLACES 0041212000
11	0602012741	RADIATOR	1	C2810050001;UP TO S/N7202115
11	0602012742	RADIATOR	1	C2810050002; FROM S/N7202116
11-1	0602011065	CAP	1	C89C0115010
11-2	0602014190	HOSE	1	C87H4202350
11-3	0602014394	HOSE BAND	2	C1210015160
12	011008020	HEX HEAD BOLT	6	REPLACES 0016908020
13	M1310500403	RADIATOR HOSE	1	
14	M1310500303	RADIATOR HOSE	1	
15	0605515147	HOSE BAND	1	5032
16	0602046232	AIR CLEANER	1	FWG06-5295
	0602046368	ELEMENT AIR CLEANER	1	P18-1052
17	0602040650	INDICATOR AIR CLEANER	1	RBX00-2252
18	0602040595	BAND AIR CLEANER	2	P00-7191
19	011008020	HEX HEAD BOLT	4	REPLACES 0016908020
20	020108060	HEX NUT	4	REPLACES 0207008000
21	8052032303	HOSE, AIR CLEANER	1	REPLACES M1373100203
22	0605515148	HOSE BAND	2	5040
23	0602022560	ADAPTER	1	10-M20X1.5 F80X-S
24	M1320300304	PACKING	1	
25	0602022792	SWIVEL	1	30682-10-10
26	0603306590	CONNECTOR	1	10WFTX-S
27	0603300285	ROCKNUT	1	10WLN
28	0605511395	VALVE	1	XV500P-8
29	0603306395	HOSE JOINT	1	30182-8-10
30	0602021070	CAP	1	10FNTX-S
31	0269200190	DRAIN HOSE	1	836-10
32	M9300000103	RESERVE TANK	1	
33	M9300100003	CAP, RESERVE TANK	1	
34	0199100175	HOSE	1	
35	M1316100404	BRACKET, RESERVE TANK	1	
36	1819001902	ENGINE STOPPER	1	UP TO S/N7202115; REPLACES 0602210810
	0601802133	FUSE	1	5A; UP TO S/N7202115
36-1	011808015	MACHINE SCREW	3	UP TO S/N7202115; REPLACES 0027106015
36	0602010793	FAN COVER	1	C2810054200; FROM S/N7202116
37	0643003070	HEX. HEAD BOLT	5	FROM S/N7202116
38	0043003000	LOCK WASHER	5	FROM S/N7202116
39	0043103000	PLAIN WASHER	5	FROM S/N7202116

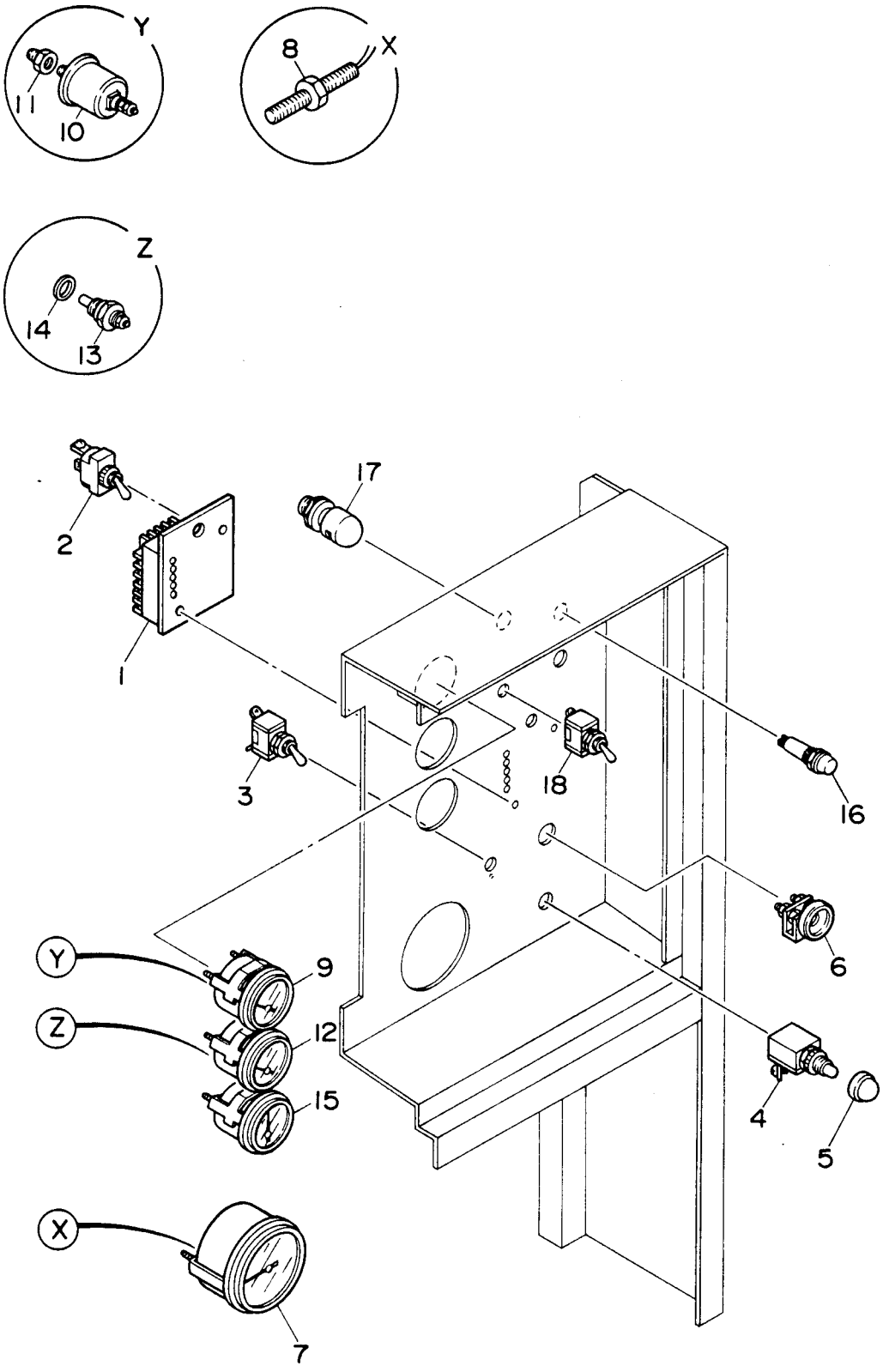
ENGINE OPERATING ASSY. UP TO S/N7202115



ENGINE OPERATING ASSY. UP TO S/N7202115

NO	PART NO	PART NAME	QTY.	REMARKS
	M1359200003	WIRE HARNESS ENGINE	1	
	M1359200303	WIRE HARNESS ENGINE	1	
	0601823223	RECTIFIER	2	30D4
1	M1354300304	SLIDE LEVER	1	
2	0601840190	KNOB	1	REPLACES M9320000004
3	020108060	HEX NUT	1	REPLACES 0036003000
4	M1354200004	BRACKET	1	
5	020108060	HEX NUT	1	REPLACES 0207008000
6	020108060	HEX NUT	1	REPLACES 0030008000
7	0605010550	SNAP PIN	1	222NPH10Z
8	M1354300104	GOVERNOR ROD	1	
9	0602180106	BALL JOINT	2	LHSAB DE161
10	020108060	HEX NUT	2	REPLACES 0030008000
11	0207006000	HEX NUT	2	
	9524004470	PLAIN WASHER	2	REPLACES 0041206000
12	1823100080	STARTER SWITCH	1	REPLACES 0602100004
13	8944626110	PREHEAT LAMP	1	REPLACES 0602102066
14	0602120095	TACVHOMETER	1	103680
15	0602120480	PICK UP TACHOMETER	1	
16	0602122093	OIL PRESSURE GAUGE	1	100174
17	0602122272	UNIT OIL PRESSURE	1	108497
18	M9200100004	ADAPTER	1	
19	0602123090	WATER TEMP. GAUGE	1	100683
20	0602123260	UNIT WATER TEMP.	1	02094-00
21	9095720140	PACKING	1	REPLACES 0602121109
22	0602121080	CHARGING AMMETER	1	100158
23	0602103092	ALARM LAMP	4	PL-05
	0601810245	BULB	4	E-10 T-10 DC18V
24	0601810141	PANEL LIGHT	1	ISUZU 98268-00370
25	0601831330	SWITCH PANEL LIGHT	1	90-0001

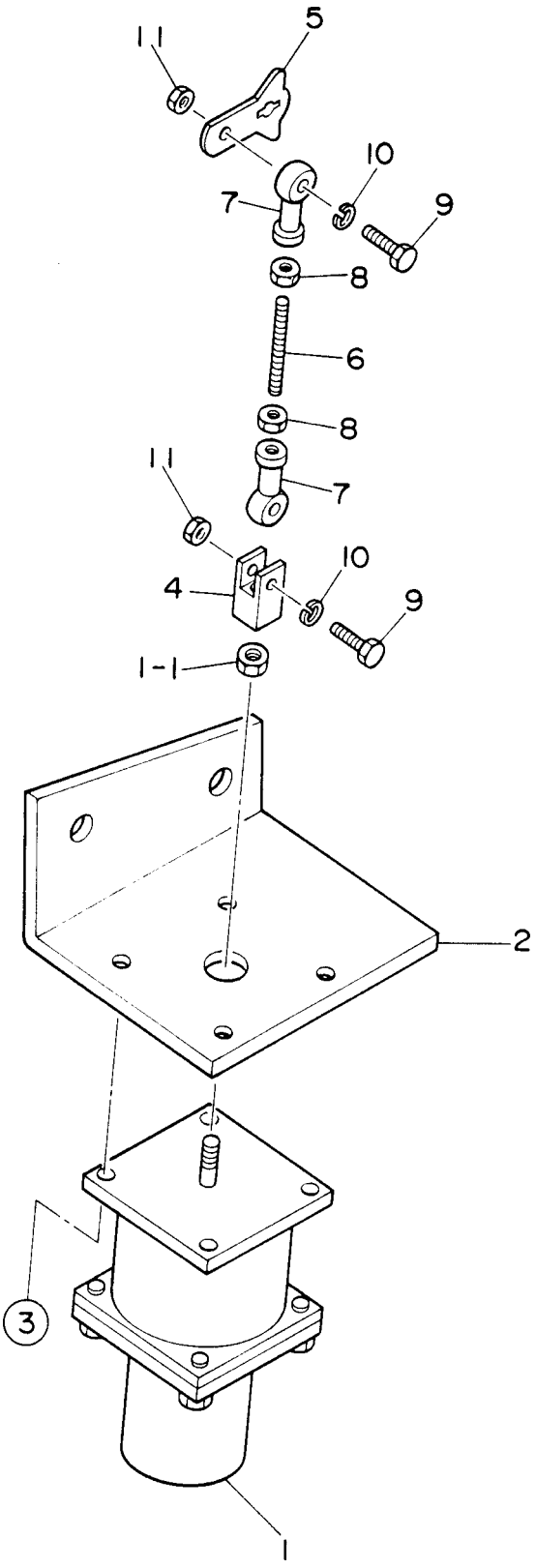
ENGINE OPERATING ASSY. FROM S/N7202116



ENGINE OPERATING ASSY. FROM S/N7202116

NO	PART NO	PART NAME	QTY.	REMARKS
	M1359200402	WIRE HARNESS, ENGINE	1	
	0601802149	FUSE	1	F1065 10A
	0601806671	FUSE	1	F1065 15A
	M1359200503	WIRE HARNESS, ENGINE	1	
1	ECU9988N	CONTROLLER	1	REPLACES 0602202545
2	82608	SWITCH	1	7562K4; REPLACES 0601831340
3	0601831395	ENGINE SPEED SWITCH	1	7302K36
4	0601831585	PREHEAT BUTTON	1	44047
5	0601831586	CAP	1	44053
6	8944626110	PREHEAT LAMP	1	REPLACES 0602102066
7	0602120095	TACHOMETER	1	103680
8	0602120480	PICK UP, TACHOMETER	1	7154400
9	0602122093	OIL PRESSURE GAUGE	1	100174
10	0602122272	UNIT, OIL PRESSURE	1	108497
11	M9200100004	ADAPTER	1	
12	0602123090	WATER TEMPERATURE GAUGE	1	100683
13	0602123260	UNIT, WATER TEMPERATURE	1	0209400
14	9095720140	PACKING	1	REPLACES 0602121109
15	0602121080	CHARGING AMMETER	1	100158
16	0602103092	ALARM LAMP	2	PL05
	0601810245	BULB	2	E10T10DC18V
17	0601810141	PANEL LIGHT	1	9826800370
18	0601831330	SWITCH, PANEL LIGHT	1	900001

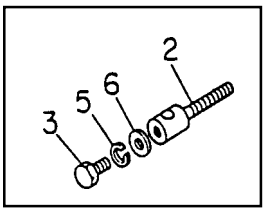
ACTUATOR ASSY. FROM S/N7202116



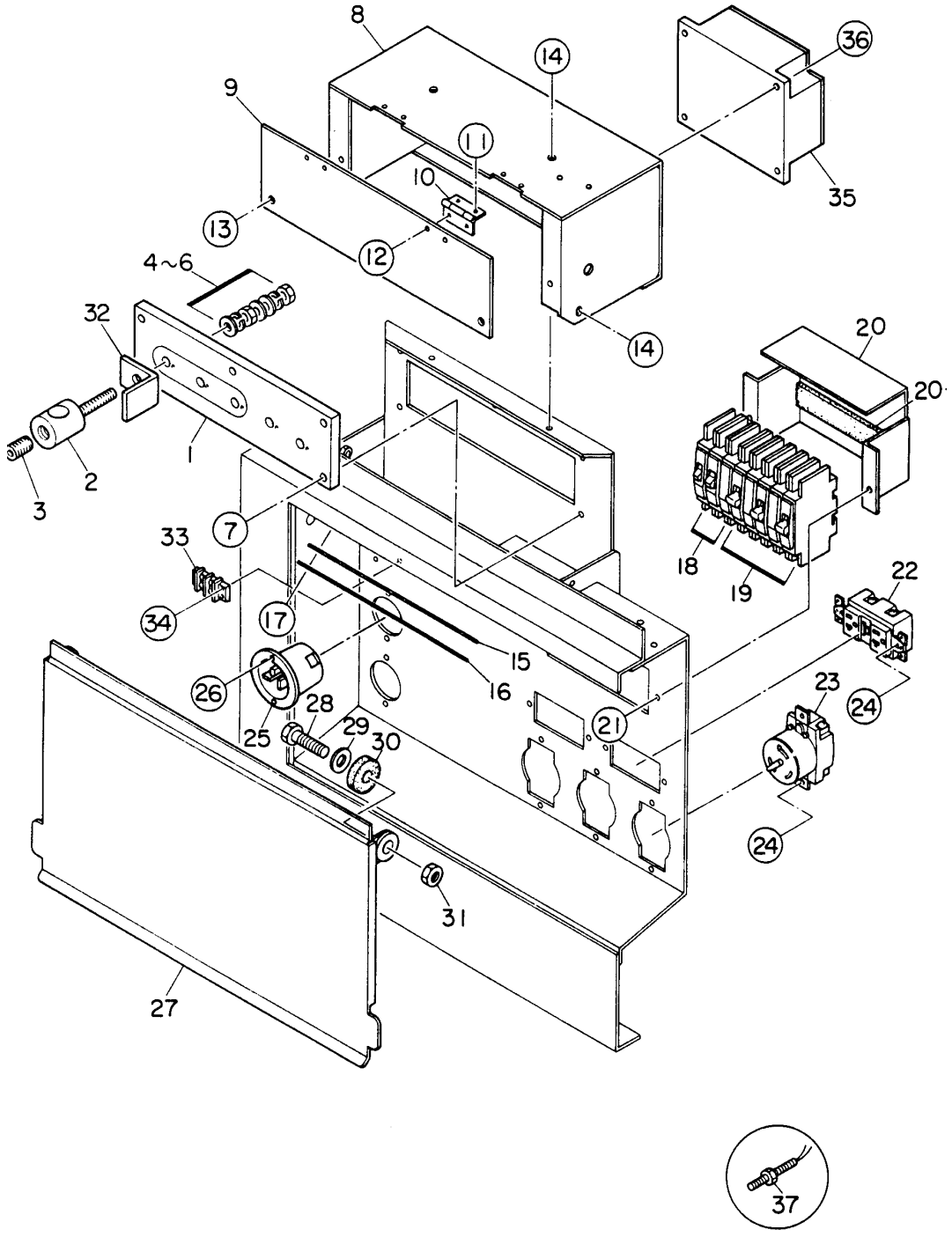
ACTUATOR ASSY. FROM S/N7202116

NO	PART NO	PART NAME	QTY.	REMARKS
1	DYNC10502000012	ACTUATOR	1	REPLACES 0602150095
1-1	020106050	HEX. NUT	1	REPLACES 0030006000
2	M1356200104	BRACKET	1	
3	0343502009	HEX. SOCKET HEAD CAP SCREW	4	
	0036302000	HEX. NUT	4	
	0043002000	LOCK WASHER	4	
4	DYNK2182	CLEVIS	1	REPLACES 060218091
5	M1356300104	THROTTLE LEVER	1	
6	M1356300004	THROTTLE THREAD	1	
7	0602180291	ROD END	2	VF3G
8	0206608000	HEX. NUT	2	
9	0343708080	HEX. HEAD BOLT	2	
10	0044808000	LOCK WASHER	2	
11	0206608000	HEX. NUT	2	

OUTPUT TERMINAL ASSY.



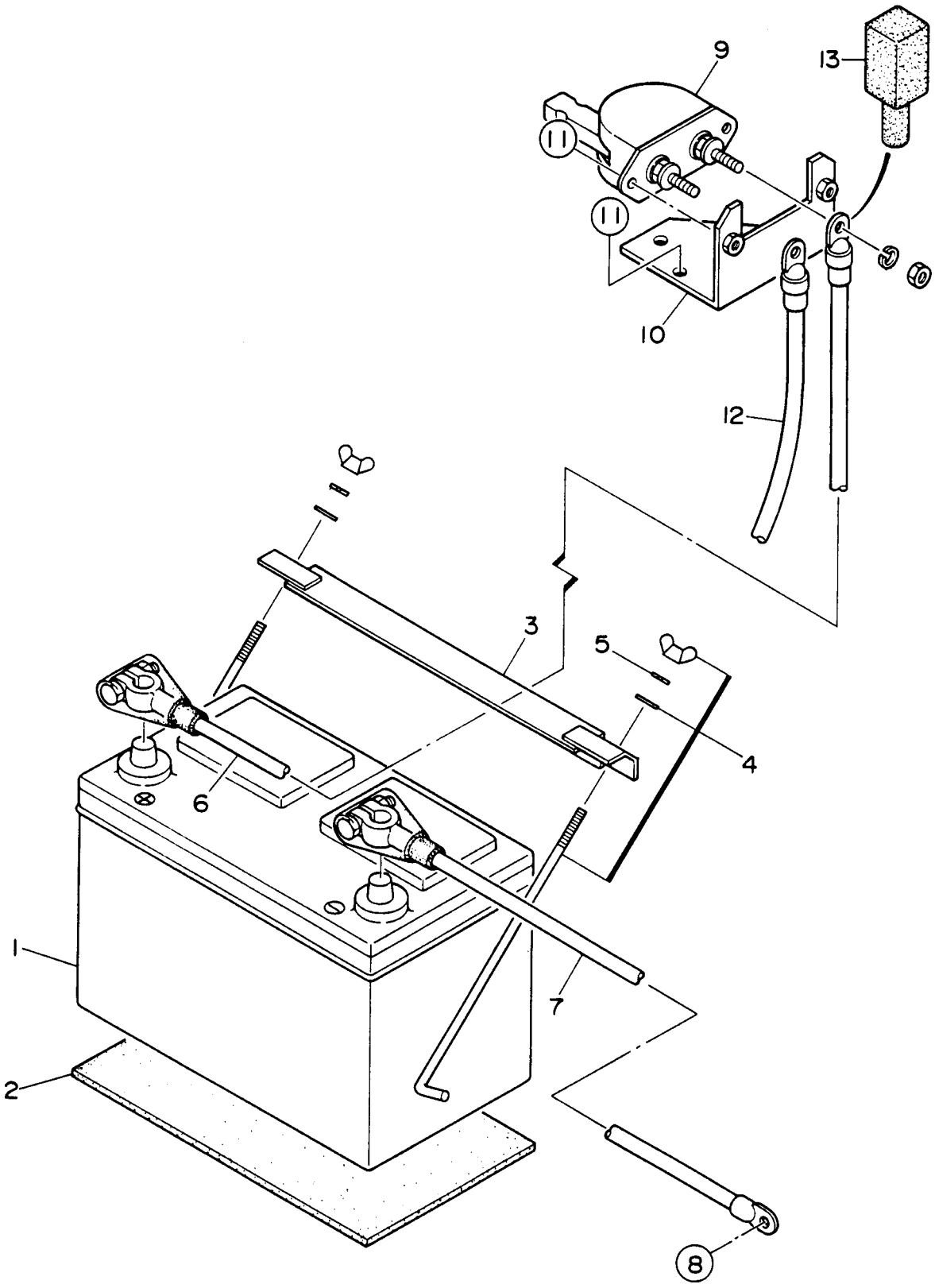
UP TO S/N7202115



OUTPUT TERMINAL ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	8111860303	TERMINAL PANEL	1	REPLACES M1230700103
2	0801831704A	OUTPUT TERMINAL BOLT	5	UP TO S/N7202115; REPLACES M9220100204
2	M1235000004	OUTPUT TERMINAL BOLT	5	FROM S/N7202116
3	012210020	TIE BOLT	5	UP TO S/N7202115; REPLACES M9220100104
3	M9222100004	TIE SCREW	5	FROM S/N7202116
4	0039310000	HEX NUT	10	
5	0040010000	LOCK WASHER	15	
6	0041410000	PLAIN WASHER	20	
7	0016908025	HEX HEAD BOLT	4	
8	M1236100613	TERMINAL COVER	1	
9	M1236100704	OUTPUT WINDOW	1	
10	0605010040	HINGE	2	TH-TM122
11	0027103010	MACHINE SCREW	4	
	0207003000	HEX NUT	4	REPLACES 0030003000
	58413	PLAIN WASHER	4	REPLACES 0041203000
12	0027103010	MACHINE SCREW	4	
	0207003000	HEX NUT	4	REPLACES 0030003000
13	011206020	HEX HEAD BOLT	2	REPLACES 0016906020
14	011106015	HEX HEAD BOLT	2	REPLACES 0016906015
15	M1236400004	CABLE OUTLET COVER	1	
16	M1236300004	SUPP. CABLE OUTLET COV.	1	
17	011206020	HEX HEAD BOLT	6	REPLACES 0016906020
18	0601808803	CIRCUIT BREAKER	2	QOU 120B 1P 20A
19	0601808804	CIRCUIT BREAKER	2	QOU 250B 2P 50A
20	M1260700304	BREAKER FITTING COVER	1	INCLUDES ITEMS W/*
20-1*	0222100150	CUSHION RUBBER	1	
21	011206020	HEX HEAD BOLT	2	REPLACES 0016906020
22	0601812597	RECEPTACLE	2	GF-530EM 125V 20AX2; REPLACES 0601812598
23	0601811034	RECEPTACLE	2	CS6369 250V 50A; REPLACES 0601812538
24	0021304015	MACHINE SCREW	8	REPLACES 0027104015
	0030004000	HEX NUT	8	REPLACES 0207004000
25	0601811189	RECEPTACLE	2	HBL5378C 125V 20A
26	0021304015	MACHINE SCREW	4	REPLACES 0027104015
	0030004000	HEX NUT	4	UP TO S/N7202115; REPLACES 0207004000
27	M1236100803	TERMINAL COVER	2	
28	012212045	HEX HEAD BOLT	2	REPLACES 0010112045
29	031112230	PLAIN WASHER	2	REPLACES 0041212000
30	M9310200004	STAY RUBBER	2	
31	0030012000	HEX NUT	2	
32	M1235400004	COVER	3	FROM S/N7202116
33	0601815194	TERMINAL BLOCK	1	FROM S/N7202116
34	0027104016	MACHINE SCREW	2	FROM S/N7202116
35	DYN110754000012	CONTROLLER	1	FROM S/N7202116;REPLACES 0602202546
36	0027105016	MACHINE SCREW	4	FROM S/N7202116
37	DYNT17200	SPEED SENSOR	1	FROM S/N7202116;REPLACES 0602120486;

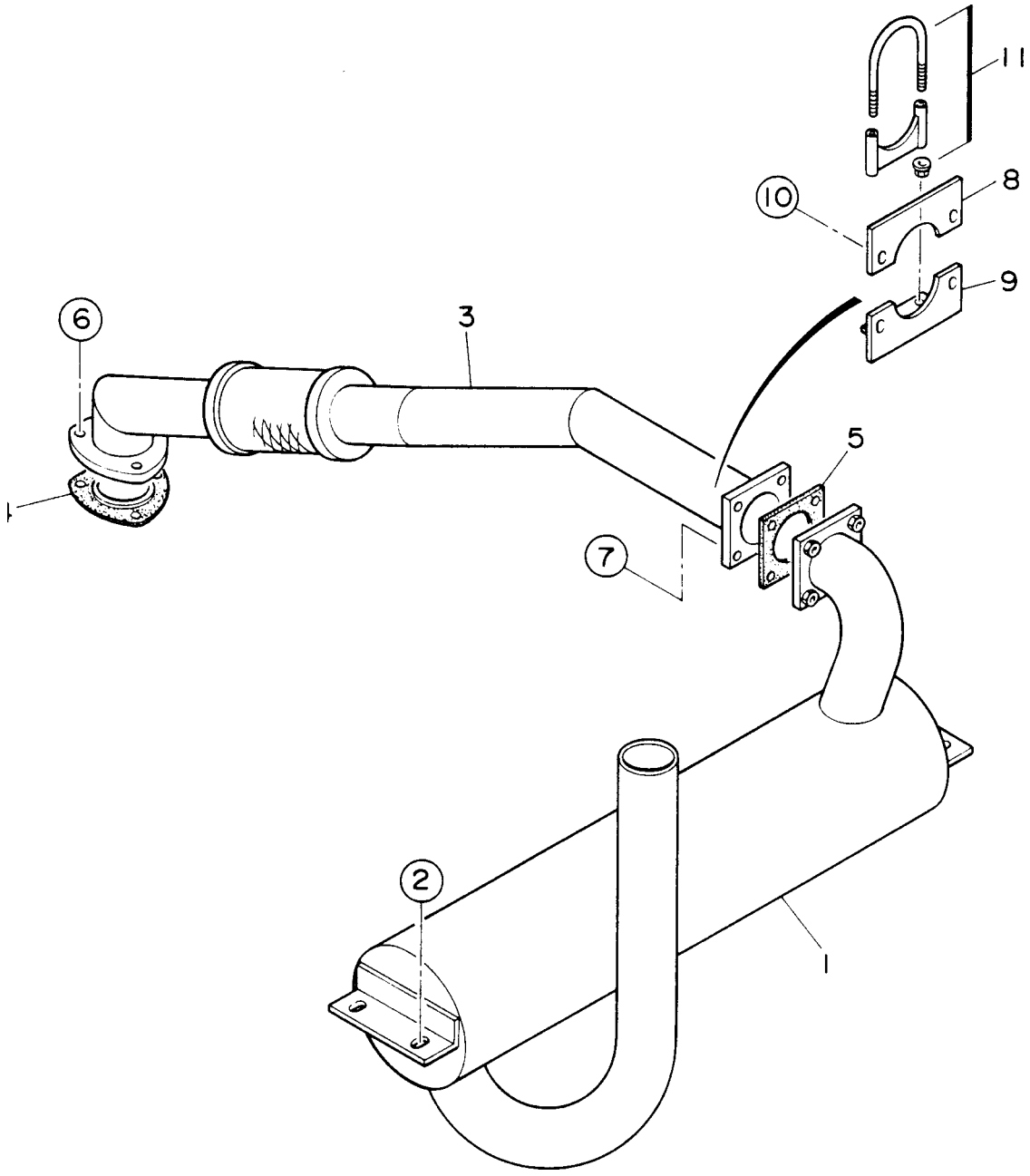
BATTERY ASSY.



