

PARTS AND OPERATION MANUAL

MQ POWER DCA-220SSK WHISPERWATT™ GENERATOR (Standard)

Up to S/N3696500
S/N3699150 to S/N3699619
S/N3699637 to S/N3703349
S/N3703364 to S/N3703853
S/N3703869~

© COPYRIGHT 2001, MULTIQUIP INC.

(For serial numbers not listed, please refer to Sunbelt or GEER manuals)

Revision #3 (06/05/01)



MULTIQUIP INC.
18910 WILMINGTON AVE.
CARSON, CALIFORNIA 90746
310-537-3700
800-421-1244
FAX:310-537-3927
E-mail:mq@multiquip.com • www:multiquip.com

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



WARNING



CALIFORNIA — Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known 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

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

TABLE OF CONTENTS

Here's How To Get Help	3
Table Of Contents	4
Parts Ordering Procedures	5
Rules for Safe Operation	6-9
Towing Safety Precaution	10
Trailer Safety Guidelines	11-17
Trailer Wiring Diagram	18
Electrical Brake Troubleshooting	19
Hydraulic Brake Troubleshooting	20
Operation and Safety Decals	21-22
DCA 220 Specifications	23
General Information	24-26
Major Components	27
Dimensions	28-29
Control Panel Descriptions	30-31
Engine Operating Panel Descriptions	32-33
Output Terminal Overview	34-41
Installation	42-43
Pre Setup	44-47
Load Application	48
Generator Start-up Procedure (Manual)	49-52
Generator Start-up Procedure (Auto)	53
Generator Shut-Down Procedure	54
Maintenance	56-59
Generator Wiring Diagram	60
Engine Wiring Diagrams	62-63
Engine Troubleshooting	64-65
Generator/Engine Troubleshooting	66
MPEC Troubleshooting	67
Explanation of Code in Remarks Column	68
Serial Numbers Pertaining to Unit	68
Suggested Spare Parts	69

NOTE

Specification and part number are subject to change without notice.

DCA-220SSK GENERATOR

Generator Assembly-Up to S/N1337562	70-73
Generator Assembly-S/N1337563~	74-77
Control Box and Panel Assembly- Up to S/N1337562	78-81
Control Box and Panel (Optional)- Up to S/N1337562	82-85
Control Panel Assembly-S/N1337563~	86-87
Control Box Assembly-S/N1337563~	88-91
Engine & Radiator Assembly-Up to S/N1337562 ..	92-95
Engine & Radiator Assembly- S/N1337563 to 3690734	96-99
Engine & Radiator Assembly-S/N3690735~	100-103
Engine Operating and Output Terminal Assembly- Up to S/N1337562	104-109
Engine Operating Panel Assembly (Opt. Parts, with Slow-Down)-Up to S/N1337562	110-115
Engine Operating Panel Assembly-S/N1337563~	116-119
Output Terminal Panel Assembly- S/N1337563 to 3690734	120-121
Output Terminal Panel Assembly-S/N3690735~ ...	122-123
Actuator-S/N3690735~	124-125
Battery Assembly	126-127
Muffler Assembly	128-129
Fuel Tank Assembly-Up to S/N1337562	130-131
Fuel Tank Assembly-S/N1337563~	132-133
Enclosure Assembly-Up to S/N1337562	134-139
Enclosure Assembly-S/N1337563~	140-145
Rubber Seal Assembly-Up to S/N1337562	146-147
Rubber Seal Assembly-S/N1337563~	148-149
Automatic Oil Feeder Assembly (Opt. Parts)- Up to S/N1337562	150-151
Control Box Assembly Remote (Opt. Parts)- Up to S/N1337562	152-153
Name Plate And Decals	154-157

Terms and Condition of Sale — Parts 158

- 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:

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

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

- UPS Ground Service at no charge for freight
- PS Third Day Service at one-half of actual freight cost

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

Extra Fax Discount for Domestic USA Dealers Only

Up to 5% extra savings!

UPS Special
For faxed orders only

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

RULES FOR SAFE OPERATION

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-220SSK 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 of 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.

- **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:



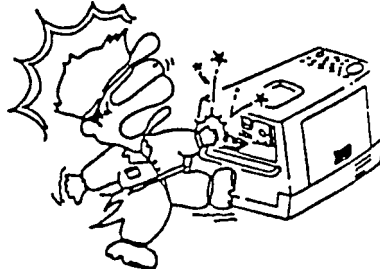
Always refuel in a well-ventilated area, away from sparks and open flames.



- 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.

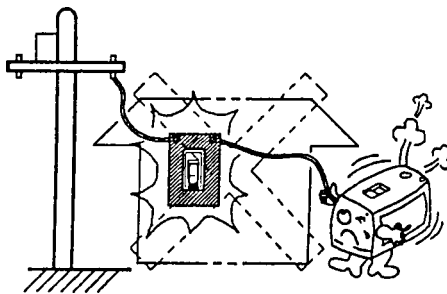
RULES FOR SAFE OPERATION

CAUTION:



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

CAUTION:



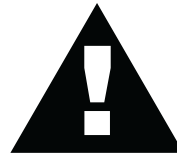
- **Backfeed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is opened.**

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 due to high pressure, will result in 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.

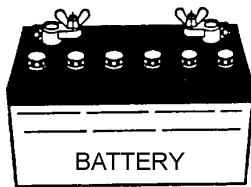
Battery

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 **Komatsu 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.

RULES FOR SAFE OPERATION

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 that 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 mileage.
- Avoid sharp turns to prevent rolling.
- Remove wheel stand when transporting.
- **DO NOT** transport generator with fuel in tank.

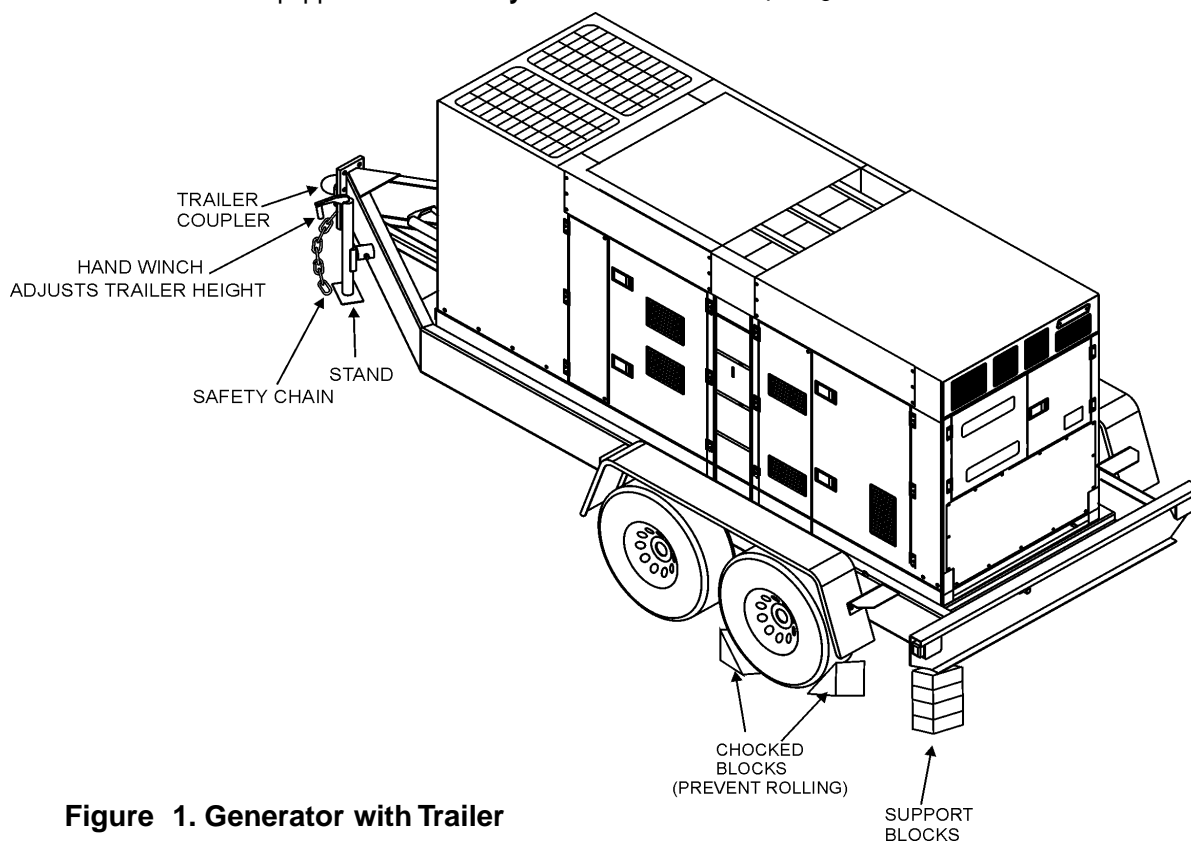


Figure 1. Generator with Trailer

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 intended to 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 this section:

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

Use the following definitions reading Table 1.

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 measurement 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 are 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 or 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 note 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 shock 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.

DCA-220SSK — TRAILER-SPECIFICATIONS

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

DCA-220SSK — TRAILER-SPECIFICATIONS

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

In order to properly synchronize the towing vehicle's braking to the trailer's braking system, 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.

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.

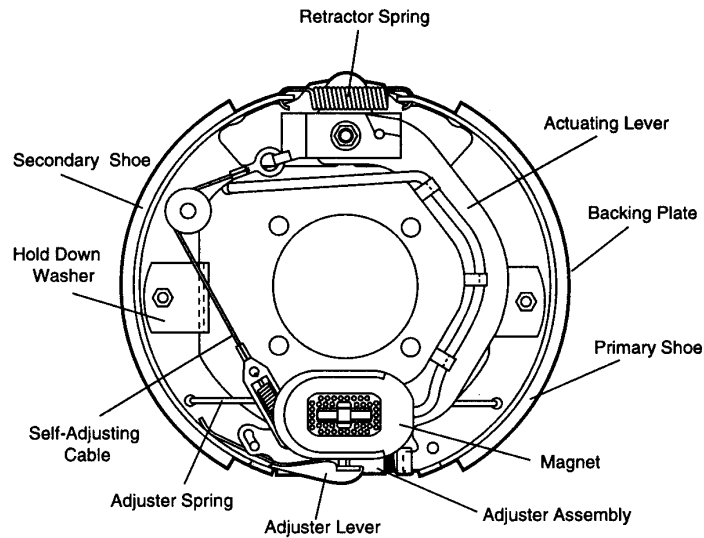


Figure 2. Electrical Brake Components

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 require inspection and maintenance. Inspect these components as required using steps 1 through 6 as referenced in the electric brake adjustments section.

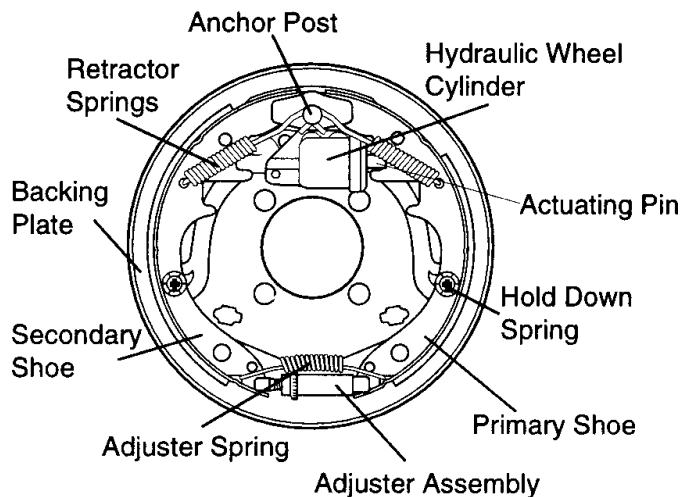


Figure 3. Hydraulic Brake Components

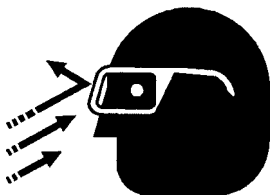
Tires/Wheels/Lug Nuts

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 attempt 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 the most important factor in tire life. Pressure should be checked cold before operation DO NOT bleed air from tires when they are hot. Check inflation pressure weekly during use to insure the maximum tire life and tread wear.

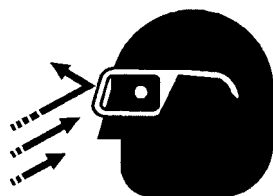
Table 2 (Tire Wear Troubleshooting) will help pinpoint the causes and solutions of tire wear problems.

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.

CAUTION:



NOTE

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

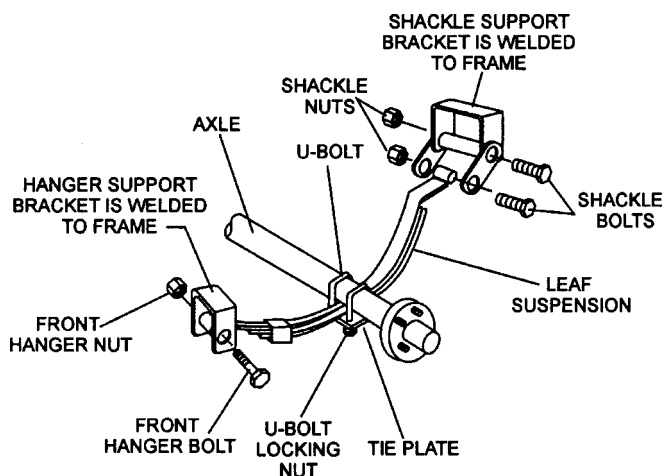


Figure 4. Major Suspension Components

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

Lug Nut Torque Requirements

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 attachment 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

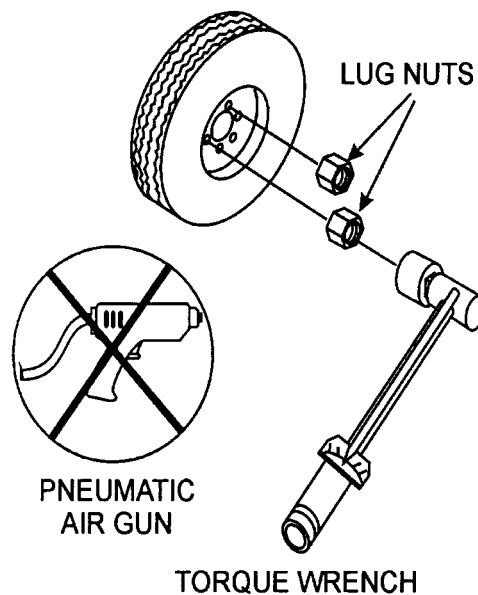
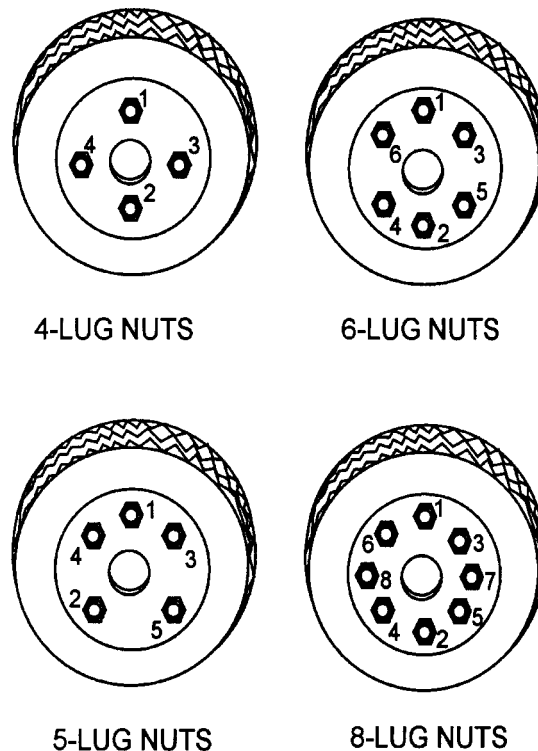
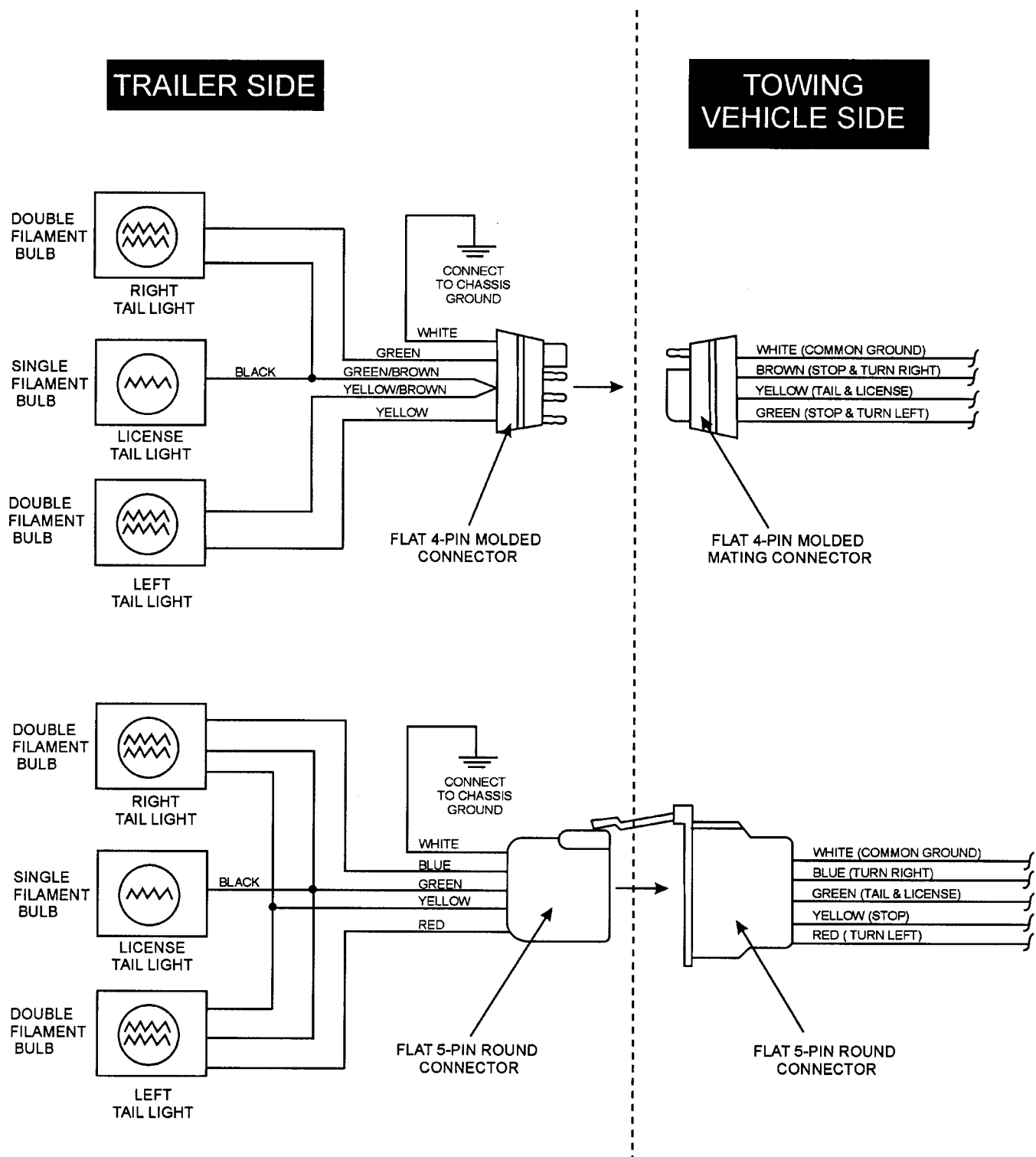


Figure 5. Wheel Lug Nuts Tightening Sequence

NOTE

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

DCA-220SSK — 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.

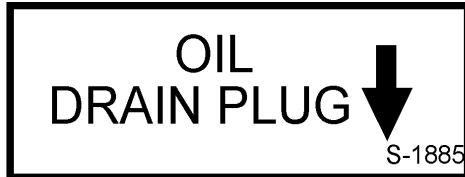
Table 6. Hydraulic Brake Troubleshooting

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.

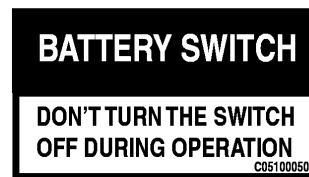
DCA-220SSK — OPERATION AND SAFETY DECALS

Machine Safety Decals

The DCA-220SSK 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.



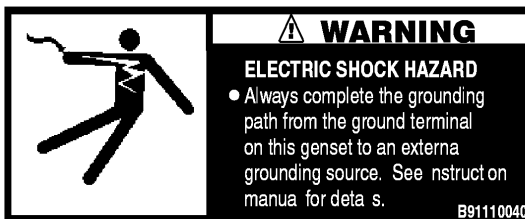
P/N 63606 20204



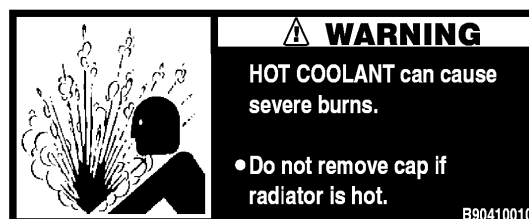
P/N C0551000704



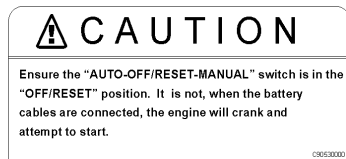
P/N 0840614104



P/N B9511100404



P/N B9504100104



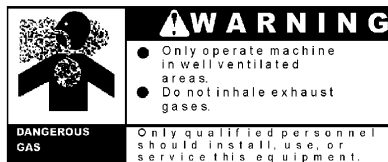
P/N C9505300004



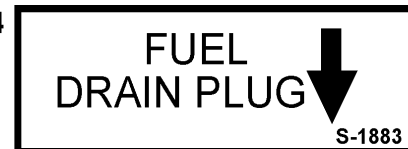
P/N 08040619904



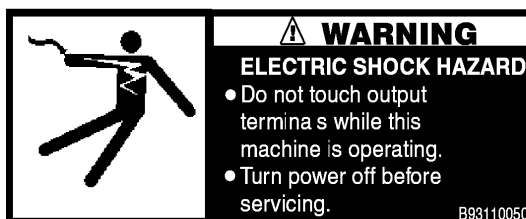
P/N C1551000404



P/N B950420004



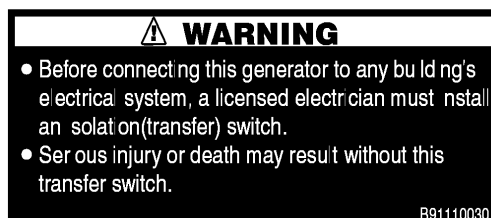
P/N 6360620004



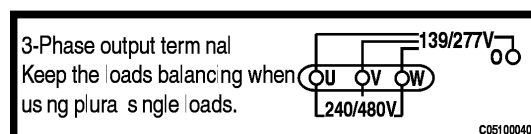
P/N B9531100504



P/N B9511100404



P/N B9511100304



P/N C0551000404

DCA-220SSK — OPERATION AND SAFETY DECALS

HANDLING PROCEDURES

1. CHECK TO OPERATING
 Prior to operating the engine, be sure to check the following items to prevent trouble and accidents:

- (1) Check lubricating oil, cooling water and diesel fuel.
- (2) Check the tension of the fan-belt and charging generator driving belt.
- (3) Check the CIRCUIT BREAKER is turned "OFF".
- (4) Set the voltage change-over board to the rated voltage (only Dual voltage type).

2. STARTING AND OPERATING

- (1) Turn the battery switch to "ON" position.
- (2) Turn the STARTER SWITCH to "PREHEAT" position for 10 - 30 seconds.
 Press the STARTER SWITCH to "START" POSITION to start the engine.
 When the engine starts, release the STARTER SWITCH.
- (3) Warm-up the engine for about 5 minutes.
- (4) Rotate the THROTTLE HANDLE to "HIGH SPEED" and adjust the engine speed according to the following table:

No-load operating speed	
50 Hz operation	Approx. 52.5 Hz (1575 rpm)
60 Hz operation	Approx. 62.5 Hz (1875 rpm)

(5) Adjust the VOLTAGE REGULATOR to the rated voltage.
 (6) Turn on the CIRCUIT BREAKER to supply electric power to the load.

3. OPERATING PRECAUTIONS

- (1) While operating, do not turn the BATTERY SWITCH "OFF" to protect the charging generator and engine circuit against damage.
- (2) When the CIRCUIT BREAKER is tripped "OFF" for over current or short-circuit, check the trouble cause and repair defective parts.
 The CIRCUIT BREAKER cannot be reset unless it is once turned "OFF" and next turned "ON".

4. STOPPING THE ENGINE

- (1) Turn the Circuit Breaker to "OFF".
 Rotate the THROTTLE HANDLE TO THE "Low Speed" side. Cool-down the engine for about 5 minutes.
- (2) Depress the STOP BUTTON.
 After the engine stops completely, turn "OFF" STARTER SWITCH and BATTERY SWITCH.

C15200040

P/N C1552000403

SAFETY INSTRUCTIONS

Improper operation of this machine can cause severe injury or death.

- Read the instruction manual carefully before operating or servicing.

This machine should only be operated by a person with sufficient knowledge and skill to ensure safe operation.

High voltage circuits are located inside the output terminal cover and control panel.


- Close the cover and control panel before operating.

Moving parts and hot surfaces are contained within the enclosure.

- Close all doors and lock them before operating.

C25100000

P/N C2551000004




WARNING

HOT PARTS can burn skin.

- Do not touch until the machine has sufficiently cooled.

B90400030

P/N B9504000304



WARNING

ELECTRIC SHOCK HAZARD

- Do not touch internal wiring or connections while this machine is operating.
- Turn power off before servicing.

B93110060

P/N B9531100604



WARNING

DIESEL FUEL can cause fire or explosion.

- Stop engine before fueling.
- Keep cigarettes, sparks and flame away.

B90450000

P/N B9504500004

CIRCUIT BREAKER
S-3031

P/N 08406 24504

PILOT LAMP
S-3033

P/N 0840624704

WHISPERWATT 220



MQ POWER CORP.
WHISPERWATT 220
220 KVA AC GENERATOR
MODEL DCA-220SSK

C16110160

P/N C0561103403

WATER • OIL CHECK AND FILL DAILY
C05100040

P/N C0551000404

DIESEL FUEL
S-1756


P/N 1320620904

SUPPORT HOOK

Never use it for lifting the unit.
 Use the LIFT HOOK on the roof for lifting.

S-2257

P/N 13206 21504



S-3057

P/N 0840625902

DCA-220SSK SPECIFICATIONS

Table 7. Specifications					
Generator Specifications					
Model	DCA-220SSK				
Type	Revolving field, self ventilated, open protected type synchronous generator				
Armature Connection	Star with Neutral				
Phase	3				
Standby Output	242 KVA (193.6 KW)				
Prime Output	220 KVA (176 KW)				
Voltage	240V or 480V				
Frequency	60 Hz				
Speed	1800 rpm				
Power Factor	0.8				
Aux. AC Power	Single Phase, 60 Hz				
Voltage	120 V				
Output	4.8 KW (2.4 KW x 2)				
Engine Specifications					
Model	KOMATSU SA6D125E-2				
Type	4 Cycle, water-cooled, direct injection, turbo-charged				
No. of Cylinders	6 cylinders				
Bore x Stroke	4.9 in. x 5.9 in. (125 mm x 150 mm)				
Rated Output	273 HP/1800 rpm				
Displacement	671 cu. in. (11000 cc)				
Starting	Electric				
Coolant Capacity	11.1 gal. (42 liters)				
Lube Oil Capacity	10.4 gal. (40 liters)				
Fuel Consumption	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">12.3 gal(46.6L)/hr at full load</td> <td style="text-align: center;">9.4 gal(35.6L)/hr at 3/4 load</td> </tr> <tr> <td style="text-align: center;">6.5gal(24.6L)/hr at 1/2 load</td> <td style="text-align: center;">4.0gal(15.1L)/hr at 1/4 load</td> </tr> </table>	12.3 gal(46.6L)/hr at full load	9.4 gal(35.6L)/hr at 3/4 load	6.5gal(24.6L)/hr at 1/2 load	4.0gal(15.1L)/hr at 1/4 load
12.3 gal(46.6L)/hr at full load	9.4 gal(35.6L)/hr at 3/4 load				
6.5gal(24.6L)/hr at 1/2 load	4.0gal(15.1L)/hr at 1/4 load				
Battery	12V- 150 AH x 2				
Fuel	#2 Diesel Fuel				

DCA-220SSK FAMILIARIZATION

Generator

The MQ Power Model DCA-220SSK is a 176 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 Warning Lamp Module
- Engine Speed Switch
- Pre-Heat Button
- Pre-Heat Lamp
- Emergency Stop Button
- Battery Switch

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
- Pilot Lamp
- Microprocessor Engine Control Unit

Control Box

The "Control Box" is provided with the following:

- Main Circuit Breaker 600 amps
- Over-Current Relay
- High Idle Adjust Trimmer

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
- 3 Load Circuit Breakers 265V @65 amps
- 2 Load GFCI Circuit Breakers 265V @ 20amps

Control Box

The "Control Box" is provided with the following:

- Main Circuit Breaker 600 amps
- Over-Current Relay
- High Idle Adjust Trimmer

Open Delta Excitation System

The DCA-220SSK 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.

Microprocessor Controlled Alarm System

The DCA-220SSK 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-220SSK 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.

Engine

The **DCA-220SSK** is powered by a 4 cycle, water cooled, turbocharged KOMATSU Model SA6D125E-2 *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 Multiquip'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-220SSK generator are addressed on the following pages.

Electronic Governor System

The electronic governor system replaces the standard mechanical governor system. The frequency regulation improves from $\pm 3.0\%$ regulation with the mechanical governor to $\pm 0.25\%$ regulation with the electronic governor system.

Jacket Water Heater

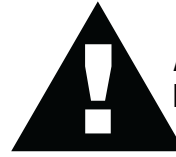
The jacket water heater is a 1500-watt heater designed to keep the coolant warm in the engine block for fast starts and load acceptance. The heater is thermostatically controlled and once an acceptable engine temperature is achieved it will cycle on and off, operating only about 1/3 of the time, which 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 properly.

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.

DCA-220SSK — WATER SEPARATOR FILTER (OPTIONAL)

Water Separator Filter

The DCA-220SSK generator may be equipped with a "Water Fuel Separator". This unit is designed to prevent dirt, rust, algae, varnishes and water from entering the fuel system.

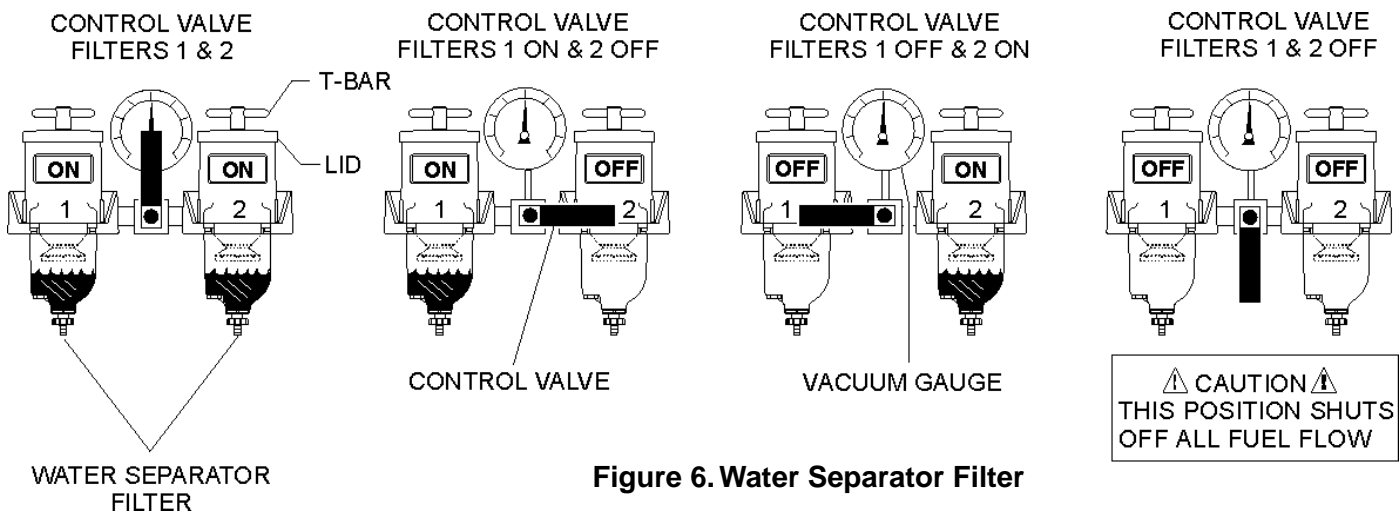
This water separator system is designed around two filters connected in parallel (Figure 6). These two filters can be configured in a variety of ways to filter water from the fuel system.

For best results it is best to have both filters active (ON) at the same time or use only one filter, and use the other filter as a reserve, that way you can use the filters alternately every time the filter element is replaced.

CAUTION:



DO NOT turn the control valve while the generator is in operation. This may stop fuel flow to the generator if both filters are set to the OFF position.

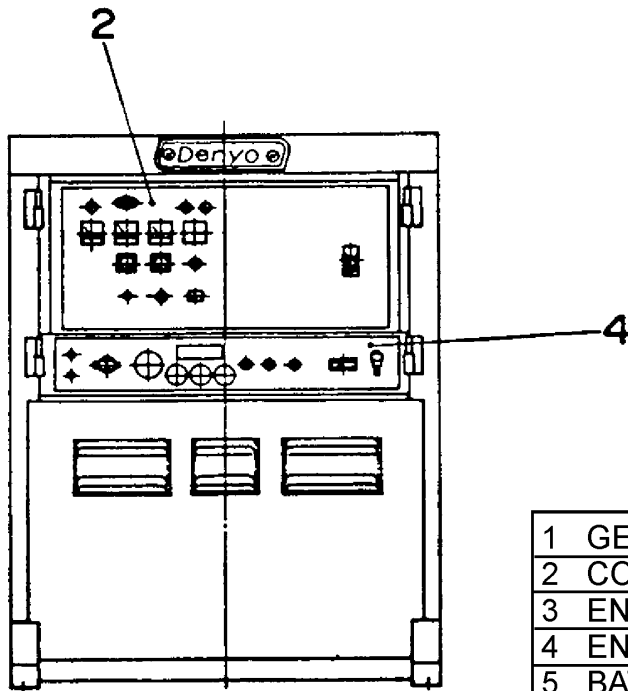
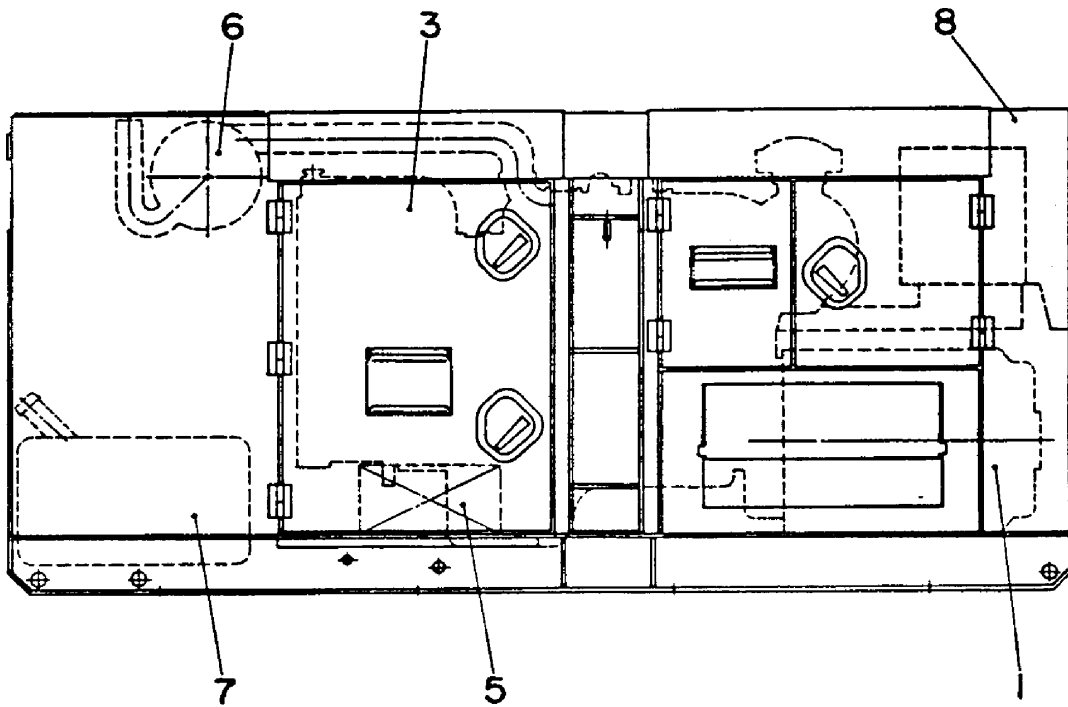


Collection Bowl Water Drainage

Inspect or drain the water in the collection bowl daily. The collection bowl must be drained before contaminants reach the bottom of the turbine.