BATTERY ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	0602220187	BATTERY	1	627MFD
2	M9310500014	BATTERY SHEET	1	
3	M9103000304	BATTERY BAND	1	
4	0602220920	BATTERY BOLT SET	2	BHL10J
5	0040006000	LOCK WASHER	2	
6	M1348400004	BATTERY CABLE	1	
7	M1346400404	BATTERY CABLE	1	
8	0010510020	HEX. HEAD BOLT	1	
	0040510000	TOOTHED WASHER	1	
	0040010000	LOCK WASHER	1	FROM S/N7202116
	0041210000	PLAIN WASHER	1	FROM S/N7202116
9	0602101000	BATTERY SWITCH	1	9827300090;FROM S/N7202116
10	M1345000104	BRACKET, BATTERY SWITCH	1	FROM S/N7202116
11	0016908025	HEX. HEAD BOLT	4	FROM S/N7202116
12	M1348400104	BATTERY CABLE	1	FROM S/N7202116
13	0602220600	TERMINAL COVER	2	FROM S/N7202116

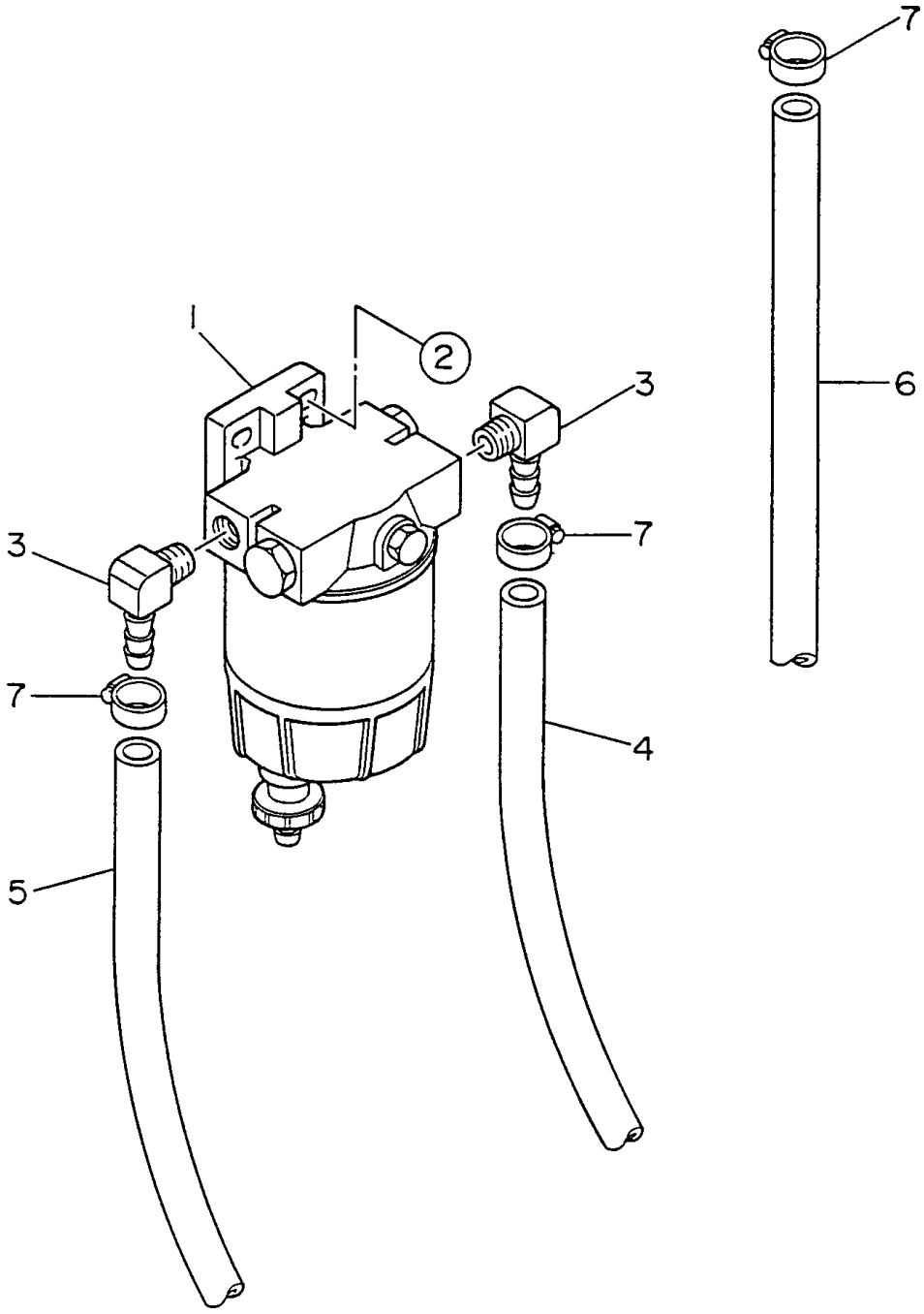
MUFFLER ASSY.



MUFFLER ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	0602300165	MUFFLER	1	27242N
2	0016910025	HEX. HEAD BOLT	4	
3	M1333001303	EXHAUST PIPE	1	
4	0602320004	GASKET	1	1141450690
5	M1333200114	GASKET	1	
6	0602323001	HEX. NUT	3	9098400850
	0040010000	LOCK WASHER	3	
7	0016908035	HEX. HEAD BOLT	4	
8	M1330400304	COVER	1	
9	M1333300004	BRACKET	1	
10	0016906016	HEX.HEAD BOLT	4	
11	0602326090	U BOLT SET	1	89542K

FUEL WATER SEPARATOR ASSY. UP TO S/N7202115

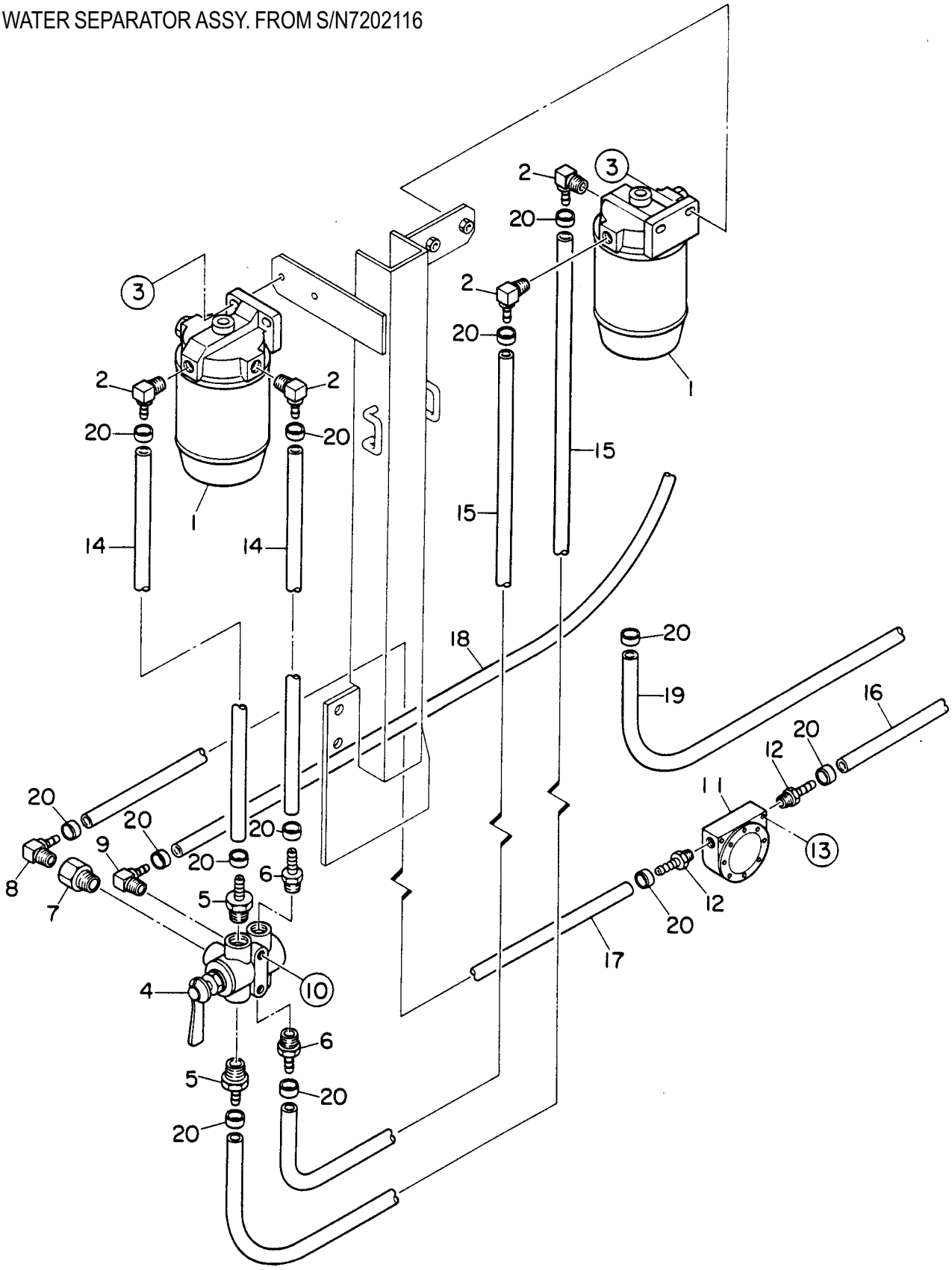


DCA-45SSIU2 — FUEL WATER SEPARATOR ASSY.

FUEL WATER SEPARATOR ASSY. UP TO S/N7202115

NO	PART NO	PART NAME	QTY.	REMARKS
1	0602042283	WATER SEPARATOR	1	120R
	0602042282	ELEMENT WATER SEPARATOR	1	
2	0016906030	HEX HEAD BOLT	2	
3	0602022784	ELBOW JOINT	2	
4	0191302260	SUCTION HOSE	1	
5	0191300430	SUCTION HOSE	1	
6	0191301855	RETURN HOSE	1	
7	0605515109	HOSE BAND	6	RS-8010

FUEL WATER SEPARATOR ASSY. FROM S/N7202116

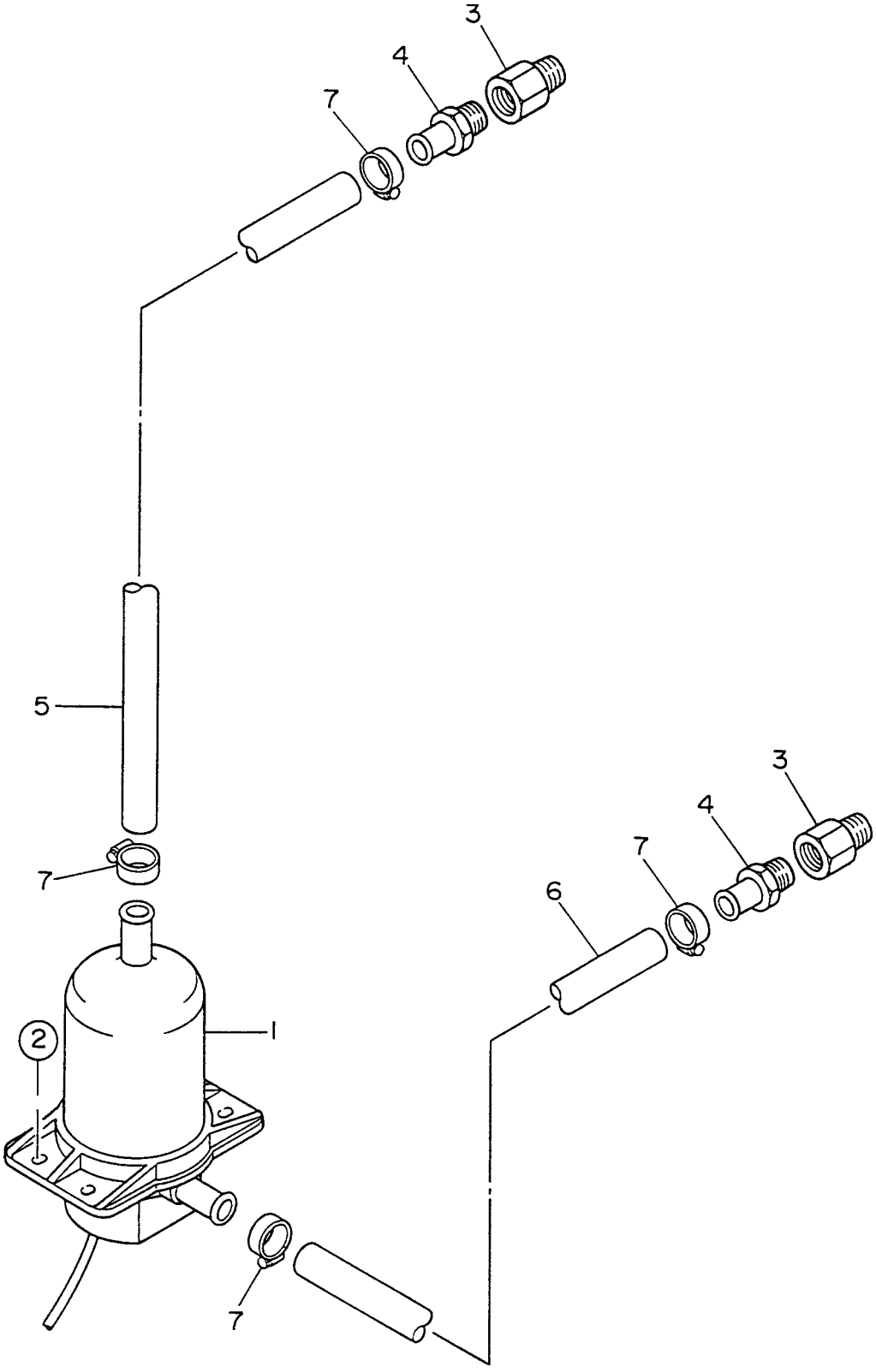


DCA-45SSIU2 — FUEL WATER SEPARATOR ASSY.

FUEL WATER SEPARATOR ASSY. FROM S/N7202116

NO	PART NO	PART NAME	QTY.	REMARKS
1	245R30	WATER SEPARATOR	2	REPLACES 0602042273
	R25P	ELEMENT	2	REPLACES 0602042773
2	0602022784	HOSE JOINT	4	
3	0016908030	HEX. HEAD BOLT	4	
4	0605511396	VALVE	1	SK1031
5	0602022776	HOSE JOINT	2	1020608
6	0602022778	HOSE JOINT	2	1020606
7	0603306596	ADAPTER	1	32000808
8	0602022791	HOSE JOINT	1	102900608
9	0602022774	HOSE JOINT	1	102900606
10	0343004060	HEX. HEAD BOLT	2	
	0043004000	LOCK WASHER	2	
	0043104000	PLAIN WASHER	2	
11	LGX200	FUEL FILTER	1	REPLACES 0602042492
12	0602022779	HOSE JOINT	2	1020604
13	0027104035	MACHINE SCREW	2	
14	0191300500	HOSE	2	
15	0191300950	HOSE	2	
16	0191301100	SUCTION HOSE	1	
17	0191300350	SUCTION HOSE	1	
18	0191300500	SUCTION HOSE	1	
19	0191301320	RETURN HOSE	1	
20	0605515109	HOSE BAND	16	

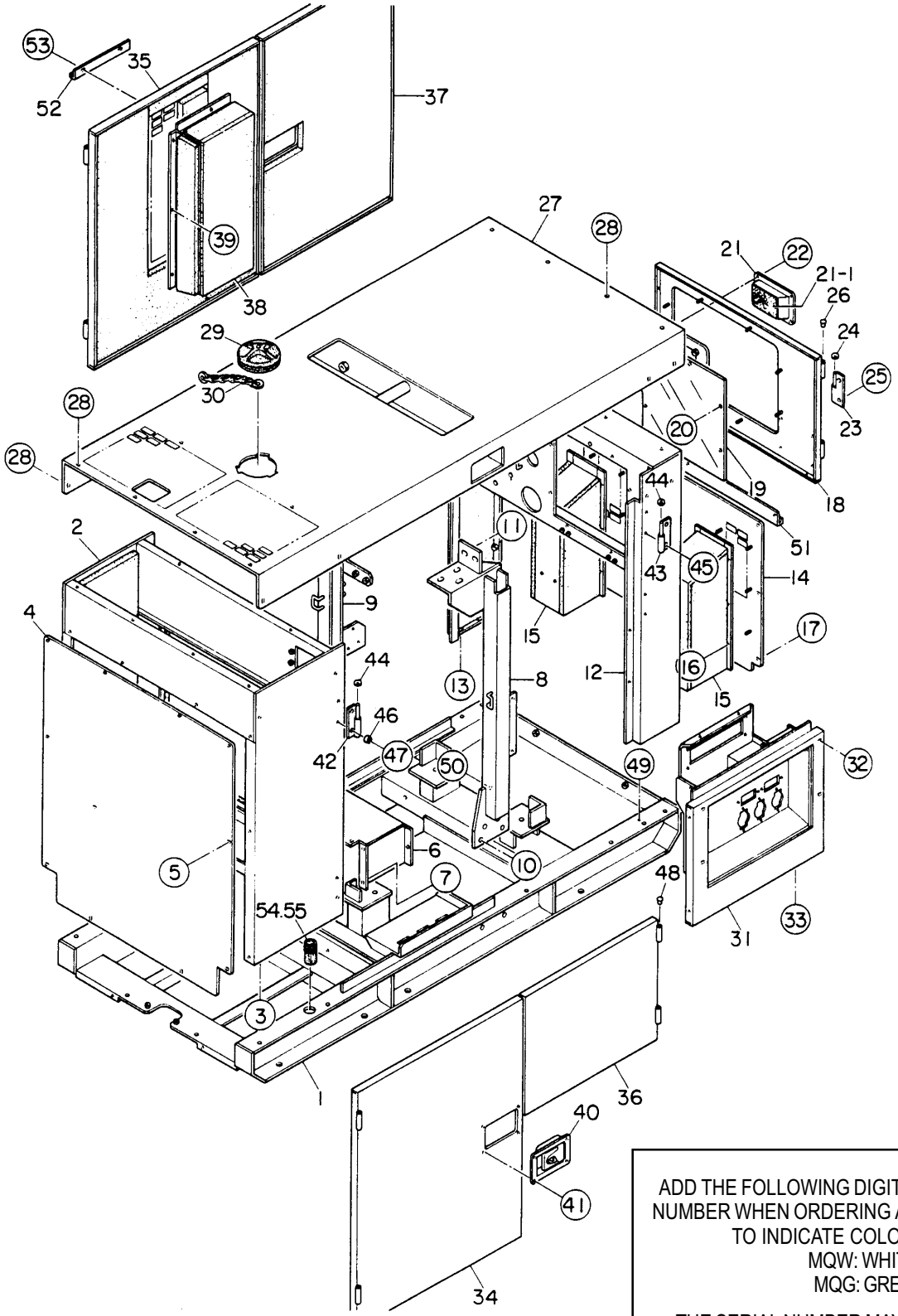
WATER HEATER ASSY.



WATER HEATER ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	0602014292	WATER HEATER	1	TPS101GT10-000
2	0027105030	MACHINE SCREW	2	
3	0603306595	STRAIGHT ADAPTER	2	
4	0602022794	HOSE JOINT	2	
5	0269301550	HOSE	1	
6	0269300700	HOSE	1	
7	060551598	HOSE BAND	4	5008

ENCLOSURE ASSY.



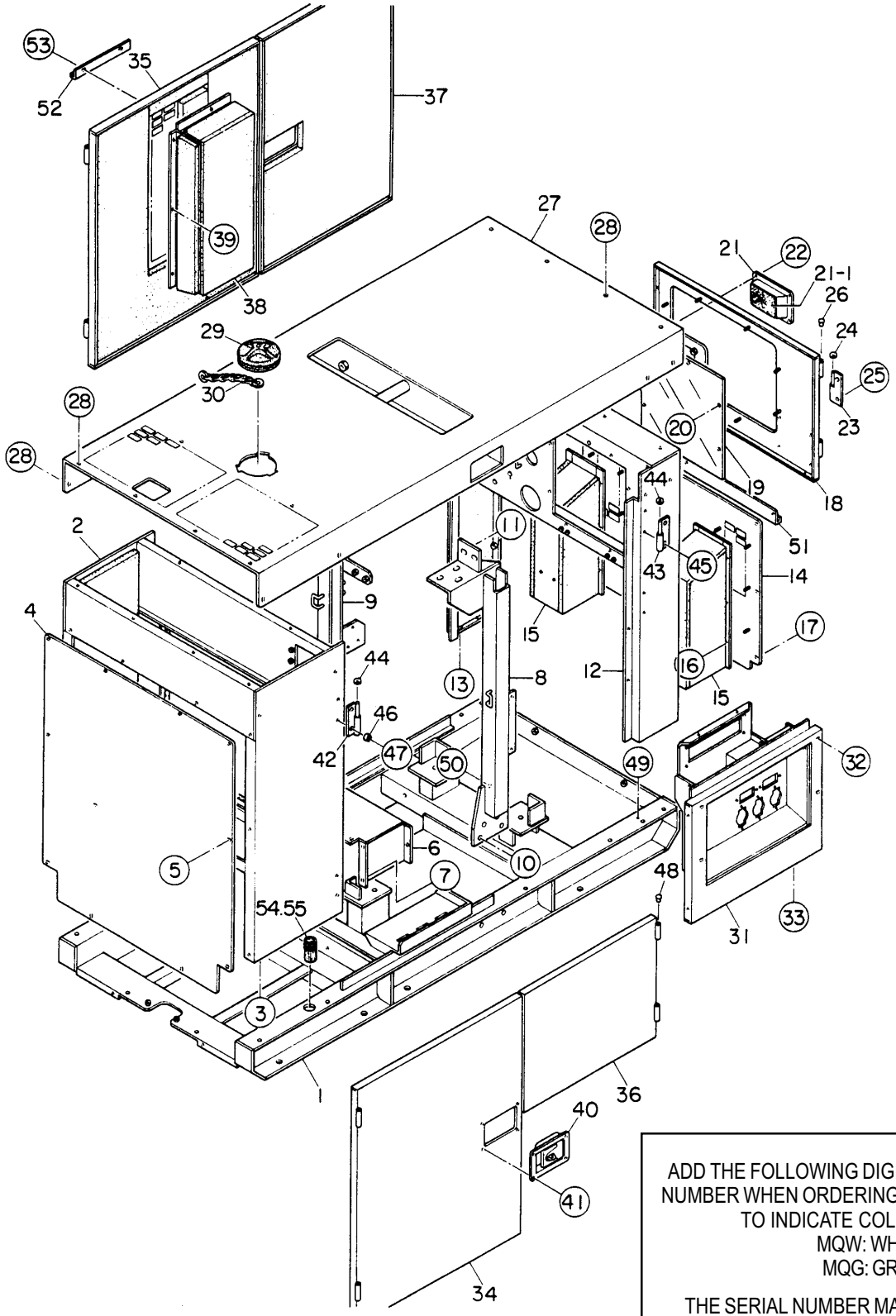
ADD THE FOLLOWING DIGITS AFTER THE PART NUMBER WHEN ORDERING ANY PAINTED PANEL TO INDICATE COLOR OF UNIT:
MQW: WHITE
MQG: GREY

THE SERIAL NUMBER MAY BE REQUIRED.

ENCLOSURE ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	M1415000112	BASE	1	UP TO S/N7202115
1	M1415000203	BASE	1	FROM S/N7202116
2	M1423000912	FRONT FRAME	1	
	M1493102703	ACOUSTIC SHEET	1	
	M1492700004	ACOUSTIC SHEET	1	FROM S/N7202116
3	0016908020	HEX HEAD BOLT	4	
4	M1425200104	COVER FRONT FRAME	1	
	M1493100804	ACOUSTIC SHEET	1	
5	0016908020	HEX HEAD BOLT	12	
6	M1423200713	INNER COV., FRT. FRAME	1	UP TO S/N7202115
6	M1425200203	INNER COV., FRT. FRAME	1	FROM S/N7202116
7	0016908020	HEX HEAD BOLT	6	
8	M1433000403	CENTER FRAME	1	
9	M1435000103	CENTER FRAME	1	
10	0010114030	HEX HEAD BOLT	8	
	0040014000	LOCK WASHER	8	
	0041214000	PLAIN WASHER	8	
11	0010112030	HEX HEAD BOLT	10	UP TO S/N7202115
	0040012000	LOCK WASHER	10	UP TO S/N7202115
	0041212000	PLAIN WASHER	10	UP TO S/N7202115
11	0017112030	HEX. HEAD BOLT	10	FROM S/N7202116
12	M1445000112	REAR FRAME	1	UP TO S/N7202115
12	M1445000203	REAR FRAME	1	FROM S/N7202116
	M1493300504	ACOUSTIC SHEET	1	
13	0016908020	HEX HEAD BOLT	4	
	0040508000	TOOTHED WASHER	1	
14	M1443300613	REAR COVER	1	
15	M1443300303	DUCT REAR COVER	2	
	M1493300604	ACOUSTIC SHEET	1	
16	0207006000	HEX NUT	7	
17	0016908020	HEX HEAD BOLT	7	
18	M1443200803	REAR DOOR	1	
19	M1443600204	WINDOW PLATE	1	
20	0207306000	HEX NUT	8	
	0041206000	PLAIN WASHER	8	
21	M9113000002	DOOR HANDLE ASSY.	1	
21-1	C9312500004	RUBBER SEAL	1	FROM S/N7202116
22	0021806015	MACHINE SCREW	4	
	0030006000	HEX NUT	4	
23	M9110100204	HINGE	2	
24	M9116100004	WASHER	2	
25	0021808020	MACHINE SCREW	3	
26	M9310000004	BILND PLUG	2	
27	M1463000702	ROOF PANEL	1	
	M1493501503	ACOUSTIC SHEET	1	

ENCLOSURE ASSY.



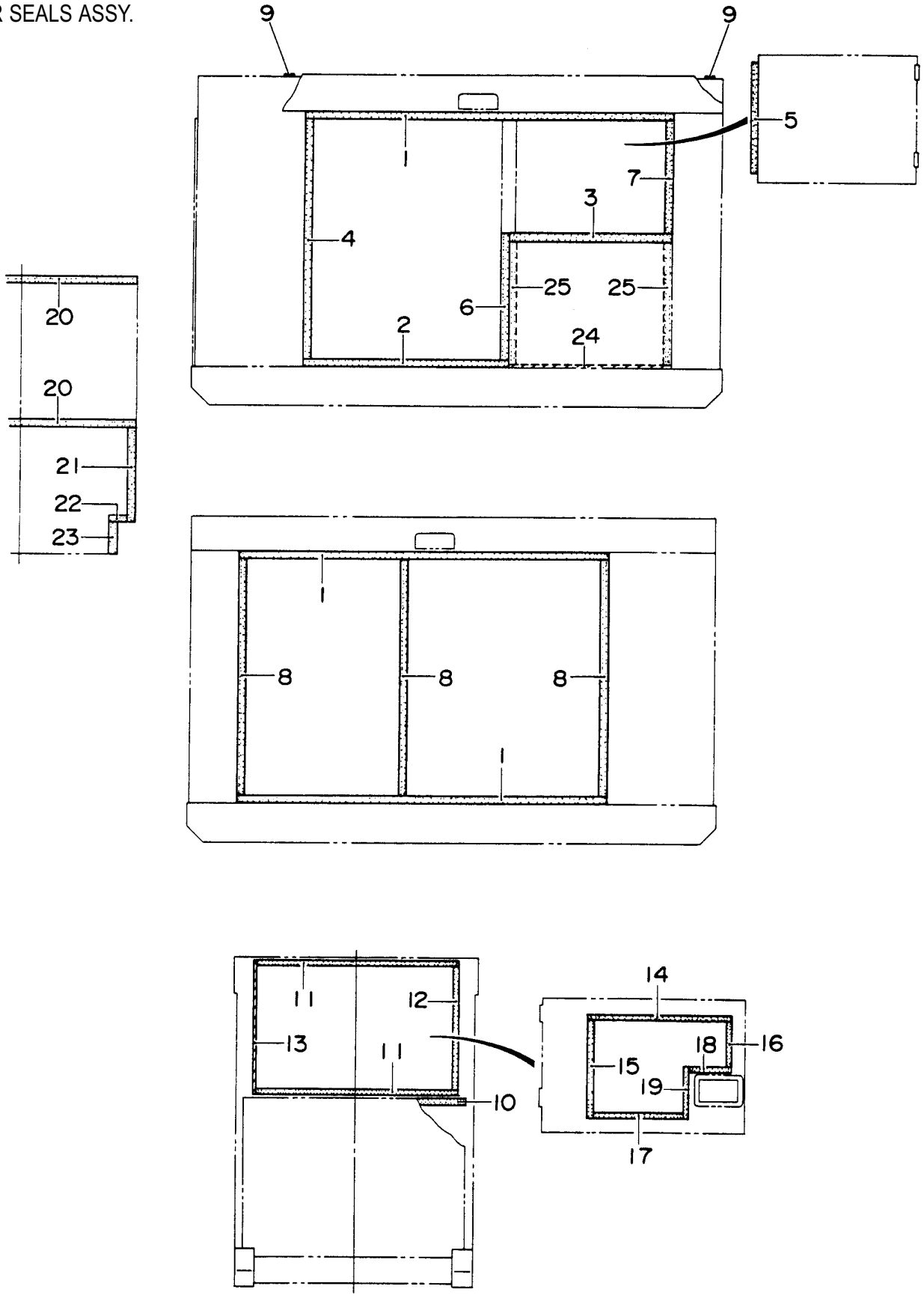
ADD THE FOLLOWING DIGITS AFTER THE PART NUMBER WHEN ORDERING ANY PAINTED PANEL TO INDICATE COLOR OF UNIT:
MQW: WHITE
MQG: GREY

THE SERIAL NUMBER MAY BE REQUIRED.

ENCLOSURE ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
28	0016908020	HEX HEAD BOLT	19	
	0044508019	SEAL WASHER	19	FROM S/N7202116
29	M9310000103	BONNET CAP	1	
30	M1483600204	CHAIN ASSY.	1	
31	M1455200102	SPLASHER PANEL	1	UP TO S/N7202115
31	M1445100003	SPLASHER PANEL	1	FROM S/N7202116
	M1493300204	ACOUSTIC SHEET	1	
32	0016908055	HEX HEAD BOLT	4	
	0044508019	SEAL WASHER	4	FROM S/N7202116
33	0016908020	HEX HEAD BOLT	2	
34	M1453001503	SIDE DOOR	1	UP TO S/N7202115
34	M1453002403	SIDE DOOR	1	FROM S/N7202116
	M1493403104	ACOUSTIC SHEET	1	
35	M1453002003	SIDE DOOR	1	UP TO S/N7202115
35	M1455000003	SIDE DOOR	1	FROM S/N7202116
	M1493403003	ACOUSTIC SHEET	1	
36	M1453001303	SIDE DOOR	1	UP TO S/N7202115
36	M1453002503	SIDE DOOR	1	FROM S/N7202116
	M1493400404	ACOUSTIC SHEET	1	
37	M1453001203	SIDE DOOR	1	
	M1493401404	ACOUSTIC SHEET	1	
38	M1453300603	DUCT	1	
	M1493401304	ACOUSTIC SHEET	1	
39	0207006000	HEX NUT	5	
40	M9113000002	DOOR HANDLE ASSY.	3	
	C9312500004	RUBBER SEAL	3	FROM S/N7202116
41	0021806015	MACHINE SCREW	12	
	0030006000	HEX NUT	12	
42	M9110100204	HINGE	4	
43	M9110100304	HINGE	4	
44	M9116100004	WASHER	8	
45	0021808020	MACHINE SCREW	9	
46	0601850097	DOOR STOPPER	8	
47	0027208025	MACHINE SCREW	8	
48	M9310000004	BLIND PLUG	8	
49	0016908020	HEX HEAD BOLT	1	
	0040508000	TOOTHED WASHER	1	
50	0016910020	HEX HEAD BOLT	1	
	0040510000	TOOTHED WASHER	1	
51	M1445500104	COVER BRACKET	1	FROM S/N7202116
52	M1455600004	DOOR BRACKET	1	FROM S/N7202116
53	0016906016	HEX. HEAD BOLT	2	FROM S/N7202116
54	M9312500004	RUBBER SHEET	1	FROM S/N7202116
55	0605515149	HOSE BAND	1	FROM S/N7202116

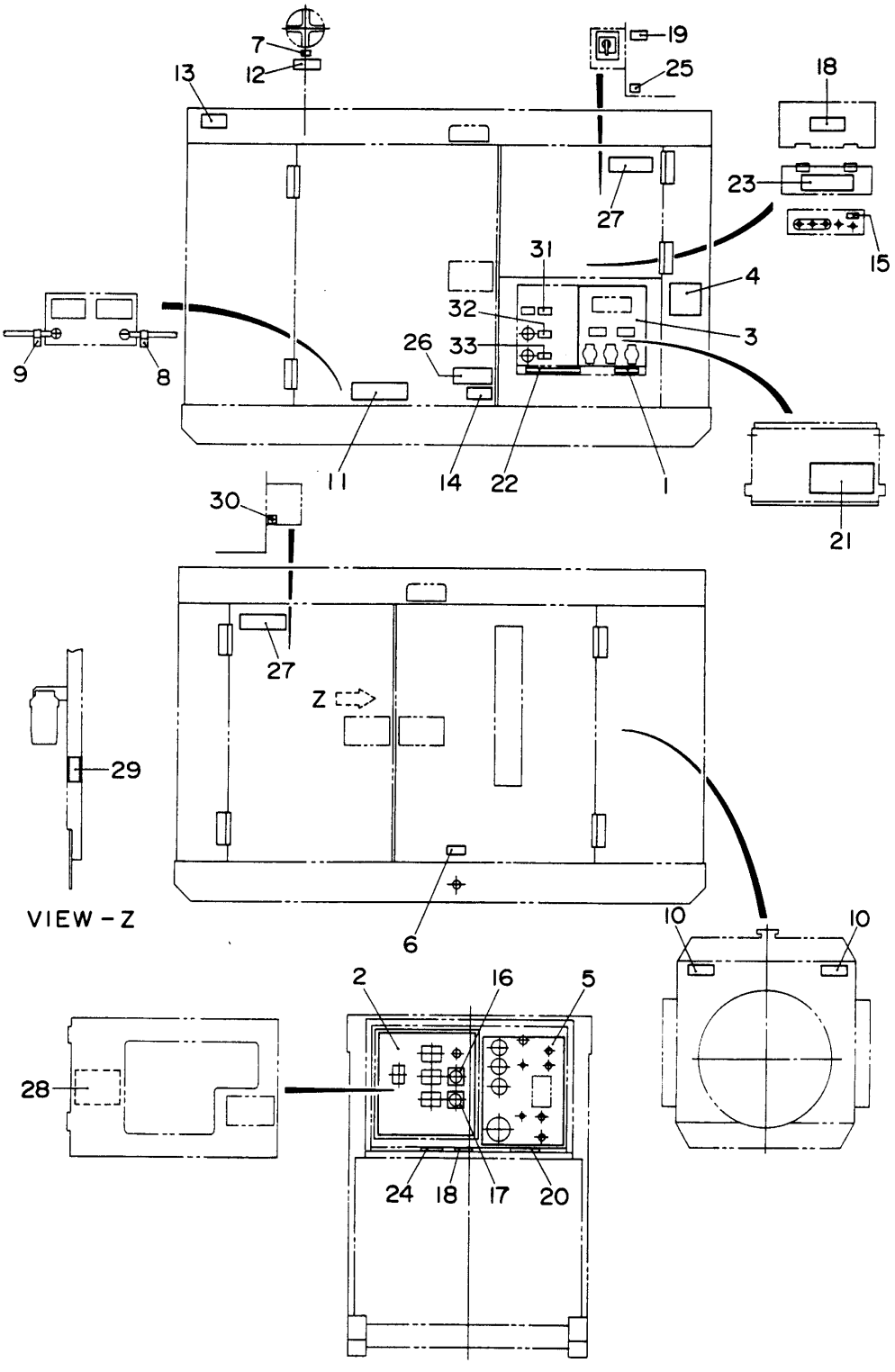
RUBBER SEALS ASSY.



RUBBER SEALS ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	0228901400	RUBBER SEAL	3	
2	0229200695	RUBBER SEAL	1	UP TO S/N7202115
2	0228900780	RUBBER SEAL	1	FROM S/N7202116
3	0228900620	RUBBER SEAL	1	
4	0228900940	RUBBER SEAL	1	UP TO S/N7202115
4	0228900910	RUBBER SEAL	1	FROM S/N7202116
5	M1490300104	RUBBER SEAL	1	UP TO S/N7202115
5	0228800421	RUBBER SEAL	1	FROM S/N7202116
6	0228800515	RUBBER SEAL	1	UP TO S/N7202115
6	0228800490	RUBBER SEAL	1	FROM S/N7202116
7	0228900420	RUBBER SEAL	1	
8	0228900910	RUBBER SEAL	3	
9	0229200900	RUBBER SEAL	2	
10	0229200840	RUBBER SEAL	1	
11	0228800780	RUBBER SEAL	2	
12	0228800470	RUBBER SEAL	1	
13	0228800510	RUBBER SEAL	1	
14	0228100545	RUBBER SEAL	1	
15	0228100370	RUBBER SEAL	1	
16	0228100165	RUBBER SEAL	1	
17	0228100340	RUBBER SEAL	1	
18	0228100170	RUBBER SEAL	1	
19	0228100200	RUBBER SEAL	1	
20	0229200880	RUBBER SEAL	2	FROM S/N7202116
21	0229200345	RUBBER SEAL	2	FROM S/N7202116
22	0229200065	RUBBER SEAL	2	FROM S/N7202116
23	0229200115	RUBBER SEAL	2	FROM S/N7202116
24	0229200615	RUBBER SEAL	1	FROM S/N7202116
25	0229200485	RUBBER SEAL	2	FROM S/N7202116

NAME PLATE AND DECALS ASSY.

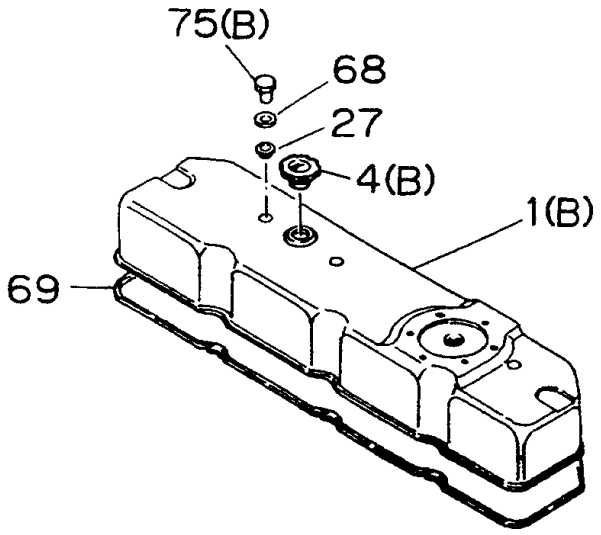


DCA-45SSIU2 — NAME PLATE & DECALS ASSY.

NAME PLATE AND DECALS ASSY.

NO	PART NO	PART NAME	QTY.	REMARK
1	M1550000204	DECAL:NOTE	1	M15000020
2	M1550001003	DECAL:GENERATOR CONTROL	1	M15000100
3	M1550000703	DECAL:AUXILLIARY OUTPUT	1	M15000070
4	M1550000804	DECAL:NOTE	1	M15000080
5	M1552000103	DECAL:ENGINE OPERATING	1	M15200010; UP TO S/N7202115
5	M1552000203	DECAL:ENGINE OPERATING	1	M15200020; FROM S/N7202116
6	M9500000004	DECAL:OIL DRAIN PLUG	1	M90000000
7	M9500100004	DECAL: WATER	1	M90010000
8	M9500300004	DECAL: -	1	M90030000
9	M9500300104	DECAL: +	1	M90030010
10	M9503000004	DECAL: WARNING MOVING PARTS	2	M90300000
11	M9503000103	DECAL: WATER OIL CHECK	1	M90300010
12	M9503100004	DECAL: WARNING HOT COOLANT	1	M90310000
13	M9503200004	DECAL: WARNING ENGINE EXHAUST	1	M90320000
14	M9510100004	DECAL: CAUTION HOT PARTS	1	M91010000
15	M9520000004	DECAL: GROUND	1	M92000010
16	M9520000104	DECAL: AMMETER CHANGE-OVER SW	1	M95000010
17	M9520000204	DECAL: VOLTMETER CHANGE-OVER SW	1	M92000020
18	M9520100004	DECAL: WARNING ELECTRIC SHOCK HAZ.	2	M92010000
19	M9520100204	DECAL: CAUTION	1	92010020A
20	M9520100304	DECAL: SAFETY INSTRUCTIONS	1	M92010030
21	M9520100404	DECAL: DANGER HIGH VOLTAGE	1	M92010040
22	M9520100503	DECAL: WARNING	1	M92010050
23	M9520200003	DECAL:CONNECTION OF OUYPUT CABLE	1	M92020000
24	M9520200104	DECAL:OVER CURRENT RELAY	1	M92020010
25	C0551000504	DECAL; BATTERY SWITCH	1	C05100050;FROM S/N7202116
26	C9505300004	DECAL:CAUTION	1	C90530000;FROM S/N7202116
27	C9522100003	DECAL:CAUTION	2	C92210000; FROM S/N7202116
28	M1552000303	DECAL:OPERATING PROC.	1	M12500030;FROM S/N7202116
29	M1552000404	DECAL:FUEL VALVE OPER.	1	M15200040;FROM S/N7202116
30	M9522000204	DECAL:HIGH IDLE SPEED	1	M92200020;FROM S/N7202116
31	9039209064	DECAL:START CONTACT	1	S4468;FROM S/N7202116
32	M9522000004	DECAL:WATER HEATER	1	
33	M9522000104	DECAL:BATTERY CHARGER	1	

CYLINDER HEAD COVER ASSY.

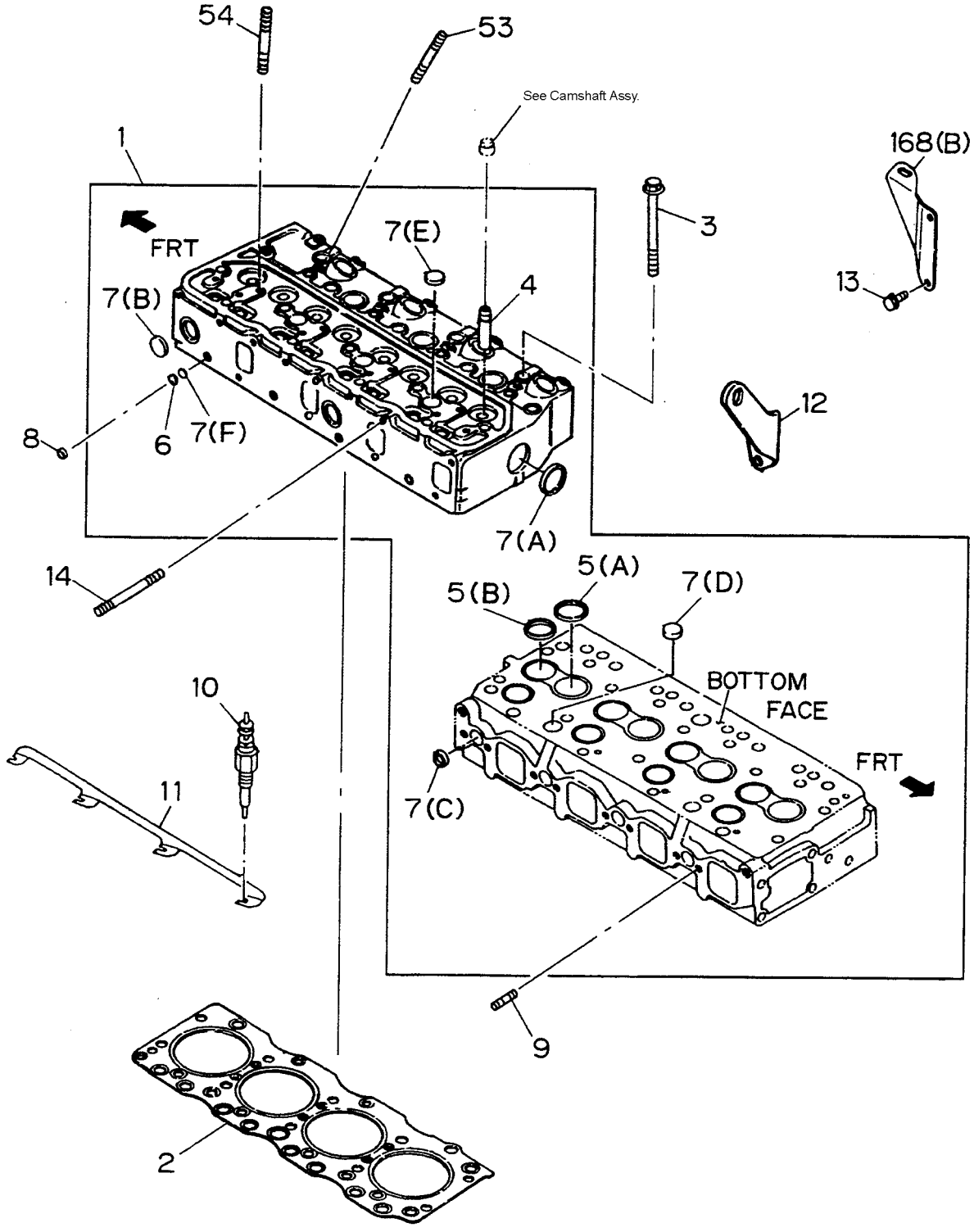


ISUZU 4BG1 — CYLINDER HEAD COVER ASSY.