To drain the collection bowl perform the following:

1. Open the self-venting drain to evacuate contaminants with a suitable collection container in place.
2. Prime the unit by removing the filter lid and filling with clean fuel.
3. Replace the filter lid and snugly tighten the T-handle by hand only.

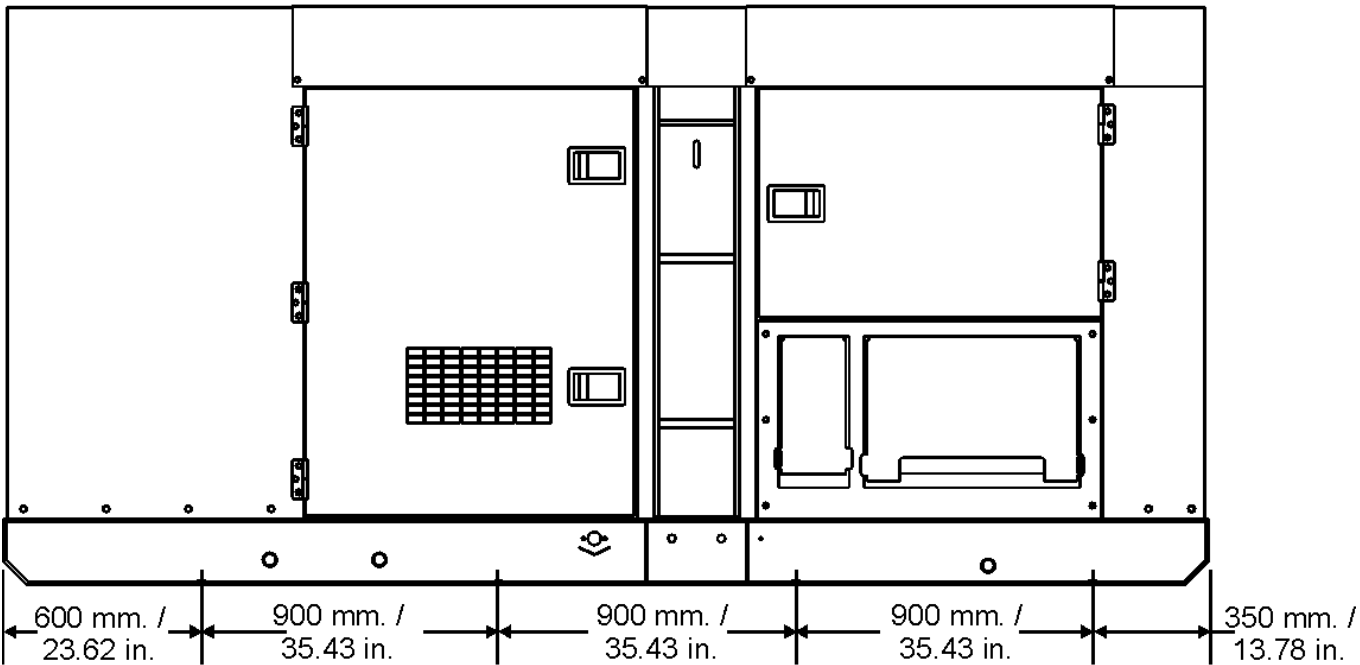


1	GENERATOR ASSEMBLY
2	CONTROL BOX ASSEMBLY
3	ENGINE & RADIATOR ASSEMBLY
4	ENGINE OPERATING PANEL ASSEMBLY
5	BATTERY ASSEMBLY
6	MUFFLER ASSEMBLY
7	FUEL TANK ASSEMBLY
8	ENCLOSURE ASSEMBLY

Figure 7. Major Components

DCA-220SSK — DIMENSIONS (TOP AND SIDE)

SIDE VIEW



(BOLT HOLE LOCATION)

TOP VIEW

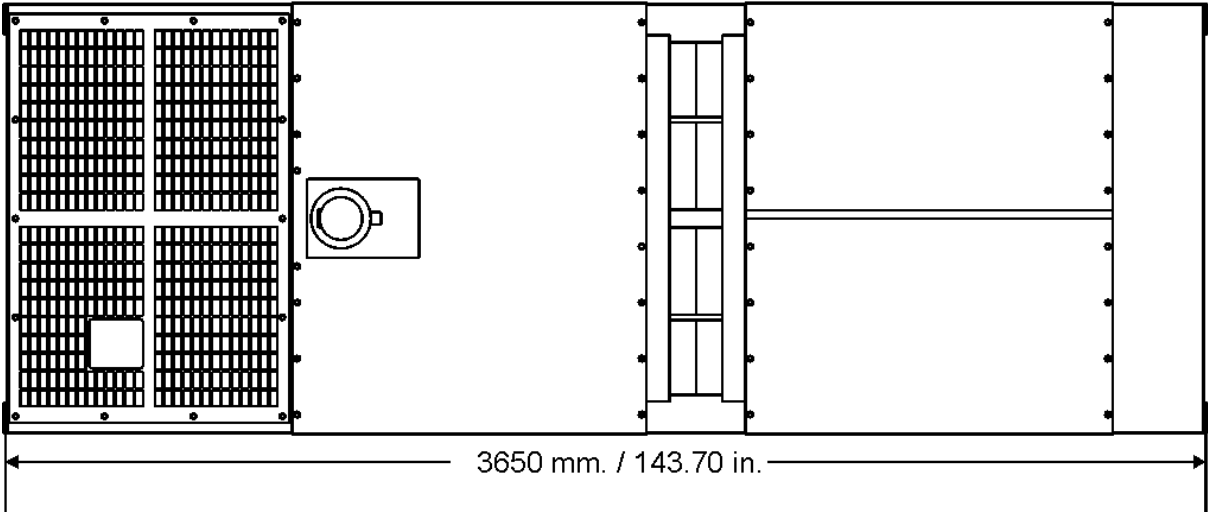


Figure 8a. Dimensions

DCA-220SSK — DIMENSIONS (FRONT AND REAR)

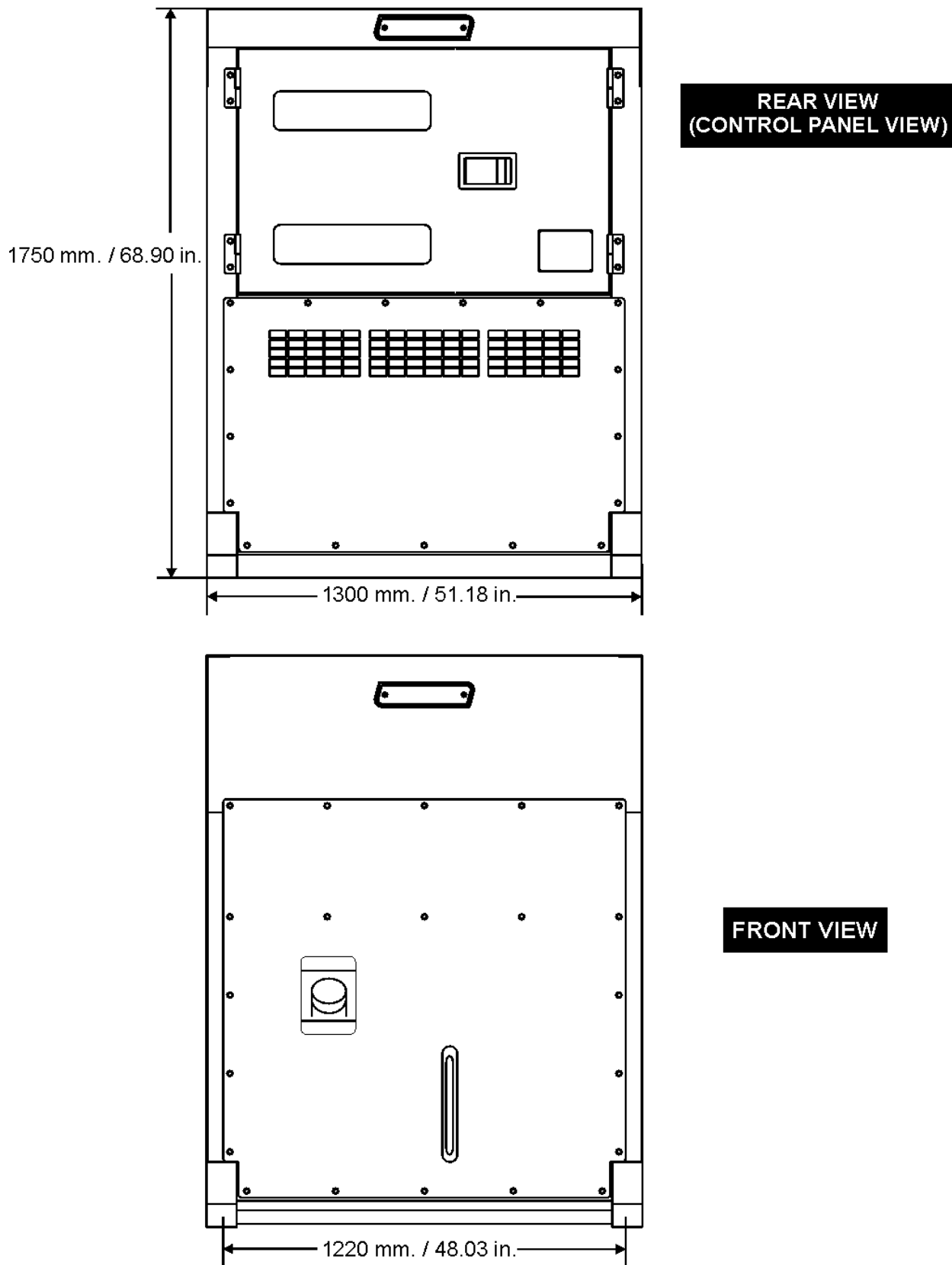
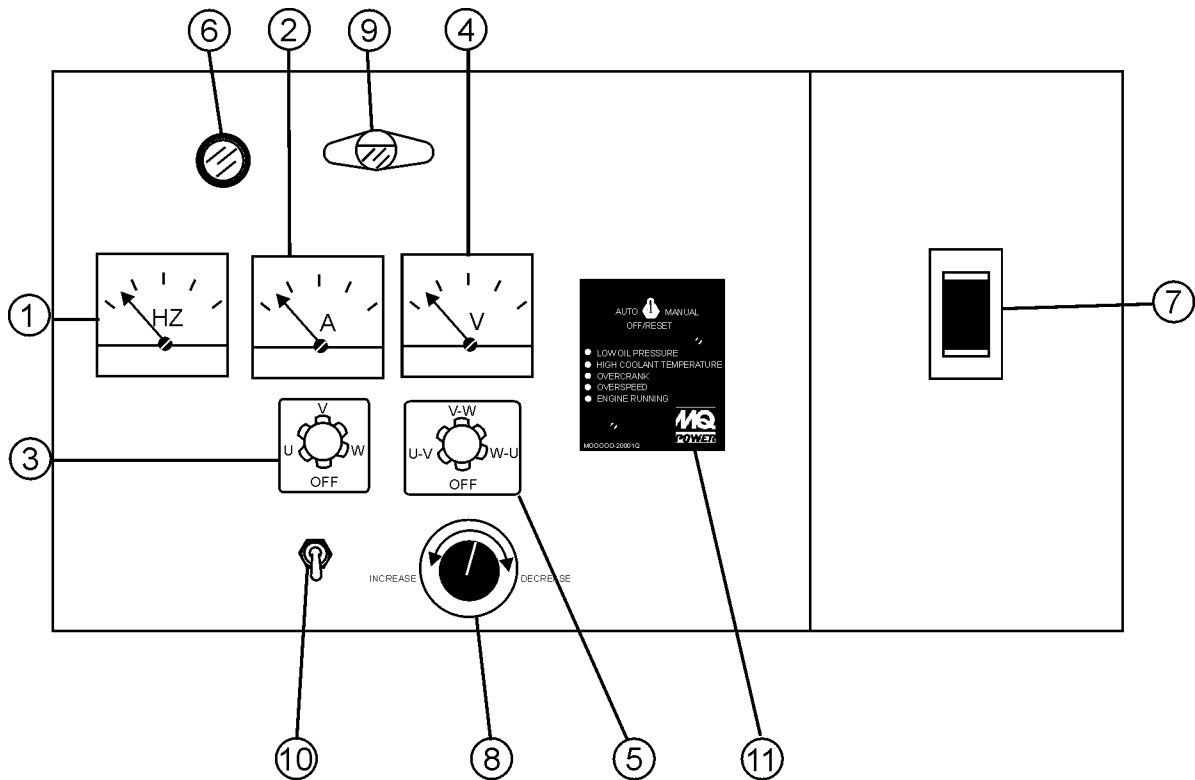


Figure 8b. Dimensions



1	FREQUENCY METER
2	AC AMMETER
3	AMMETER CHANGE-OVER SWITCH
4	AC VOLTMETER
5	VOLTMETER CHANGE-OVER SWITCH
6	PILOT LAMP
7	CIRCUIT BREAKER
8	VOLTAGE REGULATOR
9	PANEL LIGHT
10	PANEL LIGHT SWITCH
11	MICROPROCESSOR ENGINE CONTROL (MPEC)

Figure 9. Control Panel

The definitions below describe the controls and functions of the DCA-220SSK " **Control Panel** " (Figure 9).

1. **Frequency Meter** – Indicates the output frequency in hertz (Hz). Normally 60 Hz \pm 1 Hz .
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. **AC Voltmeter** – Indicates the single phase output voltage present at the UVW terminals.
5. **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.
6. **Pilot Lamp** – Indicates that the generator is working properly.
7. **Main Circuit Breaker** – This three-pole, 600 amp main breaker is provided to protect the UVW voltage output terminals from overload.
8. **Voltage Regulator Control** – Allows manual adjustment of the generator's output voltage.
9. **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.
10. **Panel Light Switch** – When activated will turn on control panel light.
11. **MPEC – Microprocessor Engine Control Module – (MPEC)** has a vertical row of status LED's (Figure 10), 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 if the fault is major will shutdown the generator. **Figure 10. MPEC Module**



If the engine does not engage (start) by the third attempt, the engine will be shutdown by the MPEC's " Over Crank Protection" mode. If the engine engages at a speed (RPM's) that is not safe, the MPEC will shutdown the engine by initializing the "Over Speed Protection" mode.

Also the MPEC will shutdown 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.

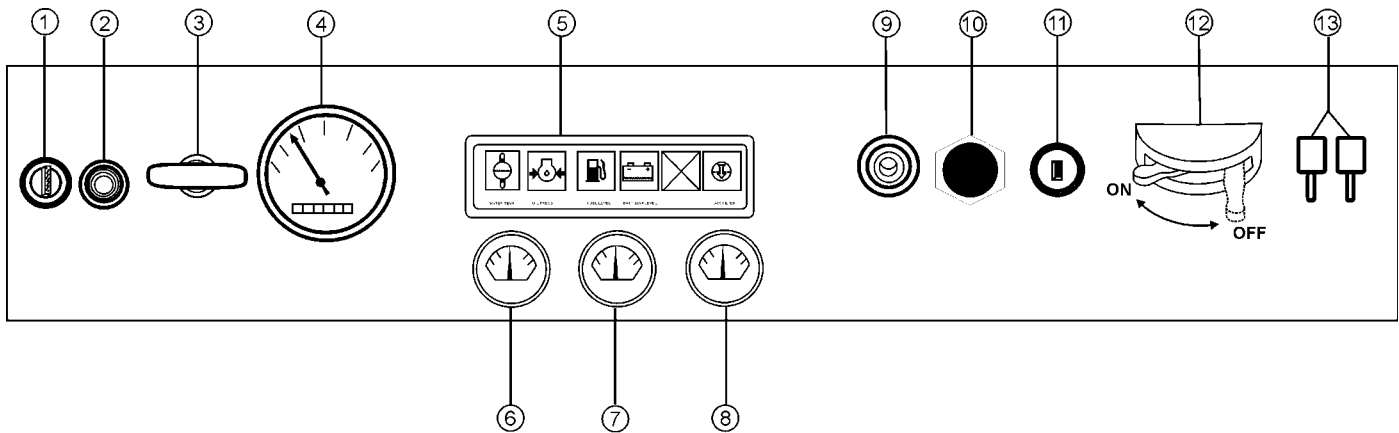
D. Overcrank Shutdown – Indicates the unit has attempted to start a pre-programmed number of times, and has failed to start. The number of cycles and duration are programmable. Typical programmable start settings is 3 cycles with a 10 second duration .This is considered a *major* fault.

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.

During *cranking cycle* , The MPEC will attempt to crank the engine for 10 seconds before disengaging.

DCA-220SSK — ENGINE OPERATING PANEL



1	ENGINE SPEED SWITCH
2	CAUTION LAMP
3	ENGINE THROTTLE
4	TACHOMETER
5	ENGINE WARNING DISPLAY LED
6	OIL PRESSURE GAUGE
7	WATER TEMPERATURE GAUGE
8	AC AMMETER GAUGE
9	PREHEAT LAMP
10	EMERGENCY STOP BUTTON
11	STARTER SWITCH
12	BATTERY SWITCH
13	AIR CLEANER INDICATOR

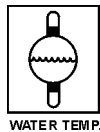
Figure 11. Engine Operating Panel

DCA-220SSK — ENGINE OPERATING PANEL

The definitions below describe the controls and functions of the DCA-220SSK " **Engine Operating Panel** "(Figure 11).

1. **Engine Speed Switch** – This switch controls the constant speed of the engine.
2. **Caution Lamp** - This light indicates the generator is running.
3. **Throttle Handle** - This handle controls the speed of the engine (low or high).
4. **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.
5. **Engine Warning Display Module** – This module display's the following engine failures:

A. **Overheat Lamp** – This lamp goes ON when the cooling water temperature rises abnormally. If the lamp goes ON during normal operation of the generator, the emergency shutdown device will stop the engine automatically.



B. **Low Oil Pressure Lamp** – During normal operation of the generator this lamp should remain OFF. When the Auto-OFF/Reset-Manual switch is set to the "Manual" position to start the engine, the lamp will be lit. After the oil pressure rises after start-up the lamp will go OFF. If this lamp is ever lit (ON) during normal operation of the generator, the emergency shutdown device will stop the engine automatically.



C. **Low Fuel Level Lamp** – When this lamp is ON, it is time to stop the engine and add fuel. Remember to let the engine cool before adding fuel.



D. **Low Battery Fluid Lamp** – This lamp goes ON when the battery fluid is low. If this lamp goes ON during normal operation of the generator, stop the engine and fill the battery with distilled water to the specified level.



E. **Clogged Air Filter Lamp** – This lamp goes ON when the air filter is clogged. If this lamp goes ON during normal operation of the generator, stop the engine and replace the air filter.



6. **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.

7. **Water Temperature Gauge** – During normal operation this gauge be should read in the "GREEN" zone.

8. **Charging Ammeter Gauge** – Indicates the current being supplied by the engine's alternator which provides current for generator's control circuits and battery charging system.

9. **Pre-Heat Lamp** – Indicates that the glow plugs of the diesel engine are hot and the engine is ready to be started.

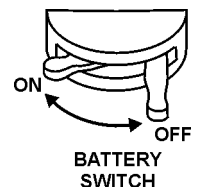


10. **Emergency Stop Button** – Push this button inward to stop the engine in the event of an emergency. **DO NOT** use this button as a means of stopping the engine.



11. **Starter Switch** - This turns the generator on or off. (The generator is not equipped with this feature if has MPEC (see Control Panel).

12. **Battery Switch** – This switch should be set to the ON position during normal operation. When the engine has been stop, place this switch in the OFF position. **DO NOT** turn this switch during normal operation, it could cause damage to the electrical equipment.



13. **Air Cleaner Indicator** - Indicates the air filter needs replacement.



DCA-220SSK — OUTPUT TERMINAL PANEL OVERVIEW

OUTPUT TERMINAL FAMILIARIZATION

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

- Three 120/240V output receptacles, 50 amp
- Two 120V input receptacles, 20 amp
- 3 Load Circuit Breakers 250V @50 amps
- 2 Load GFCI Circuit Breakers 120V@ 20amps

Control Box

The "Control Box" is provided with the following:

- Main Circuit Breaker 600 amps
- Over-Current Relay

Output Terminal Panel

The Output Control Panel (See Figure 16) is located on the right hand side (left from control panel) of the generator. The UVW lugs are protected by a face plate cover that can be secured in the close position by a pad lock. (See Figure 12).

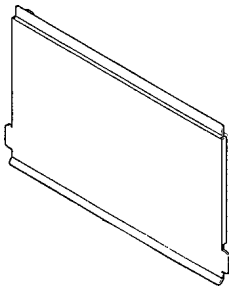


FIGURE 12. Output Terminal Cover

120 Volt Receptacle

Two GFCI Duplex Nema 5-20R (120V, 20 Amp) receptacle is provided on the output terminal. This receptacle can be used anytime the generator is in operation. The receptacle is controlled by the circuit breaker located on the control panel.

Pressing the reset button resets the receptacle after being tripped. Pressing the "Test Button" (See Figure 13) in the center of this receptacle will check the GFCI function. The receptacle should be tested at least once a month.

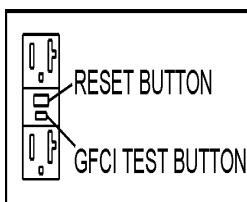


FIGURE 13. GFCI Test Button

Connecting Load

Loads can be connected to the generator by the UVW Lugs or the convenience receptacles. (See Figure 14). Make sure to read the operation manual before attempting to connect a load to the generator.

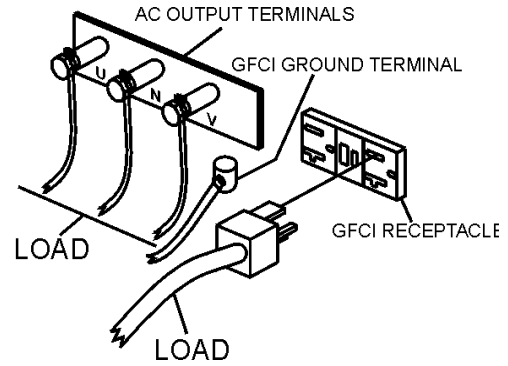


FIGURE 14. Connecting Load

Circuit Breakers

To protect the generator from an overload, a 3-pole, 600 amp, **main** circuit breaker is provided to protect the UVW 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.

Maximum Output

The entire load connected to the UVW Lugs, all four slots in the duplex receptacles, and the must not exceed 88 kW in standby or 80 kW in prime output.

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. Place the voltmeter change-over switch to the U-W position and the ammeter change-over switch to the U or W to read the output.

DCA-220SSK — OUTPUT TERMINAL PANEL OVERVIEW

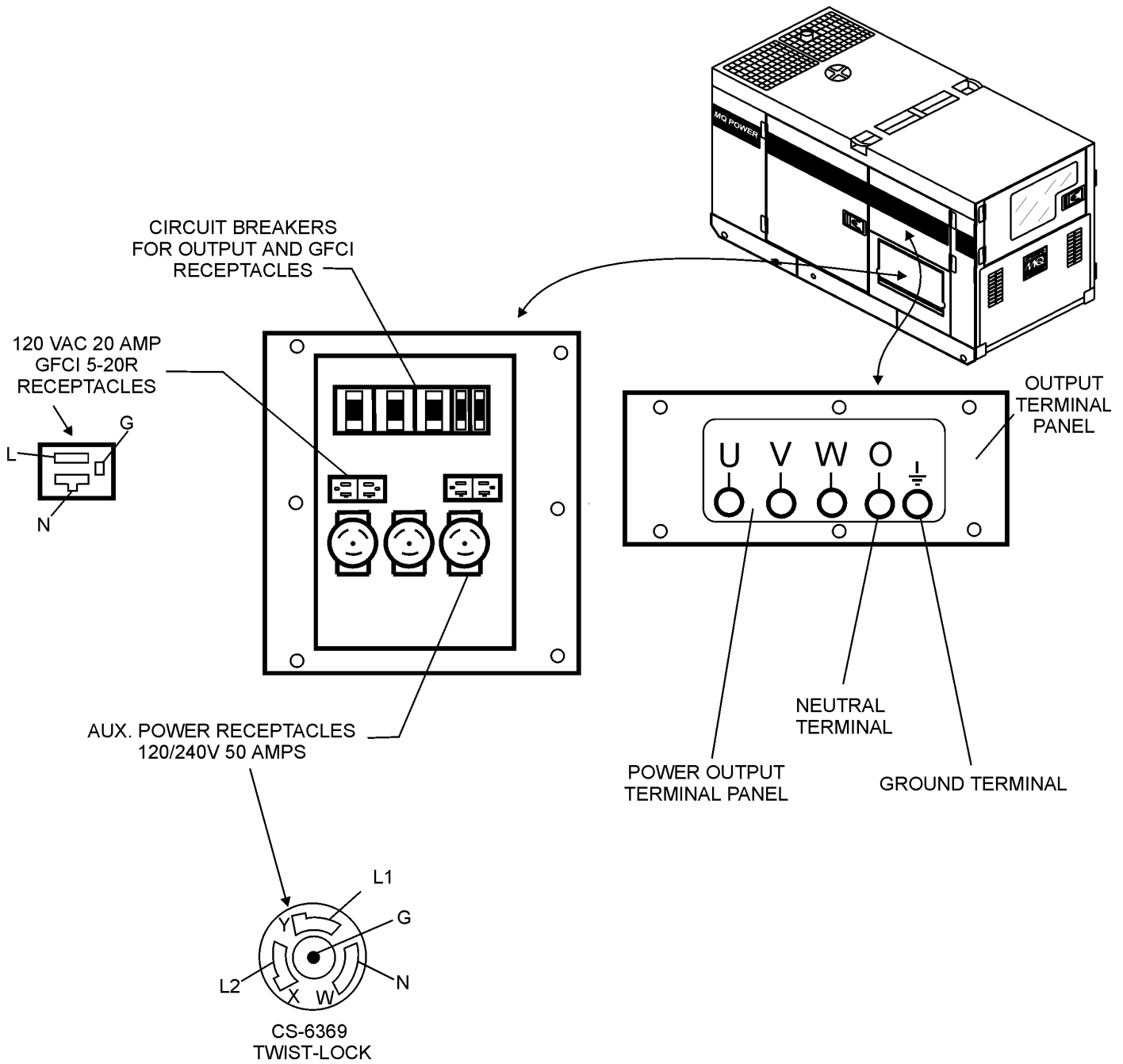


FIGURE 15. Output Terminal Panel

DCA-220SSK — OUTPUT TERMINAL PANEL OVERVIEW

Output Terminal Panel Available Voltages

A wide range of voltages are available to supply load to many different applications. Voltages may be selected by using the voltage selector switch and how you hookup your hard wire connection to the generator. To obtain some of the voltages listed, fine adjustment with the Voltage Regulator on the control panel is necessary. See the table below (Table 8) for a list of available voltages the generator is able to supply.

	208 VOLT	220 VOLT	240 VOLT	416 VOLT	440 VOLT	480 VOLT
3 Phase Voltage (Reconnectable)						
Single Phase (Adjustable)	120 VOLT	127 VOLT	139 VOLT	240 VOLT	254 VOLT	277 VOLT

Voltage Selector Switch

The voltage selector switch is located above the UVWO Hard Wire Hookup Panel. It has been provided for ease of voltage selection.

CAUTION :



NEVER switch Voltage Selector Switch position while the engine is engaged.

Voltage Selector Switch Locking Button

The voltage selector switch has a locking button to protect the generator and generator load from being switched while the engine is running. To lock the Voltage Selector Switch, press in the red button located on the Voltage Selector Switch, and use a pad lock to hold it into this position (See Figure 17, page 37).

Over Current Relay

An over current relay is connected to the circuit breaker. In an over current situation, both the circuit breaker and the over current relay may trip. If the circuit breaker can not be reset, the reset button on the over current relay must be pressed. The over current relay is located in the control box.

Maximum Amps

The following table show the maximum amps the entire generator can provide. Do not exceed the maximum amps listed (See Table 9 below).

Rated Voltage	Maximum Amps
Single Phase 120 Volt	488.9 amps (4 wire)
Single Phase 240 Volt	244.4 amps (4 wire)
Three Phase 240 Volt	529.3 amps
Three Phase 480 Volt	264.6 amps

DCA-220SSK — OUTPUT TERMINAL PANEL OVERVIEW

How to read the output terminal gauges.

The gauges and knobs on the control panel **DO NOT** effect the generator output in any fashion. They are there to simply help the operator observe how much power is being supplied produced at the UVWO legs.

When the Voltage selector switch is in the 240/120V position (see Figure 16), place the AC Voltmeter Change-over switch to the W-U position and the AC ammeter Change-over Switch to the U or W position to read the output on the selected leg.

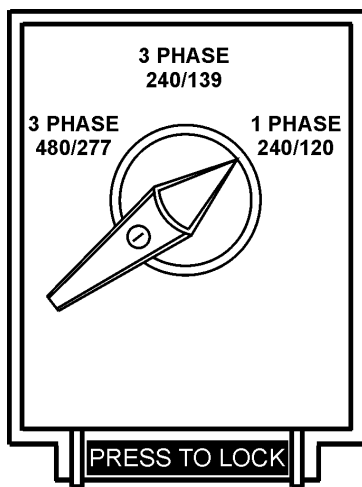


FIGURE 16. Voltage Selector Switch 240/120V Single Phase Position

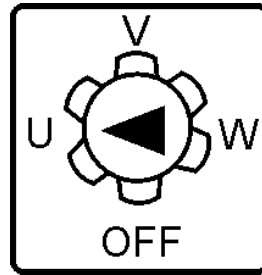


FIGURE 19. AC Ammeter Change-over Switch (Reading the U leg on the output terminal panel)

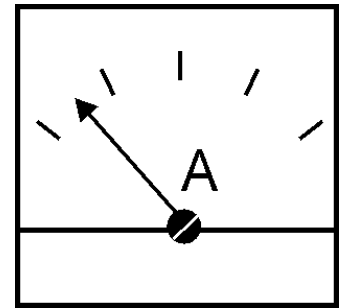


FIGURE 20. AC Ammeter (Amp reading on U lug)

NOTE

When using plural single phase voltages, make sure to balance the load on each of the single phase legs.

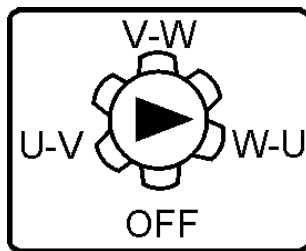


FIGURE 17. AC Voltmeter Change-over switch (Reading the W-U leg on the output terminal panel)

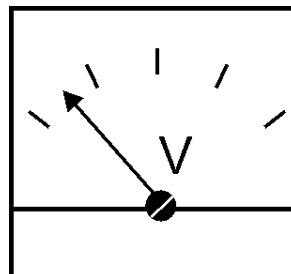


FIGURE 18. AC Voltmeter Gauge (Volt reading on W-U Lug)

DCA-220SSK — OUTPUT TERMINAL PANEL OVERVIEW

240/120V Hard Wire Hookup

The output terminal panel, when supplying single phase 120 volts, will provide three legs available with 222.2 amps each on three different circuits. (See Figure 23 below.) The voltage selector switch must be set at the single phase 240/120V position.

The output terminal panel, when supplying single phase 240 volts, will provide one leg only with 111.1 amps available. (See Figure 22 below.) The voltage selector switch must be set at the single phase 240/120V position.

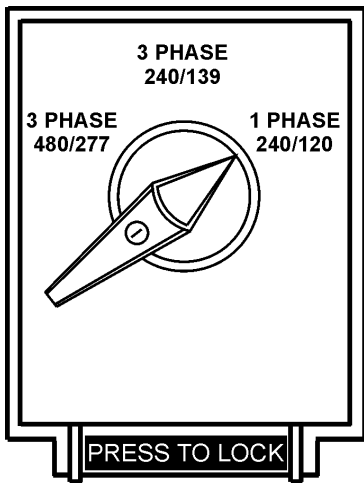


FIGURE 21. Voltage Selector Switch 240/120V Single Phase Position

480/240V Hard Wire Hookup

The output terminal panel, when supplying three phase 240 volts, will provide one circuit available at 241 amps with any two wires plus the ground. (See Figure 24 below.) The voltage selector switch must be set at the three phase 480/277V position.

The output terminal panel, when supplying 3 phase 480 volts, will provide one circuit available at 120 amps available with all three wires plus ground. (See Figure 23 below.) The voltage selector switch must be set at the three phase 480/277V position.

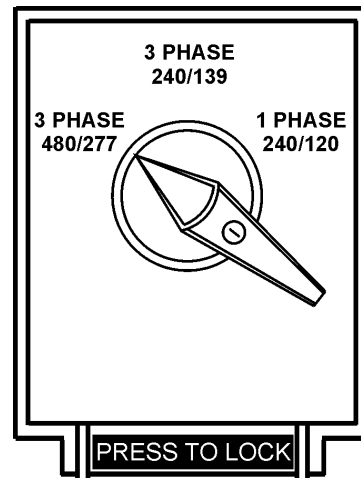


FIGURE 23. Voltage Selector Switch 480/277V Three Phase Position

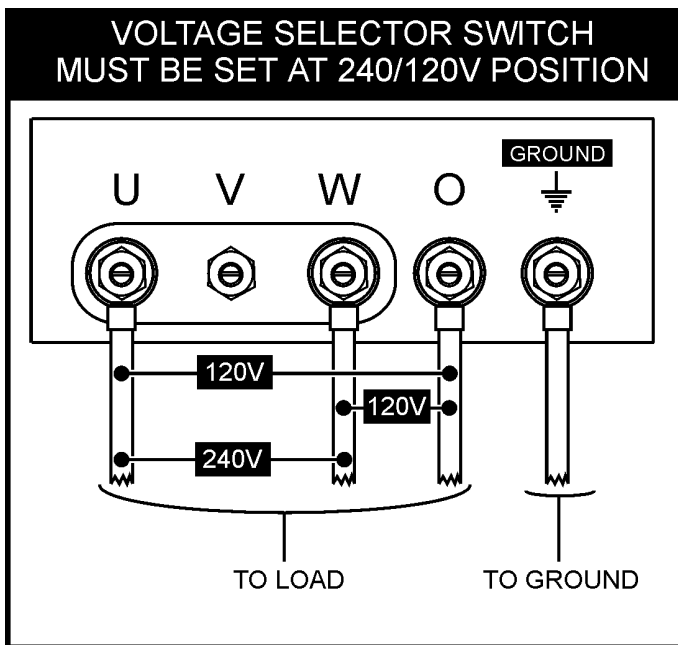


FIGURE 22. Hard Wire Hookup at 240/120V Position

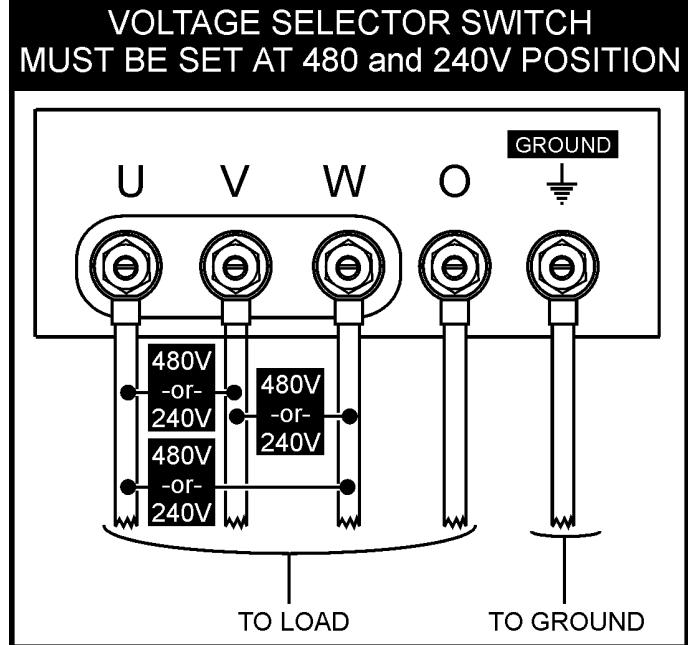


FIGURE 24. Hard Wire Hookup at 480/240V Position

DCA-220SSK — OUTPUT TERMINAL PANEL OVERVIEW

Voltage Selector Switch- 3 Phase 480/277V Position

The following are additional voltages available when the voltage selector switch is in the 3 phase 480/277V position. (See figure 25 below.)