CYLINDER HEAD COVER ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	8971334460	COVER	1	
4	8941332075	CAP	1	
5	8941236231	GASKET, OIL FILLER	1	
27	9111790300	GASKET, HEAD COVER	3	
68	9111791050	WASHER	3	
69	8943109120	GASKET, HEAD TO COVER	1	REPLACES 8944625590
75	9111750120	NUT	3	

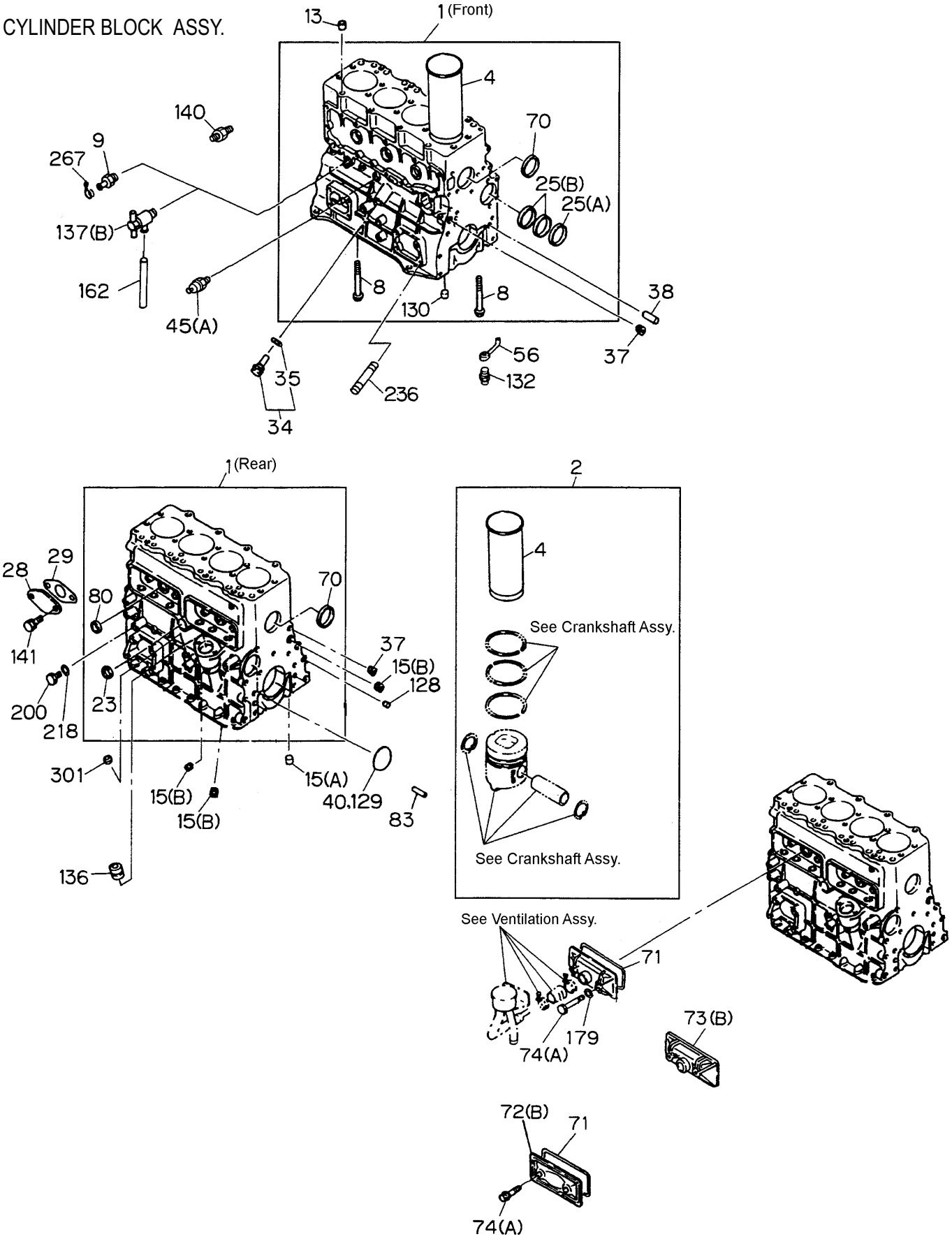
CYLINDER HEAD ASSY.



CYLINDER HEAD ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	8971418211	CYLINDER HEAD ASSY.	1	INCL. ITEMS W/*
2	8944189200	GASKET, HEAD	1	
3	8943674380	BOLT	4	M12X 115
	8943674370	BOLT	4	M12X102
4*	5117510010	GUIDE, VALVE	8	
5A*	8970376860	VALVE INSERT SEAT, INLET	4	
5B*	5117110280	VALVE, INSERT SEAT, EXHAUST	4	
6*	9096600340	PLUG PLATE	4	
7A*	1096000051	SEALING CYL. HEAD CUP	1	OD=45
7B*	5112190150	SEALING CYL. HEAD CUP	2	OD=32
7C*	1096000160	SEALING CYL. HEAD CUP	4	OD-25
7D*	9111291280	SEALING CYL. HEAD CUP	2	OD=20
7E*	1096000160	SEALING CYL. HEAD CUP	3	OD=25
7F*	5096000130	SEALING CYL. HEAD CUP	4	OD=12.3
8	9111296010	CUP, SEALING WATER JACKET	4	
9	9041108250	INLET MANIFOLD STUD	2	
10	9825139289	GLOW PLUG	4	
11	5197320021	GLOW PLUG CONNECTOR	1	
12	9117778050	REAR ENG. HANGER	1	
13	0500410200	HANGER BOLT	4	
14	9041108750	STUD, EX. MANIFOLD	3	M8X75 L=87
	9098301770	STUD, EX. MANIFOLD	1	M8X85 L=97
53	1093000180	INJ. NOZZLE STUD	8	
54	5093000650	ROCKER ARM STUD	3	
168	5117770640	FRONT ENG. HANGER	1	

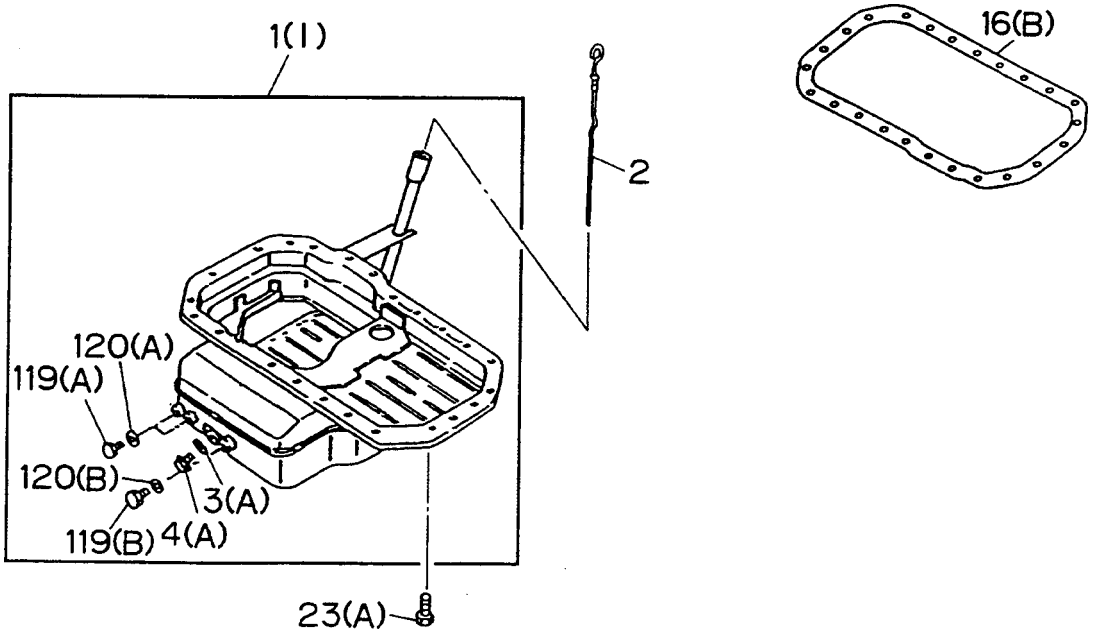
CYLINDER BLOCK ASSY.

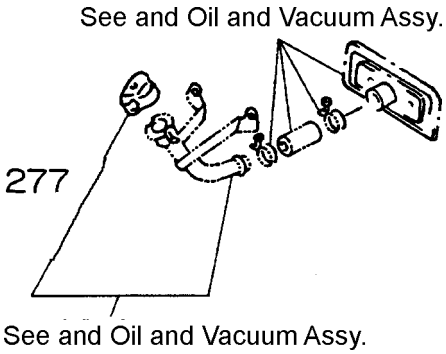


CYLINDER BLOCK ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8971239542	CYLINDER BLOCK ASSY.	1	INCL. ITEMS W/*
2	5878133000	LINER SET	1	GRADE 1
	4878133010	LINER SET	1	GRADE 2
	4878133020	LINER SET	1	GRADE 3
	5878133030	LINER SET	1	GRADE 4
4*	1112612480	LINER, CYLINDER BLOCK	4	OD GRD=1 ID GRD=AX
	1112612490	LINER, CYLINDER BLOCK	4	OD GRD=1 ID GRD=CX
	1112612500	LINER, CYLINDER BLOCK	4	OD GRD=2 ID GRD=AX
	1112612520	LINER, CYLINDER BLOCK	4	OD GRD=2 ID GRD=CX
	1112612520	LINER, CYLINDER BLOCK	4	OD GRD=3 ID GRD=AX
	1112612530	LINER, CYLINDER BLOCK	4	OD GRD=3 ID GRD=CX
	1112612540	LINER, CYLINDER BLOCK	4	OD GRD=4 ID GRD=AX
	1112612550	LINER, CYLINDER BLOCK	4	OD GRD=4 ID GRD=CX
8*	1090004691	BOLT	2	
13	8941480790	DOWEL	2	
15A	9992055170	OIL GALLERY PLUG	1	PT 3/8
15B	5096050180	OIL GALLERY PLUG	7	PT 1/8 (SQUARE HEAD)
23*	5112190140	CUP, SEALING	1	
25A*	9116110480	CAMSHAFT METAL	1	
25B*	9116130350	CAMSHAFT METAL	2	
28	8941745290	OIL PORT COVER	1	
29	8943706630	OIL PORT COVER GASKET	1	
34	8970233390	OIL RELIEF VALVE	1	
35	5096230350	OIL RELIEF GASKET	1	
37	1096050681	OIL GALLERY PLUG	2	
38	1097400780	TIMING GEAR CASE PIN	1	
40	8943444620	SEALING CUP	1	
45	9827200690	OIL PRESSURE SWITCH	1	
56	1133420742	PISTON COOLING OIL JET	4	
70*	1096000520	SEALING CUP	2	
71	8943673681	GASKET	2	
72	8970285250	TAPPET CHAMBER COVER	1	
73	9112916051	TAPPET CHAMBER ASSY.	1	
74	8943675301	BOLT		
80*	1096000121	TAPPET CHAMBER SEALING CUP	2	
83	9081510180	FLYWHEEL HOUSING PIN	2	
130*	5112570011	BRIDGE CAP DOWEL	1	
132	1131610120	OIL CHECK VALVE	4	
136	5112240040	OIL PUMP SHAFT DRIVE BUSHING	1	
137	5096800110	WATER DRAIN COCK	1	
140	5096600330	INJ. PUMP NIPPLE	1	
141	0500408180	BOLT, COVER	2	
162	1093660330	CYL. BLOCK WATER DRAIN HOSE	1	REPLACES 9099135050
179	9095720080	GASKET	4	
200	9992023140	OIL GALLERY PLUG	1	
218	9095720140	GASKET PLUG	1	
236	1093000790	ENGINE FOOT STUD	1	
267	5097070041	DRAIN HOSE CLIP	1	
301	5111290030	SEALING LEVEL GAUGE CUP	1	

OIL PAN AND LEVEL GAUGE ASSY.



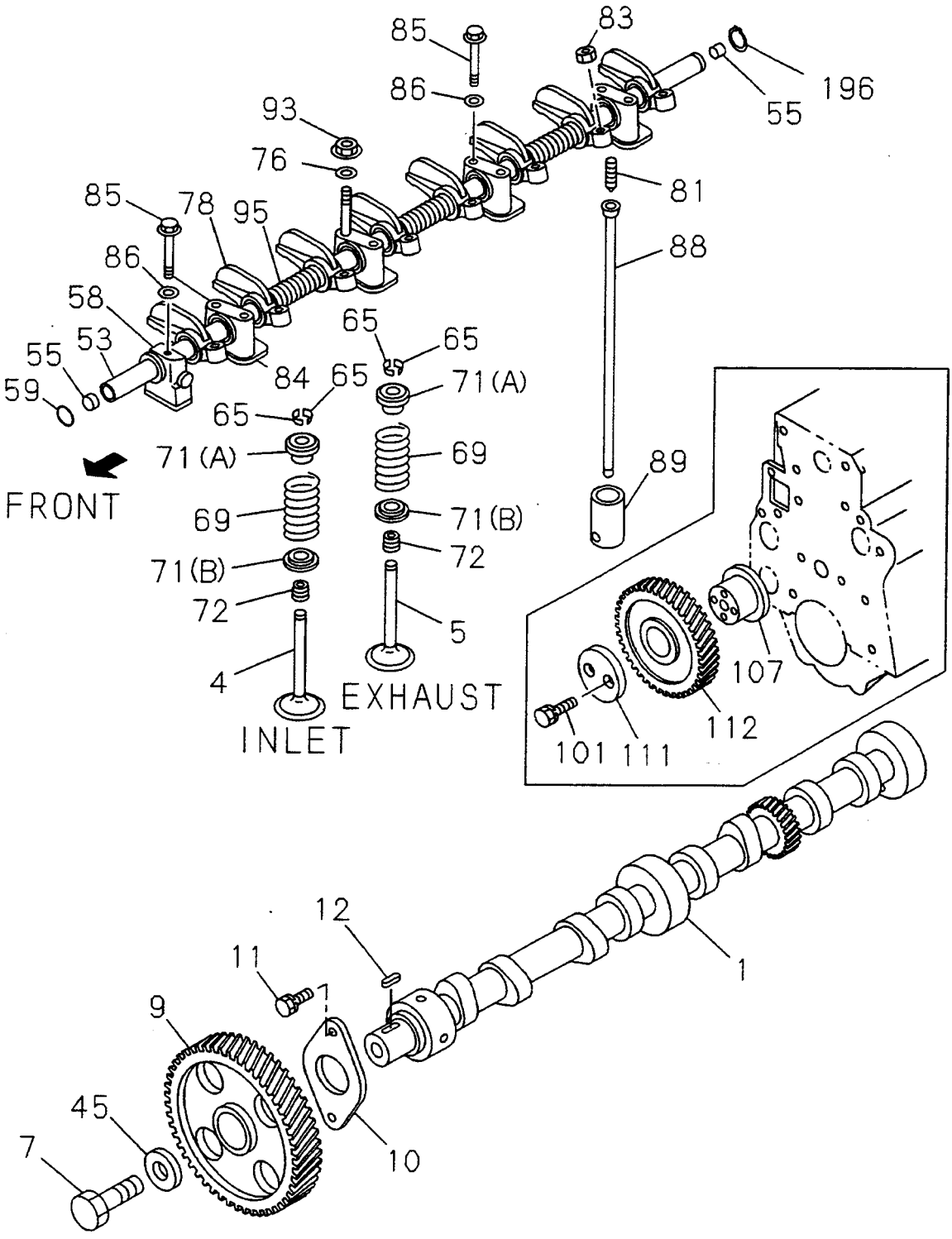


ISUZU 4BG1 — OIL PAN AND LEVEL GAUGE ASSY.

OIL PAN AND LEVEL GAUGE ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8941340361	OIL PAN ASSEMBLY	1	INCL. ITEMS W/*
2	5117601500	OIL LEVEL GAUGE	1	
3*	1096230570	DRAIN PLUG GASKET	1	
4*	9096620120	OIL DRAIN PLUG	1	
16	8943706660	OIL PAN GASKET	1	
23	0500408180	BOLT	24	
119A*	9992023160	OIL HEATER BLIND PLUG	2	
119B*	9992023240	OIL HEATER BLIND PLUG	1	
120A*	9095714160	GASKET	2	
120B*	9095714240	GASKET	1	
277	1117500120	OIL FILLER CAP	1	

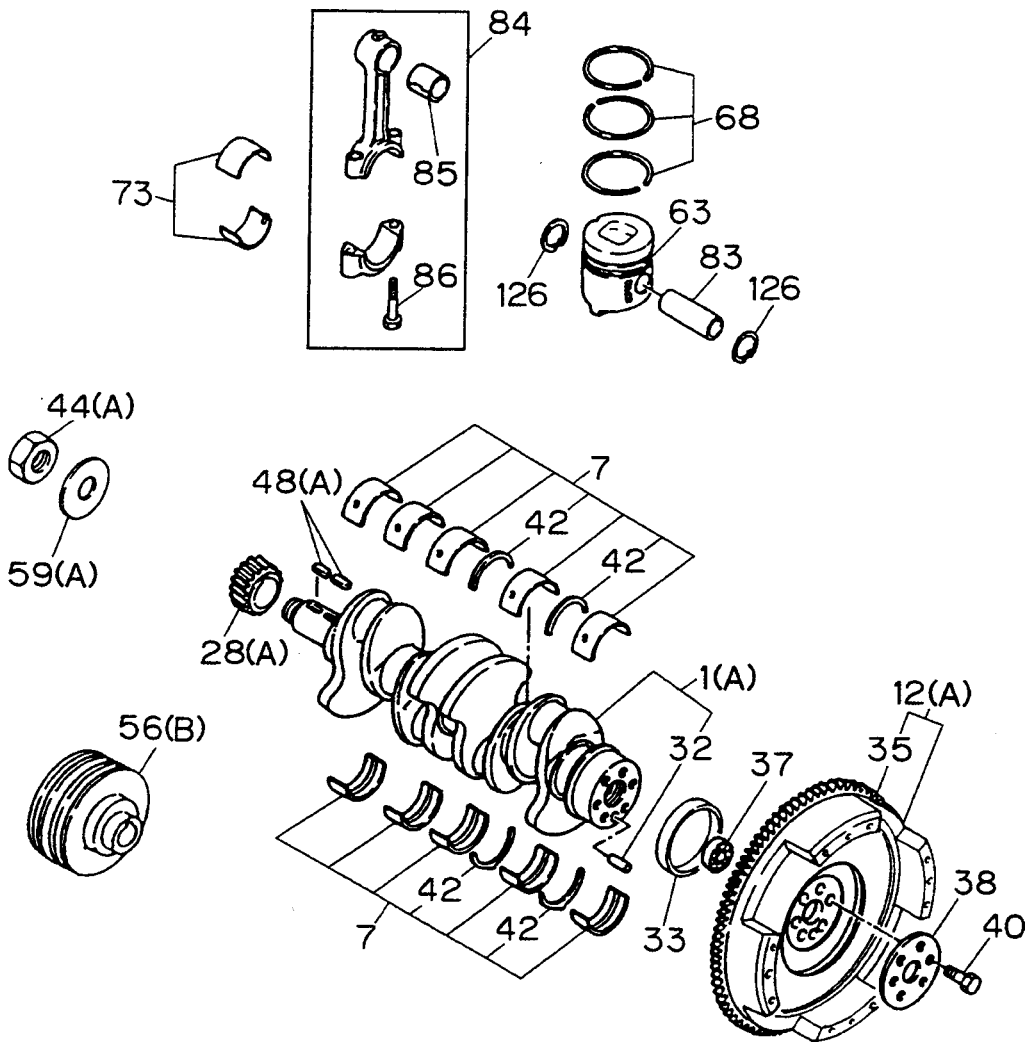
CAMSHAFT AND VALVE ASSY.



CAMSHAFT AND VALVE ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8944094120	CAMSHAFT	1	
4	1125510501	INLET VALVE	4	
5	1125520251	EXHAUST VALVE	4	
7	5090002360	BOLT	1	
9	1125220161	CAMSHAFT GEAR	1	
10	9116810150	THRUST PLATE	1	
11	0500408250	BOLT	2	
12	9080107200	KEY	1	
45	9098518503	WASHER	1	
53	8941295510	ROCKER ARM SHAFT	1	
55	9126260050	ROCKER ARM PLUG	2	
58	5126280120	ROCKER ARM BRACKET	1	
59	5096230600	ROCKER SHAFT GASKET	1	
65	5125650060	SPLIT COLLAR	16	
69	5125610090	OUTER VALVE SPRING	8	
71A	8941145790	SPRING SEAT, UPPER	8	
71B	1125630351	SPRING SEAT, LOWER	8	
72	1125690150	VALVE GUIDE SEAT	8	
76	9098514300	WASHER	3	
78	5126110310	ROCKER ARM	8	
81	9126160420	ADJ. SCREW	8	
83	9091115080	ADJ. SCREW NUT	8	
84	9126281050	ROCKER SHAFT BRACKET	4	
85	1090005670	BOLT	6	
86	9098514300	WASHER	6	
88	1125750360	PUSH ROD	8	
89	5125710032	VALVE TAPPET	8	
93	1094001160	NUT	3	
95	1095803350	ROCKER SHAFT SPRING	3	
101	5090300381	BOLT	2	
107	9125310300	IDLE GEAR SHAFT	1	
111	5125350011	THRUST COLLAR	1	
112	8941339372	IDLER GEAR	1	
196	9091800190	SNAP RING	1	

CRANKSHAFT, PISTON AND FLYWHEEL ASSY.



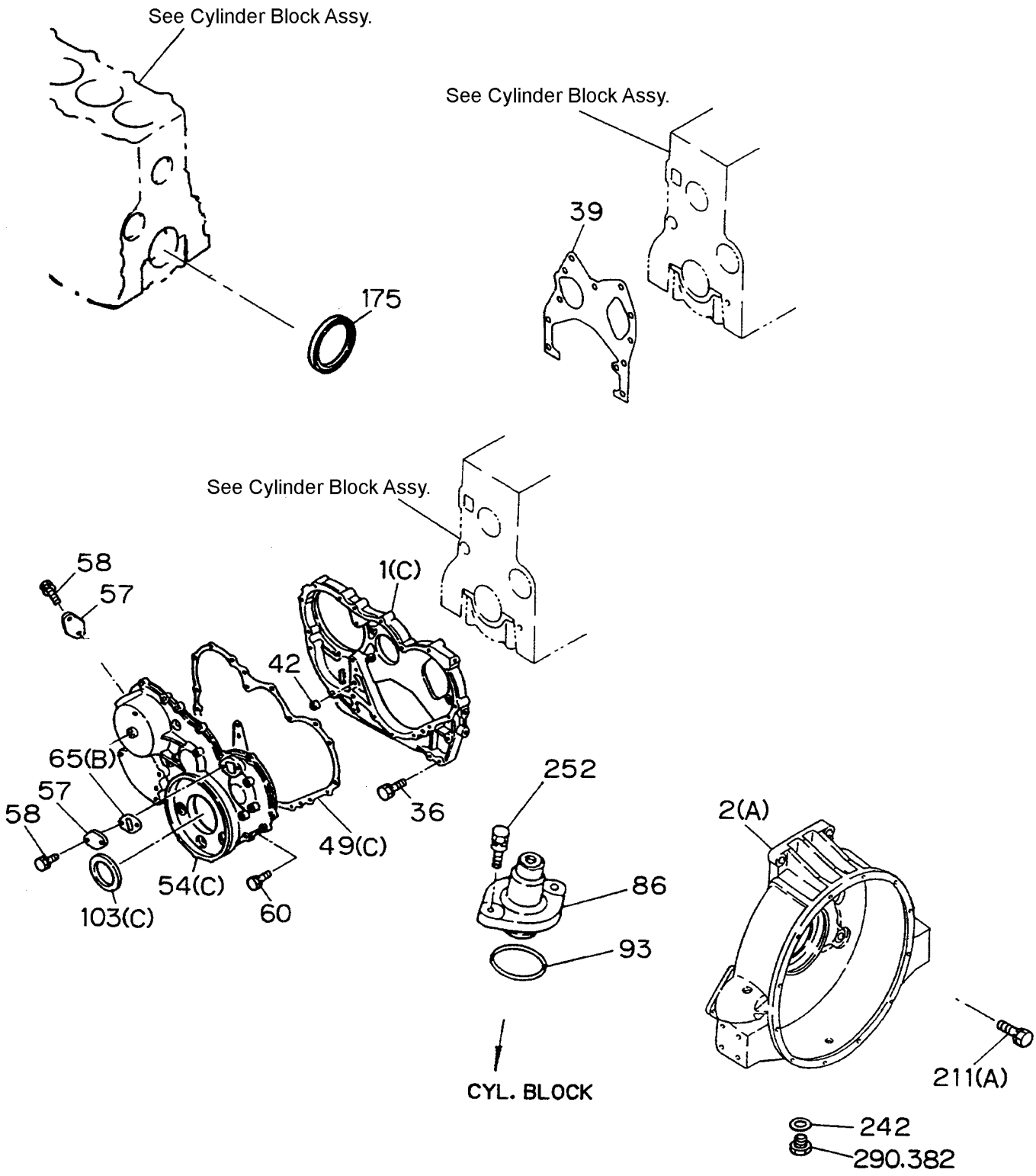
ISUZU 4BG1 — CRANKSHAFT, PISTON AND FLYWHEEL ASSY.

CRANKSHAFT, PISTON AND FLYWHEEL ASSY.

NO	PART NO	PART NAME	QTY.	REMARKS
1	8943398950	CRANKSHAFT	1	
7	8970716610	CRANKSHAFT, STD KIT	1	REPLACES 8941170322
12	8970461810	FLYWHEEL	1	
28	8971379100	CRANKSHAFT GEAR	1	
32	9081612200	FLYWHEEL PIN	1	
33	5123190032	CRANKSHAFT RING	1	
35	9123336070	GEAR RING	1	
37	9000901570	PILOT BEARING	1	
38	5123360030	WASHER	1	
40	5123340060	BOLT	6	
42	8970713580	WASHER	2	REPLACES 8941145652
44	5123780020	NUT	1	
48	8941075970	KEY	2	
56	8941004540	CRK DAMPER PULLEY	1	
59	5095030240	WASHER	1	
63	8971766500	PISTON, STD.	4	GRADE=AX
	8971766510	PISTON, STD.	4	GRADE=CX
68	8971238330	RING SET	4	
73	9122716080	CONN. ROD METAL SET	4	
83	912211604	PISTON PIN	4	
84	1122301041	CONNECTING ROD ASSY.	4	INCL. ITEMS W/*
85*	1122510270	BUSHING	4	
86*	1122350271	BOLT	8	
126	8941075751	SNAP PIN RING	8	

ISUZU 4BG1 — TIMING GEAR AND FLYWHEEL HOUSING ASSY.

TIMING GEAR AND FLYWHEEL HOUSING ASSY.

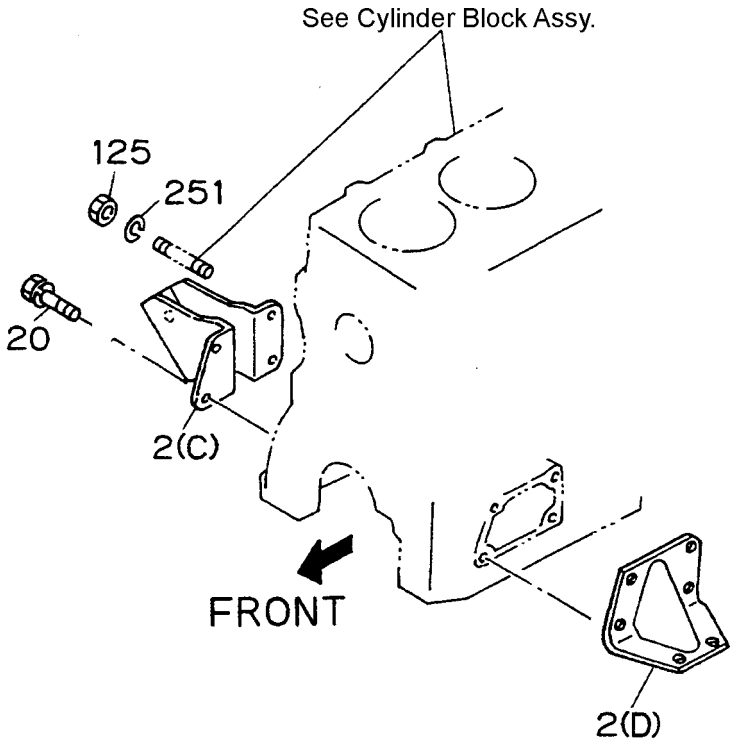


ISUZU 4BG1 — TIMING GEAR AND FLYWHEEL HOUSING ASSY.

TIMING GEAR AND FLYWHEEL HOUSING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8944509752	TIMING GEAR CASE	1	
2	8943213304	FLYWHEEL HOUSING	1	
36	0500408200	BOLT	4	M8X20 W/ LOCK WASHER
	0500408450	BOLT	2	M8X45 W/ LOCK WASHER
39	8943706710	GASKET	1	
42	9112290581	DOWEL	1	
49	8943706720	GASKET	1	
54	8971298300	GEAR CASE COVER	1	
57	5113210090	TIMING CHECK COVER	2	
58	0500406140	BOLT	4	
60	0500408250	BOLT	8	MX45 W/ LOCK WASHER
	0500408800	BOLT	1	M8X80W/ LOCK WASHER
	5090000841	BOLT	4	M8X55 W/LOCK WASHER
	5090300381	BOLT	3	M10X55
65	8970276011	GASKET	2	
86	8944533001	TACHO DRIVE ELBOW	1	
93	1096234650	ELBOW GASKET	1	
103	1096254380	OIL SEAL, FRONT	1	
175	1096253630	OIL SEAL, REAR	1	
211	0500408250	BOLT	7	
242	9095714160	PLUG GASKET	1	
252	0500408200	BOLT	2	
290	8943218380	PLUG	1	
382	9992023160	HOUSING PLUG	1	

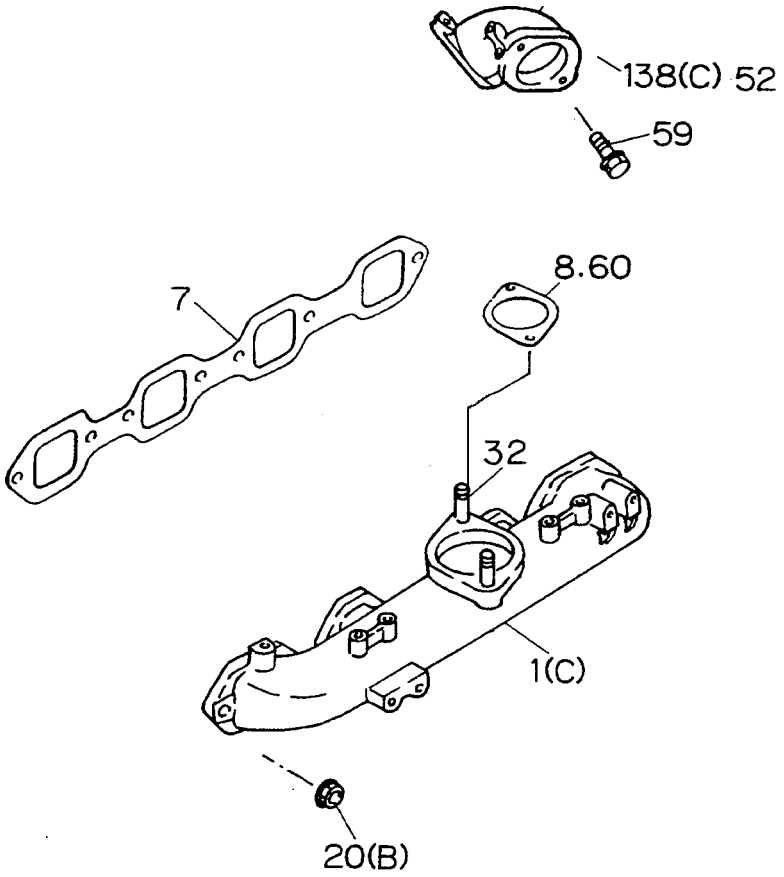
ENGINE MOUNTING ASSY



ENGINE MOUNTING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
2C	9117712470	ENGINE FOOT, RIGHT	1	
D	9117712480	ENGINE FOOT, LEFT	1	
20	8943134650	BOLT	7	
125	9091105100	NUT	1	
251	9091505100	LOCK WASHER	1	

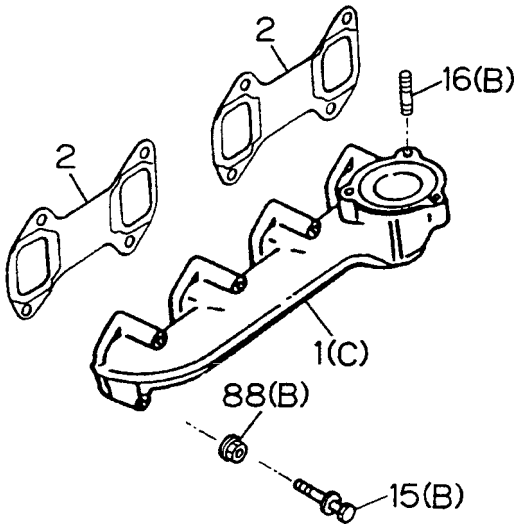
INLET MANIFOLD ASSY.



INLET MANIFOLD ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8971333280	INLET MANIFOLD	1	
7	8970241220	GASKET	1	
20	0911501080	NUT	2	
52	8943216751	INLET PIPE	1	
59	0500510300	BOLT	2	M10X30 W/ LOCK WASHER
	0501510300	BOLT	2	M10X30 W/ LOCK WASHER
60	8943706760	GASKET	1	
	8970225710	GASKET	1	
138	5141111970	INLET PIPE	1	
144	0500408250	BOLT	6	

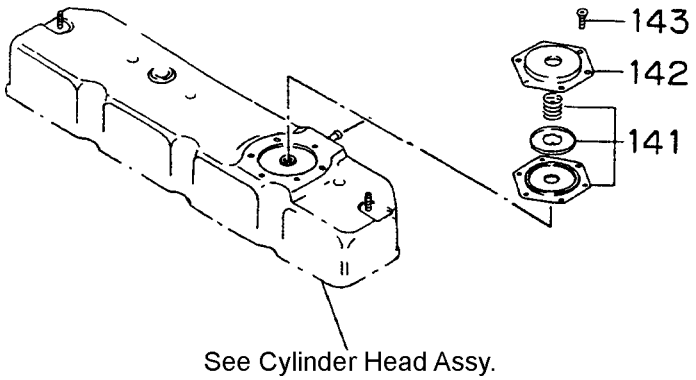
EXHAUST MANIFOLD ASSY.



EXHAUST MANIFOLD ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	5141410360	EXHAUST MANIFOLD	1	
2	8944046100	GASKET	2	
15	8943185540	BOLT	1	M8X63 W/PLAIN WASHER
	8943185550	BOLT	3	M8X75 W/ PLAIN WASHER
16	9044110300	EXHAUST PIPE STUD	3	
88	8941704860	NUT	4	

VENTILATION ASSY.

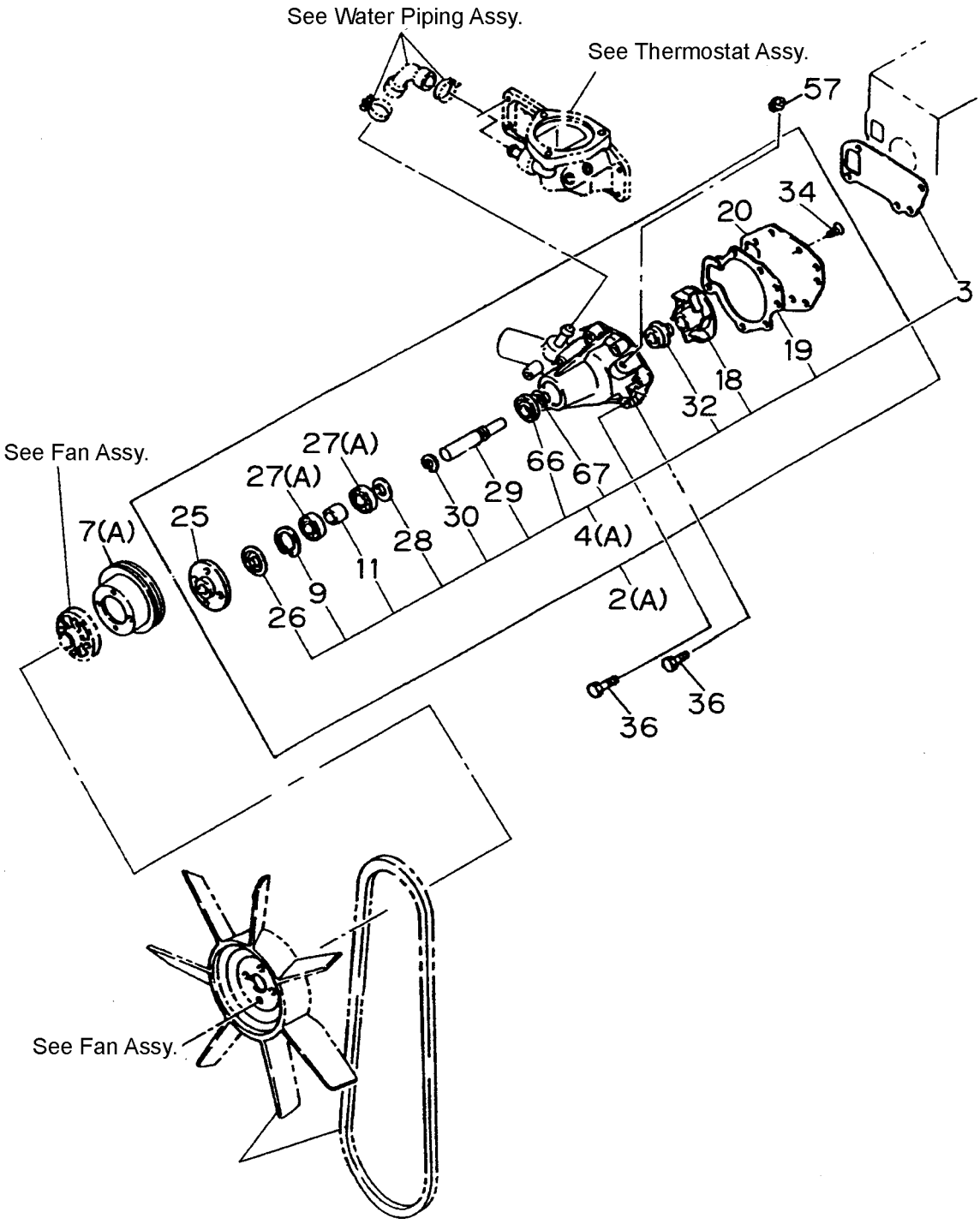


VENTILATION ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
141	894110110	DIAPHRAGM ASSY.	1	
142	1143620020	PCV COVER	1	
143	9934905100	SCREW	6	

ISUZU 4BG1 — WATER PUMP AND CORROSION RESISTOR ASSY.

WATER PUMP AND CORROSION RESISTOR ASSY.

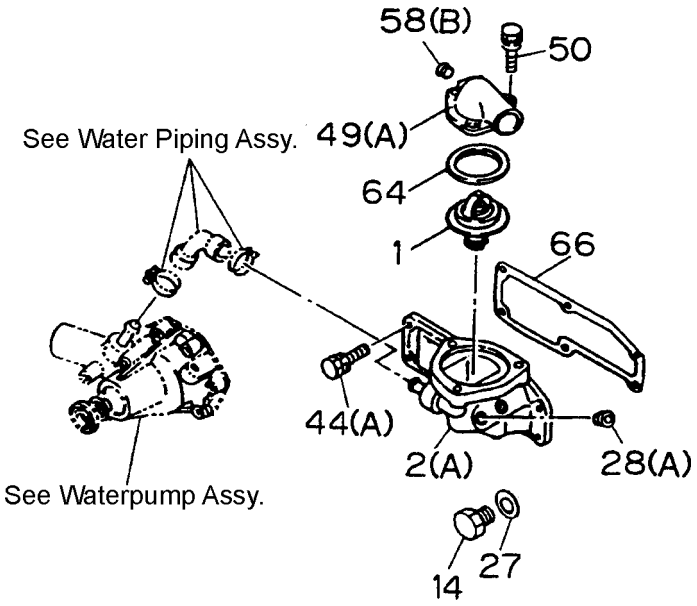


ISUZU 4BG1 — WATER PUMP AND CORROSION RESISTOR ASSY.

WATER PUMP AND CORROSION RESISTOR ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
2	8971250510	WATER PUMP ASSY.	1	INCL. ITEMS W/*
3#	8943706610	GASKET	1	
4*	8943809470	REPAIR KIT	1	INCL. ITEMS W/#
7	8944161302	WATER PUMP PULLEY	1	
9*#	9091801470	RING	1	
18*#	5136210110	WATER PUMP IMPELLER	1	
19*#	5136130070	GASKET	1	
20*#	5136120100	COVER	1	
25*#	5136420530	CENTER	1	
26*#	5136390020	DUST COVER	1	
27*#	5098000520	BEARING	2	
28*#	5095030990	WASHER	1	
29*#	8943777860	SHAFT	1	
30*#	9099521030	SNAP RING	1	
32*#	5136200061	SEAL	1	
34*#	9090908200	SCREW	3	
36	0500410400	BOLT	1	M10X40 W/LOCK WASHER
	5090300101	BOLT	2	M10X75 W/LOCK WASHER
	0500410500	BOLT	1	M10X50 W/ LOCK WASHER
57	5096050050	HEATER PLUG	1	
66*#	5096250780	SECONDARY SEAL	1	
67*#	5136390070	SLINGER	1	

THERMOSTAT AND HOUSING ASSY.

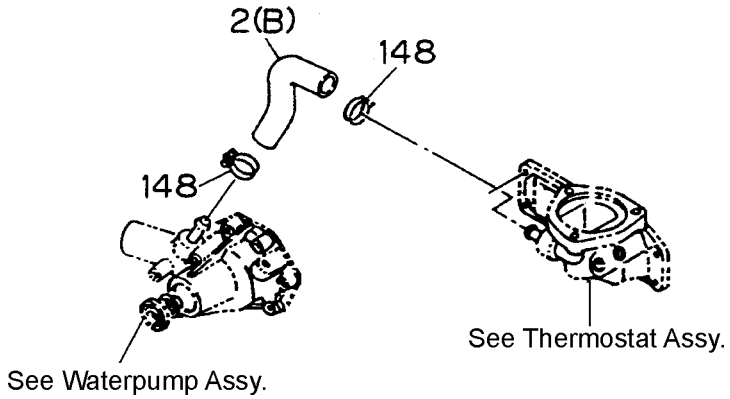


ISUZU 4BG1 — THERMOSTAT AND HOUSING ASSY.

THERMOSTAT AND HOUSING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	5137700301	THERMOSTAT	1	
2	8944033142	HOUSING	1	
14	9096610050	SWITCH	1	
27	9095713160	GASKET	1	REPLACES 9095714160
28	5096050050	HEATER PLUG	1	
44	0501410250	BOLT	4	M10X25 W/LOCK AND PLAIN WASHER
	0501410300	BOLT	2	M10X30 W/LOCK AND PLAIN WASHER
49	8944017531	WATER OUTLET PIPE	1	
50	0500408250	BOLT	3	
58	5096050050	WATER OUTLET PLUG	1	
64	8941760310	GASKET	1	
66	8943706730	GASKET	1	

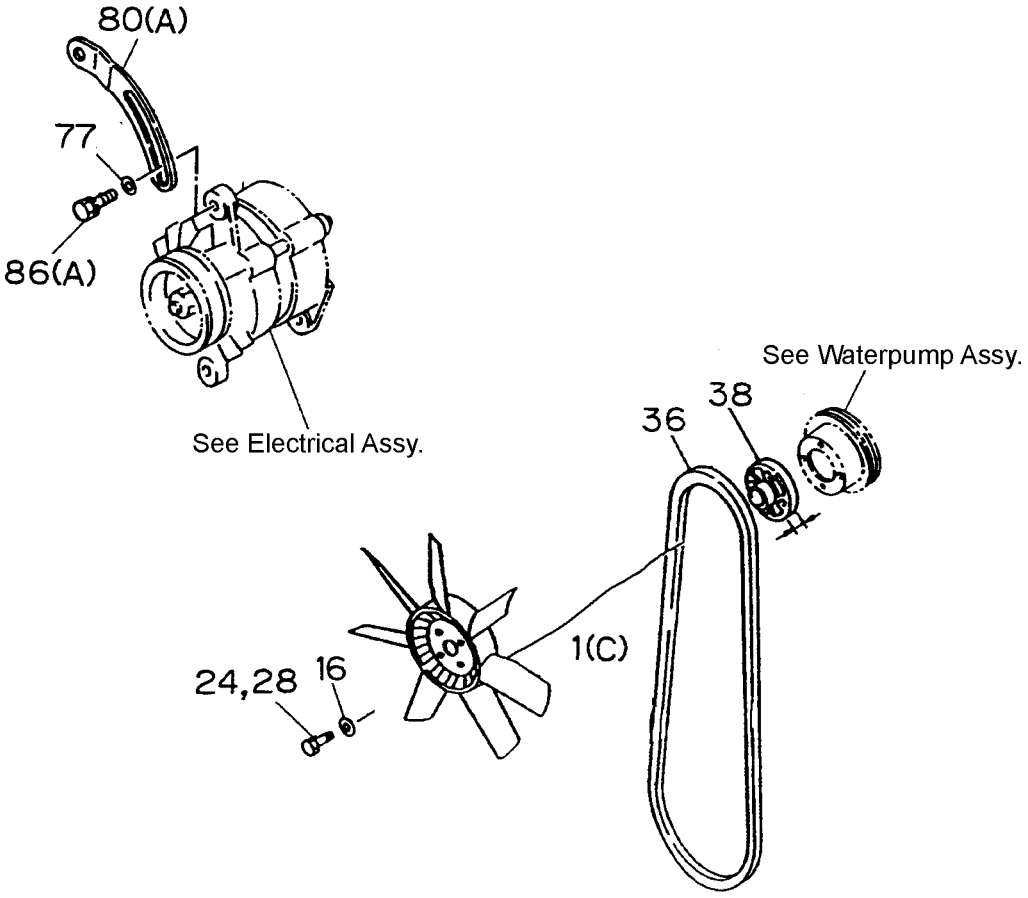
ENGINE WATER PIPING ASSY.



ENGINE WATER PIPING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
2	8941324900	HOSE	1	
148	9099153151	CLIP	2	

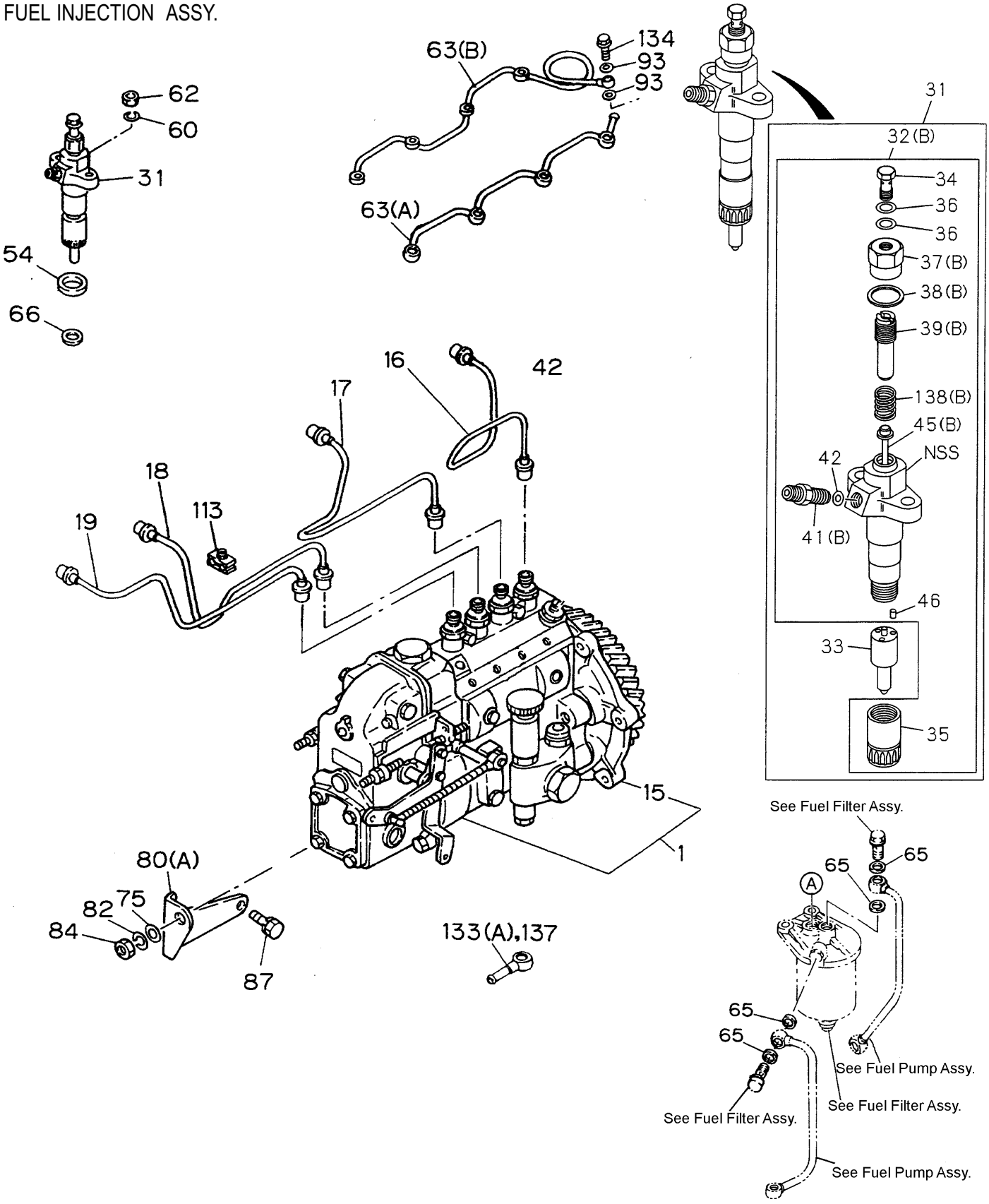
FAN AND FAN BELT ASSY.