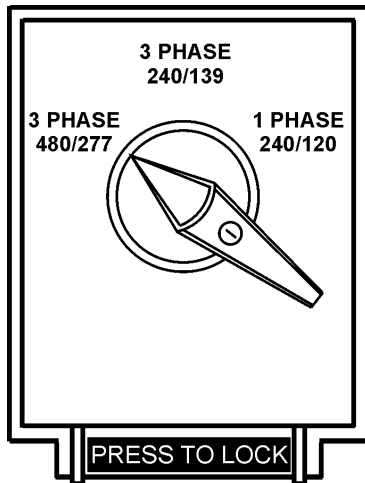


FIGURE 25. Voltage Selector Switch 480/277V Single Phase Position

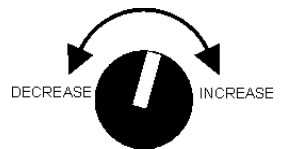


FIGURE 26. Voltage Selector Switch 270/120V Single Phase Position

3 Phase, 480V, 440V, or 416 Volt

The following connection, with the voltage selector switch locked into the 3 phase 480/277V position (See Figure 26), can offer **THREE PHASE** power at 480V, 440V, or 416V. After hooking up the hard wires to the lugs as shown in figure 28 below, 480V will be the voltage with the Voltage Regulator Knob turned toward maximum. 440 volt will be reached when the Voltage Regulator Knob is turned down, and 416 volt when the Voltage Regulator Knob is toward the lowest setting (See Figure 26).

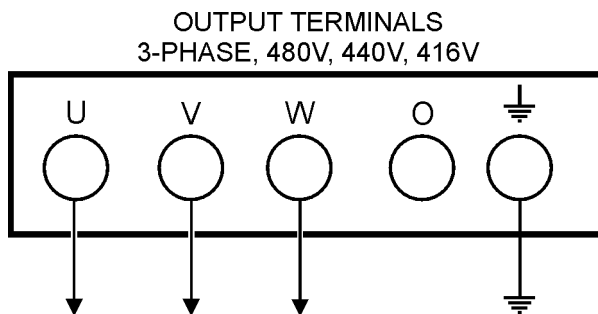


FIGURE 27. Hard Wire Hookup for Three Phase 480V, 440V, or 416V

Single Phase: 480V, 440V, or 416 Volt

The following connection, with the voltage selector switch locked into the 3 phase 480/277V position (See Figure 25), can offer **SINGLE PHASE** power at 480V, 440V, or 416V. After hooking up the hard wires to the lugs as shown in Figure 28 below, 480V will be the voltage with the Voltage Regulator Knob turned toward maximum. 440 volt will be reached when the Voltage Regulator Knob is turned down, and 416 volt when the Voltage Regulator Knob is toward the lowest setting (See Figure 26).

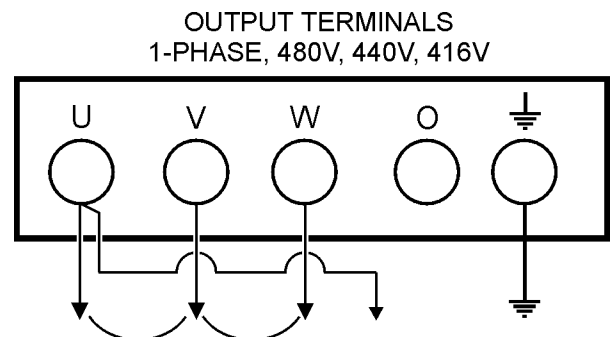


FIGURE 28. Hard Wire Hookup for Single Phase 480V, 440V, or 416V

Single Phase: 277V, 254V, or 240V

The following connection, with the voltage selector switch locked into the 3 phase 480/277V position (See Figure 26), can offer **SINGLE PHASE** power at 277V, 254V, or 240V. After hooking up the hard wires to the lugs as shown in Figure 29 below, 277V will be the voltage with the Voltage Regulator Knob turned toward maximum. 254 volt will be reached when the Voltage Regulator Knob is turned down, and 240 volt when the Voltage Regulator Knob is toward the lowest setting (See Figure 26).

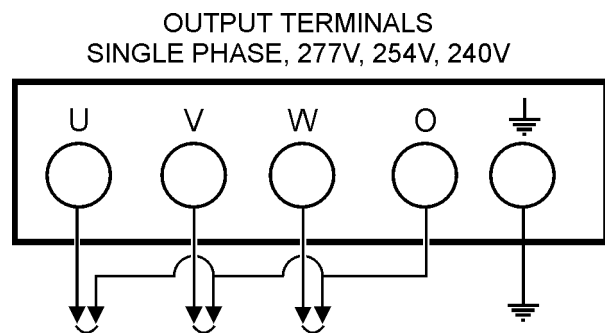


FIGURE 29. Hard Wire Hookup for Single Phase 277V, 254V, or 240V

DCA-220SSK — OUTPUT TERMINAL PANEL OVERVIEW

Voltage Selector Switch- 3 Phase 240/139V Position

The following are additional voltages available when the voltage selector switch is in the 3 phase 240/139V position. (See Figure 30 below.)

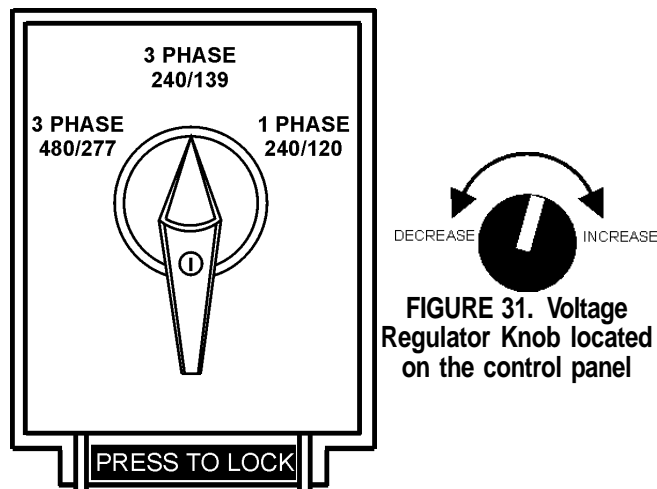


FIGURE 31. Voltage Regulator Knob located on the control panel

FIGURE 30. Voltage Selector Switch 240/139V Three Phase Position

3 Phase, 240V, 220V, or 208 Volt

The following connection, with the voltage selector switch locked into the 3 phase 240/139V position (See Figure 30), can offer **THREE PHASE** power at 270V, 220V, or 208V. After hooking up the hard wires to the lugs as shown in Figure 32 below, 240V will be the voltage with the Voltage Regulator Knob turned toward maximum. 220 volt will be reached when the Voltage Regulator Knob is turned down, and 208 volt when the Voltage Regulator Knob is toward the lowest setting (See Figure 31).

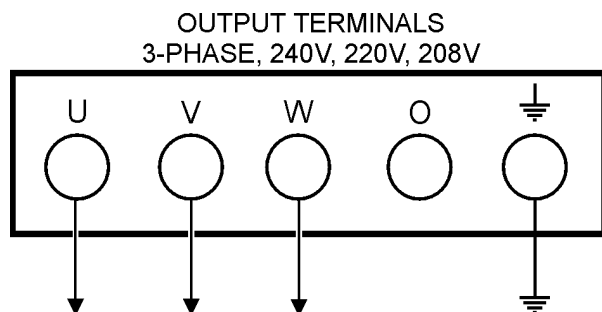


FIGURE 32. Hard Wire Hookup for Three Phase 240V, 220V, or 208V

Single Phase: 240V, 220V, or 208 Volt

The following connection, with the voltage selector switch locked into the 3 phase 240/139V position (See Figure 30), can offer **SINGLE PHASE** power at 240V, 220V, or 208V. After hooking up the hard wires to the lugs as shown in Figure 33 below, 240V will be the voltage with the Voltage Regulator Knob turned toward maximum. 220 volt will be reached when the Voltage Regulator Knob is turned down, and 208 volt when the Voltage Regulator Knob is toward the lowest setting (See Figure 31).

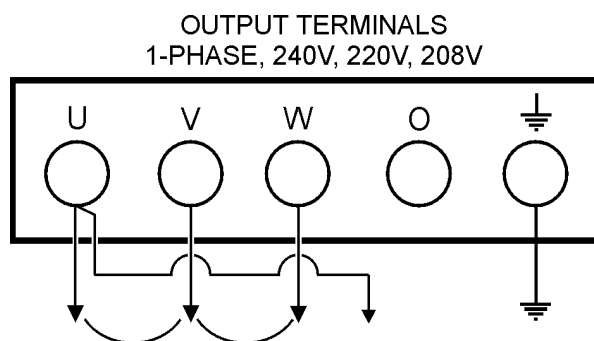


FIGURE 33. Hard Wire Hookup for Single Phase 240V, 220V, or 208V

Single Phase: 139V, 127V, or 120V

The following connection, with the voltage selector switch locked into the 3 phase 240/139V position (See Figure 30), can offer **SINGLE PHASE** power at 139V, 127V, or 120V. After hooking up the hard wires to the lugs as shown in Figure 34 below, 139V will be the voltage with the Voltage Regulator Knob turned toward maximum. 127 volt will be reached when the Voltage Regulator Knob is turned down, and 120 volt when the Voltage Regulator Knob is toward the lowest setting (See Figure 31).

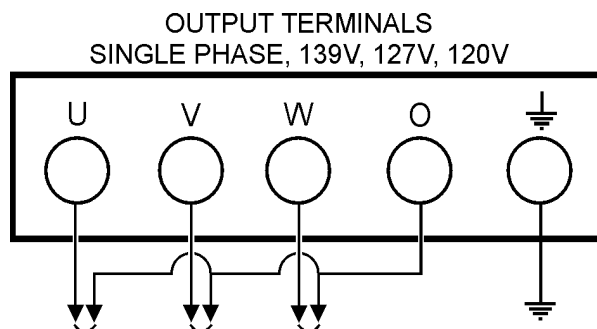


FIGURE 34. Hard Wire Hookup for Single Phase 139V, 127V, or 120V

DCA-220SSK — OUTPUT TERMINAL PANEL OVERVIEW

Voltage Selector Switch- Single Phase 240/120V Position

The following are additional voltages available when the voltage selector switch is in the single phase 240/120V position. (See Figure 35 below)

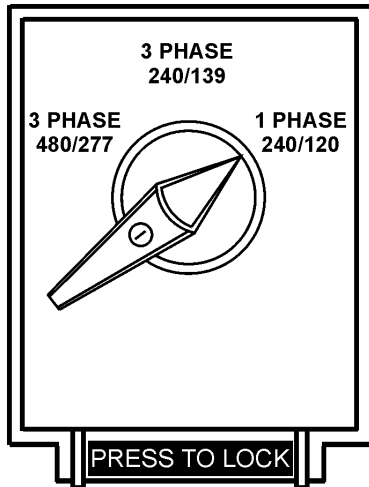


FIGURE 35. Voltage Selector Switch 240/120V Single Phase Position



FIGURE 36. Voltage Regulator Knob located on the control panel

Single Phase: 120 Volt

The following connection, with the voltage selector switch locked into the single phase 240/120V position (See Figure 35), will offer **SINGLE PHASE** power at 120V. After hooking up the hard wires to the lugs as shown in Figure 38 below, use the Voltage Regulator Knob to fine tune to 120V. (See Figure 36).

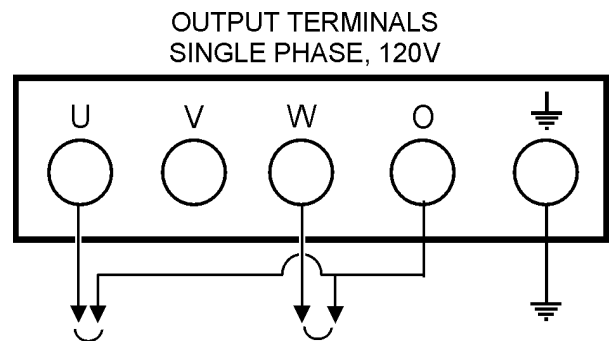


FIGURE 38. Hard Wire Hookup for Single Phase, 120 volt

Single Phase, 240 Volt

The following connection, with the voltage selector switch locked into the single phase 240/120V position (See Figure 35), will offer **SINGLE PHASE** power at 240V. After hooking up the hard wires to the lugs as shown in Figure 37 below, use the Voltage Regulator Knob to fine tune to 240V. (See Figure 36)

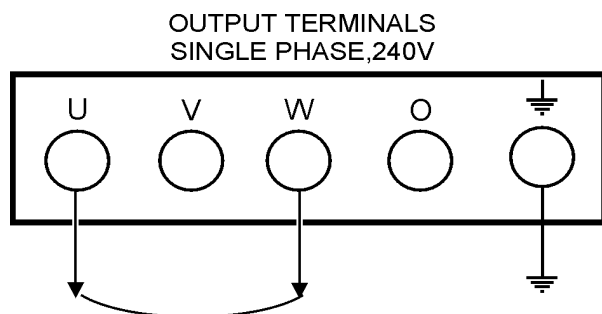


FIGURE 37. Hard Wire Hookup for Single Phase 240 volt

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 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 mm²) or larger.
 - b. Aluminum - 8 AWG (8.4 mm²) or larger.
2. When grounding the generator (Figure 39) 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.

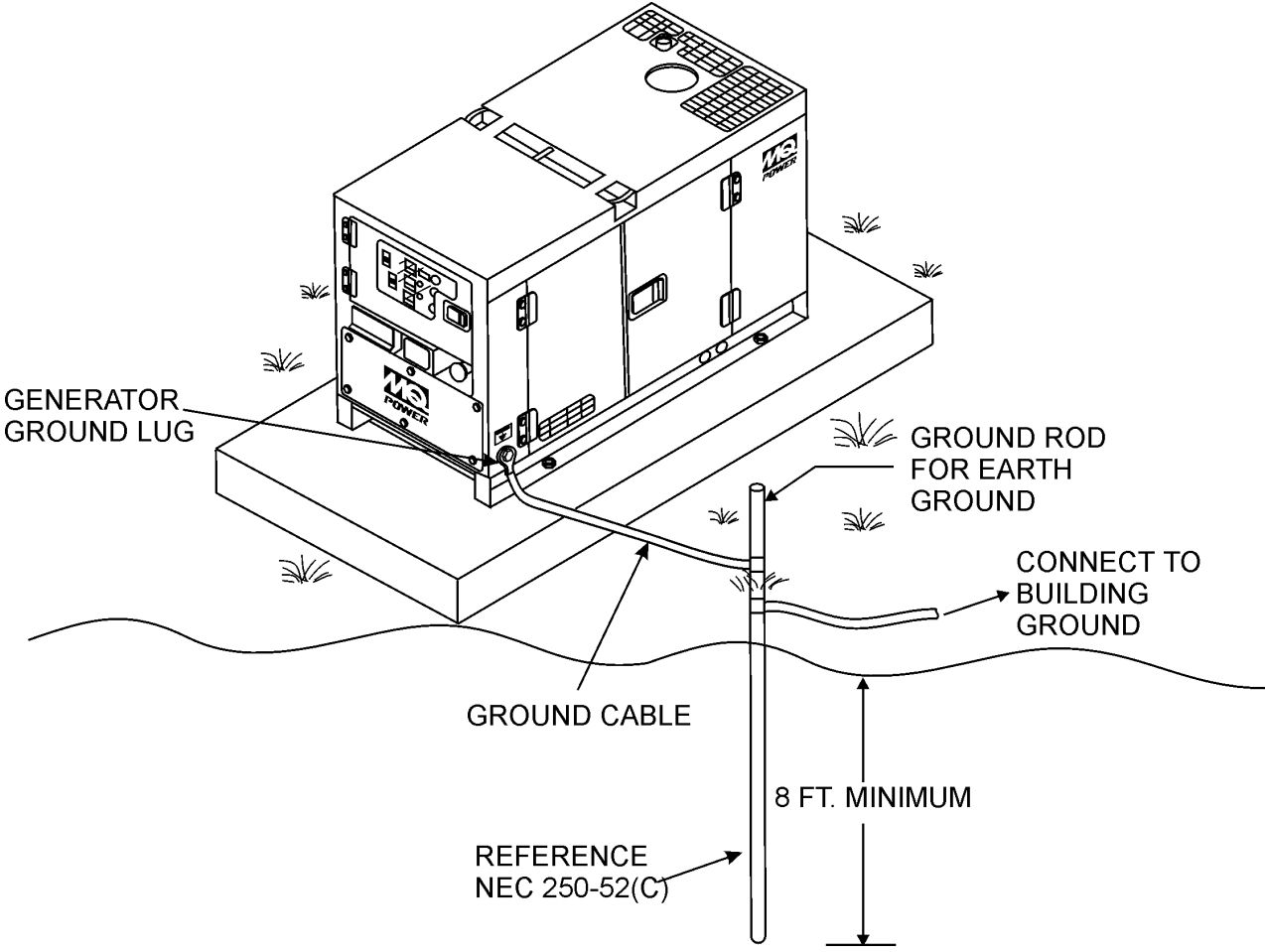


Figure 39. Typical Generator Grounding Application

General Inspection Prior to Operation

The DCA-220SSK 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 Cable Selection Guide (Table 10) as a guide for selecting proper cable size.

Circuit Breakers

To protect the generator from an overload, a 3-pole, 600 amp, **main** circuit breaker is provided to protect the UVW 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 10. 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 that the oil level is maintained between the two notches (Figure 39) on the dipstick. See Table 11 for proper selection of engine oil.

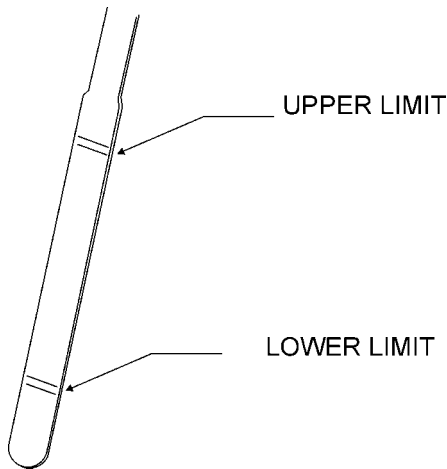


Figure 39. Engine Oil Dipstick

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 **Komatsu Engine Owner's Manual**.

Fuel

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

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 11. 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 12 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 12. Coolant Capacity

Engine and Radiator	11.1 Gal. (42.0 Liters)
Reserve Tank	2 Quarts (1.9 Liters)

Operation in Freezing Weather

When operating in freezing weather, be certain the proper amount of antifreeze (Table 13) has been added.

Table 13. 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 antifreeze is mixed with water, the antifreeze 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. See maintenance section for instruction to cleaning/replacing air cleaner.

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. See maintenance section on replacing belts. To adjust tension:

1. Insert a bar between alternator and the cylinder block to fix alternator in position. When fixing the alternator in position, insert a wooden block between the bar and alternator to prevent damage to the alternator.
2. Loosen bolts and nuts located on the alternator.
3. Move alternator with the bar so the deflection of the belt is approx. 8mm.
4. Tighten the bolt and nuts to fix the alternator back to position.

The fan belt tension is proper if the fan belt bends 7 to 10 mm (Figure 40) when depressed with the thumb as shown below.

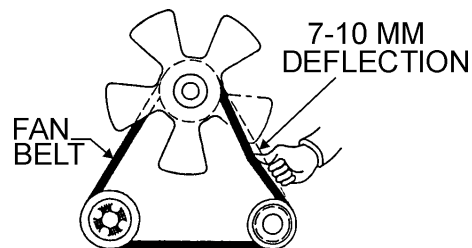


Figure 40. Fan Belt Tension

CAUTION :



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

Battery Cable Installation

ALWAYS be sure the battery cables (Figure 41) 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.

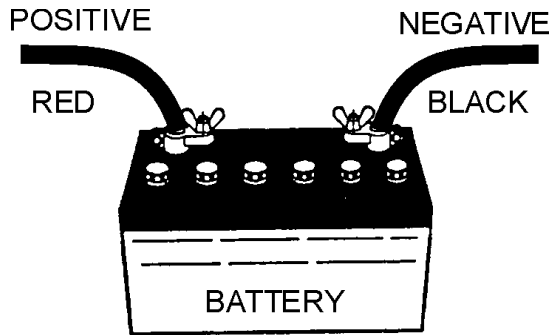


Figure 41. Battery Connections

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.

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 the battery is discharged 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 inhibit corrosion.

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.

$$\text{WATTS} = \text{VOLTAGE} \times \text{AMPERAGE}$$

The power factor of this generator is 1.0. See Table 14. below when connecting loads.

Table 14. 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, mercury 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:

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

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 9 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 the radiator cap is fastened securely.
4. Check the fuel level on the fuel gauge. If fuel is low, fill the fuel tank with clean fresh unleaded automotive diesel. If diesel spillage occurs, completely wipe up the spilled fuel 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 42) to the "OFF" position prior to starting the engine.

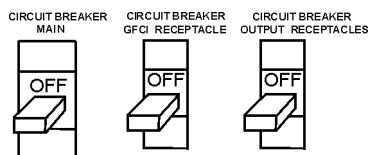


Figure 42. Main, GFCI and Load Circuit Breakers

Jacket Water Heater and Internal Battery Charger 120 VAC Output Receptacles (OPTIONAL)

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 19). 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.

DCA-220SSK — GENERATOR START-UP PROCEDURE (MANUAL)

2. Connect the load to the UVW terminals as shown in Figure 43. These terminals can be found on the output terminal panel, see page 35 Figure 15. To gain access to the output terminals lift the UVW cover. Make sure to tighten terminal nuts securely to prevent load wires from slipping out.

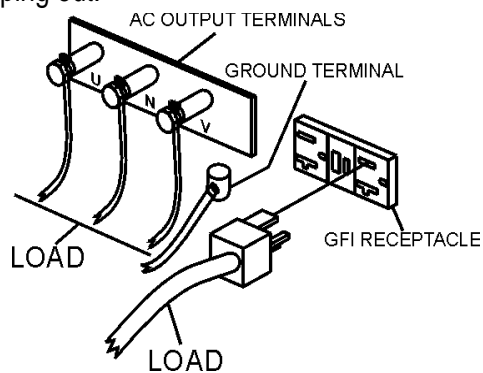


Figure 43. UVW Terminal Lugs (Load)

3. Connect the negative battery cable (BLACK) to the negative post on the battery (Figure 44).

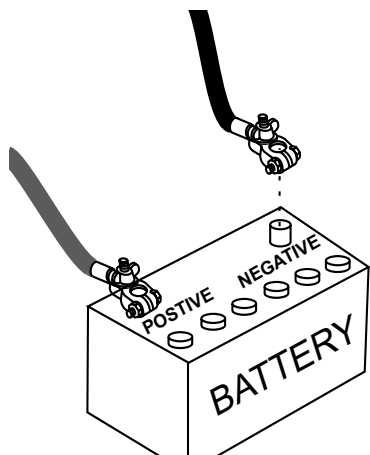
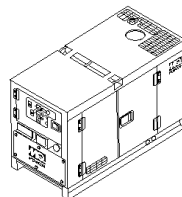
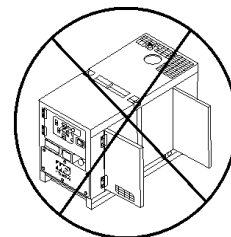


Figure 44. Battery Connections

4. Close all engine enclosure doors (Figure 45).



CORRECT



INCORRECT

Figure 45. Engine Enclosure Doors

5. Set the battery ON/OFF switch (Figure 46) to the ON position.

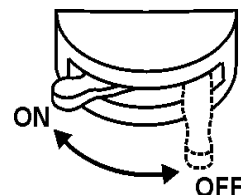


Figure 46. Battery ON/OFF Switch

6. When starting the generator in **COLD** weather conditions, press and hold the engine preheat button (Figure 47) until the preheat lamp (Figure 48) is lit (ON).



Figure 47. Engine Pre-Heat Button



Figure 48. Engine Pre-Heat Lamp

DCA-220SSK — GENERATOR START-UP PROCEDURE (MANUAL)

7. Place the Off/Manual/Auto switch (Figure 49) in the **MANUAL** position (down). Observe that the engine begins to crank.

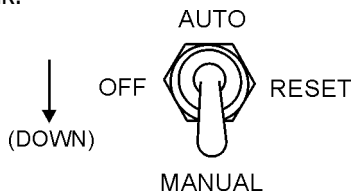


Figure 49. Off/Manual/Auto Switch (Manual)

8. After engine starts, verify that the "Engine Running" status LED (Figure 50) on the Microprocessor Engine Control Module (MPEC) display is "ON" (lit).

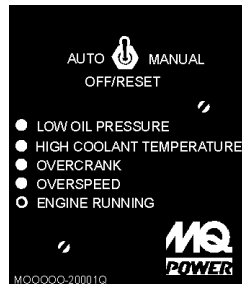


Figure 50. MPEC Engine Running Status LED

9. If the generator is equipped with a ignition switch, turn the key to "Start" position (Figure 51). Once the engine starts, release the key to the "on" position.

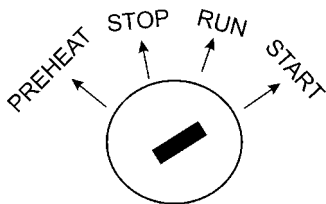


Figure 51. Engine Ignition Switch

10. The generator's frequency meter (Figure 52) displays the 60 cycle output frequency in **HERTZ**.

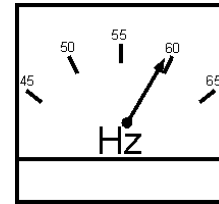


Figure 51. Frequency Meter (Hz)

11. The generator's voltage meter (Figure 52) displays the 120 VAC in **VOLTS**. If the voltage is not within the specified frequency tolerance, use the voltage adjustment control knob (Figure 53) to increase or decrease the desired voltage.

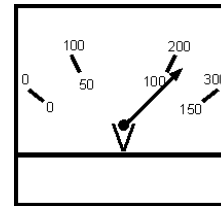


Figure 52. Voltage Meter (Volts)

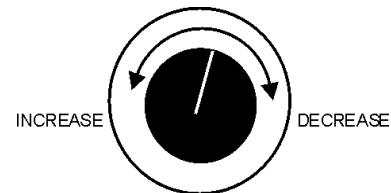


Figure 53. Voltage Adjust Control Knob

12. The ammeter (Figure 54) 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's alternator.

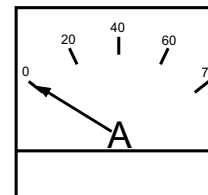


Figure 54. Ammeter (No Load)

DCA-220SSK — GENERATOR START-UP PROCEDURE (MANUAL)

13. The engine oil pressure gauge (Figure 55) will indicate the oil pressure (kg/ cm²) of the engine. Under normal operating conditions the oil pressure should be approximately 25 psi.

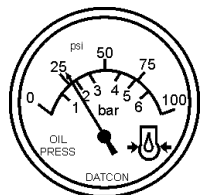


Figure 55. Oil Pressure Gauge

14. The coolant temperature gauge (Figure 56) will indicate the coolant temperature. Under normal operating conditions the coolant temperature should be between 165 and 215 degrees Fahrenheit (Green Zone).

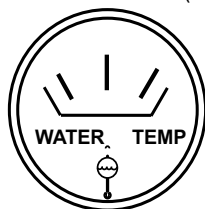


Figure 56. Coolant Temperature Gauge

15. The tachometer (Figure 57) will indicate the speed of the engine when the generator is operating. Under normal operating conditions this speed should be approximately 1800 RPM's.

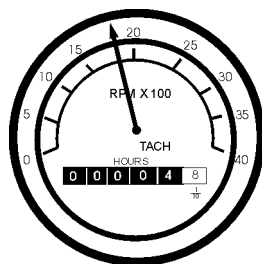


Figure 57. Engine Tachometer

16. Turn the MAIN, GFCI and LOAD circuit breakers to their "ON" position (Figure 58).

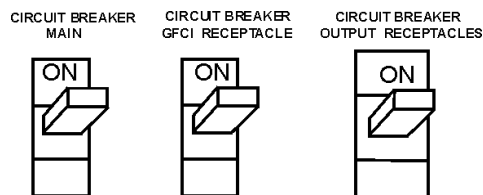


Figure 58. Main and GFCI Circuit Breakers

17. Observe the generator's ammeter (Figure 59) 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.

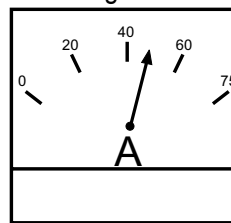


Figure 59. Ammeter (Load)

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

DCA-220SSK — GENERATOR START-UP PROCEDURE (AUTO)

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 8 (Before Starting, page 43-45) 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 60) in the **AUTO** position (up).

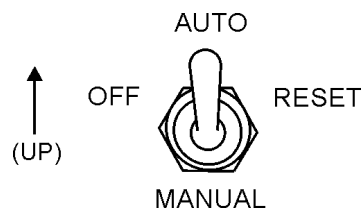


Figure 60. Off/Manual Auto Switch (AUTO)

5. Continue to follow the steps outline in the manual start-up procedure (start at step 11, page 46).

DCA-220SSK — GENERATOR SHUTDOWN PROCEDURE

Engine Shutdown

To shutdown the generator use the following procedure:

1. Place both the **MAIN**, **GFCI** and **LOAD** circuit breakers to the "OFF position".
2. Let the engine cool by running it for 3-5 minutes with no load applied.
3. Place the Off/Manual/Auto Switch (Figure 61) in the "**OFF/RESET**" position.

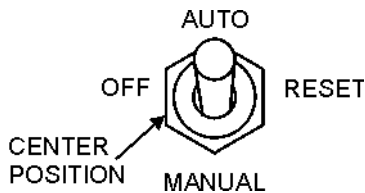


Figure 61. Off/Manual Auto Switch (OFF)

4. Verify that the "Engine Running" status LED (Figure 62) on the Microprocessor Engine Control Module (MPEC) display is "OFF" (not lit).



Figure 62. MPEC Engine Running Status LED (OFF)

5. Remove the load from the UVW terminal strip (Figure 16).

Emergency Stop

1. To stop the engine in the event of an emergency, **PUSH** the emergency stop button (Figure 63) inward. This button is located on the generator's engine operating panel, see page 32, Figure 11.

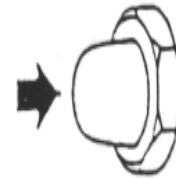


Figure 63. Emergency Stop Button

CAUTION:



NEVER stop the engine suddenly except in an emergency. **DO NOT** use the emergency stop switch as a method of shutting down the engine. This switch is **ONLY** to be used in the event of an emergency.

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.

Air Cleaner

Every 50 hours: If dust indicator is red, clean the air cleaner element.

Outer Element:

1. Loosen wing bolt, remove dust cup, then remove wing nut and take out element.
2. Clean the inside of the body and cover using a damp cloth.
3. Blow dry with compressed air (0.69Mpa (7kgf.cm², 99.4 PSI) maximum) against the side of the element along the pleats. Then blow dry against outside along the pleats, then against inside again.
4. Remove one seal each time the element is cleaned.
5. Replace the outer element after cleaning it 6 times or after one year. Replace the outer element if indicator is red even after cleaning it.
6. Check the inner cylinder element clamping nut for looseness, and retighten if necessary.
7. If seal washer is damaged or the threads of wing nut are damaged, replace.
8. Remove evacuator valve and clean it with compressed air. Reinstall.

Inner element (if equipped)

1. Remove the cover and outer element, then remove the inner element.
2. Cover the air connector opening (outer side) with clean cloth or cloth tape.
3. Clean the inside of the body. Remove air connector opening protection.
4. Install a new inner cylinder element to the cylinder and tighten the nut.
5. Install element.
6. After replacing the element, press the button of the dust indicator to return the red piston to its original position.

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 14, page 39.

Flushing Out Radiator and Changing Coolant

1. Stop the engine and allow to cool. Tighten valve of the corrosion resistor (if equipped).
2. Turn water filler cap slowly and remove it.
3. Prepare a container to catch the coolant, then open drain plug of the radiator or heat exchanger and drain plug of the engine, and drain the coolant.
4. After draining the coolant, close drain plugs and fill with tap water.

5. When the water level is near the mouth of the water filler, open drain plugs and start the engine, and run at low idling. Keep the engine running at low idling and flush the radiator for about 10 minutes.
6. Adjust the flow of the water flowing in and draining out to ensure that the radiator is always full during the flushing operation, While flushing water through the system, watch carefully the water inlet hose does not come out of the radiator filler port.
7. After flushing, stop the engine, open drain plug and drain the water, then close drain plugs.
8. After draining the water, flush the system with a flushing agent. See instructions on flushing agent label.
9. After flushing, open drain plugs and drain out all the water, then close drain plugs and add tap water so the water level is near the mouth of the water filler.
10. When the water level is near the mouth of the water filler, open drain plugs and start the engine, run at low idling and continue to flush the system until clean water comes out. Adjust the flow of the water flowing in and draining out to ensure the radiator is always full during the flushing operation.
11. When clean water comes out, stop the engine, drain all the water, then close drain plugs.
12. Remove the corrosion resistor (if equipped) and open valve.
13. Supply water until it flows over the water filler.
14. Drain the water inside reserve tank, clean the inside of the reserve tank, then fill with coolant/water mixture to between the full and low lines.
15. Stop the engine, wait for 3 minutes, add tap water until the water level reaches near the water filler port, then tighten the radiator cap.

Check Electric Heater (If equipped)

Before starting in cold weather (once a year), please contact your Komatsu distributor for inspection. Remove electric heater from the engine intake manifold and check for disconnections or dirt. When checking or installing the electric heater, replace the gasket with a new part.

Changing Oil

1. Make sure the oil is cool before changing.
2. Set a container directly under the drain plug of the oil pan. Loosen the drain plug slowly.
3. Check the drained oil for excessive metal particles or foreign material. Contact the distributor if there is metal particles or foreign material.
4. Using a filter wrench, turn filter cartridge to the left to remove it. If the filter cartridge is filled with a large amount of oil, wait 10 minutes or so before removing. Make sure there is no old gasket stuck on the filter holder.
5. Tighten drain plug. Clean the filter holder, fill the new filter cartridge with clean engine oil, coat the packing and thread of the new filter cartridge with engine oil, then install it to the filter holder. Tighten until the gasket surface contacts the seal surface of the filter holder, then tighten it a further 3/4 to 1 turn.
6. Add engine oil through oil filler until the oil level is between the H and L marks on the dipstick.
7. Run the engine at idling for a short time, then stop the engine. Recheck the oil level and fill as necessary.

Replacing fuel filter

1. Set the container under the filter cartridge to catch fuel.
2. Using a filter wrench, turn the filter cartridge to the left to remove it.
3. Clean the filter holder, fill the new filter cartridge with fuel, coat the packing surface of the filter cartridge with engine oil, then install the cartridge to the filter holder.
4. When installing, tighten until the packing surface contacts the seal surface of the filter holder then tighten a further 2/3 of a turn. If the filter cartridge is tighten too much, the packing will be damaged and will cause fuel leakage. Fuel leakage will occur if the filter cartridge is not tightened enough. Always tighten to the correct angle.
5. After replacing filter cartridge, loosen air bleed plug.
6. Loosen the knob of feed pump, and pump it up and down until no bubbles come out with the fuel from air bleed plug.

7. After bleeding the air, tighten air bleed plug, then push in the knob of feed pump and lock it in position.
8. Replace Corrosion resistor cartridge (if equipped)
9. Screw in valves at the top of the corrosion resistor.
10. Using a filter wrench, turn the cartridge to the left to remove it.
11. Coat the seal surface of the new cartridge with engine oil and install it to the filter holder.
12. Tighten until the packing surface contacts the seal surface of the filter holder, then tighten a further 2/3 of a turn.
13. Open valves.

Cleaning breather element

1. Loosen the clamp, then remove the hose and take out breather. Wipe off the dirt around the breather. Check the O-ring, and replace if necessary.
2. Wash the breather in diesel fuel or flushing oil, blow dry with compressed air, then reinstall it.
3. Inspect the hose and if there is any deteriorated oil stuck inside the hose. Replace hose if necessary.

Greasing

Using a grease pump, grease the fan hub (1 place) and tension pulley (2 places).

Generator Storage

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

- Fill the fuel tank completely, lubricate and change oil.
- Disconnect the negative terminals of the battery and cover it, or remove it from the machine and store it separately.
- If the ambient temperature is expected to drop below 0°C, add antifreeze to the radiator.