FAN AND FAN BELT ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8970699020	COOLING FAN	1	
16	9098516490	WASHER	4	
24	8942059861	BOLT	4	M8X65
36	5136711320	BELT	1	
38	1136420250	SPACER	1	
77	9091647080	WASHER	1	
80	5136740320	ADJUSTING PLATE	1	
86A	0500408220	BOLT	1	
86B	0501410300	BOLT	1	

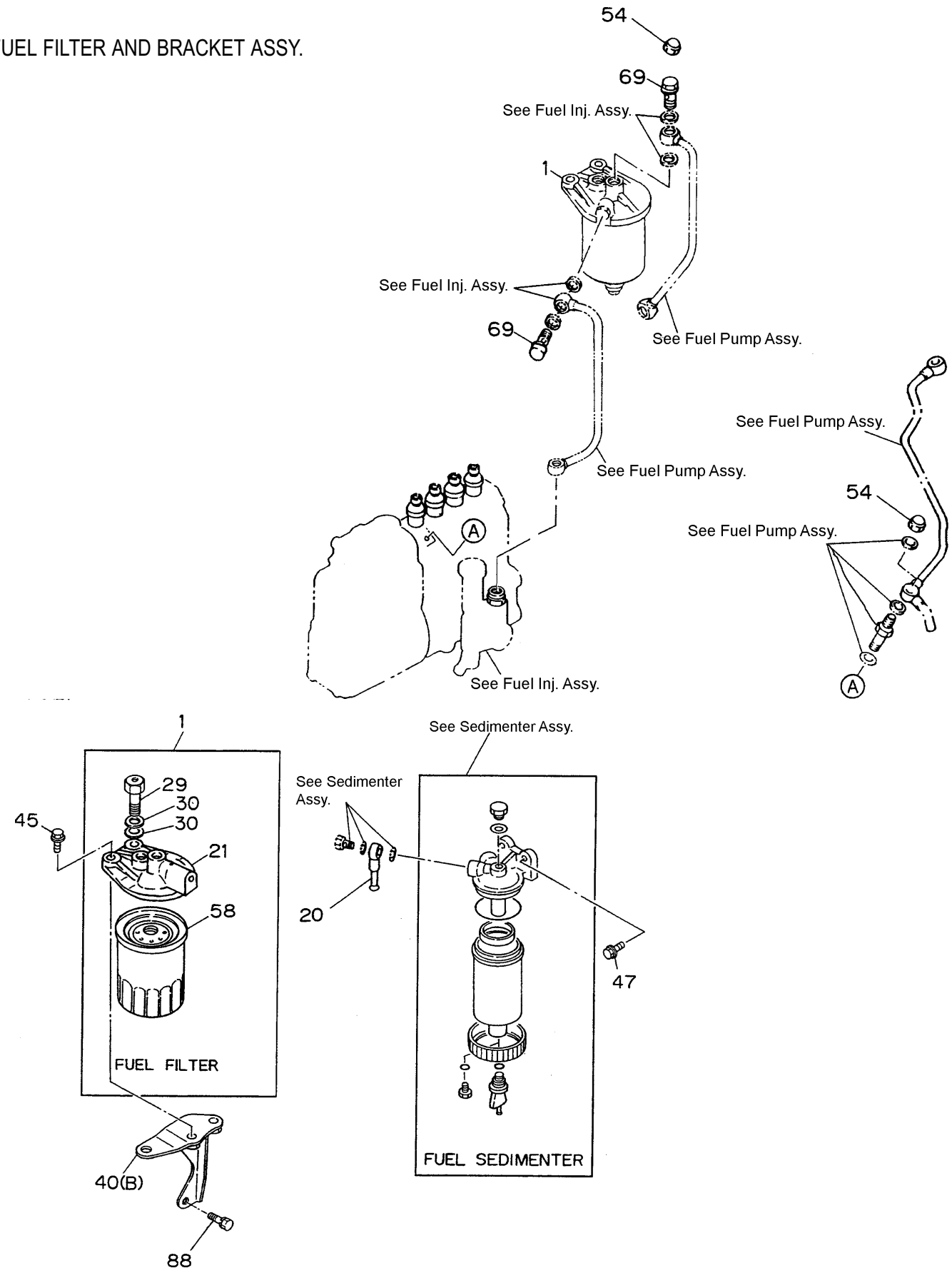
FUEL INJECTION ASSY.



FUEL INJECTION ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8971612100	INJECTION PUMP ASSY.	1	INCL. ITEM W/*
15*	8971230631	COUPLING ASSY.	1	
16	8970314671	INJ. PIPE, NO. 1	1	
17	8970314681	INJ. PIPE, NO. 2	1	
18	8970314691	INJ. PIPE, NO. 3	1	
19	8970314701	INJ. PIPE, NO. 4	1	
31	1153002912	NOZZLE ASSY.	4	
32#	8970161471	NOZZLE HOLDER ASSY.	4	INCL. ITEMS W/%
33#	5153110270	NOZZLE ASSY.	4	INCL. ITEMS W/#
34%#	1153390090	BOLT	4	
35%#	1153320170	NUT	4	
36%#	1153390100	GASKET	8	
37%#	5153320060	NUT	4	
38%#	5153390600	GASKET	4	
39%#	8941695030	SCREW	4	
41%#	8943203080	CONNECTOR	4	
42%#	5513390030	GASKET	4	
45%#	8941695020	PUSH ROD	4	
46%#	9153470030	NOZZLE PIN	8	
54	9153390510	COVER	4	
62	0911501080	NUT	8	
63	5154110420	LEAK OFF PIPE	1	REPLACES 8970209371
65	9095720140	GASKET	4	
66	5153150030	GASKET	4	
75	9091605100	WASHER	1	
80	5197510150	BRACKET	1	
82	9091505100	WASHER	1	
84	9091105100	NUT	1	
87	0500410250	BOLT	2	
93	9095714080	GASKET	2	
113	5154190131	CLIP	3	
133	5154112231	NOZZLE PIPE	1	
	8970209350	NOZZLE PIPE	1	REPLACES 8970209350
134	1096750371	BOLT	1	
138%#	5153430050	SPRING	4	

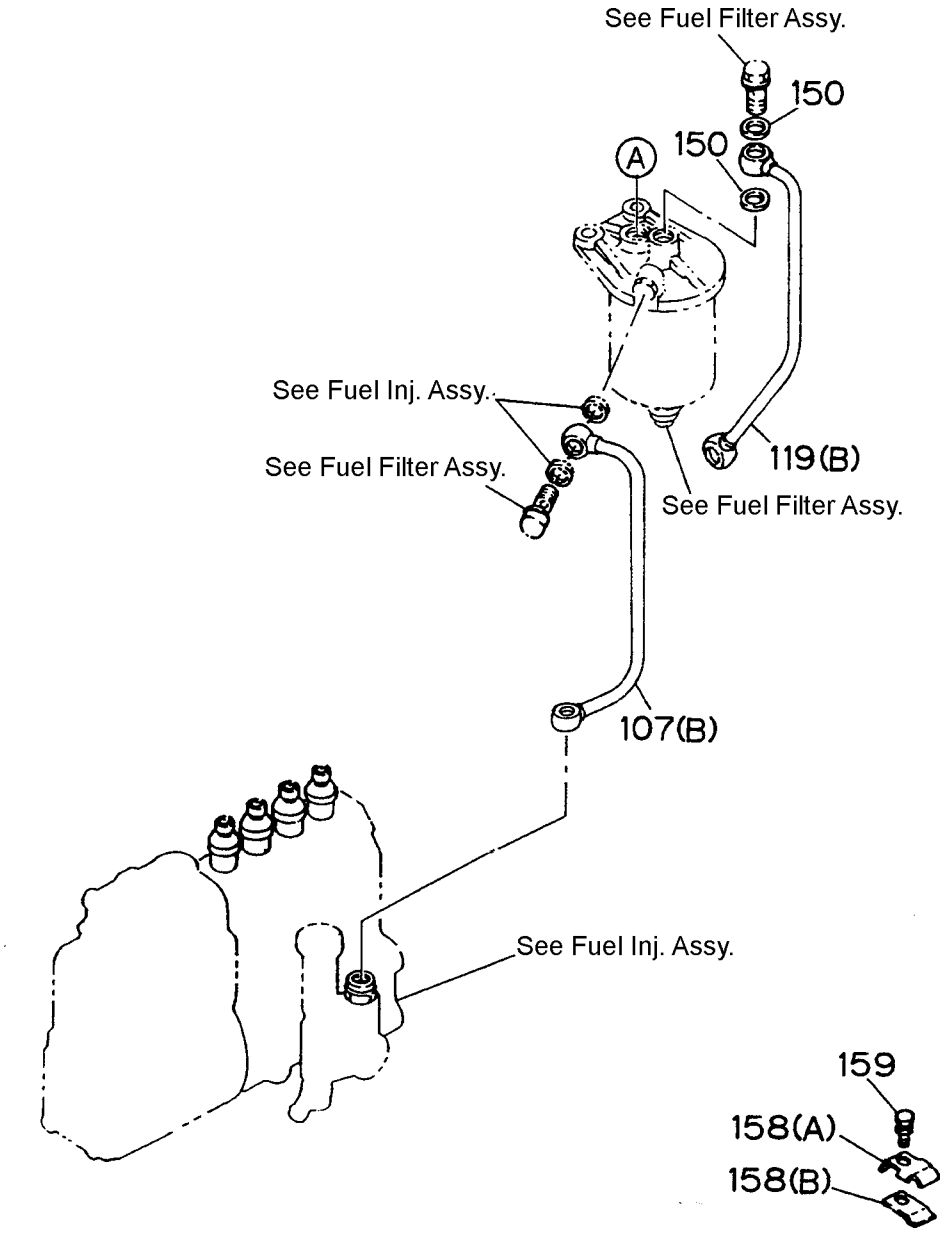
FUEL FILTER AND BRACKET ASSY.



FUEL FILTER AND BRACKET ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1132007011	FUEL FILTER ASSY.	1	REPLACES 8944537371 AND 8941517451 INCL. ITEMS W/*
20	5154112231	EYE JOINT	1	
21*	1132120870	COVER	1	REPLACES 5132120751
29*	1132600470	OVERFLOW VALVE	1	REPLACES 9132600562
30*	1096300850	GASKET	2	REPLACES 9095720140
40	5197550010	BRACKET	1	
45	0501410350	BOLT	2	
47	0501408250	BOLT	2	
54	1094680021	NUT	1	
58*	1132400791	ELEMENT	1	REPLACES 8944147963
69	9099063251	BOLT	2	
88	0500410200	BOLT	2	

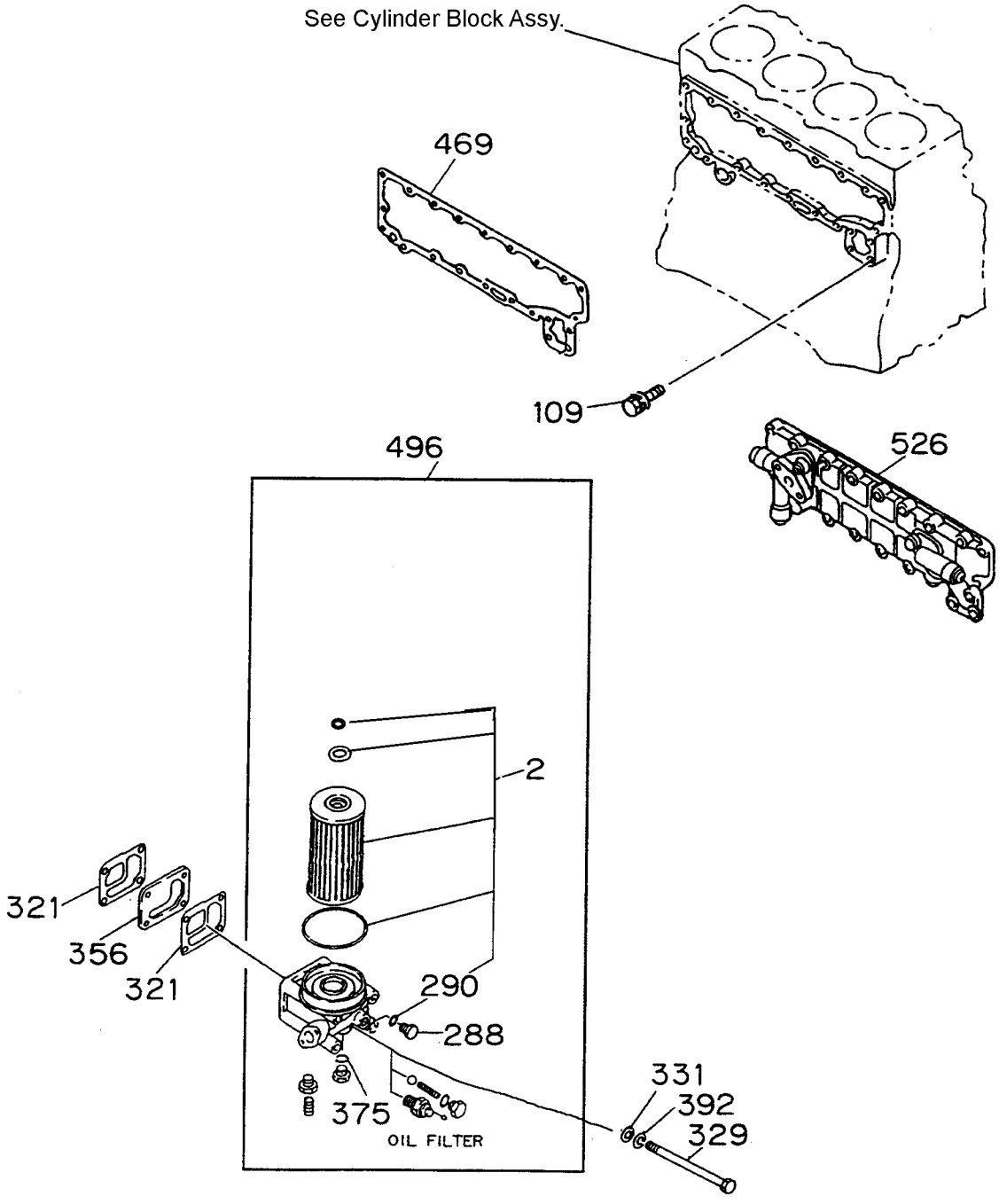
FUEL PUMP AND PIPE ASSY.



FUEL PUMP AND PIPE ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
107	5154114570	PIPE	1	REPLACES 8970209330
119	9154127311	PIPE	1	REPLACES 8970209340
150	9095720140	GASKET	2	
158A	5154190040	CLIP	1	
158B	5154190051	CLIP	1	
159	0501406160	BOLT	1	

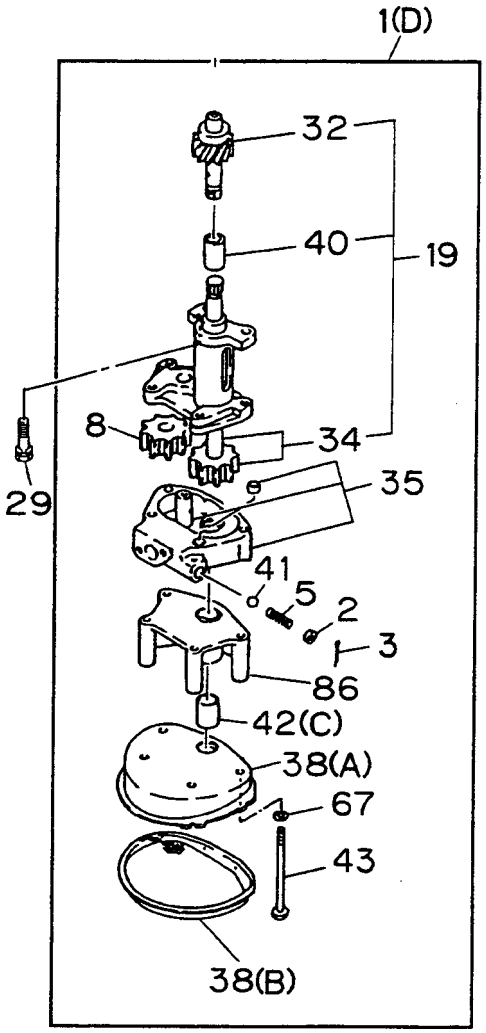
OIL COOLER AND OIL FILTER ASSY.



OIL COOLER AND OIL FILTER ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
2*	1878102201	ELEMENT	1	
109	0500408250	BOLT	11	M8X25 W/LOCK WASHER
	0500408450	BOLT	8	M8 X45 W/LOCK WASHER
	0500408200	BOLT	2	M8X20 W/ LOCK WASHER
	8942058961	BOLT	1	M8X65
288*	9098621170	PLUG	1	
290*	5096230670	GASKET	1	
321	8943706700	GASKET	1	
329	5090000071	BOLT	4	M10X135
331	9091605100	WASHER	4	
356	5132190261	SPACER	1	
375*	9099205260	GASKET	1	
392	9091505100	LOCK WASHER	4	
469	8970196530	GASKET	1	
496	5132002262	FILTER ASSY.	1	INCL. ITEMS W/*
526	5112800111	COVER	1	

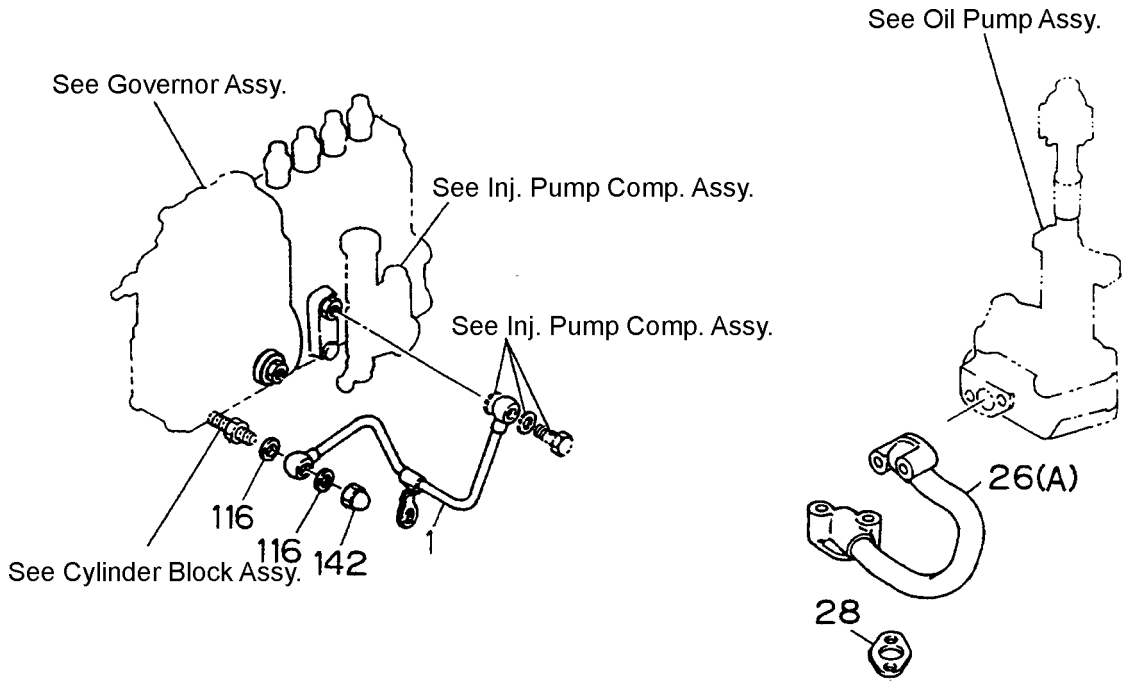
OIL PUMP AND OIL STRAINER ASSY.

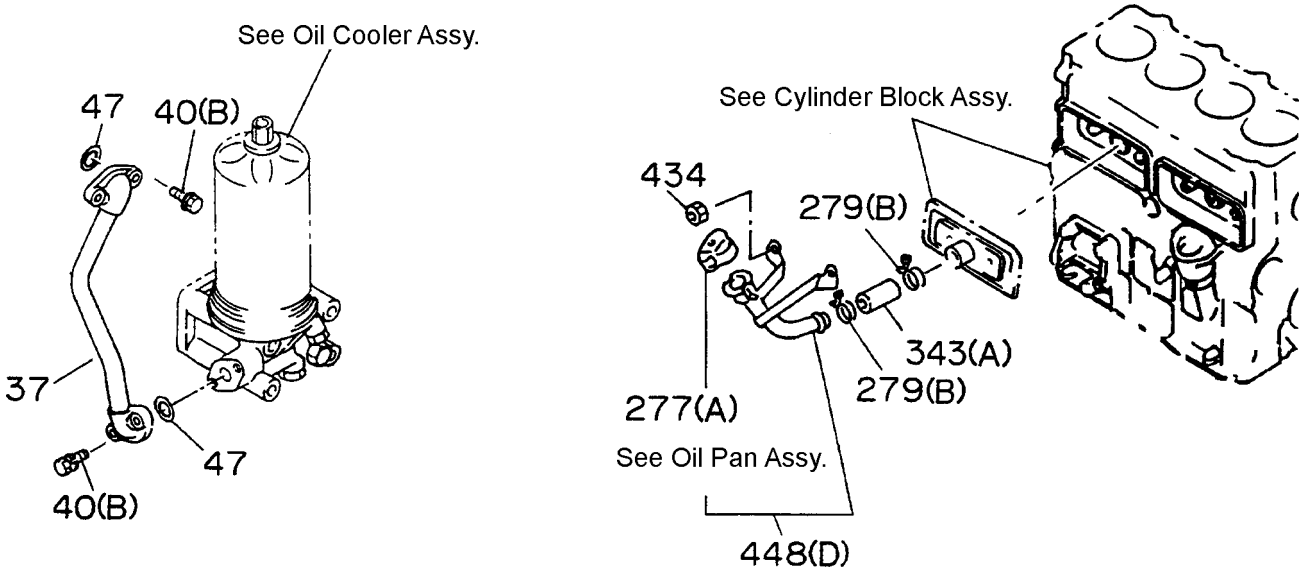


OIL PUMP AND OIL STRAINER ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	5131001373	OIL PUMP ASSY.	1	INCL. ITEMS W/*
2*	5131650040	SPRING SEAT	1	
3*	9081040300	PIN	1	
5*	5095800980	COIL SPRING	1	
8*	5131250020	GEAR	1	
19*	5878102022	GEAR SET	1	INCL. ITEMS W/#
29	0500410250	BOLT	2	
32*#	1131280180	PINION	1	
34*#	5131210140	SHAFT	1	
35*	5131130351	COVER	1	
38A*	5131410171	CASE	1	
38B*	5131410180	CASE	1	
40*#	1131230160	COUPLING	1	
41*	5098430030	VALVE BALL	1	
42*	5131190060	STRAINER	1	
43*	0108058000	BOLT	4	
67*	9091505080	WASHER	4	
86*	1131190010	SPACER	1	

OIL AND VACUUM PIPING ASSY.

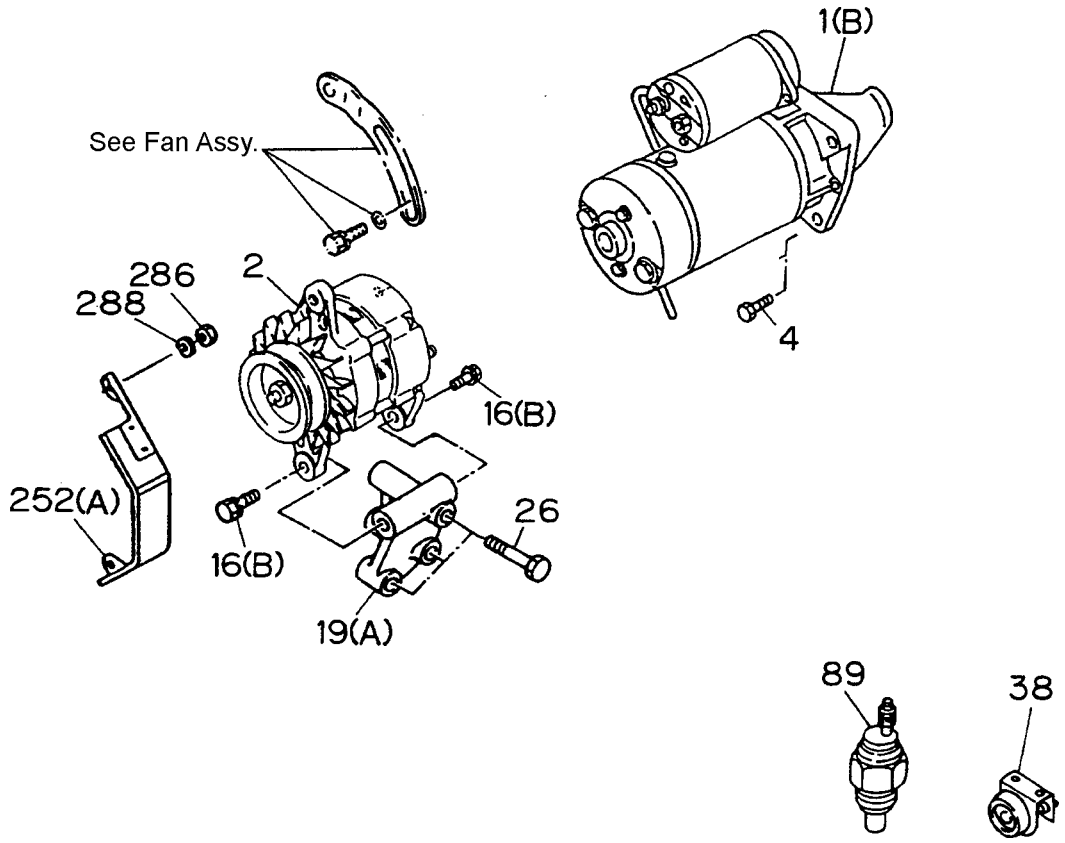




OIL AND VACUUM PIPING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8971242340	PIPE	1	
26	8941753012	PIPE	1	
28	9099211880	GASKET	2	
37	5133112561	PIPE	1	
40	0501408450	BOLT	4	M8X45 W/LOCK AND PLAIN WASHER
	0500408350	BOLT	2	M8X35 W/LOCK WASHER
	0500408320	BOLT	2	M8X32 W/LOCK WASHER
47	1096234620	GASKET	2	
116	9095720100	GASKET	2	
142	9098440220	NUT	1	
279	8941625680	CLIP	2	
343	1093600430	HOSE	1	
434	0911501080	NUT	1	
448	8941405812	FILLER	1	

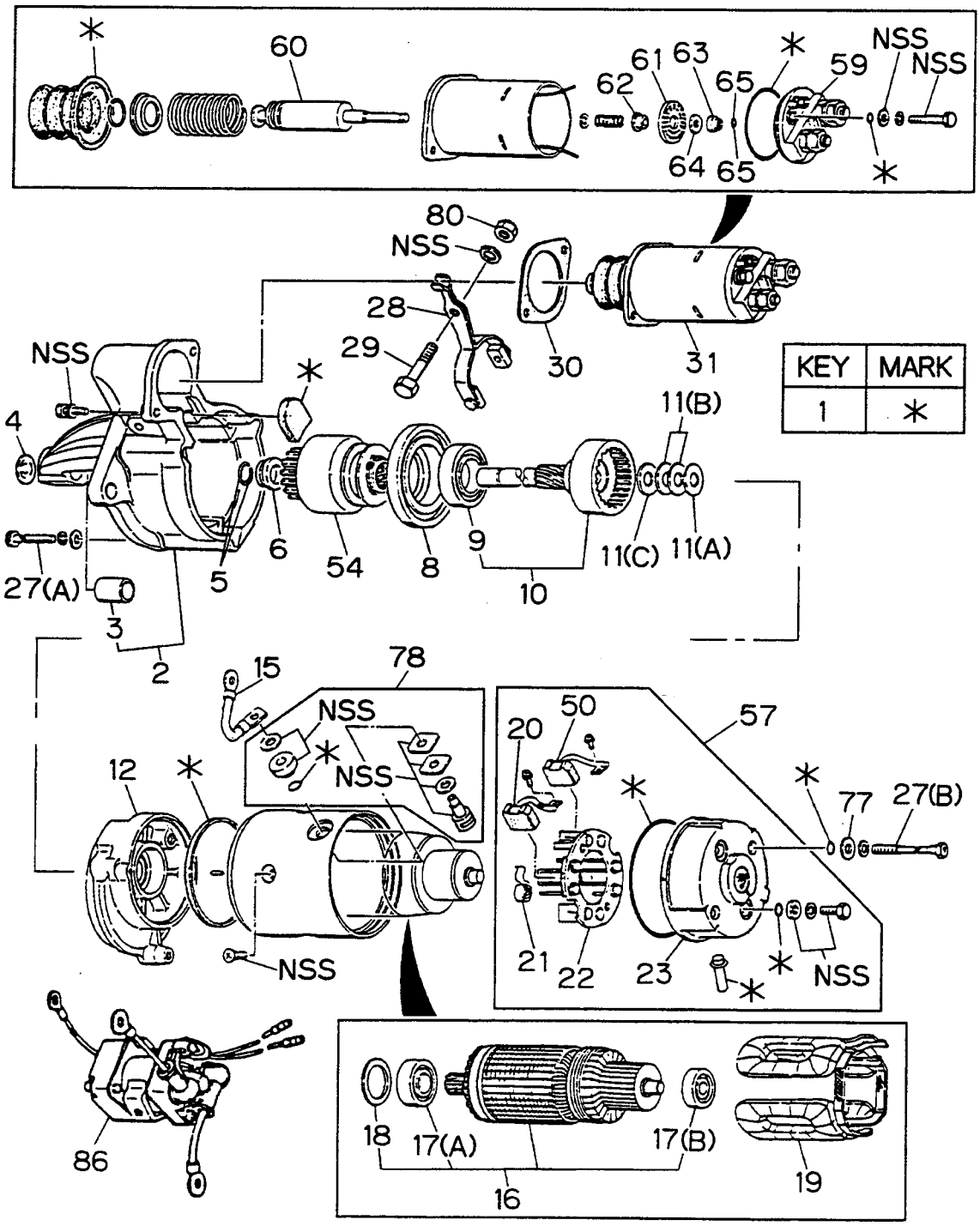
ELECTRICAL CONTROL ASSY.



ELECTRICAL CONTROL ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1811001911	STARTER ASSY.	1	24V 4.5KW
2	8971433290	GENERATOR ASSY.	1	24V 30A
4	0500512280	BOLT	1	M12X28
	0287812350	BOLT	2	M12X35
16	0501408350	BOLT	2	M8X35 W/LOCK AND PLAIN WASHER
19	5197110620	BRACKET	1	
26	050041000	BOLT	1	M10X100
	0500410450	BOLT	1	M10X45 W/LOCK WASHER
	5090300101	BOLT	1	M10X75 W/LOCK WASHER
38	9825300460	RESISTOR		
89	8970299880	SWITCH	1	
252	8943717120	COVER	1	
286	0911502080	NUT	1	
288	9091606080	PLAIN WASHER	1	

STARTER COMP. ASSY.

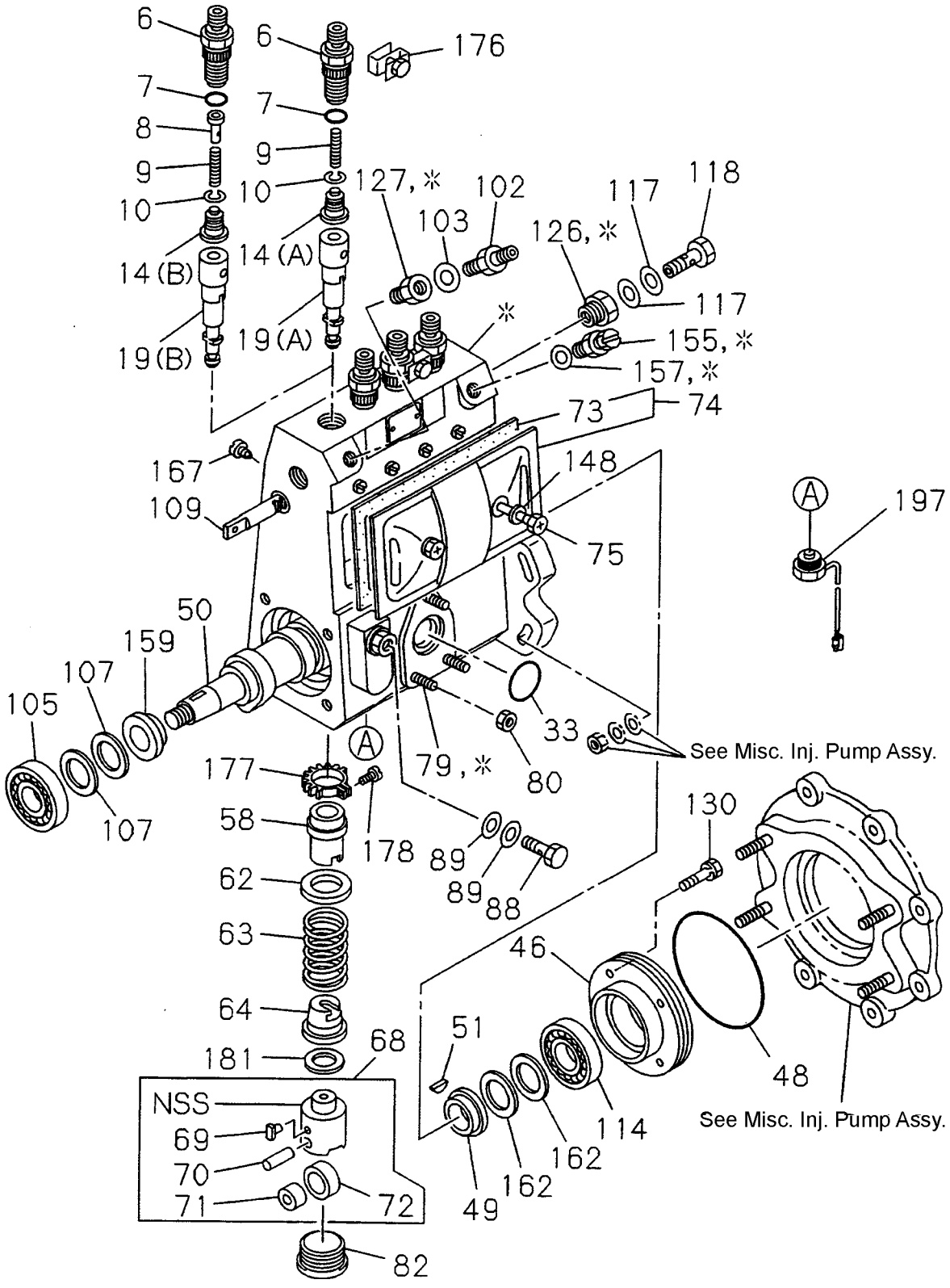


KEY	MARK
1	*

STARTER COMP. ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1811293940	SEAL KIT	1	INCL. ITEMS W/* SHOWN IN PICTURE
2	1811230250	CASE	1	INCL. ITEMS W/#
3#	1811293970	METAL	1	
4	5811291420	COVER	1	
5	5811291440	CLIP	1	
6	5811291450	STOPPER	1	
8	1811130260	BRACKET	1	
9%	1811293860	BEARING	1	
10	1811230240	SHAFT	1	INCL. ITEM W%
11A	5811291580	WASHER	1	
11B	5811291590	WASHER	2	
11C	5811291600	WASHER	1	
12	1811130730	BRACKET	1	
15	1811160440	WIRE	1	
16	1811210370	ARMATURE	1	INCL. ITEMS W/$
17A$	5811291550	BEARING	1	
17B$	1811291960	BEARING	1	
18$	5811291560	WASHER	1	
19	1811293960	COIL	1	
20@	1811160420	BRUSH	1	
21@	1811170140	SPRING	1	
22@	1811180360	HOLDER	1	
23@	1811150620	COVER	1	
27A	1811293870	BOLT	3	
27B	5811292140	BOLT	2	
28	1811270310	LEVER	1	
29	1811291850	PIN	1	
30	5811291470	PLATE	1	
31	5811510360	SWITCH	1	
50@	1811160430	BRUSH	1	
54	5811220160	CLUTCH	1	
57	1811150610	COVER ASSY.	1	INCL. ITEMS W/@
59	5811291500	TERMINAL	1	
61	5811291480	CONTACT	1	
62	9821161400	BUSHING	1	
63	5811180190	HOLDER	1	
64	9821161420	WASHER	1	
65	5811291490	RING	2	
77	1811291140	WASHER	2	
78	1811293840	TERMINAL	1	
80	1811291840	NUT	1	
86	1825530370	RELAY	1	

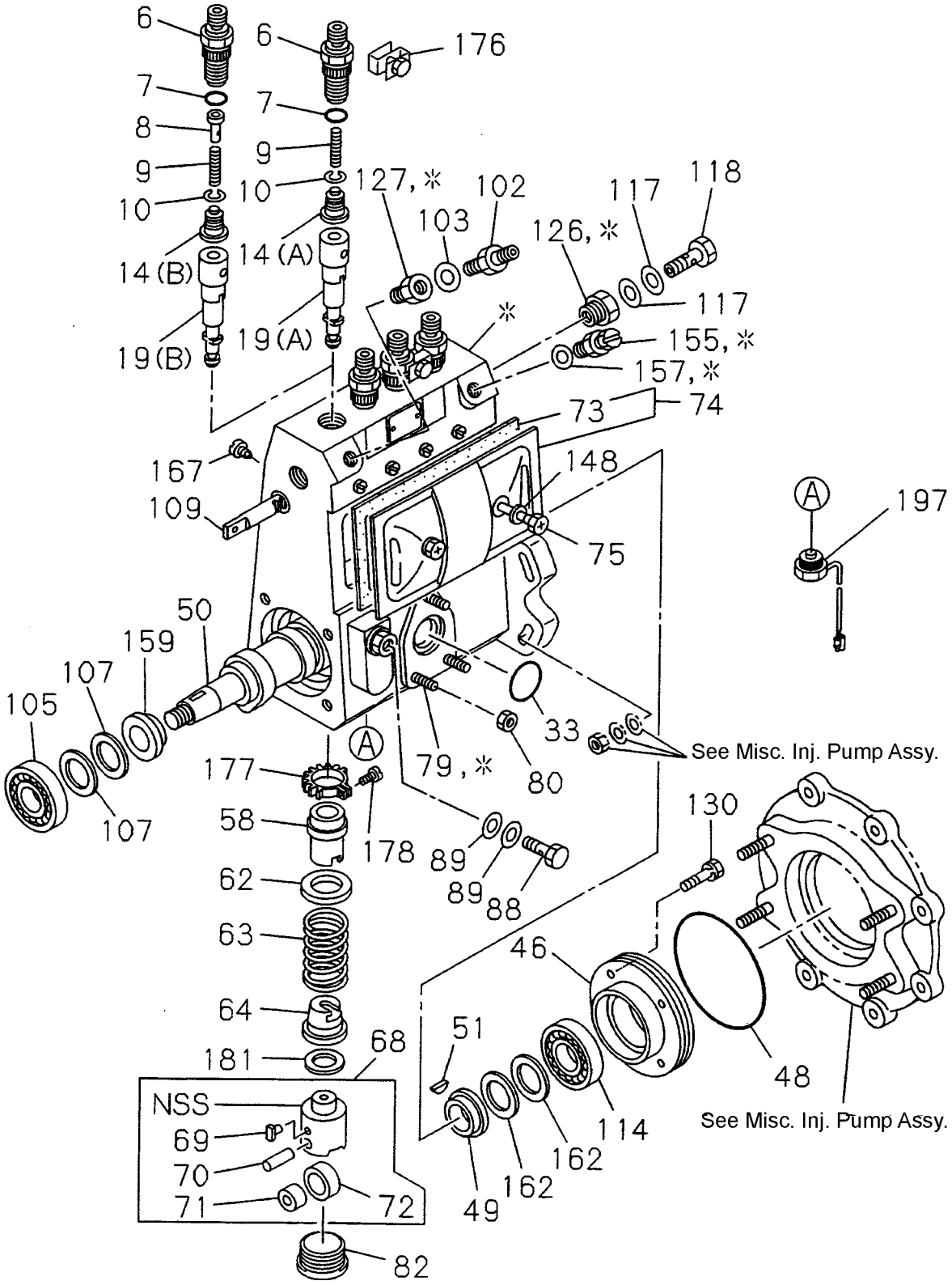
INJ. PUMP COMP. ASSY.



INJ. PUMP COMP. ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	5156110590	HOUSING	1	
6	5156440170	HOLDER	4	
7	1096230520	GASKET	4	
8	5156290450	STOPPER	4	
9	5156430010	SPRING	4	
10	1156490010	GASKET	4	
14	5156410030	VALVE	4	
19	8943771540	PLUNGER	4	
33	1096230130	GASKET	1	
46	1156192430	COVER	1	
48	5156191560	GASKET	1	
49	9812250470	RING	1	
50	5156210190	CAMSHAFT	1	
51	5156190490	KEY	1	
58	9812250580	SLEEVE	4	
62	9812350150	SEAT	4	
63	5156430090	SPRING	4	
64	9812350210	SEAT	4	
68	9812212230	TAPPET	4	INCL. ITEMS W/*
69*	5156190410	GUIDE	4	
70*	9812222200	PIN	4	
71*	1156290010	BUSHING	4	
72*	1156220030	ROLLER	4	
73	8943865960	GASKET	1	
74	8941711090	COVER	1	
75	1156190030	SCREW	2	
79	9812151150	STUD	3	
80	8941711100	NUT	3	
82	5156191360	PLUG	4	
88	9019006140	BOLT	4	
89	9095720100	GASKET	2	
102	1132600011	VALVE	1	
103	1157590010	GASKET	1	
105	9000906770	BEARING	1	NSK
	5098000380	BEARING	1	NTN
107	5156290150	SHIM	1	T=0.10
	5156290160	SHIM	1	T=0.12
	5156290170	SHIM	1	T=0.14
	5156290180	SHIM	1	T=0.16
	5156290190	SHIM	1	T=0.18
	5156290200	SHIM	1	T=0.50
	5156290380	SHIM	1	T=1.00
	9812250330	SHIM	1	T=0.30
	5156190390	SHIM	1	T=0.70
	5156290900	SHIM	1	T=1.40
	1156390880	SHIM	1	T=2.40
114	9000906770	BEARING	1	NSK
	5098000380	BEARING	1	NTN
117	1157590010	GASKET	2	
118	1156190820	BOLT	1	

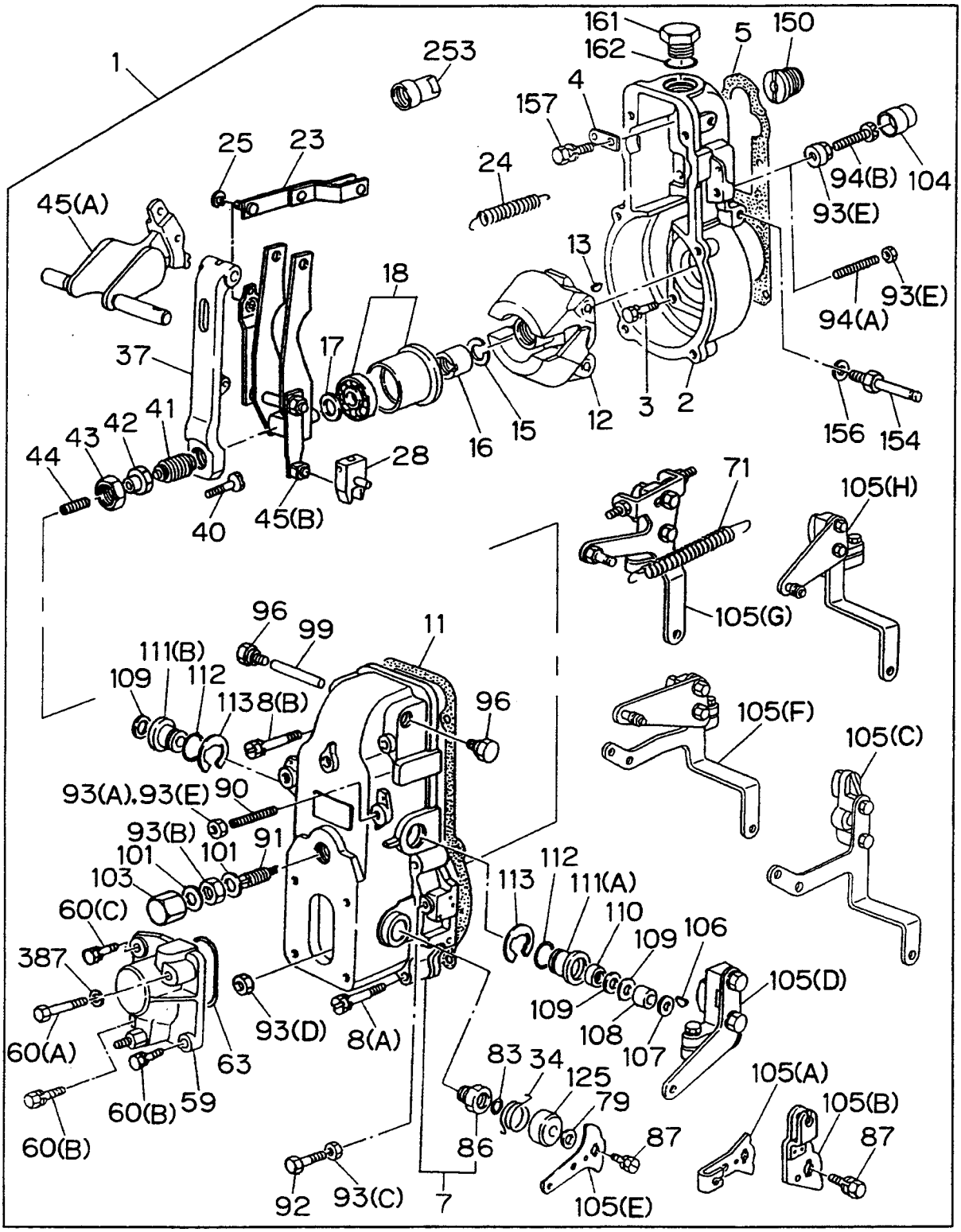
INJ. PUMP COMP. ASSY.



NJ. PUMP COMP. ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
126	9812350170	ADAPTER	1	
127	5156190440	ADAPTER	1	
130	9019006140	SCREW	4	
148	9812151440	GASKET	2	
155	1156190240	BOLT	1	
157	8941445880	GASKET	1	
159	9812250470	RING	1	
162	5156290150	SHIM	1	T=0.10
	5156290160	SHIM	1	T=0.12
	5156290170	SHIM	1	T=0.14
	5156290180	SHIM	1	T=0.16
	5156290190	SHIM	1	T=0.18
	5156290200	SHIM	1	T=0.50
	5156290380	SHIM	1	T=1.00
	9812250330	SHIM	1	T=0.30
	5156190390	SHIM	1	T=0.70
	5156290900	SHIM	1	T=1.40
	1156390880	SHIM	1	T=2.40
176	5156250010	PLATE	2	
177	9812250570	PINION	4	
178	9812350030	SCREW	4	
181	5156190340	SHIM	1	T=0.30
	5156190350	SHIM	1	T=0.40
	5156190360	SHIM	1	T=0.50
	5156190010	SHIM	1	T=0.60
	5156190020	SHIM	1	T=0.70
	5156190030	SHIM	1	T=0.80
	5156190040	SHIM	1	T=0.90
	5156190050	SHIM	1	T=1.00
	5156190070	SHIM	1	T=1.10
	5156190080	SHIM	1	T=1.20
	5156190090	SHIM	1	T=1.30
	5156190100	SHIM	1	T=1.40
	5156190110	SHIM	1	T=0.55
	5156190120	SHIM	1	T=0.65
	5156190130	SHIM	1	T=0.75
	5156190150	SHIM	1	T=0.85
	9812350420	SHIM	1	T=0.95
	9812350430	SHIM	1	T=1.05
	9812350440	SHIM	1	T=1.15
	9812350450	SHIM	1	T=1.25
	5156190250	SHIM	1	T=0.20
	5156190260	SHIM	1	T=0.25
	5156190270	SHIM	1	T=0.35
	5156190370	SHIM	1	T=0.45
	5156191060	SHIM	1	T=1.50
	5156191070	SHIM	1	T=1.60
	5156191080	SHIM	1	T=1.35
	5156191090	SHIM	1	T=1.45
	5156191100	SHIM	1	T=1.55

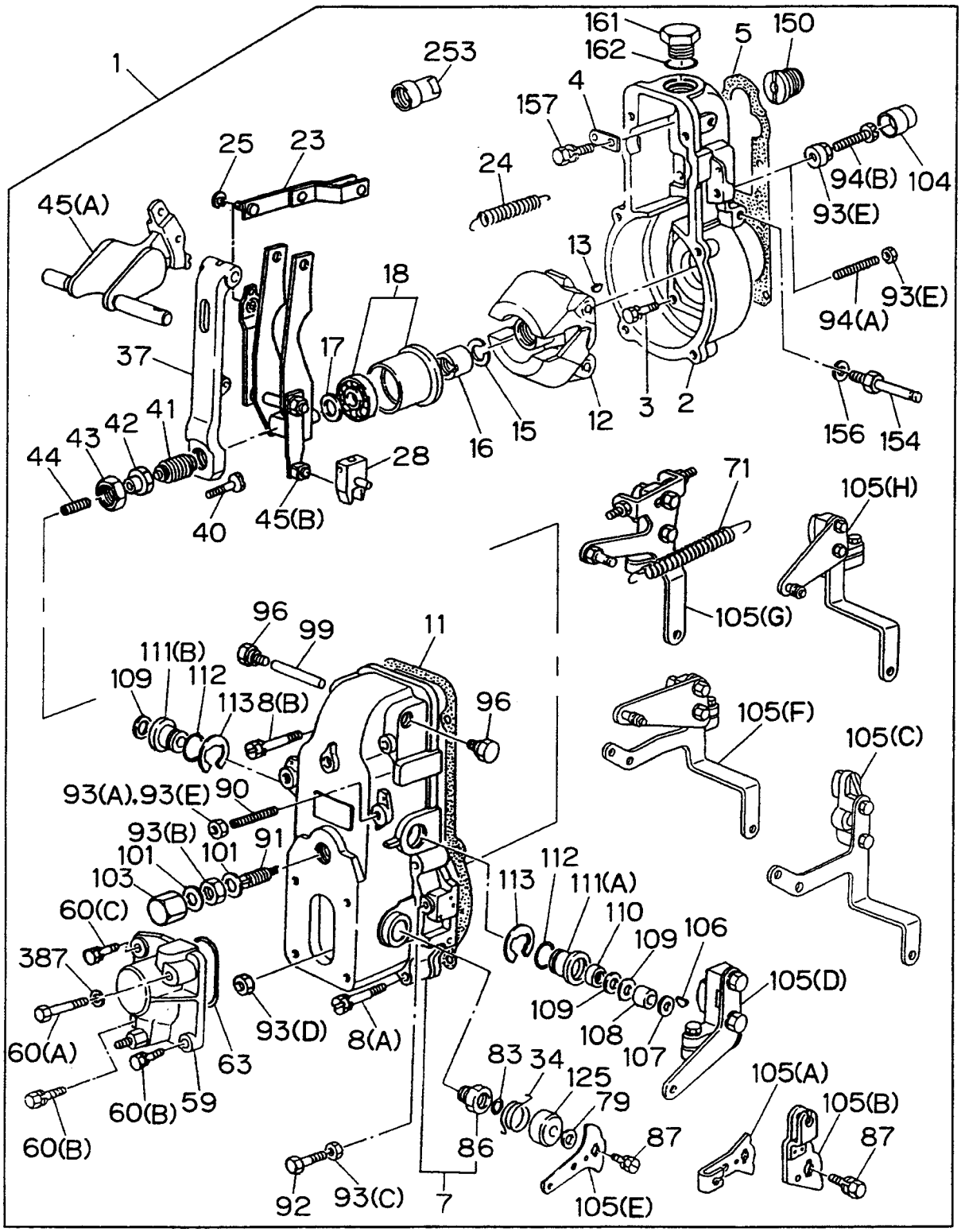
GOVERNOR COMP. ASSY.