Removal from long term storage:

- Apply oil to the engine valve and rocker arms, and examine the operating condition of the valves.
- Remove the oil filler pipe from the turbocharger oil inlet port, add 0.5-1L (0.13-0.26gal) of oil to the turbocharger, reinstall the oil filler pipe.
- Change the oil in engine oil pan.
- Replace all the filters.
- Flush the inside of the cooling system.
- Drain the water from the fuel tank and bleed the air from the fuel system.
- If the engine has not been started for more than one year, contact your Komatsu distributor to have engine overhauled.

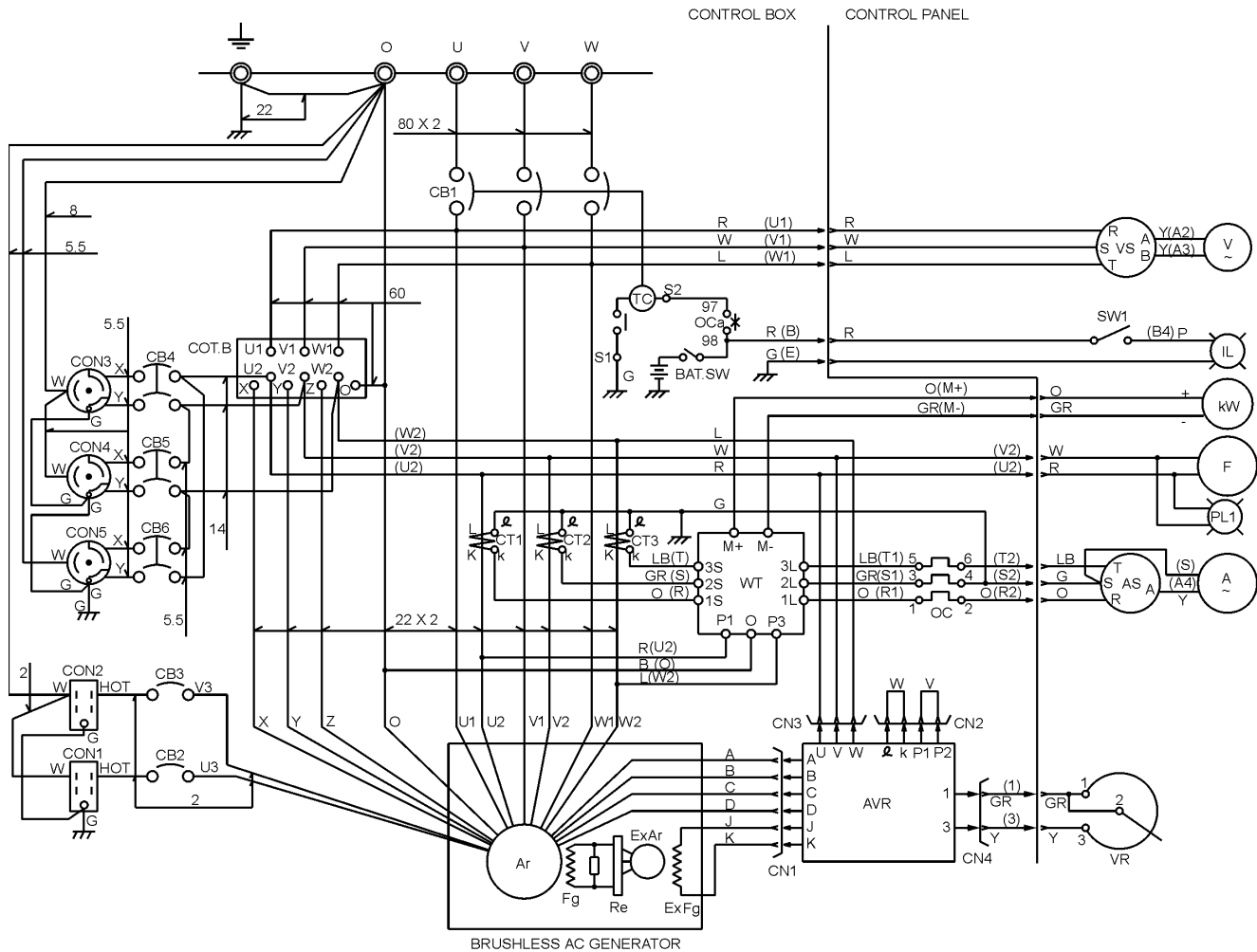
INSPECTION / MAINTENANCE		10 Hrs DAILY	250 Hrs	500 Hrs	1000 Hrs
ENGINE	Check Engine Fluid Levels	X			
	Check Air Cleaner	X			
	Check Battery Acid Level	X			
	Check Fan Belt Condition	X			
	Check for Leaks	X			
	Check for Loosening of Parts	X			
	Check Water Separator (if applicable)	X			
	Replace Engine 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 and filter at 100 hours, first time only.

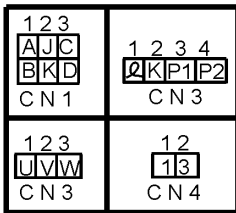
*2 Replace fuel filter at 250 Hours, first time only.

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

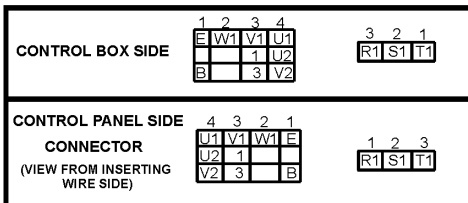
DCA-220SSK — GENERATOR WIRING DIAGRAM



AVR CONNECTOR

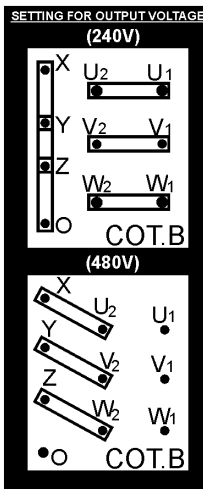


(VIEW FROM INSERTING WIRE SIDE)



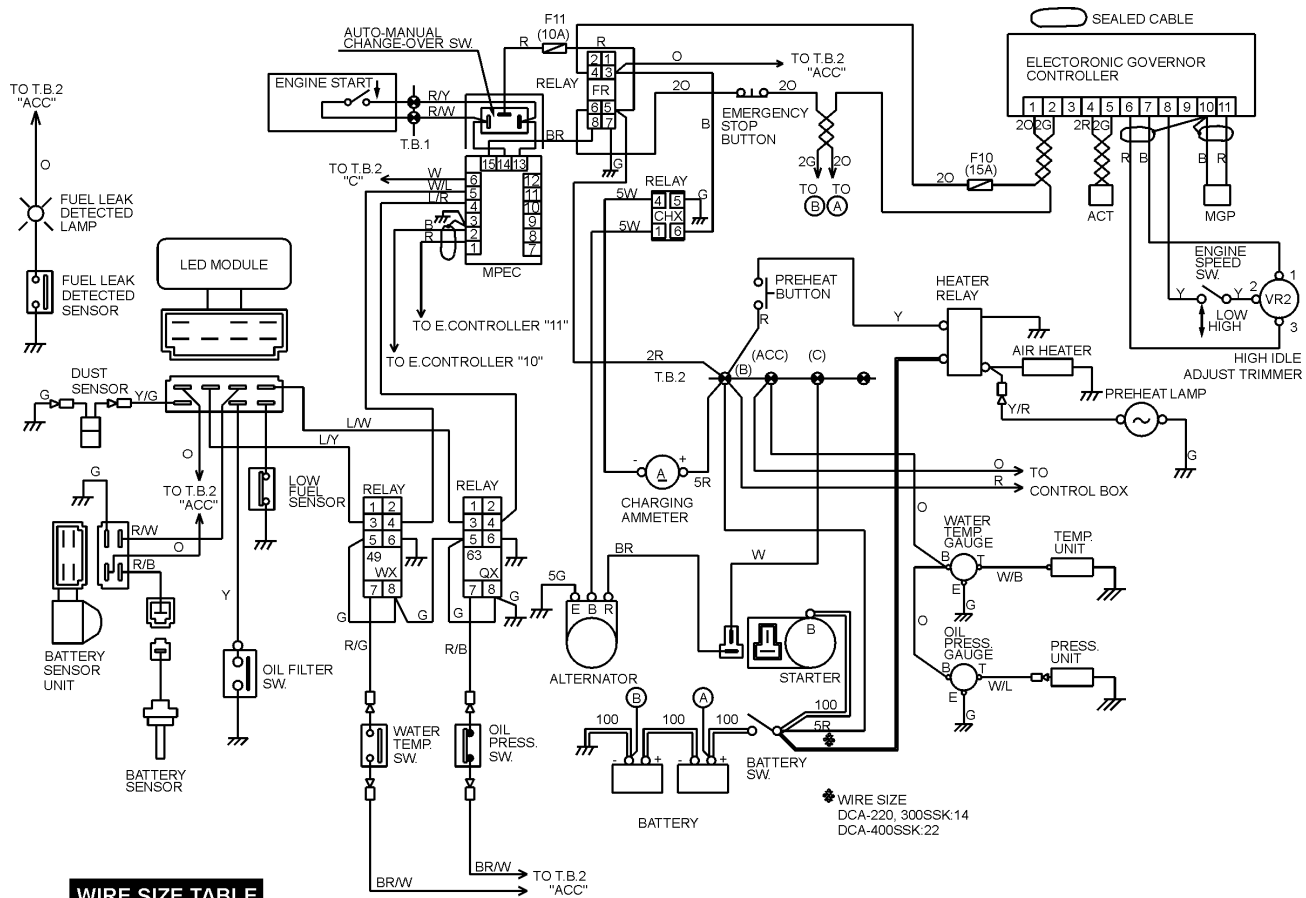
80:	80mm ²
60:	60mm ²
22:	22mm ²
14:	14mm ²
8 :	8mm ²
5.5:	5.5mm ²
2 :	2mm ²
NO MARK:	1.25mm ²

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		



MARK	NAME
Ar	MAIN GENERATOR ARMATURE WINDING
Fg	MAIN GENERATOR FIELD WINDING
ExAr	EXCITER ARMATURE WINDING
ExFg	EXCITER FIELD WINDING
AVR	AUTOMATIC VOLTAGE REGULATOR
VR	VOLTAGE REGULATING RHEOSTAT
Re	RECTIFIER
CT1~3	CURRENT TRANSFORMER (400/5A)
C B 1	CIRCUIT BREAKER (600A)
OC	OVER CURRENT RELAY
COT. B	VOLTAGE CHANGE-OVER BOARD
AS	AMMETER CHANGE-OVER SWITCH
A	AC AMMETER (0~400, 800A)
VS	VOLTMETER CHANGE-OVER SWITCH
V	AC VOLTMETER (0~600V)
F	FREQUENCY METER (45~65HZ)
PI1	PILOT LAMP
CB2. 3	AUX. CIRCUIT BREAKER (20A)
CB4~6	AUX. CIRCUIT BREAKER (50A)
CON1. 2	AUX POWER RECEPTACLE (20A)
CON3~5	AUX POWER RECEPTACLE (50A)
IL	PANEL LIGHT
SW1	PANEL LIGHT SWITCH
kW	WATTMETER -20 ~200 KW
WT	WATT-METER TRANSDUCER

DCA-220SSK — ENGINE WIRING DIAGRAM (WITH MPEC)



WIRE SIZE
 DCA-220, 300SSK:14
 DCA-400SSK:22

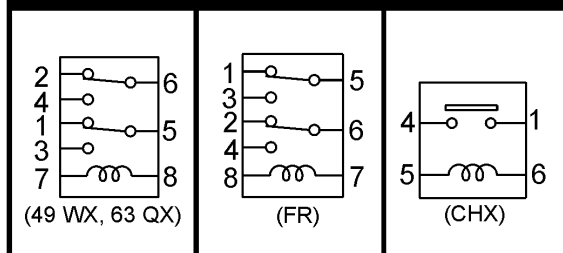
WIRE SIZE TABLE

100:	100mm ²
38:	38mm ²
22:	22mm ²
14:	14mm ²
5 :	5mm ²
2 :	2mm ²
NO MARK:	2 mm ²

COLOR CODE TABLE

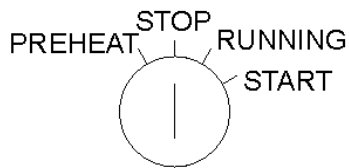
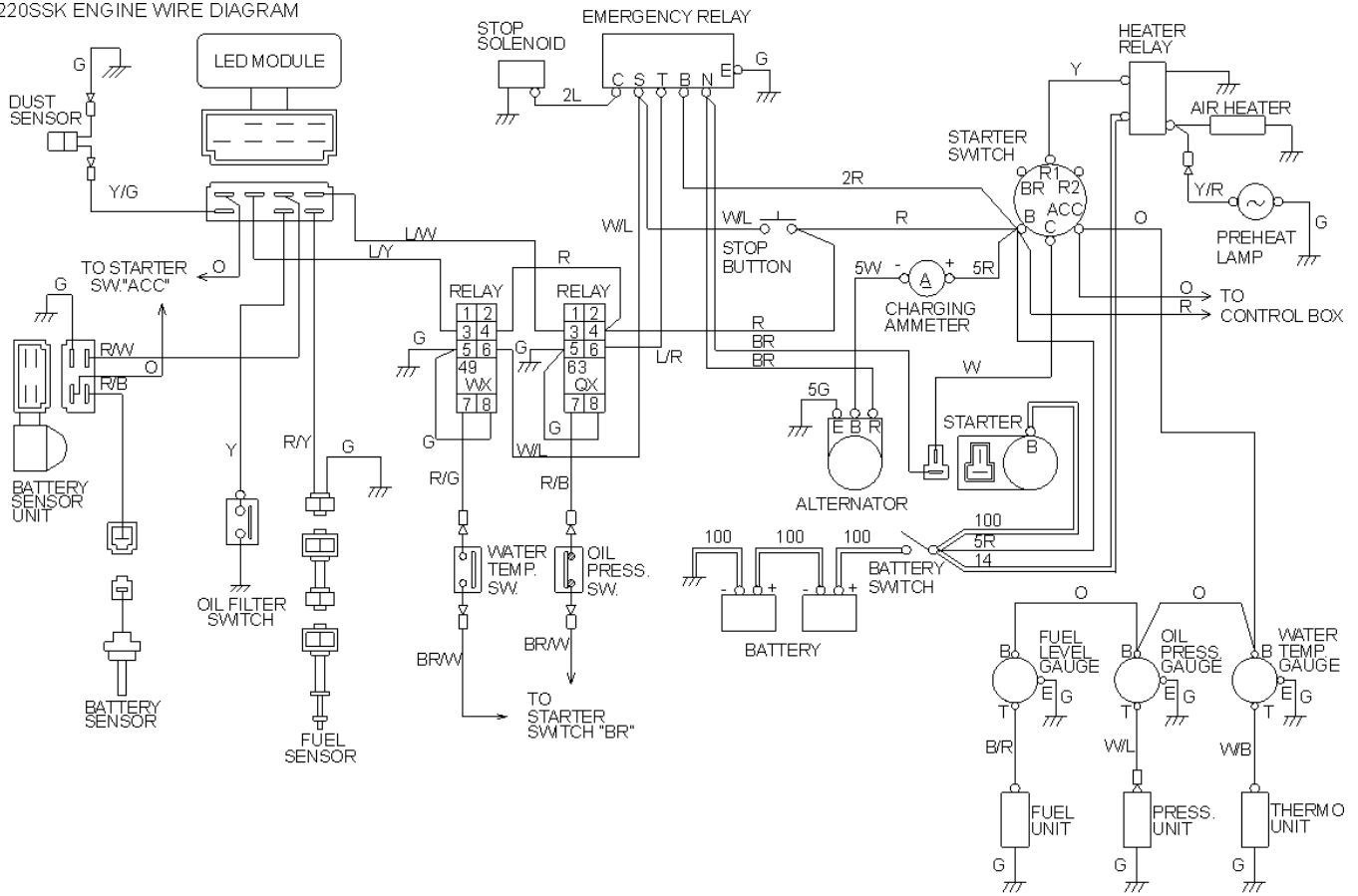
CODE/ WIRE COLOR			
B	BLACK	R	RED
L	BLUE	W	WHITE
BR	BROWN	Y	YELLOW
G	GREEN	LB	LIGHT BLUE
GR	GRAY	LG	LIGHT GREEN
V	VIOLET	O	ORANGE
P	PINK		

RELAY INSIDE CONNECTION



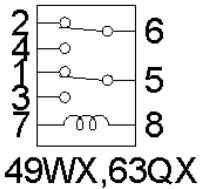
DCA-220SSK — ENGINE WIRING DIAGRAM (WITH KEY IGNITION)

DCA220SSK ENGINE WIRE DIAGRAM



	STARTER SW.CONNECTION					
	B	BR	R1	R2	C	ACC
STOP	○					
PREHEAT	○	○	○			○
RUNNING	○	○				○
START	○	○		○	○	○

RELAY INSIDE CONNECTION



WIRE SIZE	COLOR CODE			
	WIRE COLOR	WIRE COLOR	WIRE COLOR	WIRE COLOR
100: 100mm ²				
38: 38mm ²	B	BLACK	R	RED
22: 22mm ²	L	BLUE	W	WHITE
14: 14mm ²	BR	BROWN	Y	YELLOW
5 : 5mm ²	G	GREEN	LB	LIGHT BLUE
2 : 2mm ²	GR	GRAY	LG	LIGHT GREEN
	V	VIOLET	O	ORANGE
OTHERS: 1.25mm ²	P	PINK		

DCA-220SSK — TROUBLESHOOTING (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 Troubleshooting (Table 15). If the problem cannot be remedied, consult our company's business office or service plant.

TABLE 15. 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.	Battery discharged?	Charge battery.
	Starter malfunctioning?	Repair or replace.
	Key switch malfunctioning?	Repair or replace.
	Wiring disconnected?	Connect wiring.

DCA-220SSK — TROUBLESHOOTING (ENGINE)

TABLE 15. 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-220SSK — 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 (Table 16) and the MPEC Troubleshooting (Table 17). If the problem cannot be remedied, consult our company's business office or service plant.

TABLE 16. 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.

TABLE 17. 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 malfunction 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 temperature 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.

Serial Numbers Pertaining to Unit
DCA-220SSK Standard:

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.

Up to S/N3696500

S/N3699150 to S/N3699619

S/N3699637 to S/N3703349

S/N3703364 to S/N3703853

S/N3703869~

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-220SSK W/KOMATSU S6D125E-2 DIESEL ENGINE

1 to 5 Units

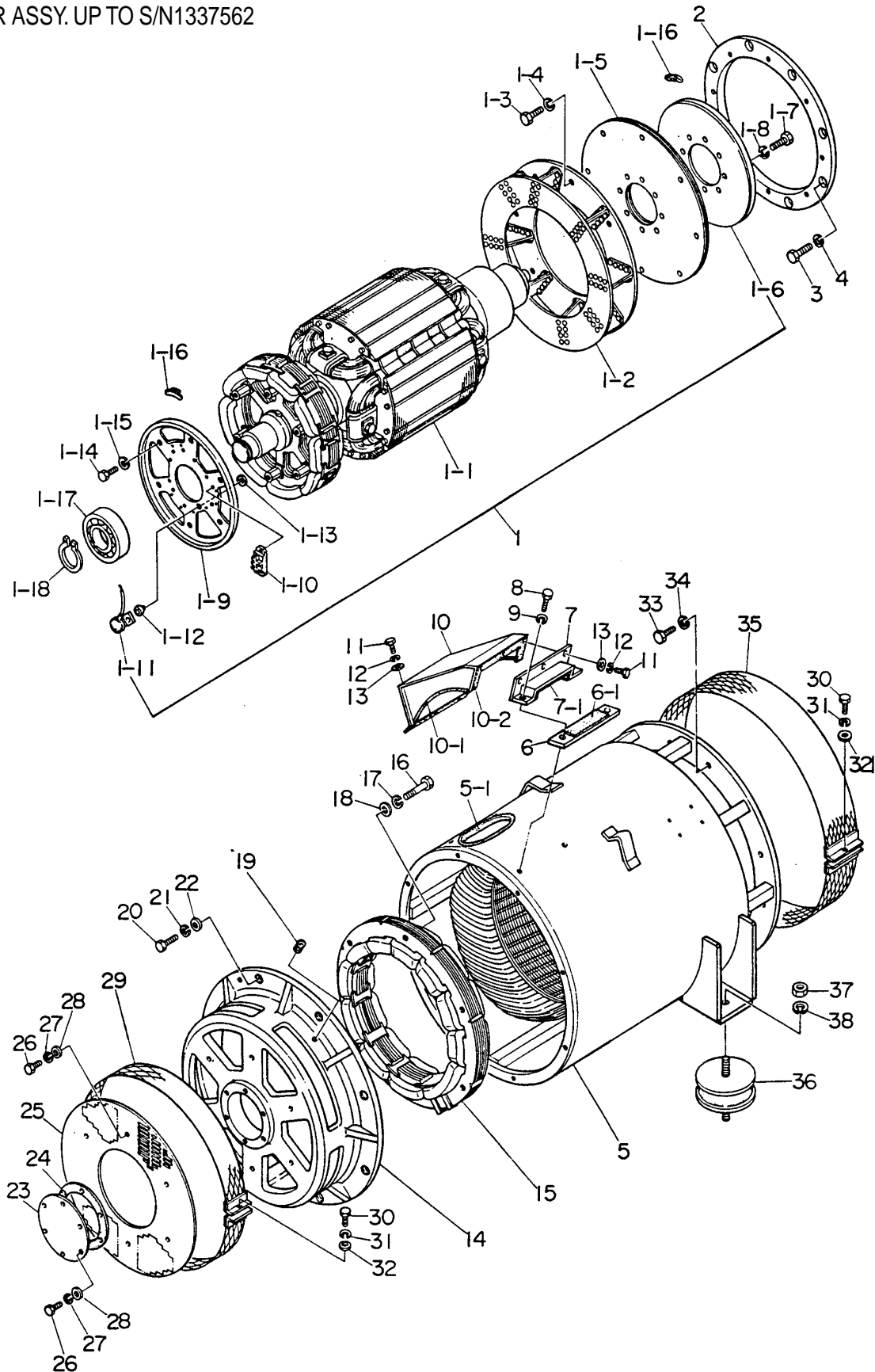
Qty.	P/N	Description
10	6125817032	AIR FILTER
10	6003118293	FUEL FILTER
10	6002111231	OIL FILTER
5	6004111020	CARTRIDGE, CORROSION RESISTOR
1	0601805950	MAIN CIRCUIT BREAKER
1	0602115008	PILOT LAMP, ENGINE TROUBLE
2	0601810204	BULB, ENGINE TROUBLE
2	0412122265	ENGINE FAN BELT
1	6008155390	SWITCH, STARTER
5	615	KEY SET, STARTER SWITCH (2)
2	6008711170	OIL SWITCH
1	6151619320	RADIATOR HOSE (UPPER)
1	6151619330	RADIATOR HOSE (LOWER)
1	0845500104	FUEL CAP
1	0601820625	AUTOMATIC VOLTAGE REGULATOR
1	0601840073	VOLTAGE REGULATOR (RHEOSTAT)
1	0601840121	KNOB, VOLTAGE REGULATOR
1	0601810072	PILOT LAMP
2	0601810261	BULB, PILOT LAMP
1	TR60110235100	CAP, RADIATOR
1	0602122200	UNIT, OIL PRESSURE
1	0602123204	UNIT, WATER TEMPERATURE
1	0602121052	CHARGING AMMETER

NOTE

Part number on this Suggested Spare Parts list may supercede/replace the P/N shown in the text pages of this book.

DCA-220SSK — GENERATOR ASSY.

GENERATOR ASSY. UP TO S/N1337562



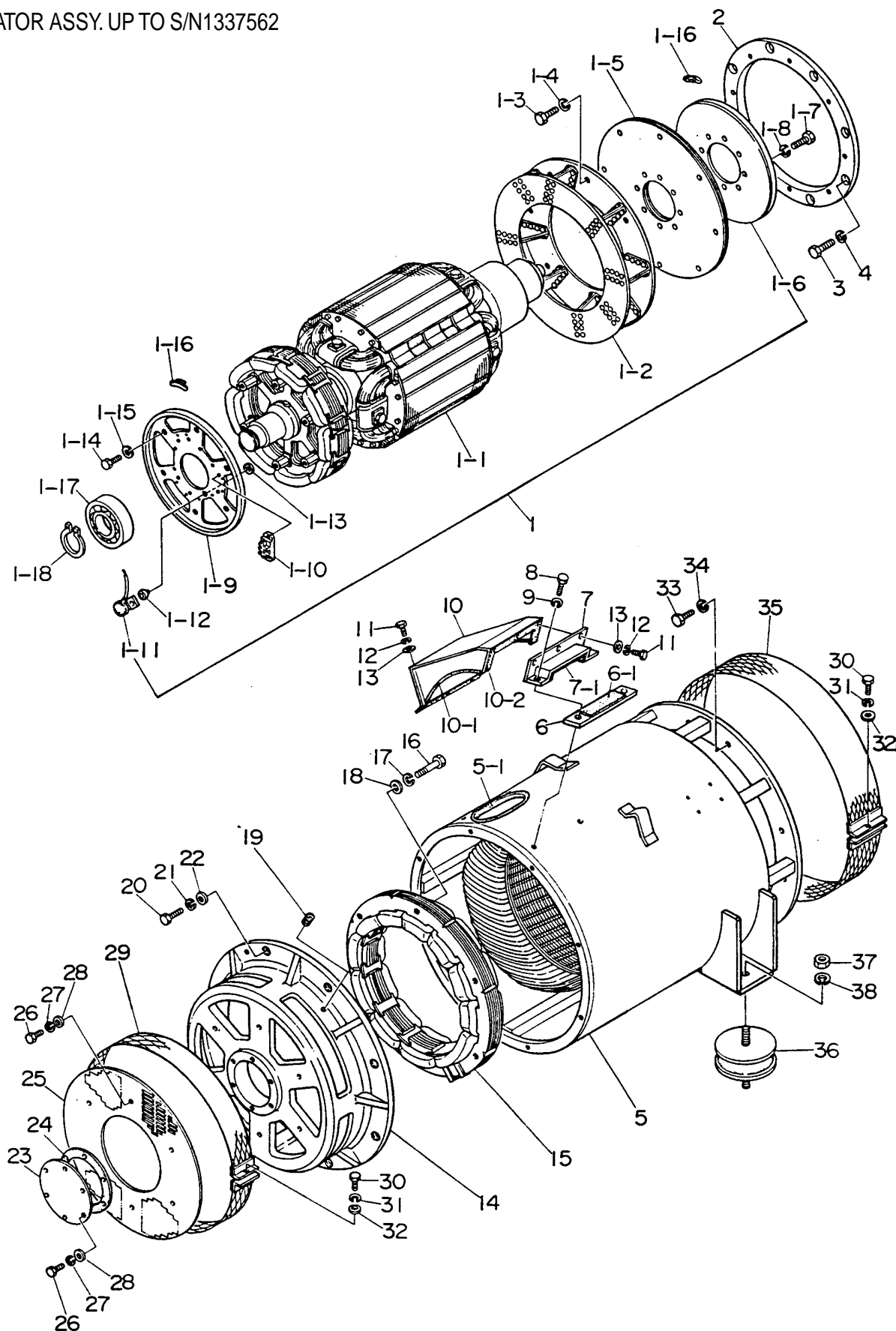
DCA-220SSK — GENERATOR ASSY.

GENERATOR ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8181000002	ROTOR ASSY.	1	
1-1		FIELD ASSY.	1	
1-2	8171070002	FAN	1	
1-3	0012112040	HEX. HEAD BOLT	8	
1-4	0042512000	LOCK WASHER	8	
1-5	8171611003	COUPLING DISK	9	
1-6	8171015003	BALANCING PLATE	1	
1-7	0012116040	HEX. HEAD BOLT	8	
1-8	0042616000	LOCK WASHER	8	
1-9	8171026003	SET PLATE, RECTIFIER	1	
1-10	0601821349	RECTIFIER	3	PT 3610
1-11	0601822615	SURGE ABSORBER	1	ERZ-M20JK621B
1-12	8171020004	INSULATOR WASHER	1	
1-13	8171020504	INSULATOR WASHER	1	
1-14	0010110020	HEX. HEAD BOLT	6	
1-15	0040010000	LOCK WASHER	6	
1-16	0601000209	BALANCING WEIGHT KIT	1	
1-17	0070806312	BEARING	1	6312 DU
1-18	0080000060	SNAP RING	1	
2	8171614003	COUPLING RING	1	
3	0012112035	HEX. HEAD BOLT	8	
4	0042512000	LOCK WASHER	8	
5	8181340303	STATOR ASSY.	1	
5-1	0226100430	RUBBER SEAL	1	
6	8171323004	CLAMPER	1	
6-1	0223300120	RUBBER SEAL	1	
7	8171323103	CLAMPER	1	
7-1	0221200300	RUBBER SEAL	1	
8	0010110035	HEX. HEAD BOLT	2	
9	031110160	PLAIN WASHER	2	REPLACES 0041610000
10	8171324003	COVER	1	
10-1	0226000270	RUBBER SEAL	2	
10-2	0225000480	RUBBER SEAL	1	
11	0010106016	HEX. HEAD BOLT	6	
12	0040006000	LOCK WASHER	6	
13	031110160	PLAIN WASHER	6	REPLACES 0041606000
14	8171315002	END BRACKET	1	
15	8171350003	FIELD ASSY., EXCITER	1	
16	0012110060	HEX. HEAD BOLT	6	
17	0042610000	LOCK WASHER	6	
18	031110160	PLAIN WASHER	6	REPLACES 0041610000

DCA-220SSK — GENERATOR ASSY.

GENERATOR ASSY. UP TO S/N1337562



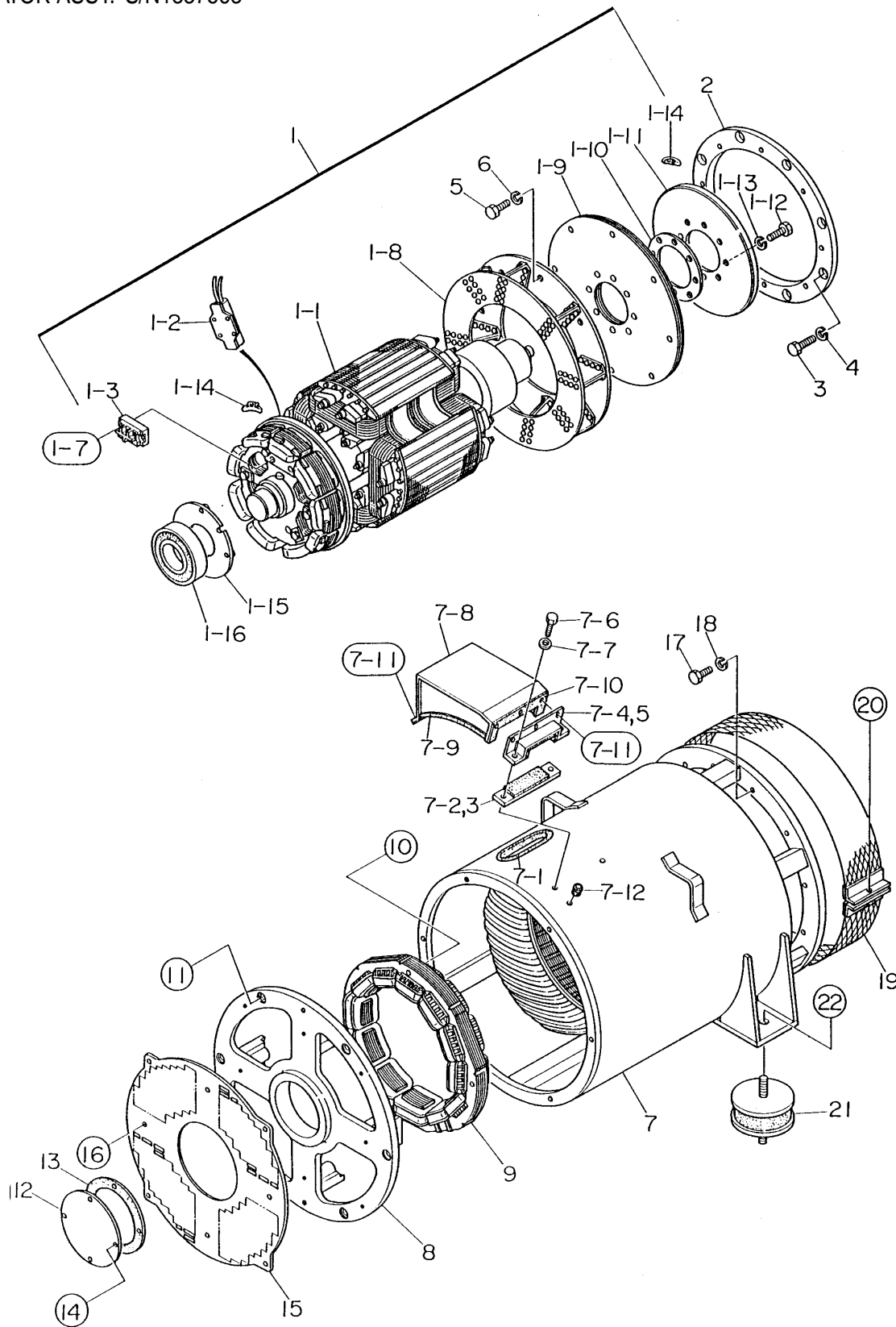
DCA-220SSK — GENERATOR ASSY.

GENERATOR ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
19	0845044904	GROMMET	1	
20	012212045	HEX. HEAD BOLT	8	REPLACES 0010112045
21	0040012000	LOCK WASHER	8	
22	031112230	PLAIN WASHER	8	REPLACES 0041612000
23	8171310004	COVER, BEARING	1	
24	8171312004	GASKET, BEARING	1	
25	8171331003	COVER, END BRACKET	1	
26	0010106016	HEX. HEAD BOLT	12	
27	0040006000	LOCK WASHER	12	
28	952404470	PLAIN WASHER	12	REPLACES 0041606000
29	8171333003	COVER, END BRACKET	1	
30	0010106030	HEX. HEAD BOLT	2	
31	0040006000	LOCK WASHER	2	
32	952404470	PLAIN WASHER	2	REPLACES 0041606000
33	0012112035	HEX. HEAD BOLT	12	
34	0042512000	LOCK WASHER	12	
35	8171332003	COVER, FAN	1	
36	0605000012	RUBBER SUSPENSION	2	
37	0030020000	HEX. NUT	4	
38	030220510	LOCK WASHER	4	REPLACES 0040020000

DCA-220SSK — GENERATOR ASSY.

GENERATOR ASSY. S/N1337563~



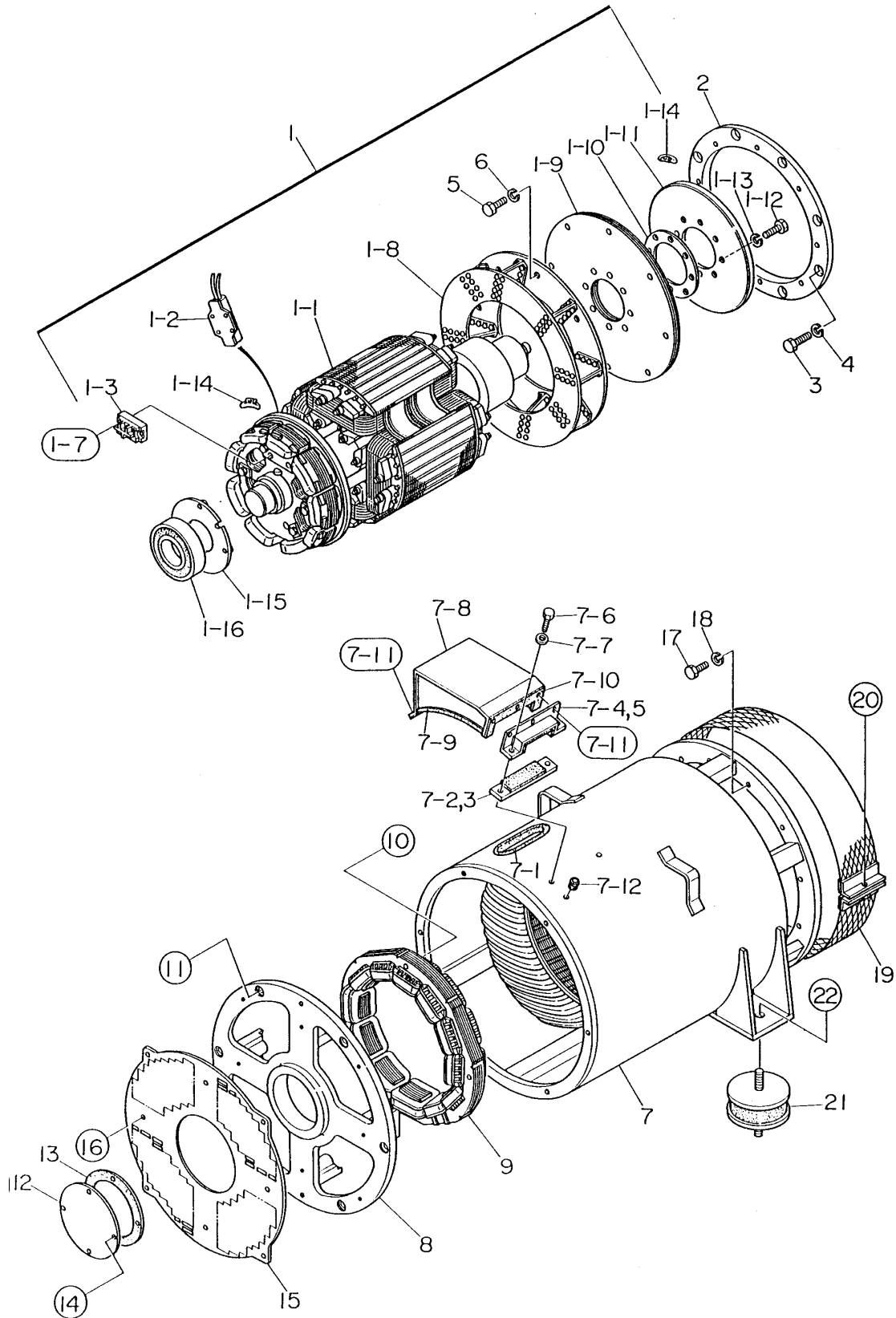
DCA-220SSK — GENERATOR ASSY.

GENERATOR ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1110100202	ROTOR ASSY.	1	
1-1		FIELD ASSY.	1	
1-2	0601842334	RESISTOR	1	SMRK 80W 100KOHM
1-3	0601823282	RECTIFIER	1	RM50TC24
1-7	0018205020	HEX. SOCKET HEAD CAP SCREW	2	
	0040005000	LOCKWASHER	2	
	0041205000	PLAIN WASHER	2	
1-8	8171070002	FAN	1	
1-9	8171611003	COUPLING DISK	9	
1-10	C1164200004	WASHER, COUPLING HUB	1	
1-11	8171015003	BALANCING PLATE	1	
1-12	0012116045	HEX. HEAD BOLT	8	
1-13	0042616000	LOCKWASHER	8	
1-14	0601000209	BALANCING WEIGHT KIT	1	
1-15	C1112500004	BEARING FLANGE	1	
1-16	0071906314	BEARING	1	6314DDUC3
2	8171614003	COUPLING RING	1	
3	0012112035	HEX. HEAD BOLT	8	
4	0042512000	LOCKWASHER	8	
5	0012112040	HEX. HEAD BOLT	8	
6	0042512000	LOCKWASHER	8	
7	C1130100103	STATOR ASSY.	1	
7-1	0226100420	RUBBER SEAL	1	
7-2	8171323004	CLAMPER	1	
7-3	0223300120	RUBBER SEAL	1	
7-4	8171323103	CLAMPER	1	
7-5	0221200300	RUBBER SEAL	1	
7-9	0010110035	HEX. HEAD BOLT	2	
7-7	0041210000	PLAIN WASHER	2	
7-8	C1132200003	COVER	1	
7-9	0226000510	RUBBER SEAL	2	
7-10	0225000470	RUBBER SEAL	1	
7-11	0017106016	HEX. HEAD BOLT	6	
7-12	0601850144	GROMMET	1	
8	C1154000002	END BRACKET	1	
9	C1138000003	FIELD ASSY. EXCITER	1	

DCA-220SSK — GENERATOR ASSY.

GENERATOR ASSY. S/N1337563~



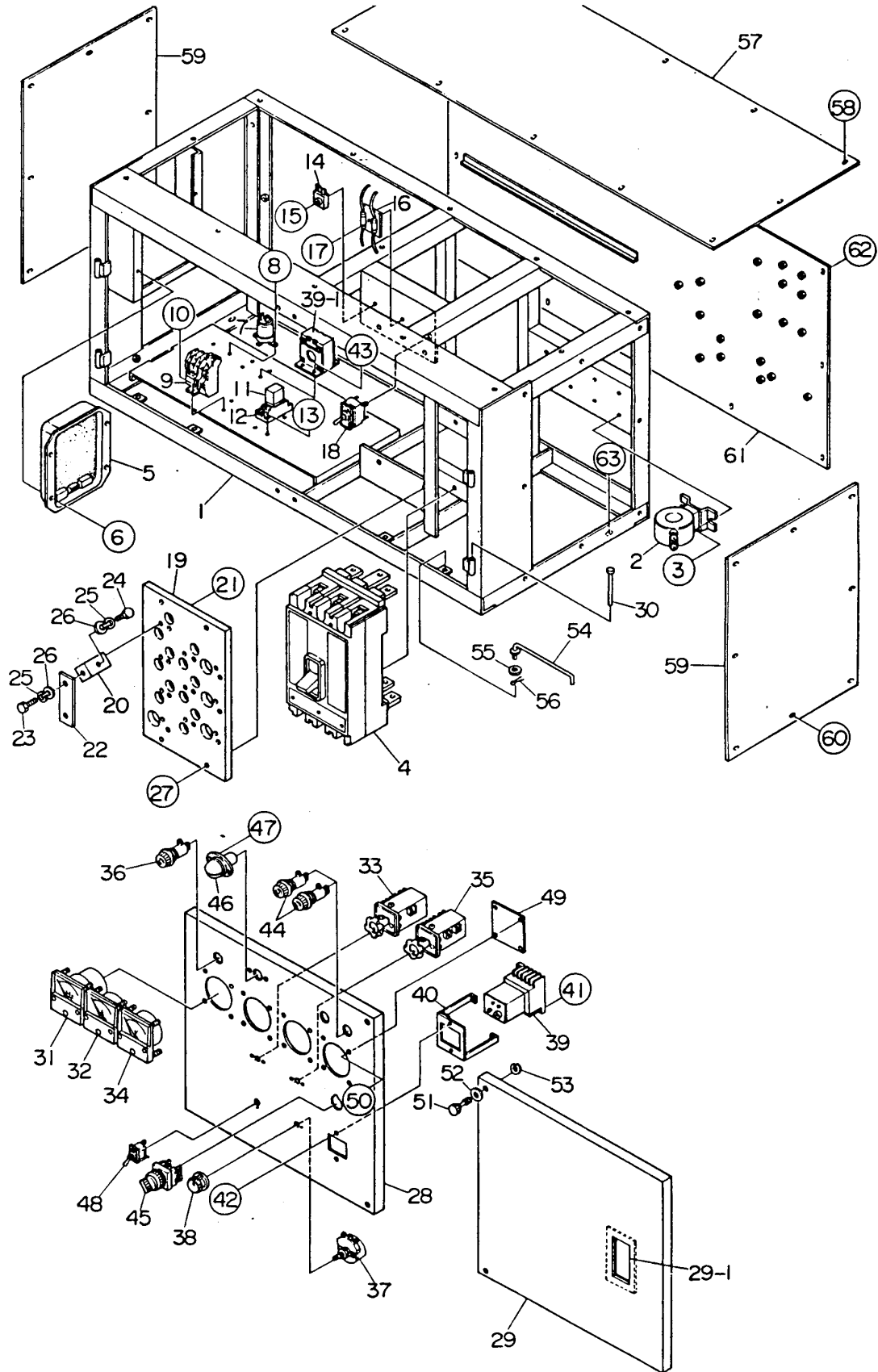
DCA-220SSK — GENERATOR ASSY.

GENERATOR ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	0012110065	HEX. HEAD BOLT	4	
	0042610000	LOCK WASHER	4	
	0041210000	PLAIN WASHER	4	
11	0017112045	HEX. HEAD BOLT	6	
12	C1154400004	COVER, BEARING	1	
13	C1154300004	GASKET, BEARING	1	
14	0010106065	HEX. HEAD BOLT	4	
	0040006000	LOCK WASHER	4	
	0041206000	PLAIN WASHER	4	
15	C1154400103	SUCTION COVER	1	
16	0017106016	HEX. HEAD BOLT	8	
17	0012112035	HEX. HEAD BOLT	12	
18	0042512000	LOCK WASHER	12	
19	C1132300103	COVER, FAN	1	S/N3690735 TO 3692206
19	C1132300114	COVER, FAN	1	S/N3692207~
20	0010106030	HEX. HEAD BOLT	1	
	0041206000	PLAIN WASHER	1	
	0600815000	NUT	1	S/N3692207~
21	0605000012	RUBBER SUSPENSION	2	
22	0030020000	HEX. NUT	4	
	0040020000	LOCK WASHER	4	

DCA-220SSK — CONTROL BOX AND PANEL ASSY.

CONTROL PANEL ASSY. UP TO S/N1337562



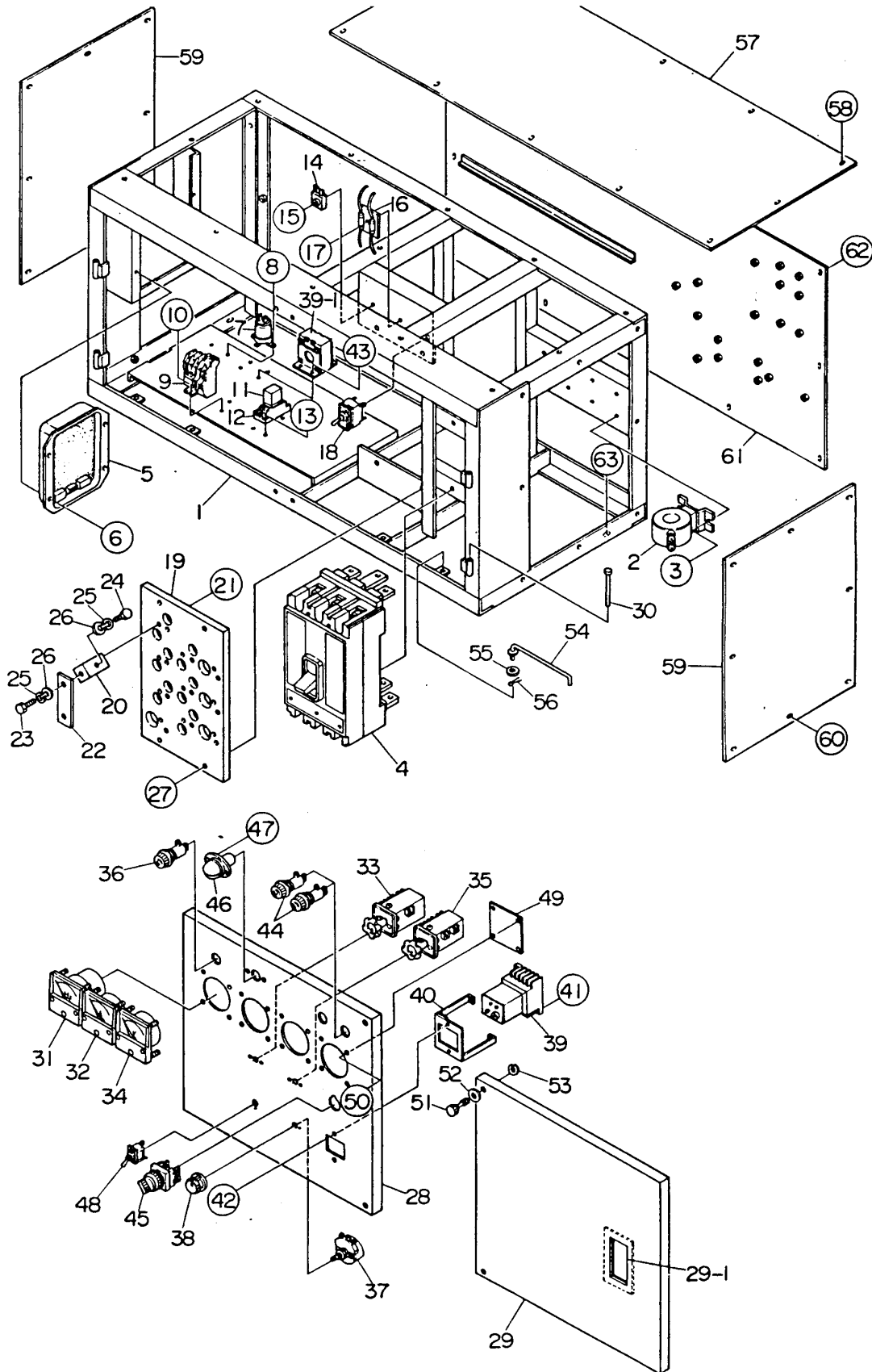
DCA-220SSK — CONTROL BOX AND PANEL ASSY.

CONTROL PANEL ASSY. UP TO S/N1337562

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8181812502	CONTROL BOX	1	
2	0601801167	TRANSFORMER, AMMETER	2	CT5MR 400/5A
3	0027106010	MACHINE SCREW	4	
4	0601805950	CIRCUIT BREAKER	1	TO-600CA 600A
5	0601820625	AUTOMATIC VOLTAGE REGULATOR	1	
6	0027105012	MACHINE SCREW	4	
7	0601820193	CONDESER	1	40FAL 155U#L2
8	0027103010	MACHINE SCREW	2	
9	0601820851	OVER CURRENT RELAY	1	THK20
10	0027104016	MACHINE SCREW	2	
11	0601823757	RELAY	2	MY2 DC24V
12	0601823143	SOCKET, RELAY	2	PYF 08A
	PYCA1	HOLDER	2	REPLACES 0601824400
13	0027104016	MACHINE SCREW	4	
14	0601823240	RECTIFIER	1	DE4503
15	0027105016	MACHINE SCREW	1	
16	0801850004	RESISTOR UNIT	1	
17	0021005020	MACHINE SCREW	1	
	0040050000	LOCK WASHER	1	
	0041205000	PLAIN WASHER	1	
	0030006000	HEX. NUT	1	
18	0601830715	SELECTOR SWITCH, VOLTAGE	1	S332T
19	8181861103	SET BOARD, CHANGE TERMINAL	1	
20	8181852104	CHANGE TERMINAL	10	
21	0017106025	HEX. HEAD BOLT	20	
22	8181853104	CHANGE PLATE	6	
23	8131852504	HEX. HEAD BOLT	10	
24	0801831804	HEX. HEAD BOLT	16	
25	0040010000	LOCK WASHER	26	
26	0041410000	PLAIN WASHER	26	
27	0017108030	HEX. HEAD BOLT	4	
28	8181822603	CONTROL PANEL	1	
29	8181822503	CONTROL PANEL	1	
29-1	0225100095	RUBBER SEAL	4	
30	0605011211	PIN	4	

DCA-220SSK — CONTROL BOX AND PANEL ASSY.

CONTROL PANEL ASSY. UP TO S/N1337562



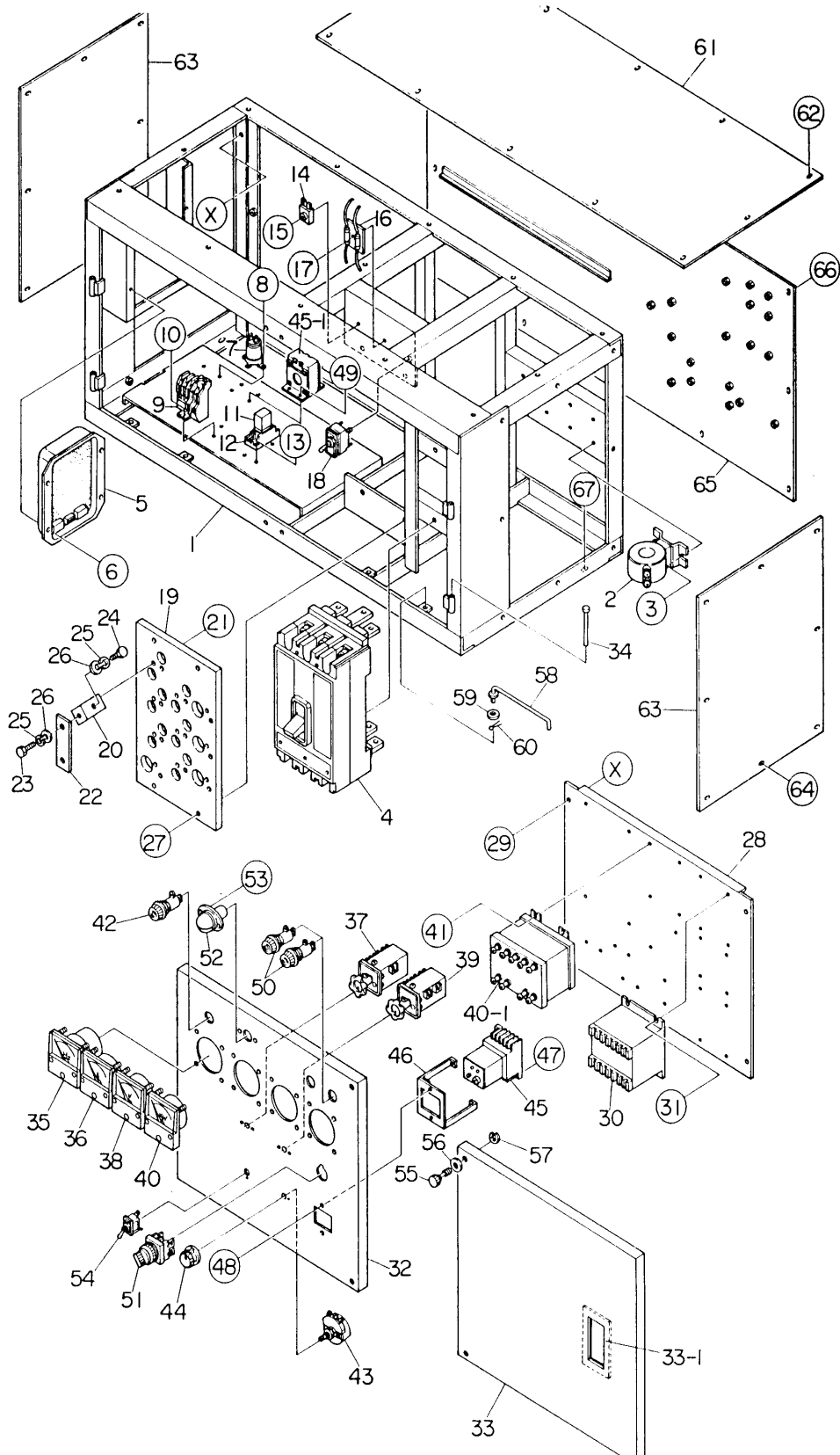
DCA-220SSK — CONTROL BOX AND PANEL ASSY.

CONTROL PANEL ASSY. UP TO S/N1337562

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
31	0601800470	FREQ. METER	1	PAK80 220V 45~65Hz
32	0601805726	AC AMMETER	1	PSK80 0~400A
33	0601801040	CHG.-OVR. SW, AMMETER	1	SL2VS
34	0601800239	AC VOLTMETER	1	PCK80 0~600V
35	0601801041	CHG.-OVR.SW, VOLTMETER	1	SL2AS
36	0601810072	PILOT LAMP	1	LP132DC 220V
	0601810261	BULB	1	
37	0601840073	RHEOSTAT (VOLTAGE REGULATOR)	1	RA20A2SE102BJ
38	0601840121	KNOB	1	
39	0601822408	EARTH LEAKAGE RELAY	1	TZS15HCD 30mA
39-1	0601802810	0-PHASE SEQ. TRANSFORMER	1	TZS15
40	0840303303	BRACKET, EARTH LEAKAGE RELAY	1	
41	0021004020	MACHINE SCREW	2	
	0040004000	LOCK WASHER	2	
	0041204000	PLAIN WASHER	2	
42	0027104010	MACHINE SCREW	2	
43	0027104010	MACHINE SCREW	4	
44	0601810072	SYNCHRONIZING LAMP	2	LD132DC 220V
	0601810261	BULB	2	
45	0601830682	SELECTOR SW. SINGLE/PAR	1	AH30P2B31
46	0601810161	PANEL LIGHT	1	V325070
	0601810214	BULB	1	
47	0207004000	HEX. NUT	2	
48	0601830710	SWITCH, PANEL LIGHT	1	S301T
49	7431822104	COVER	1	
50	0027103016	MACHINE SCREW	4	
	0030003000	HEX. NUT	4	
51	0805001304	SET SCREW	4	
52	0041608000	PLAIN WASHER	4	
53	0605010710	SNAP RING	4	
54	3871824004	STOPPER, CONTROL PANEL	2	
55	0041606000	PLAIN WASHER	2	
56	0605010502	SNAP PIN	2	
57	8181814504	COVER, CONTROL	1	
58	0017106016	HEX. HEAD BOLT	13	
59	8181826504	SIDE PANEL, CONTROL BOX	2	
60	0017106016	HEX. HEAD BOLT	16	
61	8181827503	PANEL, CONTROL BOX	1	
62	0017106016	HEX. HEAD BOLT	12	
63	0010010025	HEX. HEAD BOLT	4	
	0030010000	HEX. NUT	4	
	0040010000	LOCK WASHER	4	
	0041610000	PLAIN WASHER	8	

DCA-220SSK — CONTROL BOX ASSY. (OPTIONAL PARTS)

CONTROL BOX ASSY. (OPTIONAL PARTS) UP TO S/N1337562



DCA-220SSK — CONTROL BOX ASSY. (OPTIONAL PARTS)

CONTROL BOX ASSY. (OPTIONAL PARTS) UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8181812502	CONTROL BOX	1	
2	0601801167	CURRENT TRANSFORMER, AMMETER ...	2	CT5MR 440/5A
3	0027106010	MACHINE SCREW	4	
4	0601805950	CIRCUIT BREAKER	1	TO600CA 600A
5	0601820625	AUTOMATIC VOLTAGE REGULATOR	1	NTA-5A-27
6	0027105012	MACHINE SCREW	4	
7	0601820193	CONDENSER	1	40FAL155U #L2
8	0027103010	MACHINE SCREW	2	
9	0601820851	OVER CURRENT RELAY	1	THK20
10	0027104016	MACHINE SCREW	2	
11	0601823757	RELAY	2	MY2DC24V
12	0601823143	SOCKET, RELAY	2	PYF08A
	PYCA1	HOLDER	2	REPLACES 0601824400
13	0027104016	MACHINE SCREW	4	
14	0601821370	RECTIFIER	1	DE4503 REPLACES 0601823240
15	0027105016	MACHINE SCREW	1	
16	0801850004	RESISTOR UNIT	1	
17	0021005020	MACHINE SCREW	1	
	0032005000	LOCK WASHER	1	REPLACES 0040005000
	0401450050	PLAIN WASHER	1	REPLACES 0041205000
	020106050	HEX. NUT	1	REPLACES 0030006000
18	0601830715	SELECTOR SWITCH, VOLTAGE	1	S332T
19	8181861103	SET BOARD, CHANGE TERMINAL	1	
20	8181852104	CHANGE TERMINAL	10	
21	011606025	HEX. HEAD BOLT	20	REPLACES 0017106025
22	8181853104	CHANGE PLATE	6	
23	8131852504	HEX. HEAD BOLT	10	
24	012210020	HEX. HEAD BOLT	16	REPLACES 0801831804
25	0040010000	LOCK WASHER	26	
26	0041410000	PLAIN WASHER	26	
27	011208030	HEX. HEAD BOLT	4	REPLACES 0017108030
28	8181833003	SET PANEL, ELECTRIC PARTS	1	
29	011008020	HEX. HEAD BOLT	4	REPLACES 0017108020
30	0601823704	REVERSE POWER RELAY	1	
31	0027104010	MACHINE SCREW	4	
32	8181822603	CONTROL PANEL	1	
33	8181822503	CONTROL PANEL	1	
33-1	0225100095	RUBBER SEAL	4	
34	0605011211	PIN	4	B-99-2
35	0601800470	FREQUENCY METER	1	PAK80 220V 45~65HZ
36	0601800790	AC AMMETER	1	PSK80 0~400A 0~800A REPLACES 0601805726

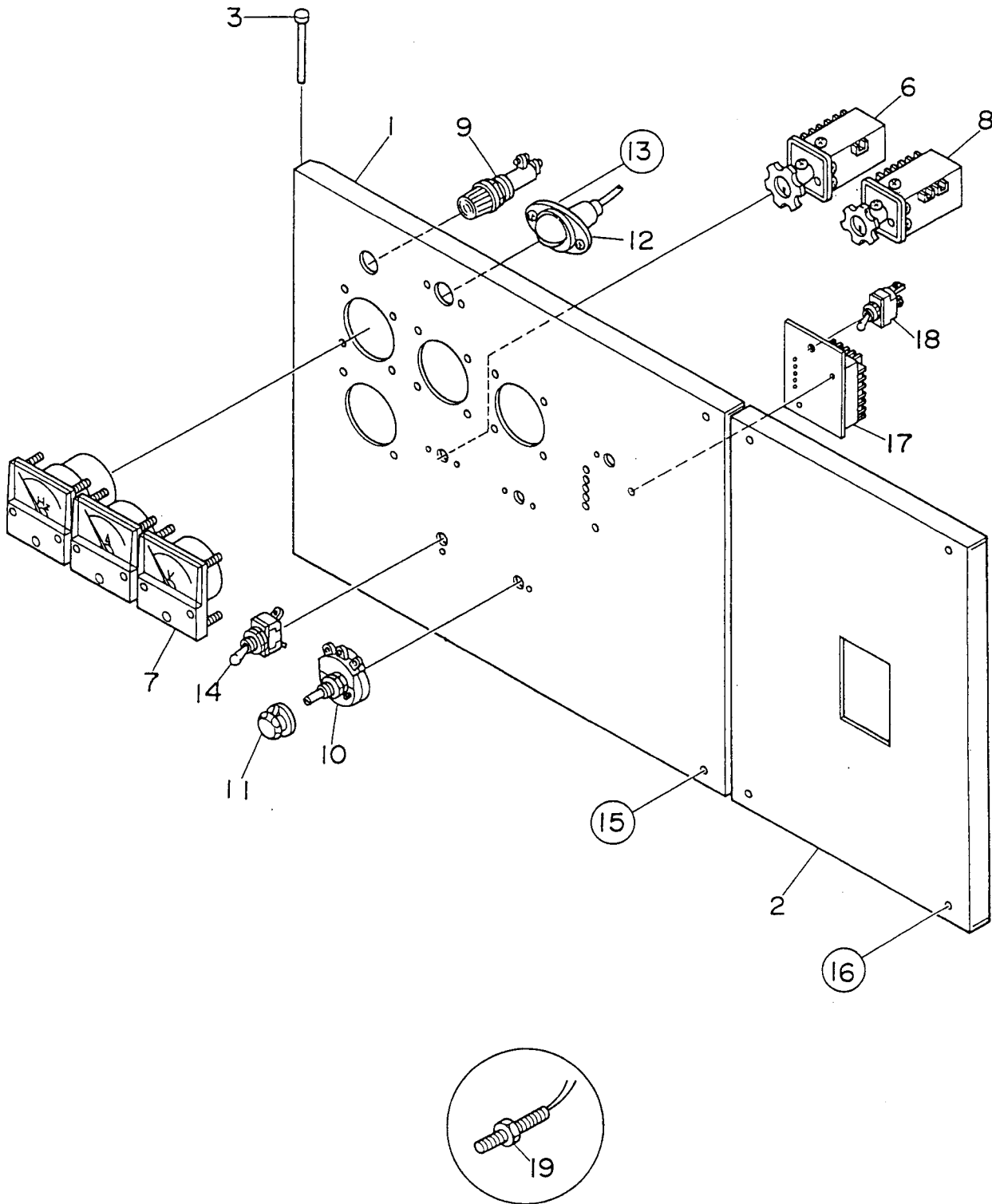
DCA-220SSK — CONTROL BOX ASSY. (OPTIONAL PARTS)

CONTROL BOX ASSY. (OPTIONAL PARTS) UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
37	0601801040	CHANGE-OVER SWITCH, AMMETER	1	SL2AS
38	0601800239	AC VOLTMETER	1	PCK80 0~600V
39	0601801041	CHANGE-OVER SWITCH, AMMETER	1	SL2 VS
40	0601800570	AC WATTMETER	1	PWTK8020~0~200kW INCLUDE ITEM W/#
40-1#	0601804021	TRANSDUCER, WATTMETER	1	WT64M
41	0027104010	MACHINE SCREW	4	
42	0601810072	PILOT LAMP	1	LP132DC 220V
	0601810261	BULB, 13W	1	
43	0601840073	RHEOSTAT (VOLTAGE REGULATOR)	1	RA20A2SE102BJ
44	0601840121	KNOB	1	
45	0601822408	EARTH LEAKAGE RELAY	1	TZS15HC-D 30mA INCLUDE ITEM W/+
45-1+	0601802810	ZERO-PHASE-SEQUENCE CURRENT TRANSFORMER	1	TZS-15
46	0840303303	BRACKET, EARTH LEAKAGE RELAY	1	
47	021004020	MACHINE SCREW	2	
	040004000	LOCK WASHER	2	
	031104080	PLAIN WASHER	2	REPLACES 0041204000
48	0027104010	MACHINE SCREW	2	
49	0027104010	MACHINE SCREW	4	
50	0601810072	SYNCHRONIZING LAMP	2	LD132DC 220V
	0601810261	BULB, 13W	2	
51	0601830682	SELECTOR SWITCH, SINGLE/PAR.	1	AH30P2B31
52	0601910161	PANEL LIGHT	1	V 325070
	0601810214	BULB	1	
53	0030004000	HEX. NUT	2	REPLACES 0207004000
54	0601830710	SWITCH, PANEL LIGHT	1	
55	0805001304	SET SCREW	4	
56	031108160	PLAIN WASHER	4	REPLACES 0041608000
57	0605010710	SNAP RING	4	
58	3871824004	STOPPER, CONTROL PANEL	2	
59	952404470	PLAIN WASHER	2	REPLACES 0041606000
60	505015300	SNAP RING	2	REPLACES 0605010502
61	8181814504	COVER, CONTROL BOX	1	
62	0017106016	HEX. HEAD BOLT	13	
63	8181826504	SIDE PANEL , CONTROL BOX	2	
64	0017106016	HEX. HEAD BOLT	16	
65	8181827503	PANEL, CONTROL BOX	1	
66	0017106016	HEX. HEAD BOLT	12	
67	0105091025	HEX. HEAD BOLT	4	REPLACES 0010010025
	020310080	HEX. NUT	4	REPLACES 0030010000
	0040010000	LOCK WASHER	4	
	031110160	PLAIN WASHER	8	REPLACES 0041610000

DCA-220SSK — CONTROL PANEL ASSY.

CONTROL PANEL ASSY. S/N1337563~



DCA-220SSK — CONTROL PANEL ASSY.

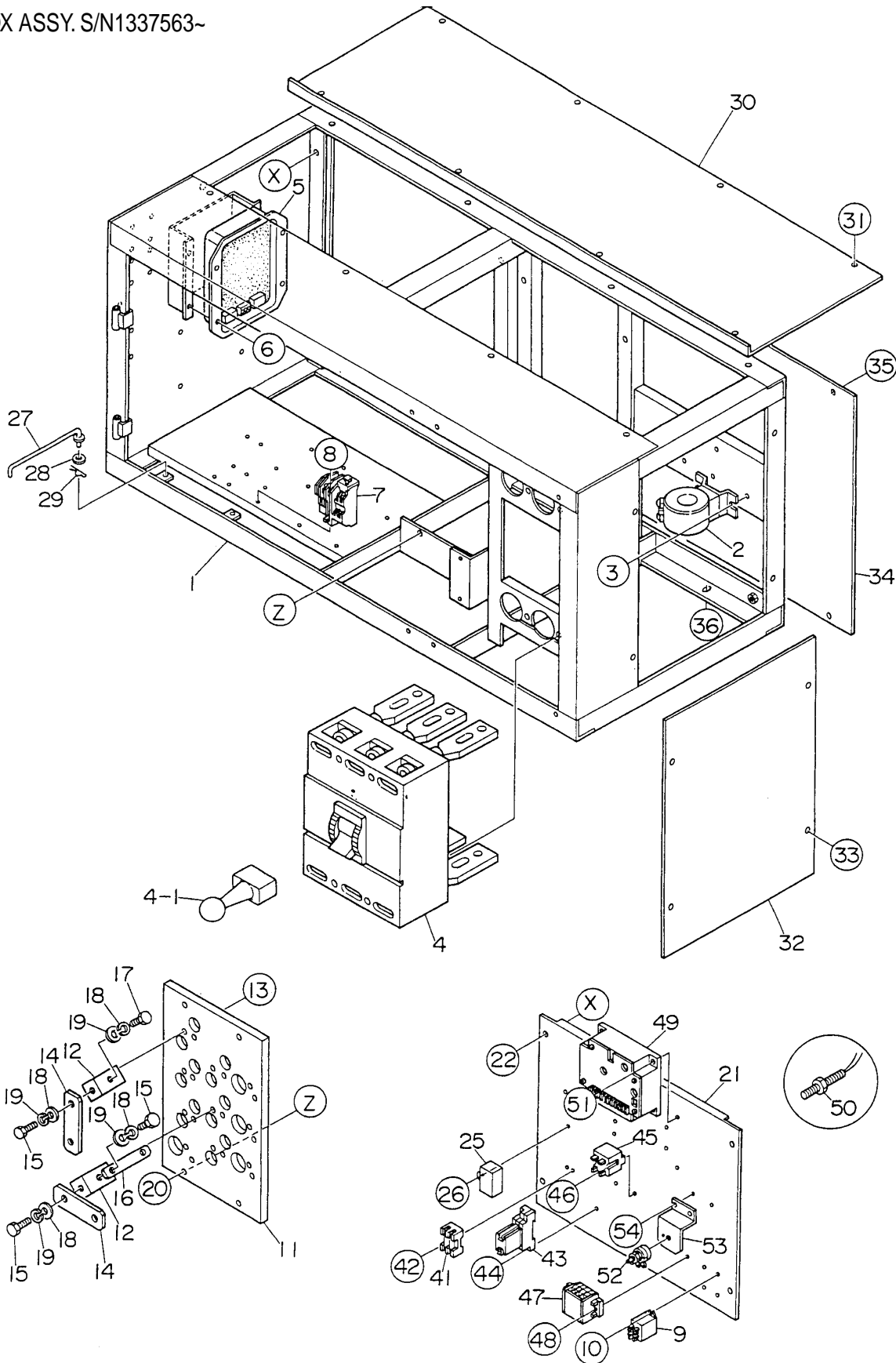
CONTROL PANEL ASSY. S/N1337563~

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1224000503	CONTROL PANEL	1	
2	C1224000603	CONTROL PANEL	1	
3	0605011211	PIN	2	
4	0601807622	FREQ. METER	1	RSC80F 45~65Hz 200V
5	0601806980	AC AMMETER	1	RSS80 0~400A
6	0601801040	CHG.OVR. SW.-AMMETER	1	SL2AS
7	0601806887	AC VOLTMETER	1	RSR80 0~600V
8	0601801041	CHG.OVR.SW-VOLTMETER	1	SL2VS
9	0601810072	PILOT LAMP	1	KO132DC 220V
	0601810261	BULB	1	
10	0601840073	RHEOSTAT (VOLTAGE REGULATOR)	1	RA20A2SE102BJ
11	060184012	KNOB	1	
12	0601810161	PANEL LIGHT	1	
	0601810214	BULB	1	
13	0207004000	HEX. NUT	2	
14	0601830710	SWITCH, PANEL LIGHT	1	
15	C9221100004	HEX. HEAD BOLT	2	
	0040008000	LOCKWASHER	2	
	0041208000	PLAIN WASHER	2	
	0080200007	SNAP RING	2	
16	0017108040	HEX. HEAD BOLT	4	
17	ECU9988N*	ENGINE CONTROLLER	1	REPLACES 0602202545
18	0601831340	SWITCH,82608DPDT	1	S/N3696501 TO3698120
18	0601830765	SWITCH,S3037;	1	S/N3698121~
19	DYNT11100	SPEED SENSOR	1	S/N3696501~; REPLACES 0602120497

***NOTE:
WHEN ORDERING PART NUMBER 17,
PLEASE INDICATE SERIAL NUMBER.**

DCA-220SSK — CONTROL BOX ASSY.