GOVERNOR COMP. ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8971621760	GOVERNOR ASSY.	1	INCL. ITEMS W/*
2*	5157210040	HOUSING	1	
3*	5157290270	BOLT	6	
4*	8913253970	PLATE	1	
7*	5157210220	COVER	1	
8A*	5157290330	BOLT	4	
8B*	5157290540	BOLT	2	
11*	1157290010	GASKET	1	
12*	1157220210	FLYWEIGHT ASSY.	1	
13*	5196190490	KEY	1	
15*	5157290340	WASHER	1	
16*	9813250860	NUT	1	
17*	9813250880	SHIM	1	T=0.20
	9813255510	SHIM	1	T=0.30
	9813255520	SHIM	1	T=0.40
	9813255530	SHIM	1	T=1.00
	5157292860	SHIM	1	T=0.50
	5157292870	SHIM	1	T=1.50
	1157298910	SHIM	1	T=2.00
	1157298920	SHIM	1	T=3.00
	1157298930	SHIM	1	T=4.00
18*	5157190080	SCREW	1	
23*	1157250110	LINK	1	
24*	9813222350	SPRING	1	
25*	9091854040	RING	1	
28*	5157250420	LEVER	1	
34*	1157232120	SPRING	1	
37*	5157250170	LEVER ASSY.	1	
40*	9813251820	SCREW	1	
41*	1157231860	SPRING CAPSULE	1	
43*	9008130230	NUR	1	
45A*	1157256680	LEVER ASSY.	1	
45B*	5157250330	LEVER ASSY.	1	
59*	5157210210	COVER	1	
60B*	5157290630	BOLT		
60C*	9019006160	BOLT	1	
63*	9813919070	GASKET	1	
71*	5157230880	SPRING	1	
79*	1157292940	SHIM	1	T=0.20
	1157292950	SHIM	1	T=0.25
	1157292960	SHIM	1	T=0.30
	1157292970	SHIM	1	T=0.35
	1157292980	SHIM	1	T=0.40
	1157292990	SHIM	1	T=0.50
83*	9813919060	SEAL	1	
86*	9813254290	BUSHING	1	
87*	9019006160	BOLT	1	
90*	9813251770	SCREW	1	
91*	1157230730	SPRING CAPSULE		

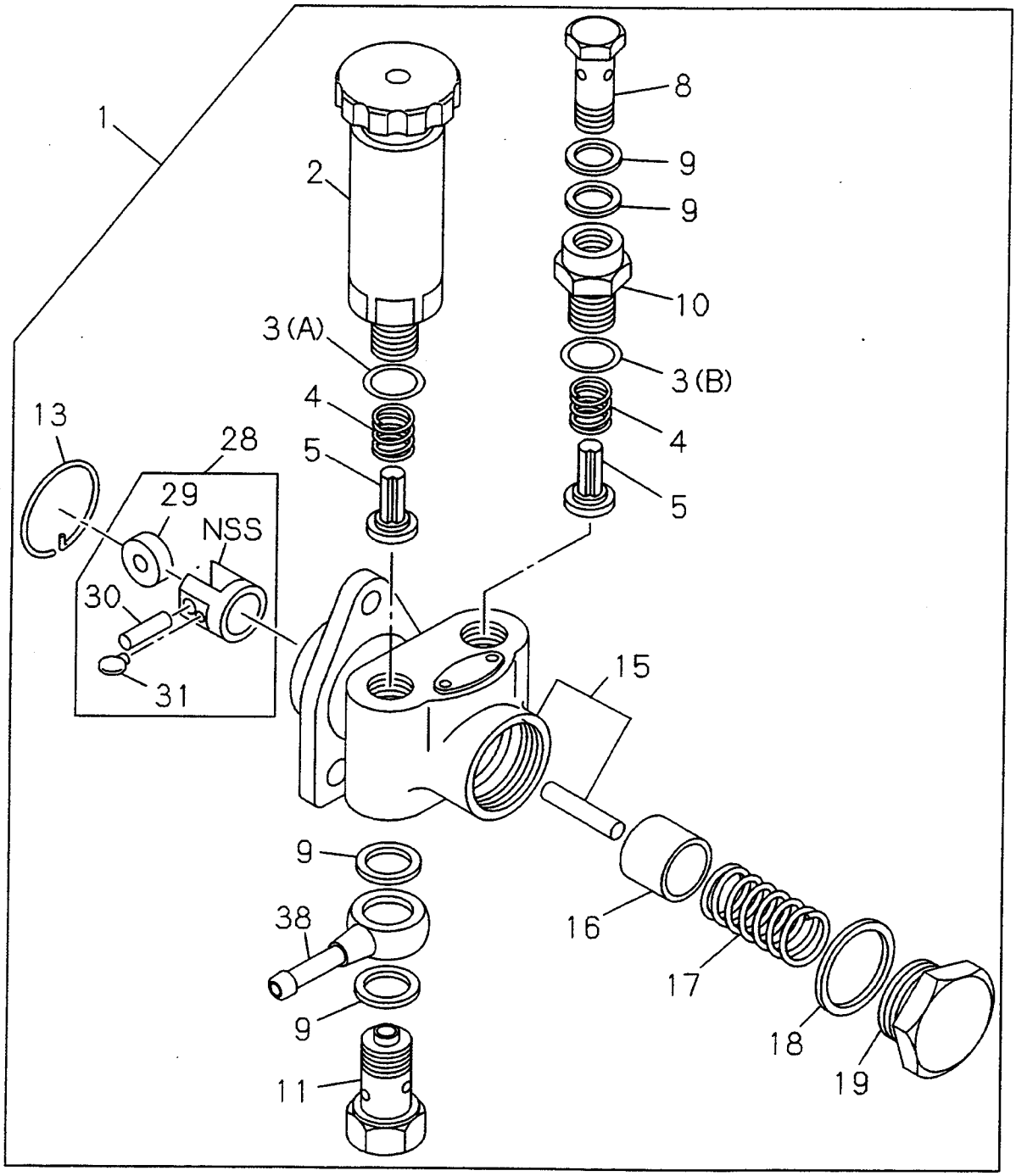
GOVERNOR COMP. ASSY.



GOVERNOR COMP. ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
93B*	1157296890	NUT	1	
93D*	9813261120	NUT	1	
93E*	9844100270	NUT	2	
94*	5157291230	SCREW	1	
96*	5157290530	PLUG	2	
99*	9813250620	PIN	1	
101*	8941445880	GASKET	2	
103*	1157290920	NUT	1	
105A*	1157250810	LEVER	1	
105D*	8943444370	LEVER	1	
105D*	8943444380	LEVER	1	
105F*	8970874410	LEVER	1	
106*	9813250300	KEY	1	
107*	9813254880	WASHER	1	
108*	1157293010	COLLAR	1	
109*	1157290990	SHIM	1	
	9813250970	SHIM	1	
110*	1157290980	SEAL	1	
111*	8970242390	BUSHING	2	
112*	9813212050	GASKET	2	
113*	9091854150	RING	2	
125*	9813252100	CAP	1	
150*	9813150650	ADAPTER	1	
154*	5157291120	BOLT	1	
156*	1835794920	WASHER	1	
157*	9019008180	BOLT	1	
161*	1157290380	PLUG	1	
162*	1157290150	WASHER	1	

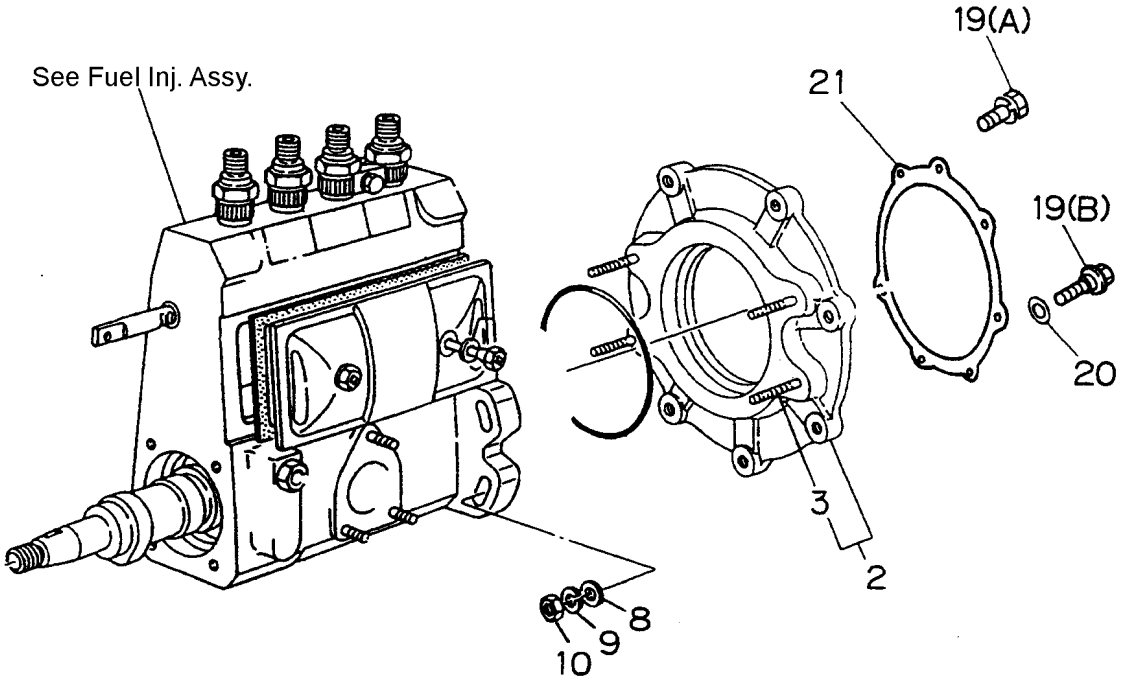
FEED PUMP ASSY.



FEED PUMP ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	8971219100	PUMP ASSY.	1	..... INCL. ITEMS W/*
2*	1157610060	PUMP	1	
3*	1196230160	GASKET	1	
4*	9813517020	SPRING	2	
5*	1157550020	VALVE	2	
8*	1156190820	BOLT	1	
9*	1157590010	GASKET	4	
10*	1157590030	ADAPTER	1	
11*	5157590270	BOLT	1	
13*	9813550250	RING	1	
15*	5157510120	HOUSING	1	
16*	9813512050	PISTON	1	
17*	9813513020	SPRING	1	
18*	9813550350	GASKET	1	
19*	8941711850	PLUG	1	
28*	5157540010	TAPPET ASSY.	1	..... INCL. ITEMS W/#
29*#	9813514030	ROLLER	1	
30*#	9813514100	PIN	1	
31*#	1157590020	GUIDE	2	

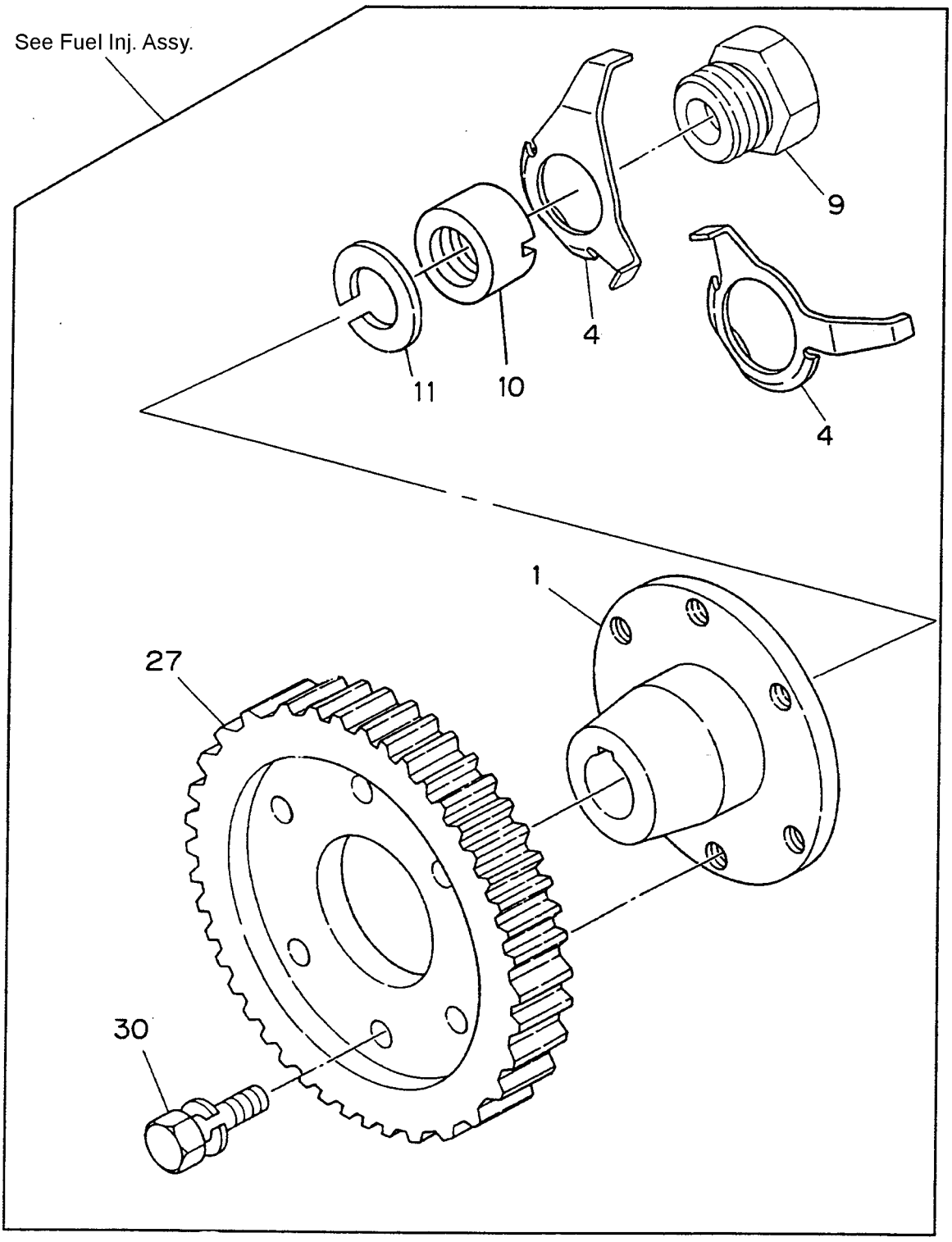
MISC. INJECTION PUMP ASSY.



MISC. INJECTION PUMP ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
2	5197510500	BRACKET	1	
3	9041010300	STUD	4	
8	9091645100	WASHER	4	
9	9091506100	WASHER	4	
10	5156390020	NUT	4	
19A	5090000841	BOLT	6	M8X55 W/LOCK WASHER
19B	5090002221	BOLT	1	M8X22
20	9095720080	GASKET	1	
2	8943706750	GASKET	1	

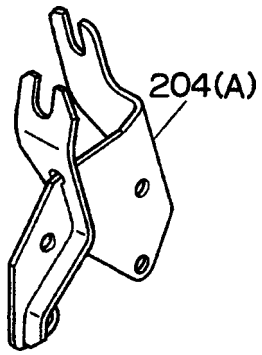
COUPLING ASSY.



COUPLING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	5157810030	COUPLING	1	
4	1156192470	PLATE	1	
9	9096620070	BOLT	1	
10	9884105020	NUT	1	
11	5156190480	WASHER	1	
27	5125240210	GEAR	1	
30	8944575170	BOLT	6	

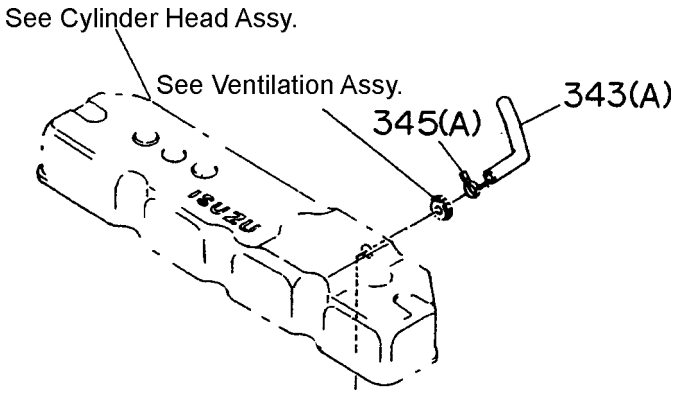
ACCELERATOR PEDAL ASSY.



ACCELERATOR PEDAL ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
204	5197890040	BRACKET	1	

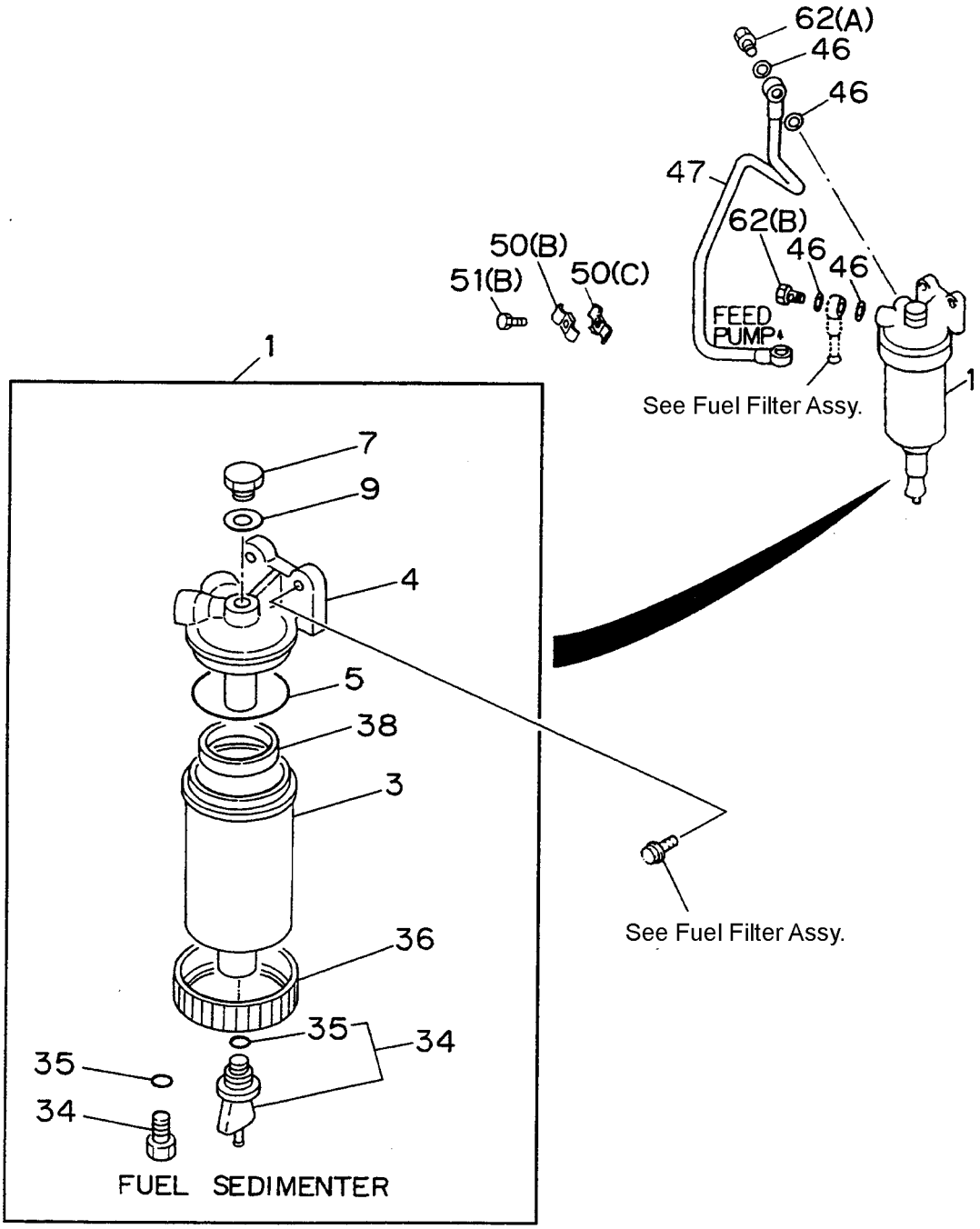
AIR DUCT ASSY.



AIR DUCT ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
343	8943216680	HOSE	1	
345	8942420340	CLIP	2	

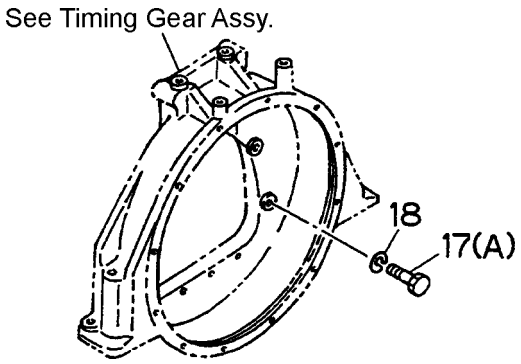
WATER SEDIMENTER ASSY.



WATER SEDIMENTER ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1132008410	FUEL SEDIMENTER	1	INCL. ITEMS W/*
3*	1132112110	BODY ASSY.	1	
4*	5132120591	COVER	1	
5*	5096230700	GASKET	1	
7*	5132190200	PLUG	1	
9*	5096300240	GASKET	1	
34*	8944537460	PLUG	1	INCL. ITEMS W/#
35*#	8944163770	GASKET	1	
36*	5132190221	RING	1	
38*	5132190210	FLOAT	1	
46*	9095720140	GASKET	4	
47	894470470	PIPE	1	
50B	1097007590	CLIP	2	
51B	9097161140	CLIP	3	
50C	1097007600	CLIP	2	
50C	9097161240	CLIP	3	
51	0500406200	BOLT	7	
62A	9099063251	BOLT	1	
62B	5157590270	BOLT	1	

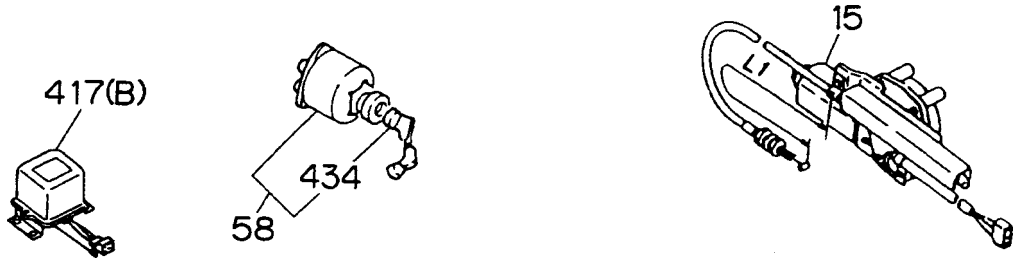
CLUTCH ASSY.



CLUTCH ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
17	9910664500	BOLT	6	
18	9091505140	LOCK WASHER	6	

SWITCH AND RELAY ASSY.



SWITCH AND RELAY ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
15	1819001372	ENG. STOP ACTUATOR	1	
58	1823100080	IGNITION SWITCH	1	..... INCL. ITEMS W/*
417	1825500732	EMERGENCY RELAY	1	
434*	1823170070	KEY	1	

PAYMENT TERMS

Terms of payment for parts are net 10 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is $15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
    a. The parts numbers and descriptions must match the current parts price list.
    b. The list must be typed or computer generated.
    c. The list must state the reason(s) for the return.
    d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
    e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.
5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Muiltiquip part numbers clearly marked.
6. The following items are not returnable:
    a. Obsolete parts. (If an item is listed in the parts price book as being replaced by another item, it is obsolete.)
    b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
    c. Any line item with an extended dealer net price of less than $5.00.
    d. Special order items.
    e. Electrical components.
    f. Paint, chemicals, and lubricants.
    g. Decals and paper products.
    h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for 5 working days from notification, pending instructions. If a reply is not received within 5 days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A $20.00 to $50.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable here under for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes not authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. A part from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

NOTE PAGE

PARTS AND OPERATION MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL NUMBER ON-HAND WHEN CALLING

PARTS DEPARTMENT
800/427-1244 or 310/537-3700
FAX: 800/672-7877 or 310/637-3284

SERVICE DEPARTMENT
800/835-2551 or 310/537-3700
FAX: 310/638-8046

WARRANTY DEPARTMENT
800/835-2551 or 310/537-3700
FAX: 310/638-8046

MAIN
800/421-1244 or 310/537-3700
FAX: 310/537-3927

MULTIQUIP INC.
18910 WILMINGTON AVENUE
CARSON, CALIFORNIA 90746
310-537-3700
800/421-1244 NATIONWIDE
FAX: 310-537-3927

PARTS DEPARTMENT:
800/427-1244
FAX: 800/672-7877
SERVICE DEPARTMENT:
800/835-2551
FAX: 310/638-8046