CONTROL BOX ASSY. S/N1337563~



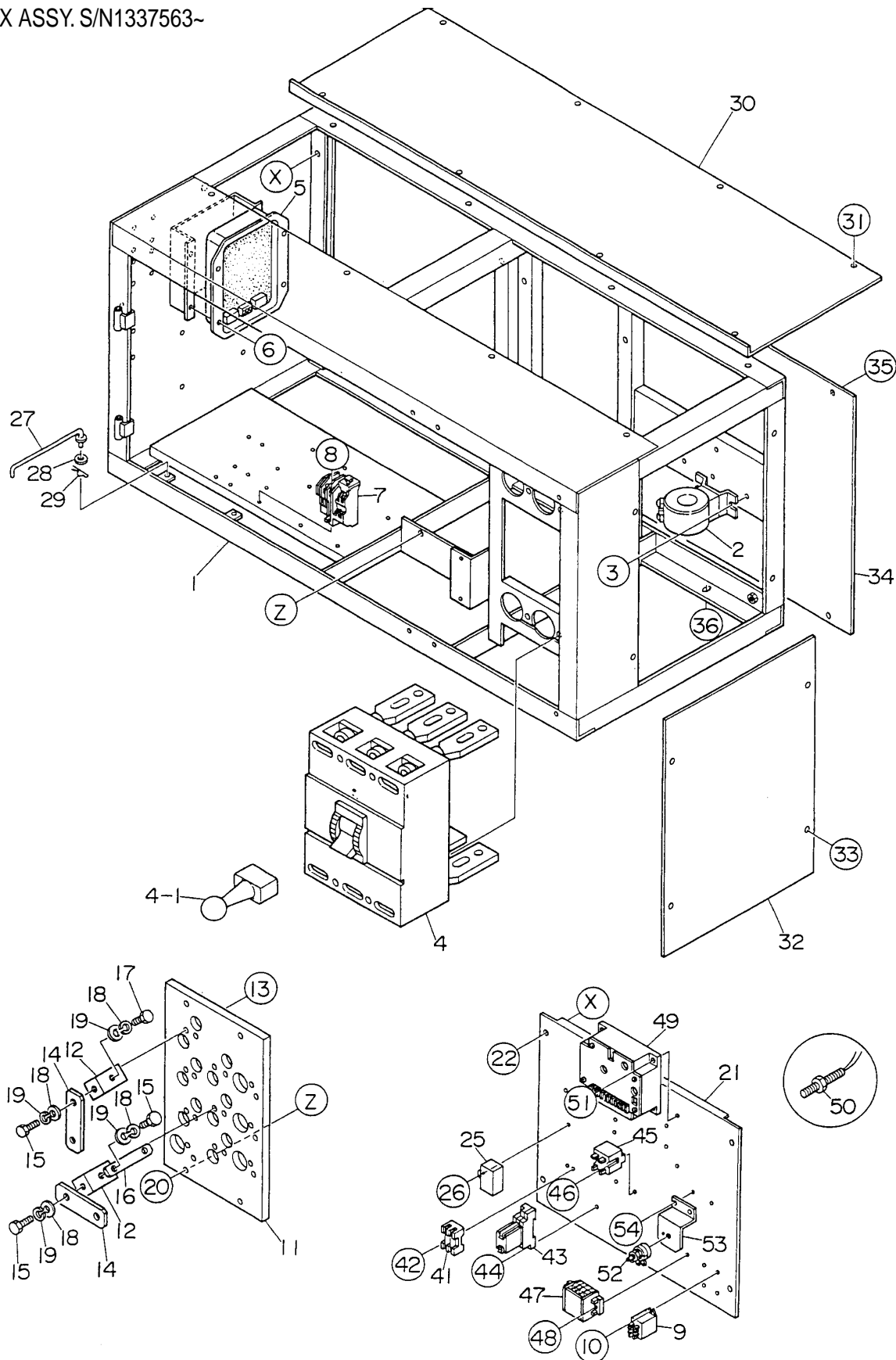
DCA-220SSK — CONTROL BOX ASSY.

CONTROL BOX ASSY. S/N1337563~

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1214000412	CONTROL BOX	1	S/N 1337563 TO3690734
1	C1214000422	CONTROL BOX	1	S/N3690735~
2	0601806133	TRANSFORMER, AMMETER	3	CT5MRN
3	0027106016	MACHINE SCREW	6	
4	0601807364	CIRCUIT BREAKER	1	XE600NS 600A
4-1	0601802525	HANDLE, CIRCUIT BREAKER	1	
5	0601820625	AUTOMATIC VOLTAGE REGULATOR ...	1	NTA5A2T
6	0027105016	MACHINE SCREW	4	
7	0601820892	OVER CURRENT RELAY	1	THN20HZKP3.6A
8	0027104016	MACHINE SCREW	2	
9	0601824542	RELAY	2	
10	0027103010	MACHINE SCREW	4	
11	C1274000103	SET BOARD CHANGE TERMINAL	1	
12	8181852104	CHANGE TERMINAL	10	
13	0017106025	HEX. HEAD BOLT	20	
14	8181853104	CHANGE PLATE	6	
15	8131852504	HEX. HEAD BOLT	13	
16	C0277200004	TERMINAL PLATE	3	
17	0801831804	HEX. HEAD BOLT	13	
18	0040010000	LOCKWASHER	26	
19	0041410000	PLAIN WASHER	26	
20	0017108030	HEX. HEAD BOLT	4	
21	C1261500114	SET PANEL, ELECTRIC PARTS	1	S/N1337563 TO 3696500
21	C1261501304	SET PANEL, ELECTRIC PARTS	4	S/N3696501~
22	0017108020	HEX. HEAD BOLT	4	
23	6008151252	EMERGENCY RELAY	1	S/N3690735 TO 3701661 REPLACES0602200446
24	0017106016	HE.X HEAD BOLT	4	S/N3690735 TO 3701661
25	0602201911	UNIT, BATTERY SENSOR	1	C7038A0000
26	0027106016	MACHINE SCREW	1	
27	3871824004	STOPPER, CONTROL PANEL	1	
28	0041206000	PLAIN WASHER	1	
29	0605010502	SNAP PIN	1	
30	C1214500004	COVER, CONTROL BOX	1	
31	0017108020	HEX. HEAD BOLT	8	
32	C1214300004	SIDE PANEL, CONTROL BOX	1	
33	0017108020	HEX. HEAD BOLT	4	
34	C1214400004	PANEL, CONTROL BOX	1	
35	0017108020	HEX. HEAD BOLT	8	
36	0017110025	HEX. HEAD BOLT	4	
37	0601823861	STOP UNITMSA9014.....	1	S/N3696501 TO 3701661
38	0027104010	MACHINE SCREW	2	S/N3696501 TO 3701661

DCA-220SSK — CONTROL BOX ASSY.

CONTROL BOX ASSY. S/N1337563~



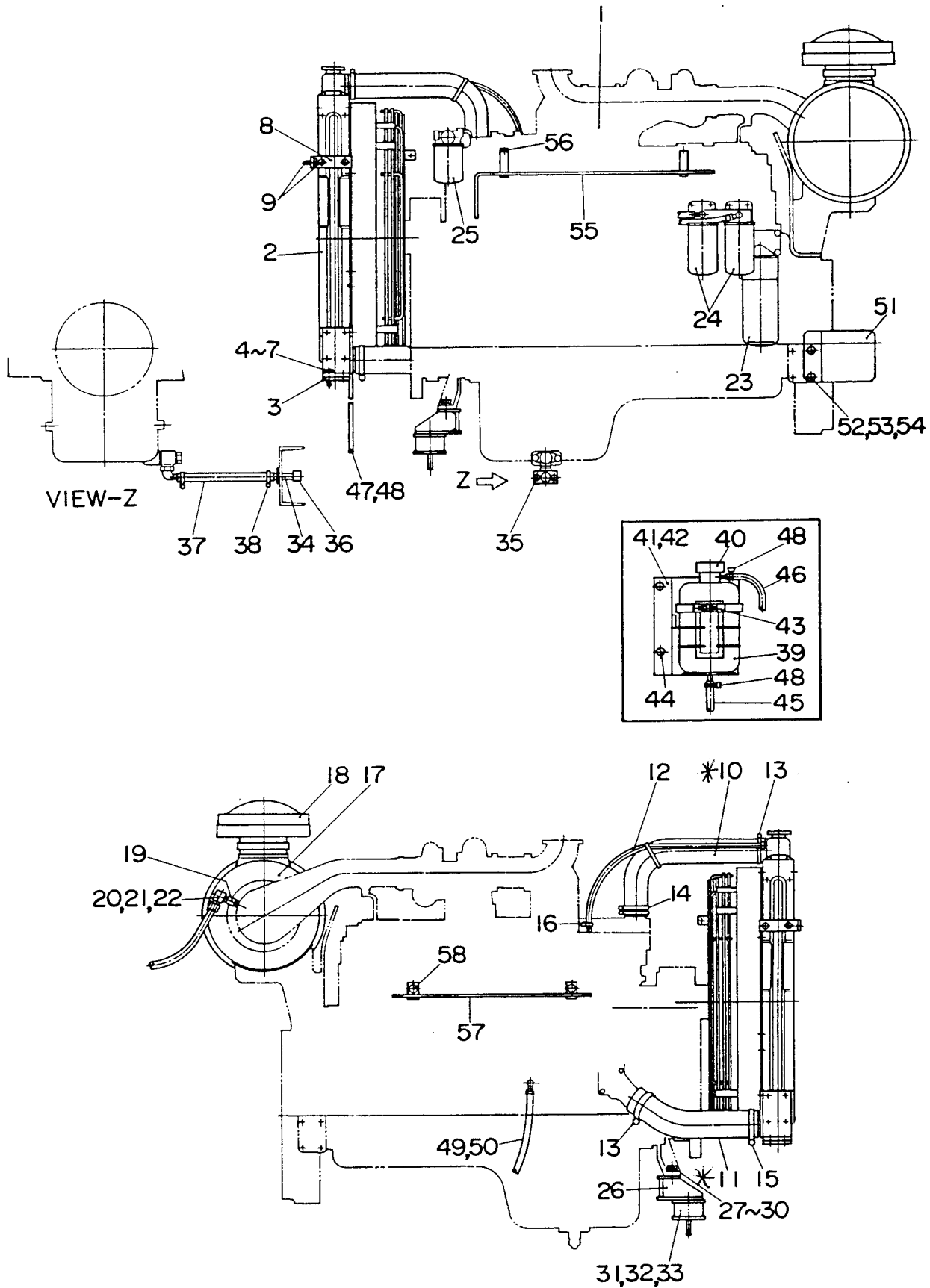
DCA-220SSK — CONTROL BOX ASSY.

CONTROL BOX ASSY. S/N1337563~

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
39	0601823240	RECTIFIER;DE4503	4	S/N3696501 TO 3701661
40	0027104030	MACHINE SCREW	2	S/N3696501 TO 3701661
41	0601802149	FUSE;10A	1	
	0601806671	FUSE;15A	1	S/N3701662~
	0601802218	HOLDER, FUSE	1	S/N3696501~
42	0027103020	MACHINE SCREW	1	
43	0601823732	RELAY;LY2DC24V	1	S/N6396501 TO3699126
	0601827655	RELAY;LY2DDC24V	1	S/N369501~
	0601823109	SOCKET;PTF08A	1	S/N369501~
	PYCA1	HOLDER	1	S/N3696501~;REPLACES 0601824400
44	0027104020	MACHINE SCREW	2	S/N3696501~
45	0601823706	RELAY;HE1ADC24V	1	S/N3696501~
46	0027104010	MACHINE SCREW	2	S/N3696501~
47	0601815402	TERMINAL BOARD	1	S/N3696501~
48	0027104020	MACHINE SCREW	2	S/N3696501~
49	DYN110654000024	CONTROLLER	1	S/N3701662~;REPLACES 0602202598
50	DYNT11200	SPEED SENSOR	1	S/N3701662~;REPLACES 0602120498
51	0027104020	MACHINE SCREW	4	S/N3701662~
52	0601840009	RHEOSTAT;RA20A2SE502BJ	1	S/N3701662~
53	C3262600004	BRACKET	1	S/N3701662~
54	0017106015	HEX. HEAD BOLT	1	S/N3701662~

DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. UP TO S/N1337562



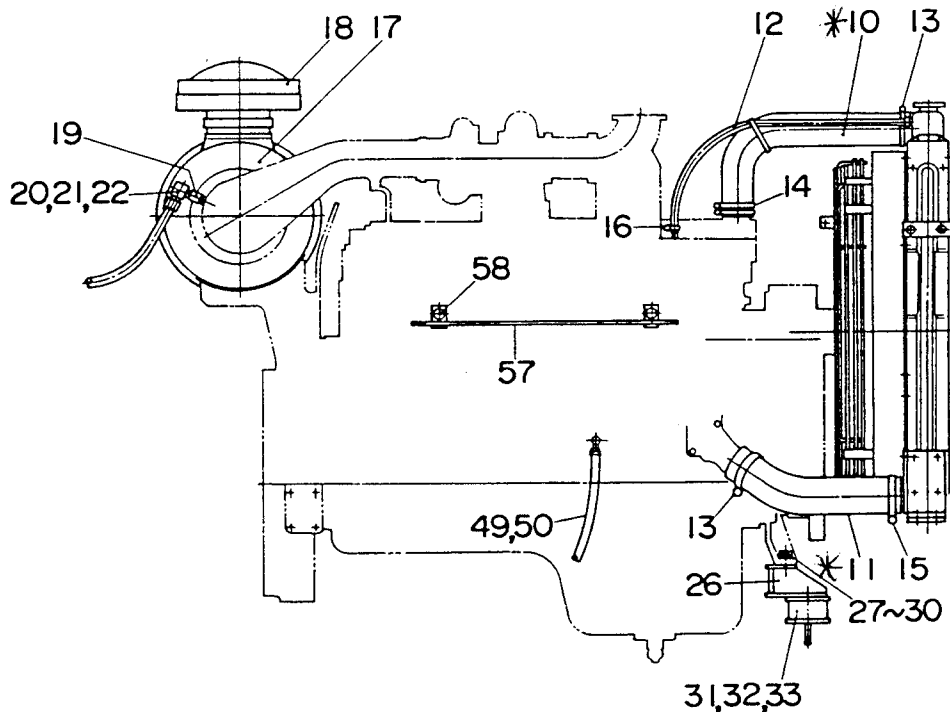
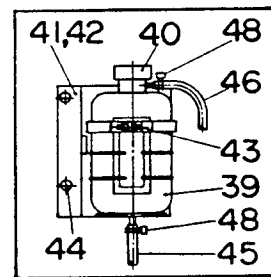
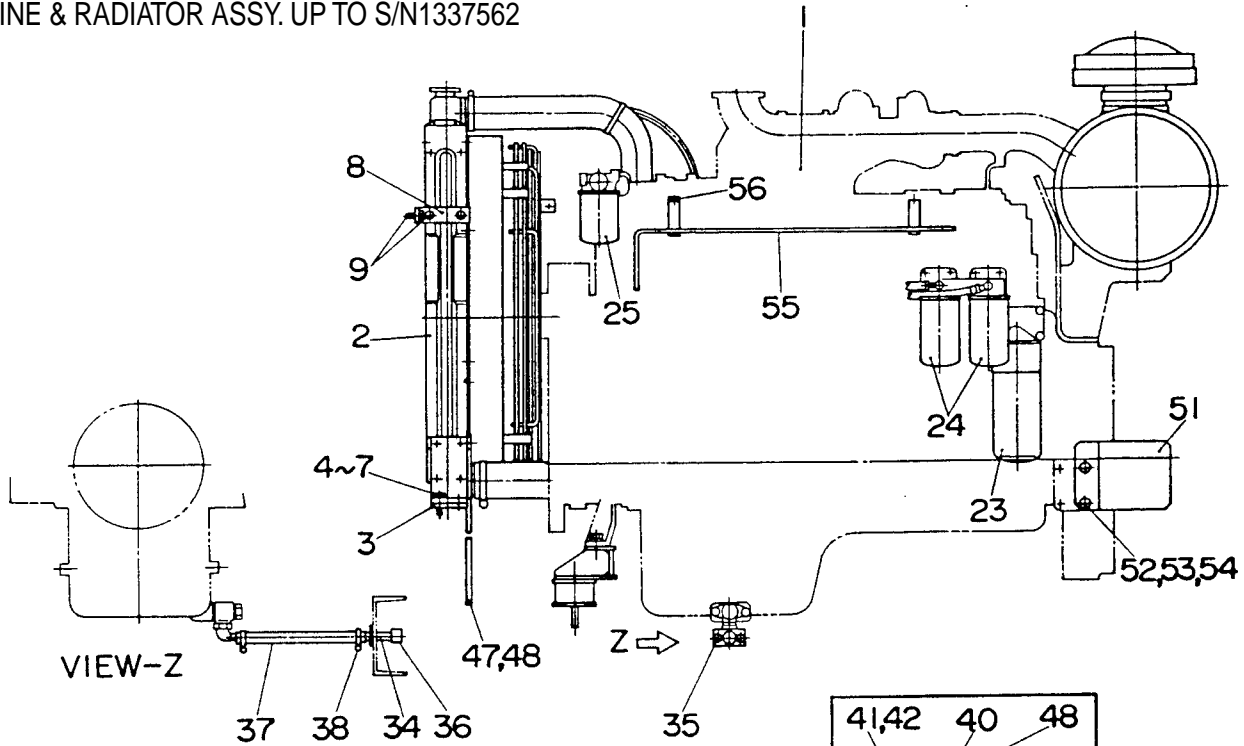
DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	0602000123	ENGINE	1	S6D125-1
2	615619350	RADIATOR	1	REPLACES 0602011866
3	615619340	RUBBER SHEET	2	REPLACES 0605000073
4	0010012045	HEX. HEAD BOLT	4	
5	0030012000	HEX. NUT	4	
6	0040012000	LOCK WASHER	4	
7	0041612000	PLAIN WASHER	4	
8	8185123004	BRACKET, RADIATOR	2	
9	0017110025	HEX. HEAD BOLT	6	
10	6151619320	RADIATOR HOSE	1	REPLACES 0602013976
11	6151619330	RADIATOR HOSE	1	REPLACES 0602014469
12	0726020980	RADIATOR HOSE	1	REPLACES 0602013977
13	0728100909	HOSE BAND	2	REPLACES 0602014056
14	0728100809	HOSE BAND	2	REPLACES 0602014067
15	0728101029	HOSE BAND	1	REPLACES 0602014350
16	0728100197	HOSE BAND	2	REPLACES 0602014058
17	0728001920	AIR CLEANER	1	REPLACES 0602040057
	6125817032	ELEMENT, AIR CLEANER	1	REPLACES 0602040156
18	6001811510	CAP, AIR CLEANER	1	REPLACES 0602040751
19	6203306104	SOCKET	1	
20	0603301000	ELBOW UNION	1	
21	0603302000	SLEEVE	1	
22	0603303000	NUT	1	
23	6002111231	CARTRIDGE, OIL FILTER	1	REPLACES 0602041146
24	6003118293	CARTRIDGE, FUEL FILTER	2	REPLACES 0602042146
25	6004111151	CARTRIDGE, CORROSION RESISTOR	1	REPLACES 0602045147 & 6004111020
26	8185112004	ENGINE FOOT	1	
27	0010018060	HE.X HEAD BOLT	2	
28	0030018000	HEX. NUT	2	
29	0040018000	LOCK WASHER	2	
30	0041618000	PLAIN WSAHER	4	
31	060500011	RUBBER SUSPENSION	2	
32	0030016000	HEX. NUT	4	
33	0040016000	LOCK WASHER	4	
34	7492025104	DRAIN JOINT	1	
35	0017108025	HEX. HEAD BOLT	2	
36	0131904000	CAP	1	
37	7492026104	DRAIN HOSE	1	
38	0605515091	HOSE BAND	2	
39	0802081003	RESERVE TANK	1	

DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. UP TO S/N1337562



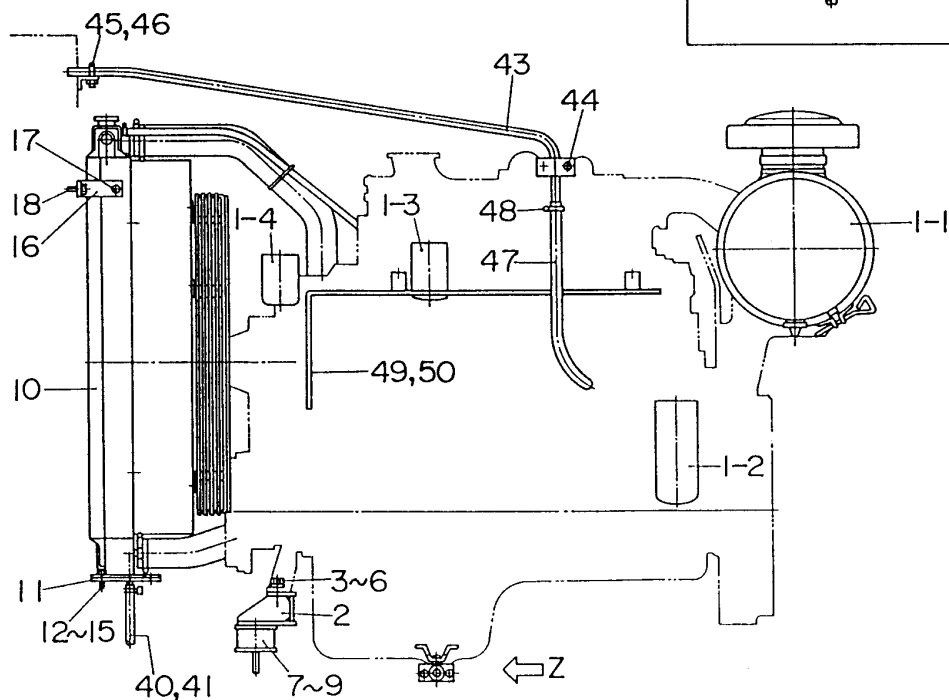
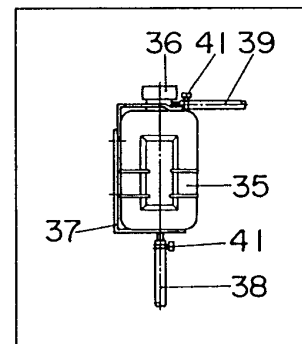
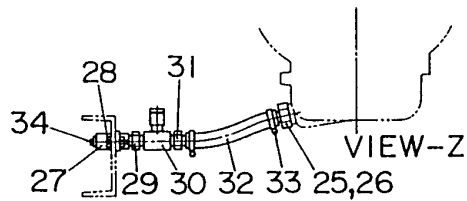
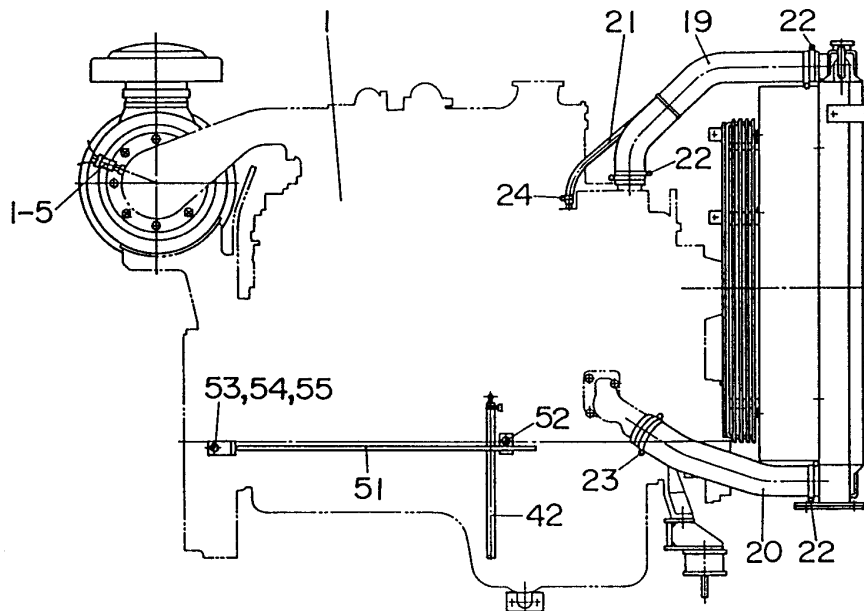
DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
40	0602010900	CAP, RESERVE TANK	1	
41	8182082103	BRACKET, RESERVE TANK	1	
42	0225000600	RUBBER CUSHION	1	
43	0017106025	HEX. HEAD BOLT	1	
44	0017108020	HEX. HEAD BOLT	2	
45	0199601100	HOSE	1	
46	0193601400	HOSE	1	
47	0193600500	HOSE	1	
48	0605515024	HOSE BAND	4	
49	0194800750	HOSE	1	
50	0605515000	HOSE BAND	1	
51	8185199004	PANEL	1	
52	0010016020	HEX. HEAD BOLT	2	
53	0040016000	LOCK WASHER	2	
54	0041616000	PLAIN WASHER	2	
55	8182256304	SUPPORT ROD	1	
56	0017110020	HEX. HEAD BOLT	2	
57	8182256104	SUPPORT ROD	1	
58	0017108016	HEX. HEAD BOLT	2	

DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. S/N1337563 TO 3690734



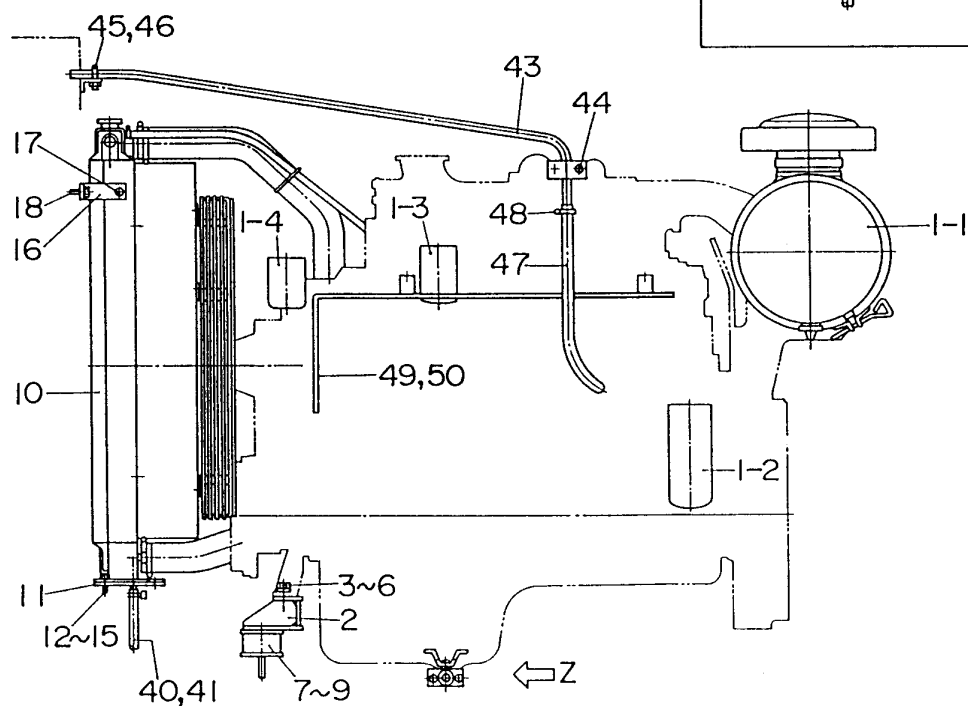
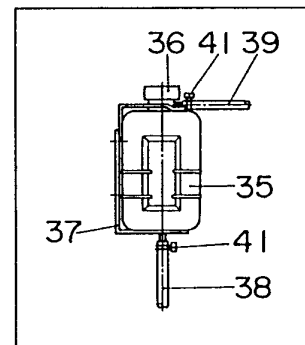
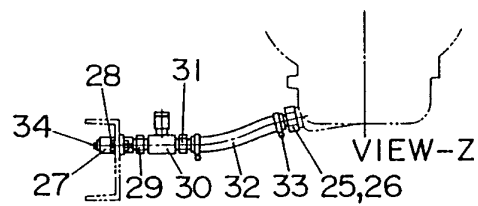
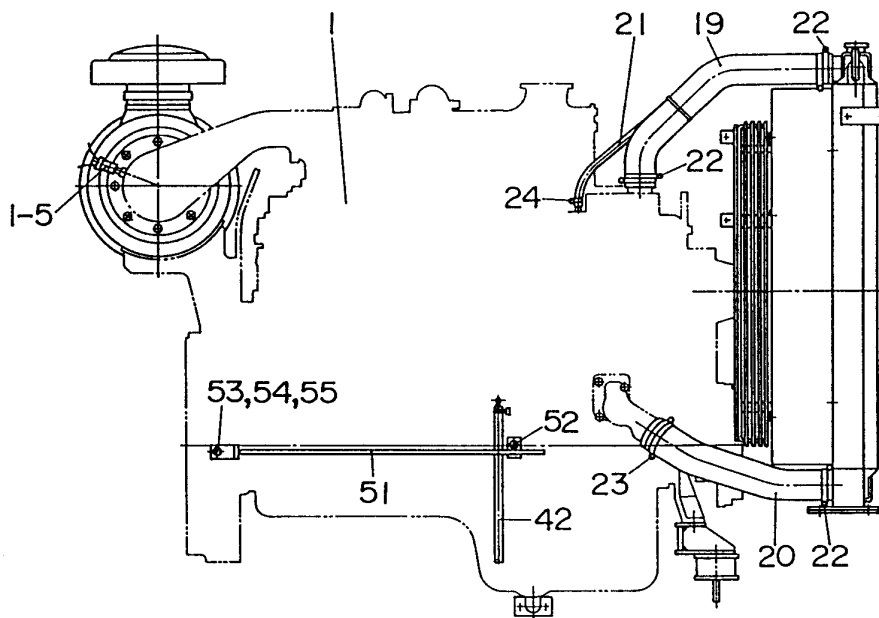
DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. S/N1337563 TO3690734

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1924200024	ENGINE	1	KOMATSU S6D125E-2
1-1	6125817032	ELEMENT, AIR CLEANER	1	REPLACES 0602040156
1-2	6002111231	CARTRIDGE, OIL FILTER	1	REPLACES 0602041146
1-3	6003118293	CARTRIDGE, FUEL FILTER	1	REPLACES 0602042146
1-4	6004111151	CARTRIDGE, CORROSION RESISTOR.....	1	REPLACES 0602045143
1-5	0602040678	DUST SENSOR;	1	REX018126
2	8185112004	ENGINE FOOT	1	
3	0010118060	HEX. HEAD BOLT	2	
4	0030018000	HEX. NUT	2	
5	0040018000	LOCK WASHER	2	
6	0041218000	PLAIN WASHER	4	
7	0605000011	RUBBER SUSPENSION	2	
8	0030016000	HEX. NUT	4	
9	0040016000	LOCK WASHER	4	
10	6252619720	RADIATOR	1	REPLACES 0602011946
11	6152619170	RUBBER SHEET	2	REPLACES 0605000490
12	0010112050	HEX. HEAD BOLT	4	
13	0030012000	HEX. NUT	4	
14	0040012000	LOCK WASHER	4	
15	0041212000	PLAIN WASHER	8	
16	8195123104	BRACKET, RADIATOR	2	
17	0017112025	HEX. HEAD BOLT	2	
18	0017110025	HEX. HEAD BOLT	2	
19	6152621520	RADIATOR HOSE	1	REPLACES 0602014513
20	6152611531	RADIATOR HOSE	1	REPLACES 0602014641
21	0726120911	RADIATOR HOSE	1	REPLACES 0602014541
22	0728100809	HOSE BAND	6	REPLACES 0602014067
23	0728100909	HOSE BAND	2	REPLACES 0602014056
24	0728100197	HOSE BAND	2	REPLACES 0602014058
25	3972054104	DRAIN JOINT	1	
26	3972054304	PACKING	1	
27	C9601000104	DRAIN JOINT	1	
28	0017108025	HEX. HEAD BOLT	2	
29	0131508000	NIPPLE	1	
30	0603325017	VALVE	1	

DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. S/N1337563 TO 3690734



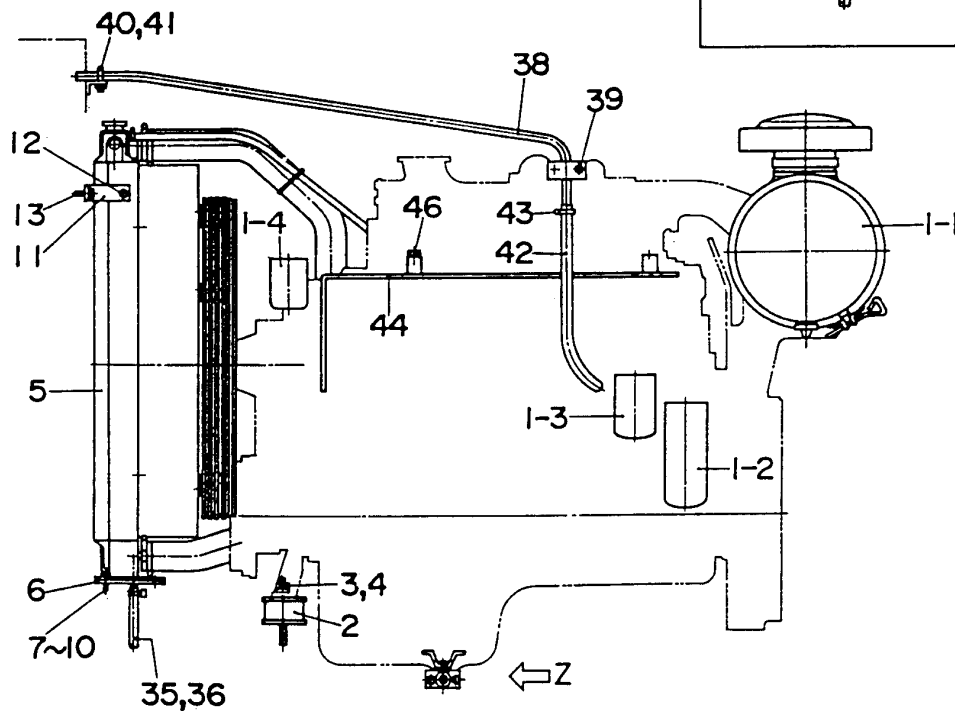
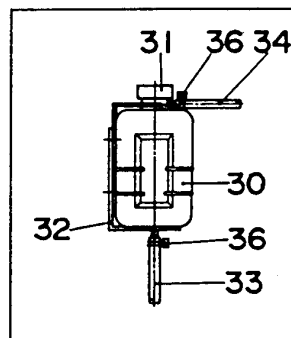
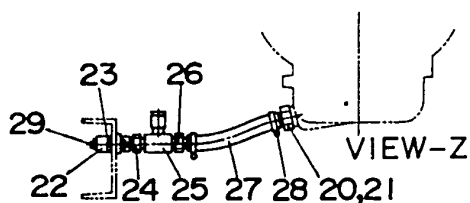
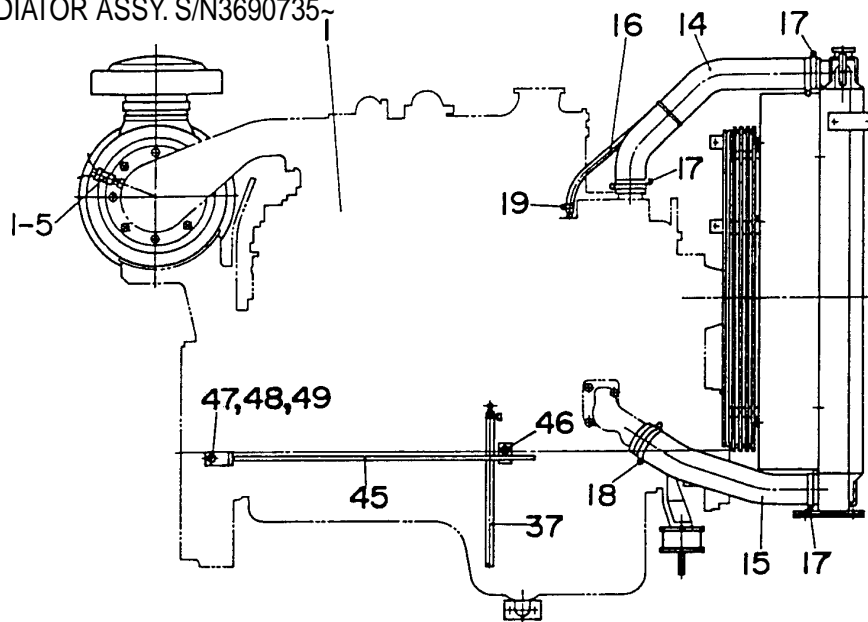
DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. S/N1337563 TO 3690734

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
31	0602022294	HOSE JOINT	1	
32	0265800260	DRAIN HOSE	1	
33	0605515074	HOSE BAND	2	
34	0132008000	PLUG	1	
35	0802081003	RESERVE TANK	1	
36	0602010900	CAP, RESERVE TANK	1	
37	C1317100103	BRACKET, RESERVE TANK	1	
38	0193601300	HOSE	1	
39	0199601300	HOSE	1	
40	0193600550	HOSE	1	
41	0605515013	HOSE BAND	4	
42	0194800750	HOSE	1	
43	C1327100103	BREATHER PIPE	1	
44	0017108020	HEX. HEAD BOLT	2	
45	0603320111	U BOLT	1	
46	0207008000	HEX. NUT	2	
47	0268500650	HOSE	1	
48	0605515073	HOSE BAND	2	
49	C1358300804	CLAMPER ROD	1	
50	0017110020	HEX. HEAD BOLT	4	
51	C1358300104	CLAMPER ROD	1	
52	0017110020	HEX. HEAD BOLT	1	
53	0010016030	HEX. HEAD BOLT	1	
54	0040016000	LOCK WASHER	1	
55	0041216000	PLAIN WASHER	1	

DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. S/N3690735-



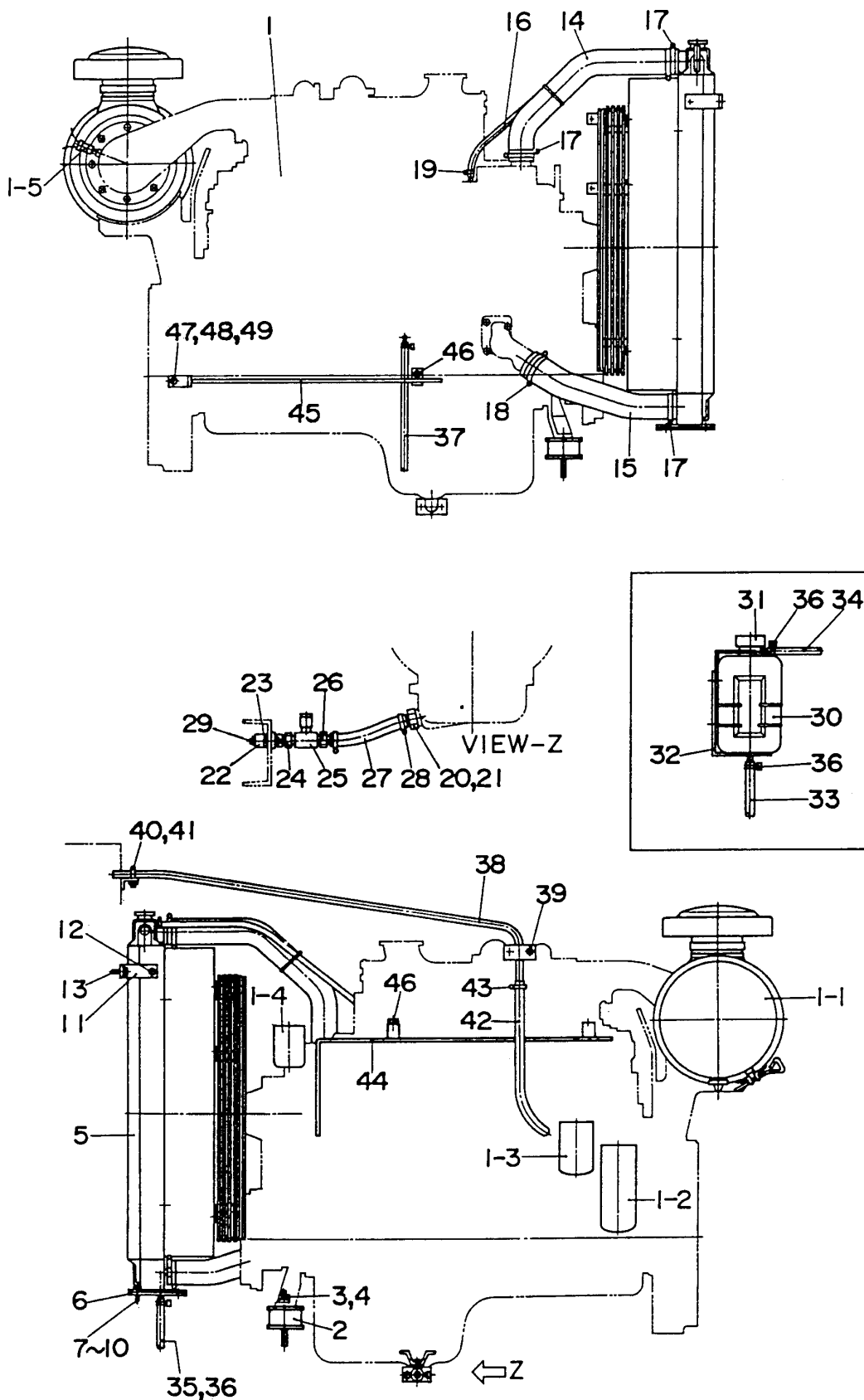
DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. S/N3690735~

NO	PART NO	PART NAME	QTY.	REMARKS
1	C1924200144	ENGINE	1	KOMATSU S6D125E-2; S/N3690735 TO 3701661
	C1925200064	ENGINE	1	KOMATSU S6D125E2;S/N3701662~
1-1	6125817032	ELEMENT, AIR CLEANER	1	REPLACES 0602040156
1-2	6002111231	CARTRIDGE, OIL FILTER	1	REPLACES 0602041146
1-3	6003118293	CARTRIDGE, FUEL FILTER	1	REPLACES 0602042146
1-4	6004111151	CARTRIDGE, CORROSION RESISTOR	1	REPLACES 0602045143
1-5	0602040678	DUST SENSOR	1	REX018126
2	0605000011	RUBBER SUSPENSION	2	
3	0030016000	HEX. NUT	4	
4	0040016000	LOCK WASHER	4	
5	6152619720	RADIATOR	1	REPLACES 0602011946
6	6152619170	RUBBER SHEET	2	REPLACES 0605000490
7	0010112050	HEX. HEAD BOLT	4	
9	0040012000	LOCK WASHER	4	
10	0041212000	PLAIN WASHER	8	
11	8195123104	BRACKET, RADIATOR	2	
12	0017112025	HEX. HEAD BOLT	2	
13	0017110025	HEX. HEAD BOLT	2	
14	6152621520	RADIATOR HOSE	1	REPLACES 0602014549
15	6152611531	RADIATOR HOSE	1	REPLACES 0602014641
16	0726120911	RADIATOR HOSE	1	REPLACES 0602014541
17	0728100809	HOSE BAND	6	REPLACES 0602014067
18	0728100909	HOSE BAND	2	REPLACES 0602014056
19	0728001920	HOSE BAND	2	REPLACES 0602014058
20	3972054104	DRAIN JOINT	1	
21	3972054304	PACKING	1	
22	C9601000104	DRAIN JOINT	1	
23	0017108025	HEX. HEAD BOLT	2	
24	0131508000	NIPPLE	1	
25	0603325017	VALVE	1	
26	0602022294	HOSE JOINT	1	
27	0265800240	DRAIN HOSE	1	
28	0605515074	HOSE BAND	2	

DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. S/N3690735~



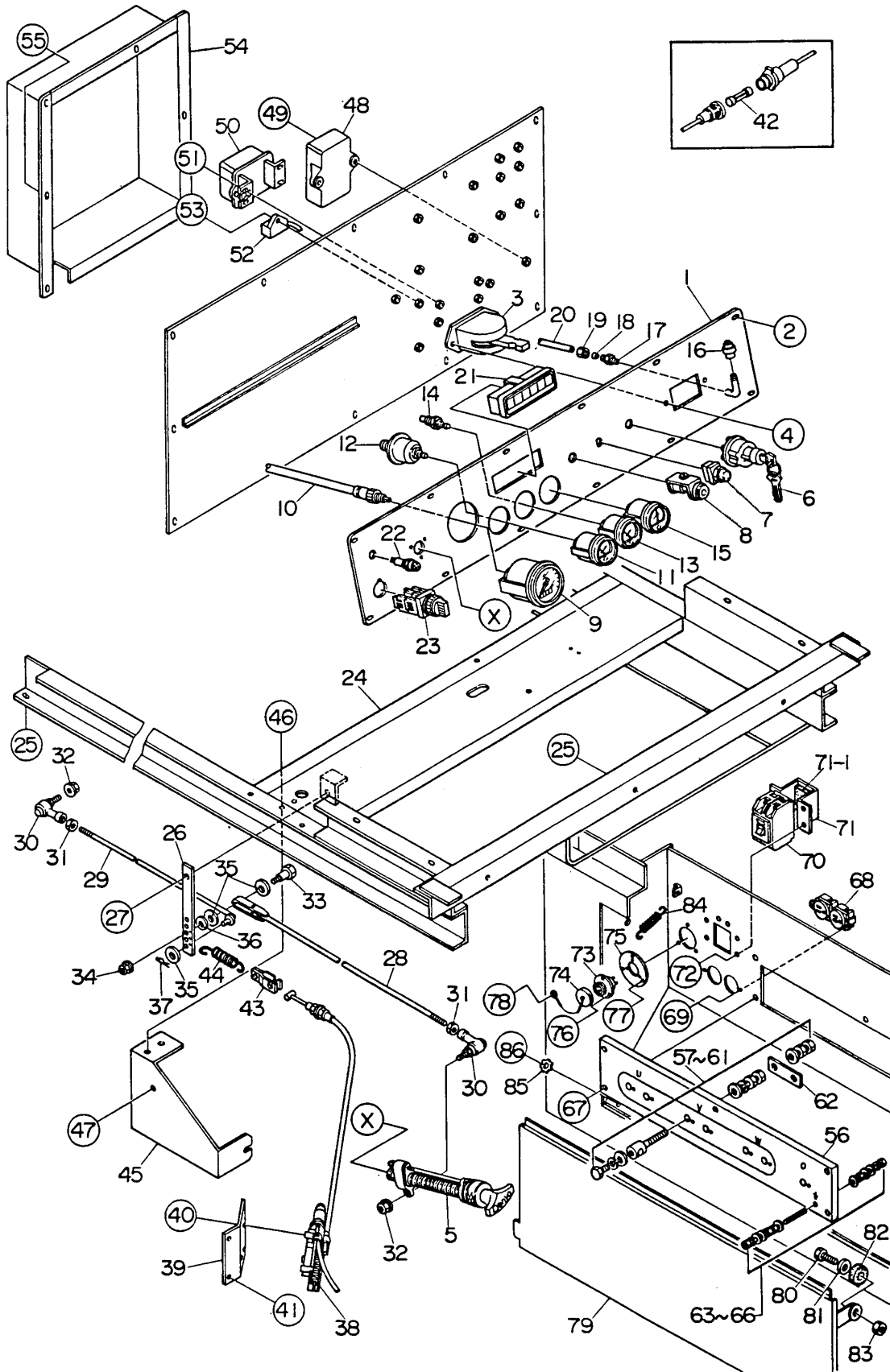
DCA-220SSK — ENGINE & RADIATOR ASSY.

ENGINE & RADIATOR ASSY. S/N3690735~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
29	0132008000	PLUG	1	
30	0802081003	RESERVE TANK	1	
31	0602010900	CAP, RESERVE TANK	1	
32	C1317100103	BRACKET, RESERVE TANK	1	
33	0199601300	HOSE	1	
34	0193601300	HOSE	1	
35	0193600550	HOSE	1	
36	0605515013	HOSE BAND	4	
37	0194800750	HOSE	1	
38	C1327100103	BREATHER PIPE	1	
39	0017108020	HEX. HEAD BOLT	2	
40	0603320111	U BOLT	1	
41	0207008000	HEX. NUT	2	
42	0268500650	HOSE	1	
43	0605515073	HOSE BAND	2	
44	C1358300804	CLAMPER ROD	1	S/N3690735 TO3691726
44	C1358300814	CLAMPER ROD	1	S/N3691727~
45	C1358300104	CLAMPER ROD	1	
46	0017110020	HEX. HEAD BOLT	3	
47	0010016030	HEX. HEAD BOLT	1	
48	0040016000	LOCK WASHER	1	
49	0041216000	PLAIN WASHER	1	

DCA-220SSK — ENGINE OPERATING AND OUTPUT TERMINAL ASSY.

ENGINE OPERATING AND OUTPUT TERMINAL ASSY. UP TO S/N1337562



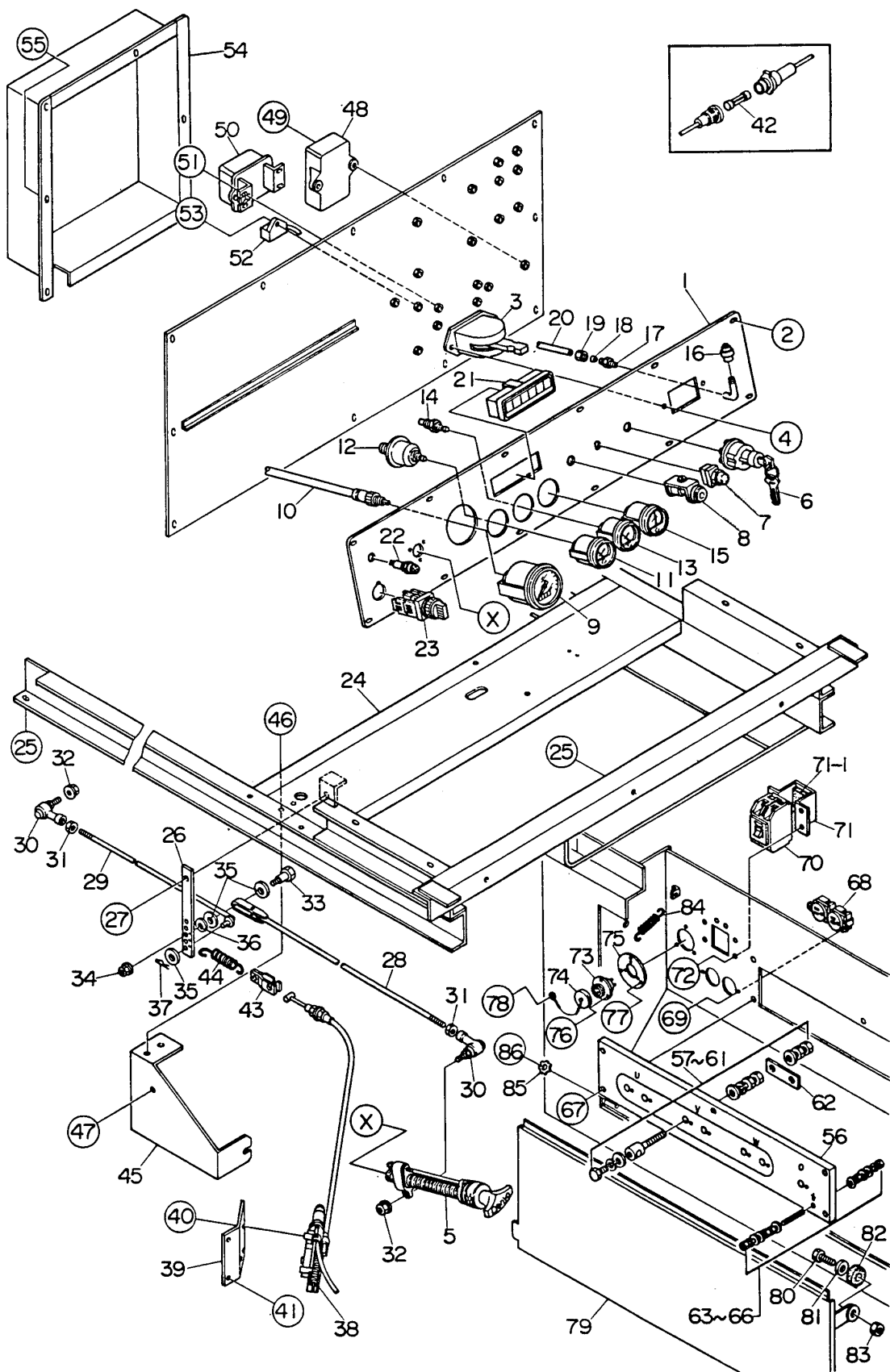
DCA-220SSK — ENGINE OPERATING AND OUTPUT TERMINAL ASSY.

ENGINE OPERATING AND OUTPUT TERMINAL ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8182111003	OPERATING PANEL	1	
	8182111303	OPERATING PANEL	1	
2	0017106016	HEX. HEAD BOLT	12	
3	0602101000	BATTERY SWITCH	1	9827300090
4	0021008080	MACHINE SCREW	2	
	020108060	HEX. NUT	2	REPLACES 0030008000
	0040008000	LOCK WASHER	2	
	031108160	PLAIN WASHER	4	REPLACES 0041608000
5	0800250300	THROTTLE HANDLE	1	
6	6008155390	STARTER SWITCH	1	REPLACES 0602100049
7	0806410000	EMERGENCY STOP BUTTON	1	REPLACES 0602104045
8	6008153730	PREHEAT LAMP	1	REPLACES 0602102055
9	0602120054	TACHOMETER	1	25000KX3710
10	0602120178	CABLE, TACHOMETER	1	62100KX0700
11	0602122053	OIL PRESSURE GAUGE	1	42000KV0300
12	0602122200	UNIT, OIL PRESSURE	1	53000AC0101
13	0602123053	WATER TEMPERATURE GAUGE	1	40000KV0700
14	0602123204	UNIT, WATER TEMPERATURE	1	51400KA1200
15	0602121052	CHARGING AMMETER	1	43000KV0300
16	0602040690	INDICATOR, AIR CLEANER	1	RBX002252
17	0603300000	HALF UNION, PT 1/8 x 4	1	
18	0603302000	SLEEVE	1	
19	0603303000	NUT	1	
20	0190001000	NYLON PIPE	1	
21	0602115008	ENGINE WARNING DISPLAY LED	1	V 336760
	0601810204	BULB	6	
22	0602103091	CAUTION LAMP, RUNNING	1	REPLACES 0602103090
	0601810244	BULB	1	
23	0601830710	CHANGE-OVER SWITCH, AUTO/LOW	1	S/N1325370 TO 1326266;S301T
	0601830685	SPEED CHANGE-OVER SWITCH	1	S/N1326267~;AH30PCB032D
24	8185312002	SUPPORT LEG	1	
25	012010030	HEX. HEAD BOLT	5	REPLACES 0010010030
	020310080	HEX. NUT	2	REPLACES 0030010000
	0040010000	LOCK WASHER	5	
	031110160	PLAIN WASHER	7	REPLACES 0041610000
26	8192183004	LINK, GOVERNOR ROD	1	
27	0010010055	HEX. HEAD BOLT	1	
	020310080	HEX. NUT	1	REPLACES 0030010000
	031110160	PLAIN WASHER	2	REPLACES 0041610000
28	8182152004	GOVERNOR ROD	1	
29	8182152104	GOVERNOR ROD	1	
30	0602180106	BALL JOINT	2	
31	020108060	HEX. NUT	2	REPLACES 0030008000
32	0207006000	HEX. NUT	2	

DCA-220SSK — ENGINE OPERATING AND OUTPUT TERMINAL ASSY.

ENGINE OPERATING AND OUTPUT TERMINAL ASSY. UP TO S/N1337562



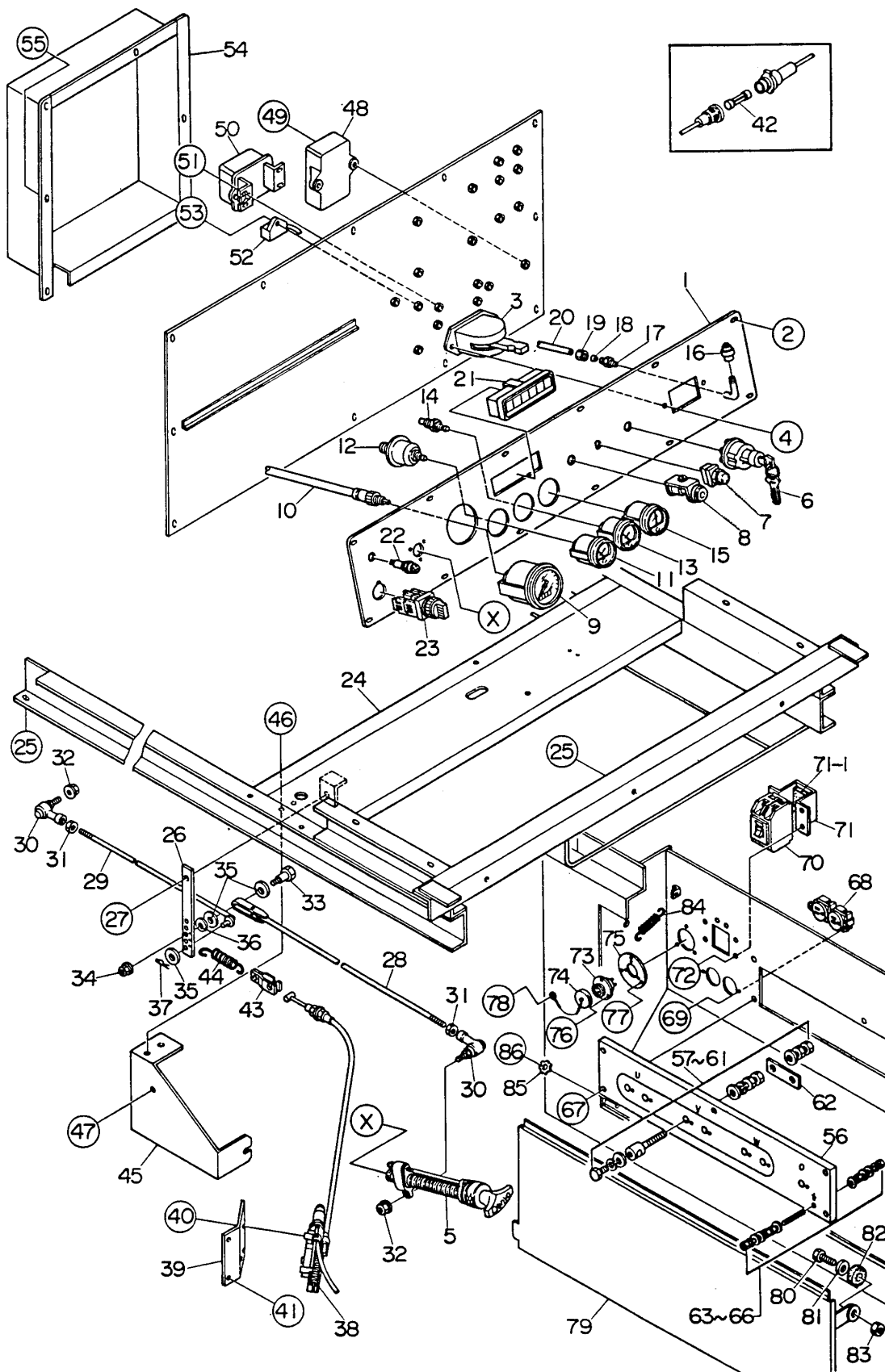
DCA-220SSK — ENGINE OPERATING AND OUTPUT TERMINAL ASSY.

ENGINE OPERATING AND OUTPUT TERMINAL ASSY. UP TO S/N1337562

NO	PART NO	PART NAME	QTY.	REMARKS
33	0802100704	PIN BOLT	1	
34	0207006000	HEX. NUT	1	
35	031108160	PLAIN WASHER	3	REPLACES 0041608000
36	952404470	PLAIN WASHER	1	REPLACES 0041606000
37	0605010503	SNAP PIN	1	
38	1819001931	CONTROLLER	1	REPLACES 0602210803
39	8182159304	BRACKET	1	
40	0027106012	MACHINE SCREW	3	
41	011008020	HEX. HEAD BOLT	4	REPLACES 0017108020
42	0601802133	FUSE	1	F-5 5A
43	0802100204	JOINT	1	
44	0802101204	SPRING	1	
45	8182159103	BRACKET	1	
46	011208030	HEX. HEAD BOLT	2	REPLACES 0017108030
47	0021005020	MACHINE SCREW	1	
	0032005000	LOCK WASHER	1	REPLACES 0040005000
	0041205000	PLAIN WASHER	1	
48	0601823873	UNIT, AUTO, IDLING	1	REPLACES 0601823872
49	011606025	HEX. HEAD BOLT	2	REPLACES 0017106025
50	6008151252	EMERGENCY RELAY	1	REPLACES 0602200446
51	0017106016	HEX. HEAD BOLT	4	
52	0602201910	UNIT, BATTERY SENSOR	1	C703900000
53	0027106016	MACHINE SCREW	1	
54	8182210113	COVER, ELECTRIC PARTS	1	
55	0017106016	HEX. HEAD BOLT	1	
56	8181860103	SET BOARD, OUTPUT TERMINAL	1	
57	0801830304	OUTPUT TERMINAL	7	
58	0801830804	HEX. HEAD BOLT	7	
59	0039316000	HEX. NUT	14	
60	0040016000	LOCK WASHER	21	
61	0041416000	PLAIN WASHER	28	
62	3461860504	TERMINAL PLATE	3	
63	0801832304	TERMINAL SCREW	1	
64	0039306000	HEX. NUT	5	
65	0040006000	LOCK WASHER	2	
66	0041406000	PLAIN WASHER	6	
67	0010008030	HEX. HEAD BOLT	5	
	0040008000	LOCK WASHER	5	
	031108160	PLAIN WASHER	5	REPLACES 0041608000
68	0601812597	RECEPTACLE, AUX. POWER;1136X	1	REPLACES 0601811018

DCA-220SSK — ENGINE OPERATING AND OUTPUT TERMINAL ASSY.

ENGINE OPERATING AND OUTPUT TERMINAL ASSY. UP TO S/N1337562



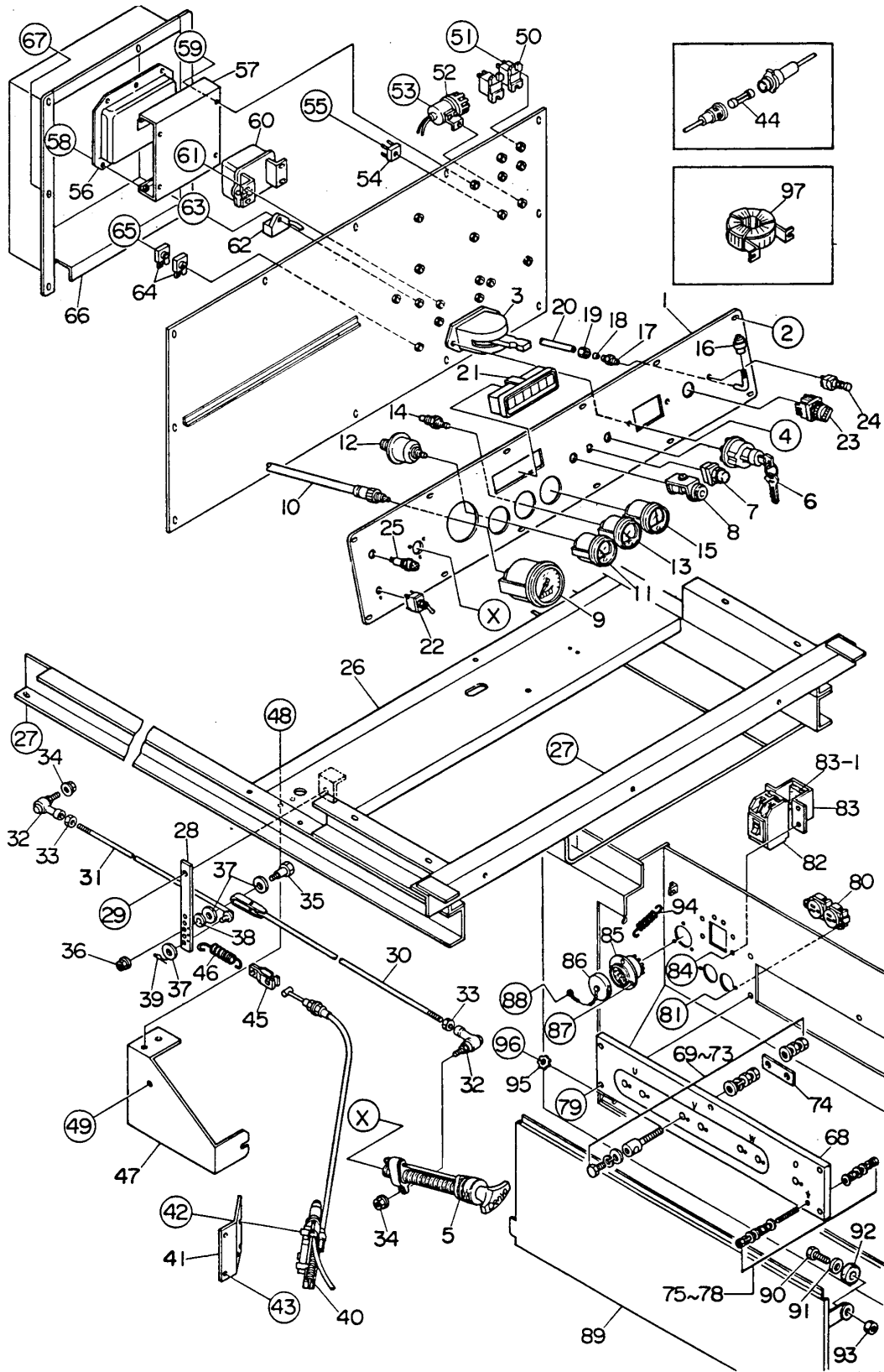
DCA-220SSK — ENGINE OPERATING AND OUTPUT TERMINAL ASSY.

ENGINE OPERATING AND OUTPUT TERMINAL ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
69	0025004016	MACHINE SCREW	2	
	0042304000	LOCK WASHER	2	
	0042404000	PLAIN WASHER	2	
70	0601802010	CIRCUIT BREAKER	1 KM-2 220V 15A
71	0845032304	BRACKET, CIRCUIT BREAKER	1	
71-1	0223300060	RUBBER CUSHION	1	
72	0019106020	HEX. HEAD BOLT	4	
	0042306000	LOCK WASHER	4	
	0042406000	PLAIN WASHER	4	
73	0601811262	RECEPTACLE REMOTE CONTROL	1 NWPC-254-RF
74	0601811409	CAP, RECEPTACLE	1 NWPC-25-RCa
75	0845044604	BRACKET	1	
76	0027103010	MACHINE SCREW	3 REPLACES 0021103010
77	0025013010	MACHINE SCREW	3	
	0042303000	LOCK WASHER	3	
	0042403000	PLAIN WASHER	3	
78	0021003010	MACHINE SCREW	1	
	0040003000	LOCK WASHER	1	
	0021103010	PLAIN WASHER	1	
79	8185182003	COVER, OUTPUT TERMINAL	1	
80	0019112045	HEX. HEAD BOLT	2	
81	0042412000	PLAIN WASHER	4	
82	0805009804	RUBBER WASHER	2	
83	0205012000	HEX. NUT	2	
84	0845043704	LOCK	2	
85	0040506000	TOOTHED WASHER	1	
86	011206020	HEX. HEAD BOLT	1 REPLACES 0017106020

DCA-220SSK — ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS)

ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS WITH SLOW DOWN)-UP TO S/N1337562



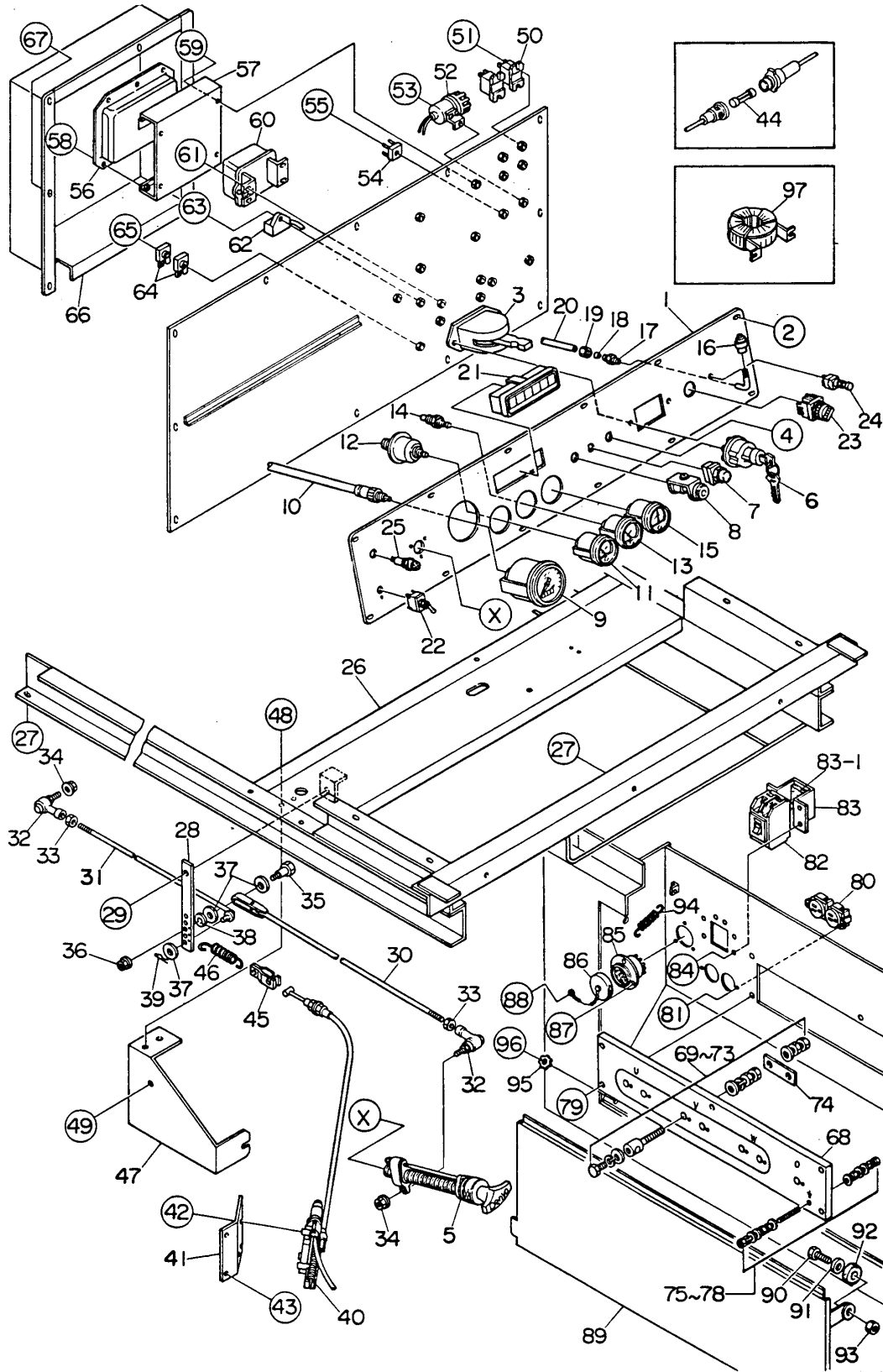
DCA-220SSK — ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS)

ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS WITH SLOW DOWN)- UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8182111003	OPERATING PANEL	1	
2	0017106016	HEX. HEAD BOLT	12	
3	0602101000	BATTERY SWITCH	1	9827300090
4	0021008080	MACHINE SCREW	2	
	020108060	HEX. NUT	2	REPLACES 0030008000
	0040008000	LOCK WASHER	2	
	031108160	PLAIN WASHER	4	REPLACES 0041608000
5	0800250300	THROTTLE HANDLE	1	
6	6008155390	STARTER SWITCH	1	REPLACES 0602100049
7	0806410000	EMERGENCY STOP BUTTON	1	REPLACES 0602104045
8	6008153730	PREHEAT LAMP	1	REPLACES 0602102055
9	0602120054	TACHOMETER;25000KX3710	1	REPLACES 0602120052
10	0602120178	CABLE, TACHOMETER	1	62100KX0700
11	0602122053	OIL PRESSURE GAUGE	1	42000KV0300
12	0602122200	UNIT, OIL PRESSURE	1	53000AC0101
13	0602123053	WATER TEMPERATURE GAUGE	1	40000KV0700
14	0602123204	UNIT, WATER TEMPERATURE	1	51400KA1200
15	0602121052	CHARGING AMMETER	1	43000KV0300
16	0602040690	INDICATOR, AIR CLEANER	1	RBX002252
17	0603300000	HALF UNION, PT 1/8 x 4	1	
18	0603302000	SLEEVE	1	
19	0603303000	NUT	1	
20	0190001000	NYLON PIPE	1	
21	0602115008	ENGINE WARNING DISPLAY LED	1	V 336760
	0601810204	BULB	6	
22	0601830707	SWITCH, SLOW DOWN	1	S-331T
23	0601830683	SELECTOR SWITCH, REMOTE CONTROL	1	AH30P2B33
24	0601831200	REMOVE BUTTON, IDLING	1	MB201110K
25	0602103091	PILOT LAMP, IDLING	1	REPLACES 0602103090
	0601810244	BULB	1	
26	8185312002	SUPPORT LEG	1	
27	012010030	HEX. HEAD BOLT	5	REPLACES 0010010030
	020310080	HEX. NUT	2	REPLACES 0030010000
	0040010000	LOCK WASHER	5	
	031110160	PLAIN WASHER	7	REPLACES 0041610000
28	8192183004	LINK, GOVERNOR ROD	1	
29	0010010055	HEX. HEAD BOLT	1	
	020310080	HEX. NUT	1	REPLACES 0030010000
	031110160	PLAIN WASHER	2	REPLACES 0041610000
30	8182152004	GOVERNOR ROD	1	
31	8182152104	GOVERNOR ROD	1	
32	0602180106	BALL JOINT	2	

DCA-220SSK — ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS)

ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS WITH SLOW DOWN)- UP TO S/N1337562



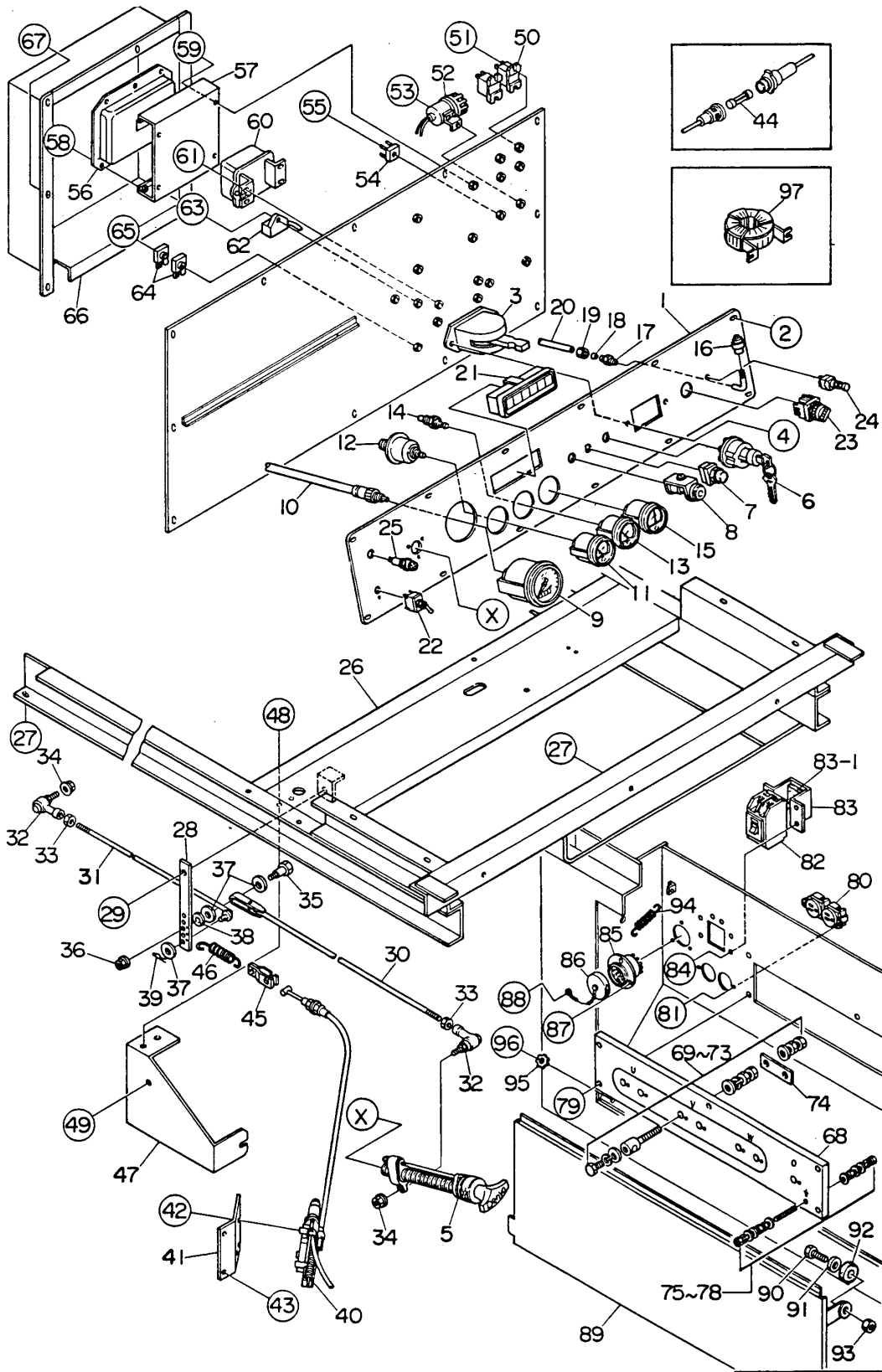
DCA-220SSK — ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS)

ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS WITH SLOW DOWN) UP TO S/N1337562

NO	PART NO	PART NAME	QTY.	REMARKS
33	020108060	HEX. NUT	2	REPLACES 0030008000
34	0207006000	HEX. NUT	2	
35	0802100704	PIN BOLT	1	
36	0207006000	HEX. NUT	1	
37	031108160	PLAIN WASHER	3	REPLACES 0041608000
38	952404470	PLAIN WASHER	1	REPLACES 0041606000
39	0605010503	SNAP PIN	1	
40	1819001931	CONTROLLER	1	REPLACES 0602210803
41	8182159304	BRACKET	1	
42	0027106012	MACHINE SCREW	3	
43	011008020	HEX. HEAD BOLT	4	REPLACES 0017108020
44	0601802133	FUSE	1	F-5 5A
45	0802100204	JOINT	1	
46	0802101204	SPRING	1	
47	8182159103	BRACKET	1	
48	011208030	HEX. HEAD BOLT	2	REPLACES 0017108030
49	0021005020	MACHINE SCREW	1	
	0032005000	LOCK WASHER	1	REPLACES 0040005000
	0041205000	PLAIN WASHER	1	
50	0601820995	RELAY	2	JA1C-TM DC24
51	0027105010	MACHINE SCREW	4	
52	0601822560	BUZZER	1	BA-047
53	0027105010	MACHINE SCREW	1	
54	0601820067	RECTIFIER	1	PB2510
55	0021005020	MACHINE SCREW	1	
	0032005000	LOCK WASHER	1	REPLACES 0040005000
	58151	PLAIN WASHER	1	REPLACES 0041205000
56	08002323306	SLOW DOWN UNIT	1	
57	8182630104	BRACKET	1	
58	0027105010	MACHINE SCREW	6	
59	011206020	HEX. HEAD BOLT	4	REPLACES 0017106020
60	6008151252	EMERGENCY RELAY	1	REPLACES 0602200446
61	0017106016	HEX. HEAD BOLT	4	
62	0602201910	UNIT, BATTERY SENSOR	1	C703900000
63	0027106016	MACHINE SCREW	1	
64	0601821370	RECTIFIER;DE4503	2	REPLACES 0601823240
65	0021005035	MACHINE SCREW	1	
	0032005000	LOCK WASHER	1	REPLACES 0040005000
	58151	PLAIN WASHER	1	REPLACES 0041205000
66	8182210113	COVER, ELECTRIC PARTS	1	
67	0017106016	HEX. HEAD BOLT	1	
68	8181860103	SET BOARD, OUTPUT TERMINAL	1	
69	0801830304	OUTPUT TERMINAL	7	

DCA-220SSK — ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS)

ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS WITH SLOW DOWN) UP TO S/N1337562



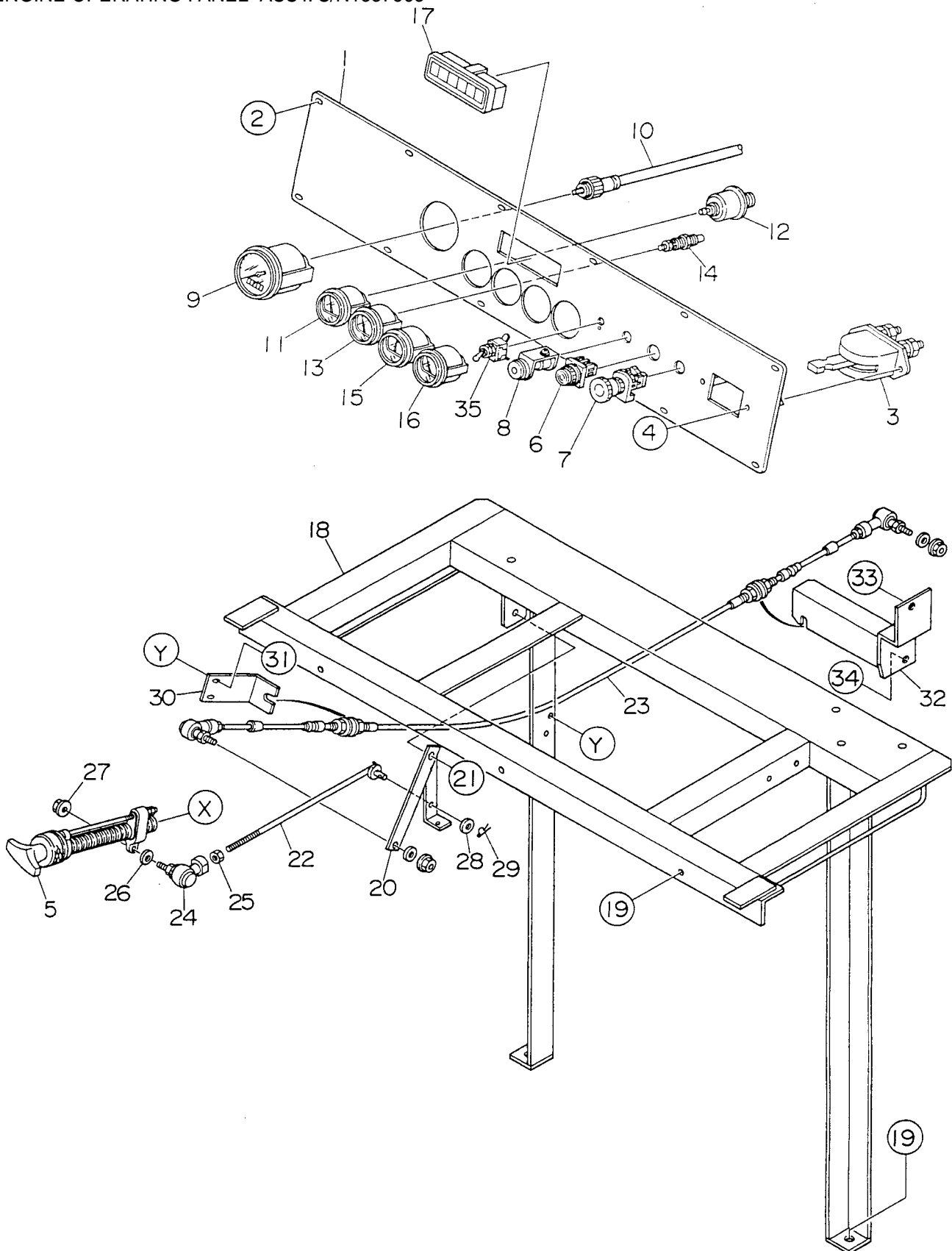
DCA-220SSK — ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS)

ENGINE OPERATING PANEL ASSY. (OPTIONAL PARTS WITH SLOW DOWN) UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
70	0801830804	HEX. HEAD BOLT	7	
71	0039316000	HEX. NUT	14	
72	0040016000	LOCK WASHER	21	
73	0041416000	PLAIN WASHER	28	
74	3461860504	TERMINAL PLATE	3	
75	0801832304	TERMINAL SCREW	1	
76	0039306000	HEX. NUT	5	
77	0040006000	LOCK WASHER	6	
78	952404470	PLAIN WASHER	6	REPLACES 0041606000
79	011208030	HEX. HEAD BOLT	5	REPLACES 0010008030
	0040008000	LOCK WASHER	5	
	031108160	PLAIN WASHER	5	REPLACES 0041608000
80	0601812597	RECEPTACLE, AUX. POWER;1136X	1	REPLACES 0601811018
81	0025004016	MACHINE SCREW	2	
	0042304000	LOCK WASHER	2	
	0042404000	PLAIN WASHER	2	
82	0601802010	CIRCUIT BREAKER	1	KM-2 220V 15A
83	0845032304	BRACKET, CIRCUIT BREAKER	1	
83-1	0223300060	RUBBER CUSHION	1	
84	0019106020	HEX. HEAD BOLT	4	
	0042306000	LOCK WASHER	4	
	0042406000	PLAIN WASHER	4	
85	0601811262	RECEPTACLE REMOTE CONTROL	1	NCS-4410-RF
86	0601811409	CAP, RECEPTACLE	1	NCS-44-RCa
87	0027103010	MACHINE SCREW	3	REPLACES 0021103010
88	0025013010	MACHINE SCREW	3	
	0042303000	LOCK WASHER	3	
	0042403000	PLAIN WASHER	3	
89	8185182003	COVER, OUTPUT TERMINAL	1	
90	0019112045	HEX. HEAD BOLT	2	
91	0042412000	PLAIN WASHER	4	
92	0805009804	RUBBER WASHER	2	
93	0205012000	HEX. NUT	2	
94	0845043704	SPRING	2	
95	0040506000	TOOTHED WASHER	1	
96	011206020	HEX. HEAD BOLT	1	REPLACES 0017106020
97	0840300803	CURRENT TRANSFORMER	2	

DCA-220SSK — ENGINE OPERATING PANEL ASSY.

ENGINE OPERATING PANEL ASSY. S/N1337563~



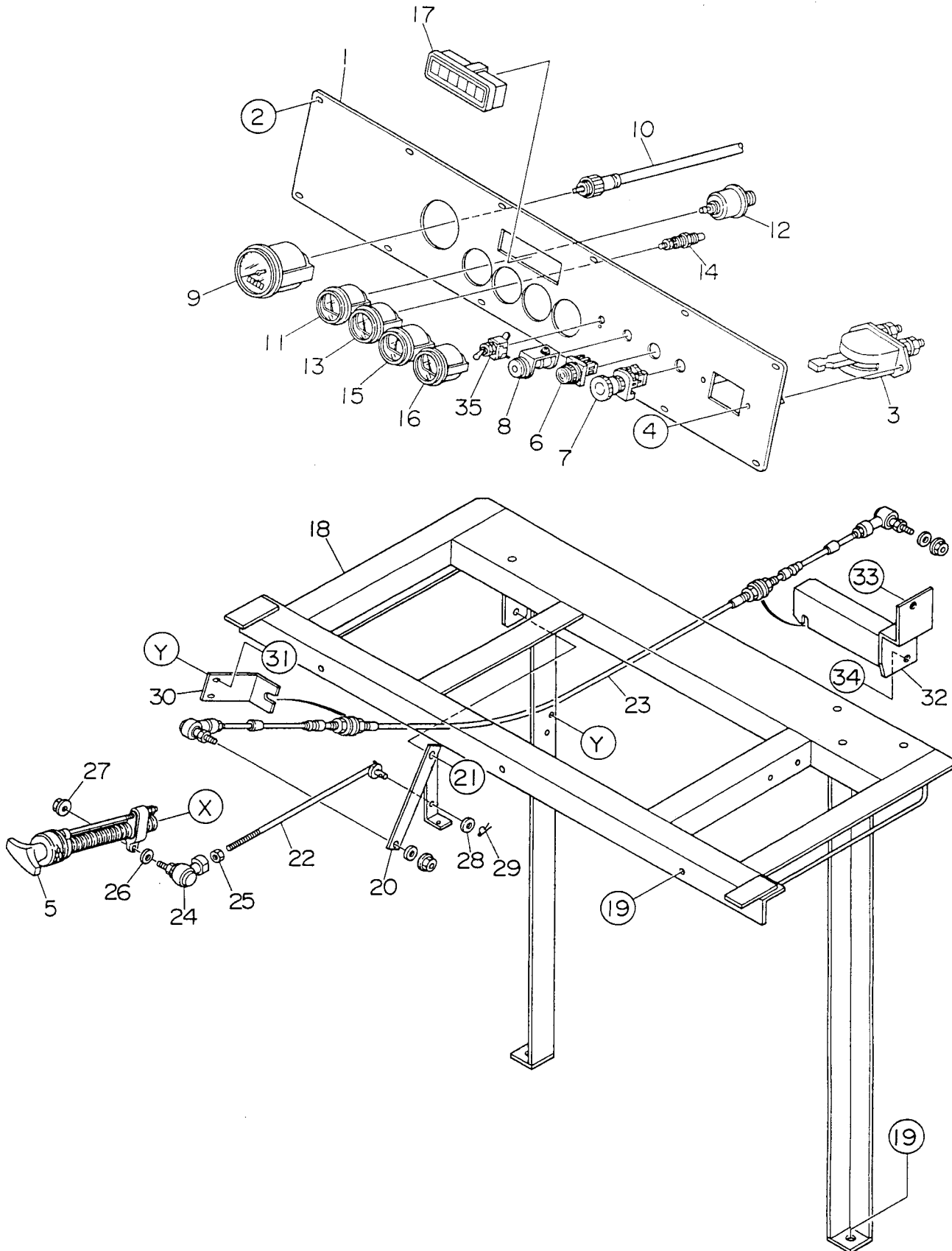
DCA-220SSK — ENGINE OPERATING PANEL ASSY.

ENGINE OPERATING PANEL ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1352101103	OPERATING PANEL	1	UP TOS/N3696500
1	C1352101113	OPERATING PANEL	1	S/N3696501 TO3701661
1	C1352101123	OPERATING PANEL	1	S/N3701662~
2	0019106016	HEX. HEAD BOLT	12	
	0042306000	LOCK WASHER	12	
	0042406000	PLAIN WASHER	12	
3	0602101000	BATTERY SWITCH	1	9827300090
4	0021008080	MACHINE SCREW	2	
	0030008000	HEX. NUT	2	
	0040008000	LOCK WASHER	2	
	0041608000	PLAIN WASHER	4	
5	0800250300	THROTTLE HANDLE	1	UP TO 3701661
6	6008155390	STARTER SWITCH	1	UP TO S/N3696500;REPLACES 0602100049
6	0601830448	PREHEAT BUTTON	1	S/N3696501~;AH25FB10
7	0806410000	STOP BUTTON	1	UP TO S/N3696500;REPLACES 0602104045
7	0602104045	EMERGENCY STOP BUTTON	1	S/N3696501 TO3701661
7	0601831557	EMERGENCY STOP BUTTON	1	S/N3701662~
8	6008153730	PREHEAT LAMP	1	REPLACES 0602102055
9	0602120054	TACHOMETER	1	25000KX4110
10	0602120175	CABLE, TACHOMETER	1	62100KX0700
11	0602122060	OIL PRESSURE GAUGE	1	42000KX1410
12	0602122200	UNIT, OIL PRESSURE	1	53000AC0101
13	0602123061	WATER TEMPERATURE GAUGE ...	1	40000KX0910
14	0602123206	UNIT, WATER TEMPERATURE	1	51400KS0600
15	0602121052	CHARGINE AMMETER	1	43000KV0300
16	0602125060	FUEL GAUGE	1	41000KW0110
17	0602115014	MONITOR	1	V337660
18	C1484000202	SUPPORT LEG	1	UP TO S/N3701661
18	C1484000212	SUPPORT LEG	1	S/N3701662~
19	0010110030	HEX. HEAD BOLT	5	
20	C1355100104	LINK, GOVERNOR ROD	1	UP TO S/N3701661
21	0010010035	HEX. HEAD BOLT	1	UP TO S/N3701661
	0030010000	LOCK WASHER	1	UP TO S/N3701661
	0041210000	PLAIN WASHER	1	UP TO S/N3701661

DCA-220SSK — ENGINE OPERATING PANEL ASSY.

ENGINE OPERATING PANEL ASSY. S/N1337563~



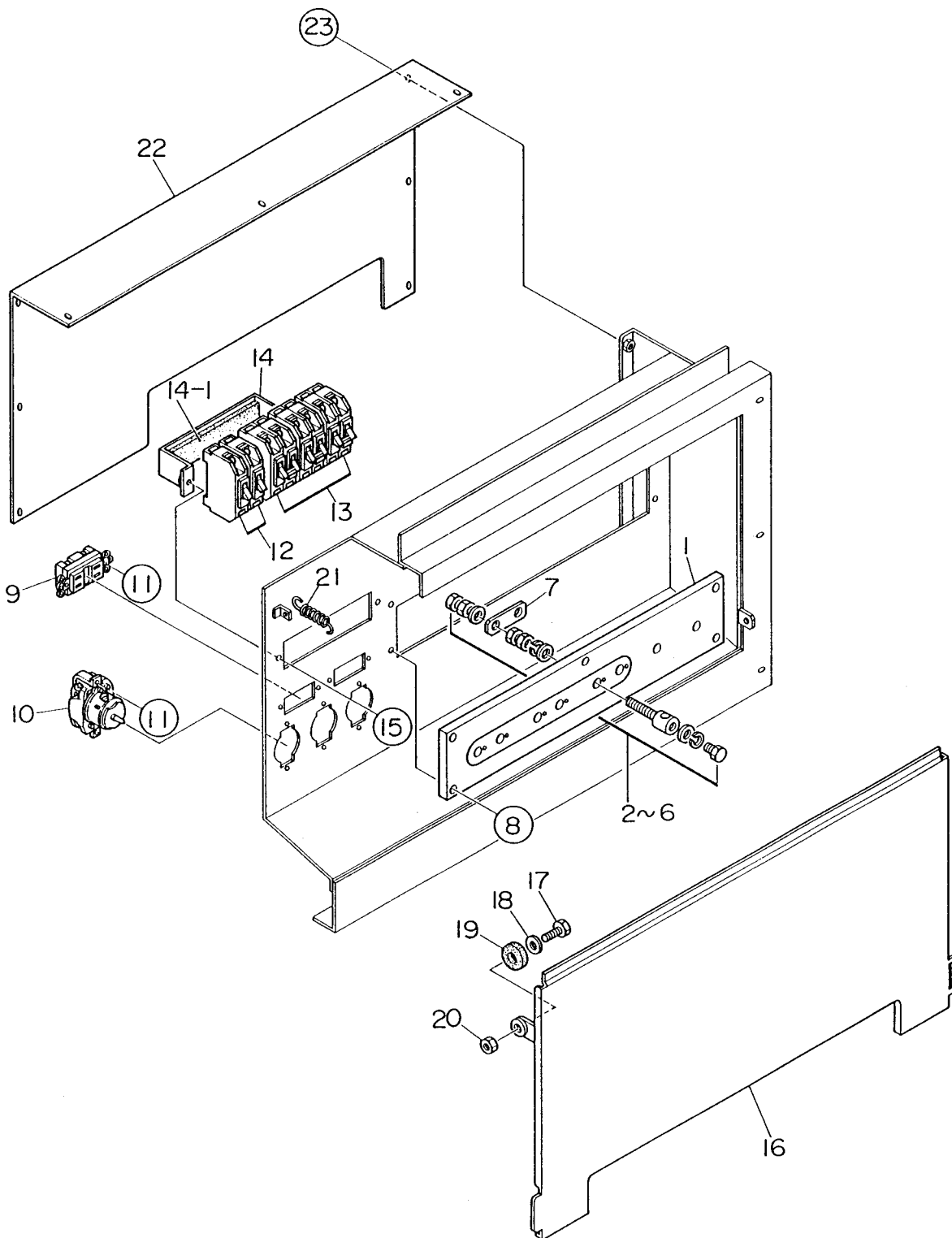
DCA-220SSK — ENGINE OPERATING PANEL ASSY.

ENGINE OPERATING PANEL ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
22	C1355300404	GOVERNOR ROD	1	UP TO S/N3701661
23	C1355300304	GOVERNOR ROD	1	UP TO S/N3701661
24	0602180106	BALL JOINT	2	UP TO S/N3701661
25	0207008000	HEX. NUT	2	UP TO S/N3701661
26	0041206000	PLAIN WASHER	2	UP TO S/N3701661
27	0207006000	HEX. NUT	2	UP TO S/N3701661
28	0041206000	PLAIN WASHER	2	UP TO S/N3701661
29	0605010502	SNAP PIN	2	UP TO S/N3701661
30	C1355200804	BRACKET, THROTTLE WIRE	1	UP TO S/N3701661
31	0017106025	HEX. HEAD BOLT	2	UP TO S/N3701661
32	C1355200603	BRACKET, THROTTLE WIRE	1	UP TO S/N3701661
33	0010310040	HEX. HEAD BOLT	1	UP TO S/N3701661
	0040010000	LOCK WASHER	1	UP TO S/N3701661
	0041210000	PLAIN WASHER	1	UP TO S/N3701661
34	0010310050	HEX. HEAD BOLT	1	UP TO S/N3701661
	0040010000	LOCK WASHER	1	UP TO S/N3701661
	0041210000	PLAIN WASHER	1	UP TO S/N3701661
35	0601830710	ENGINE SPEED SWITCH;S301T; .	1	S/N3701662~

DCA-220SSK — OUTPUT TERMINAL ASSY.

OUTPUT TERMINAL ASSY. S/N1337563 TO3690734



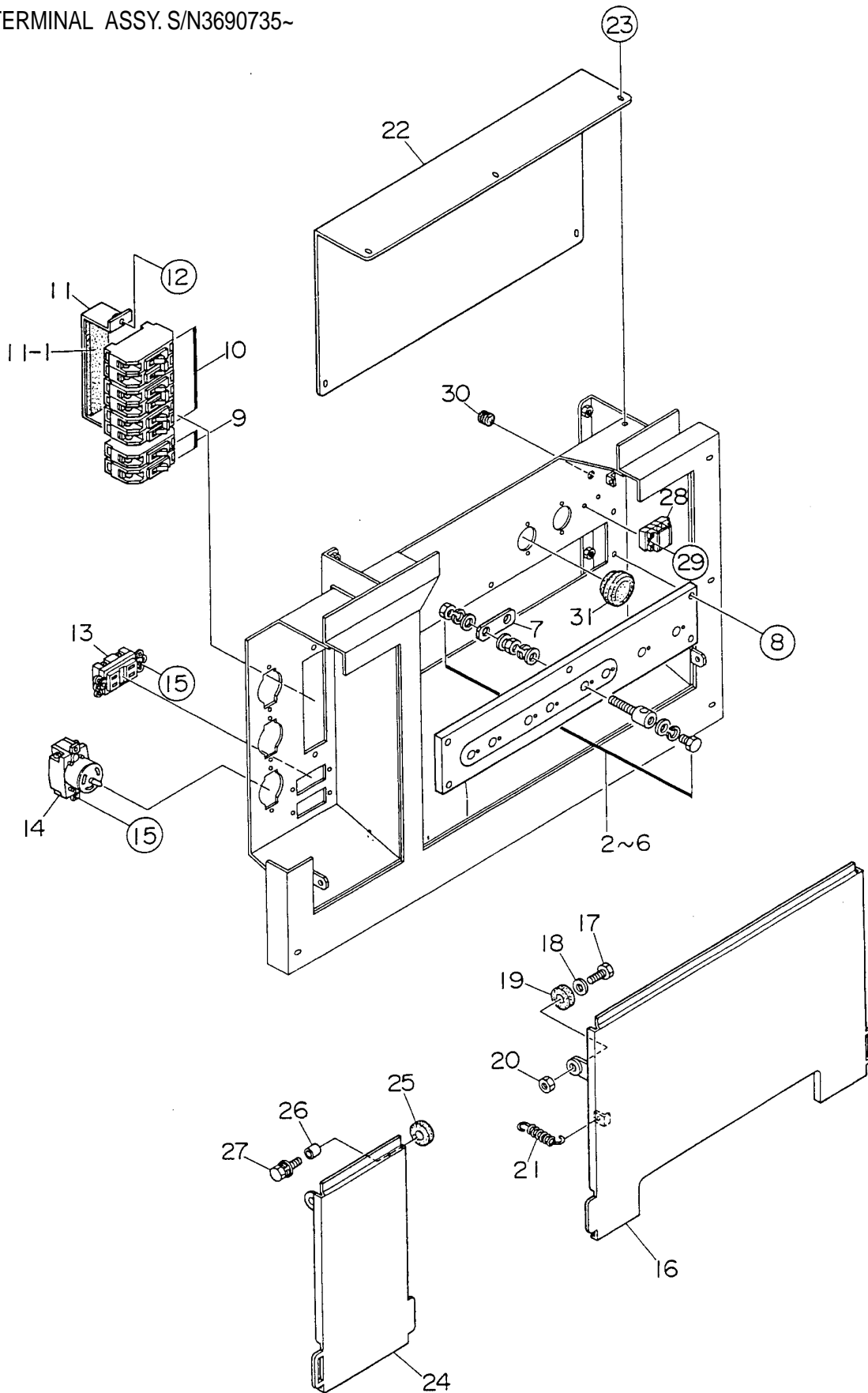
DCA-220SSK — OUTPUT TERMINAL ASSY.

OUTPUT TERMINAL ASSY. S/N1337563 TO3690734

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1231700003	SET BOARD, OUTPUT TERMINAL	1	
2	0801030304	OUTPUT TERMINAL	8	
3	0801830804	HEX. HEAD BOLT	8	
4	0039316000	HEX. NUT	16	
5	0040016000	LOCK WASHER	24	
6	0041416000	PLAIN WASHER	32	
7	3461860504	TERMINAL PLATE	3	
8	0019108040	HEX. HEAD BOLT	5	
	0205008000	HEX. NUT	5	
	0042308000	LOCK WASHER	10	
	0042408000	PLAIN WASHER	10	
9	0601812597	RECEPTACLE, AUX. POWER; 5-20R	2	S/N1337563 TO 1338269
10	0601811034	RECEPTACLE, AUX. POWER; C6369	3	REPLACES 0601812565
11	0027104016	MACHINE SCREW	10	
	0030004000	HEX.NUT	10	
	0041204000	PLAIN WASHER	10	
12	0601804887	CIRCUIT BREAKER; KM51 20A	2	REPLACES 0601805313
13	0601805840	CIRCUIT BREAKER; KM52 50A	3	
14	C1261600204	BRACKET, CIRCUIT BREAKER	1	
14-1	0223300200	RUBBER CUSHION	1	
15	0017106020	HEX. HEAD BOLT	2	
16	C1237100103	COVER, OUTPUT TERMINAL	1	
17	0019112045	HEX. HEAD BOLT	2	
18	0042412000	PLAIN WASHER	2	
19	0805009804	RUBBER WASHER	2	
20	0205012000	HEX. NUT	2	
21	0845043704	SPRING	2	
22	C1237100204	COVER, OUTPUT TERMINAL	1	
23	0017108020	HEX. HEAD BOLT	9	

DCA-220SSK — OUTPUT TERMINAL ASSY.

OUTPUT TERMINAL ASSY. S/N3690735~



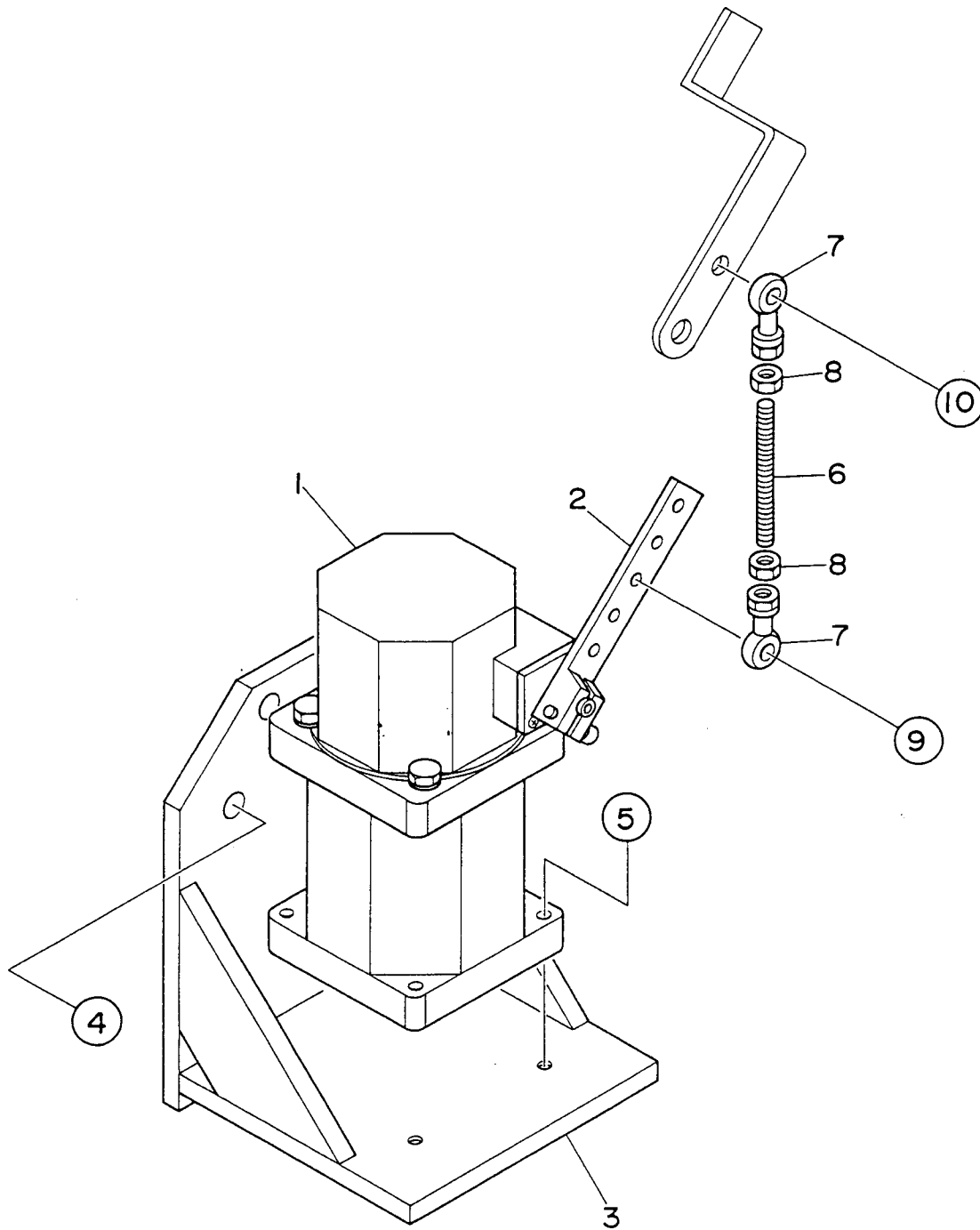
DCA-220SSK — OUTPUT TERMINAL ASSY.

OUTPUT TERMINAL ASSY. S/N3690735~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1231700003	SET BOARD, OUTPUT TERMINAL	1	
2	0801030304	OUTPUT TERMINAL	8	
3	0801830804	HEX. HEAD BOLT	8	
4	0039316000	HEX. NUT	16	
5	0040016000	LOCK WASHER	24	
6	0041416000	PLAIN WASHER	32	
7	3461860504	TERMINAL PLATE	3	
8	0019108040	HEX. HEAD BOLT	5	
	0205008000	HEX. NUT	5	
	0042308000	LOCK WASHER	10	
	0042408000	PLAIN WASHER	10	
9	0601805313	CIRCUIT BREAKER	2	KM51B 265V 20
10	0601805840	CIRCUIT BREAKER	3	KM52 265V 50A
11	C1261600204	BRACKET, CIRCUIT BREAKER	1	
12	0017106020	HEX. HEAD BOLT	2	
13	0601812598	RECEPTACLE	2	GF530EM
14	0601812565	RECEPTACLE	3	CS6369
15	0027104015	MACHINE SCREW	10	
	0030004000	HEX. NUT	10	
	0041204000	PLAIN WASHER	10	
16	C1237100113	COVER, OUTPUT TERMINAL	1	
17	0019112045	HEX. HEAD BOLT	2	
18	0042412000	PLAIN WASHER	2	
19	0805015604	STAY RUBBER	2	
20	0205012000	HEX. NUT	2	
21	0845043704	SPRING	2	
22	C1237100214	COVER	1	
23	0017108020	HEX. HEAD BOLT	7	
24	C0237101504	COVER, OUTPUT TERMINAL	1	
25	0805015604	STAY RUBBER	1	
26	0845054204	COLLAR	2	
27	0017110040	HEX. HEAD BOLT	2	
28	0601815324	TERMINAL BOARD;TS22P	1	S/N3696501~
29	0027104020	MACHINE SCREW	2	S/N3696501~
30	0601850275	GROMMET	1	S/N3696501~
31	0601851780	GROMMET	2	S/N3700671~

DCA-220SSK — ACTUATOR ASSY.

ACTUATOR ASSY. S/N3690735~



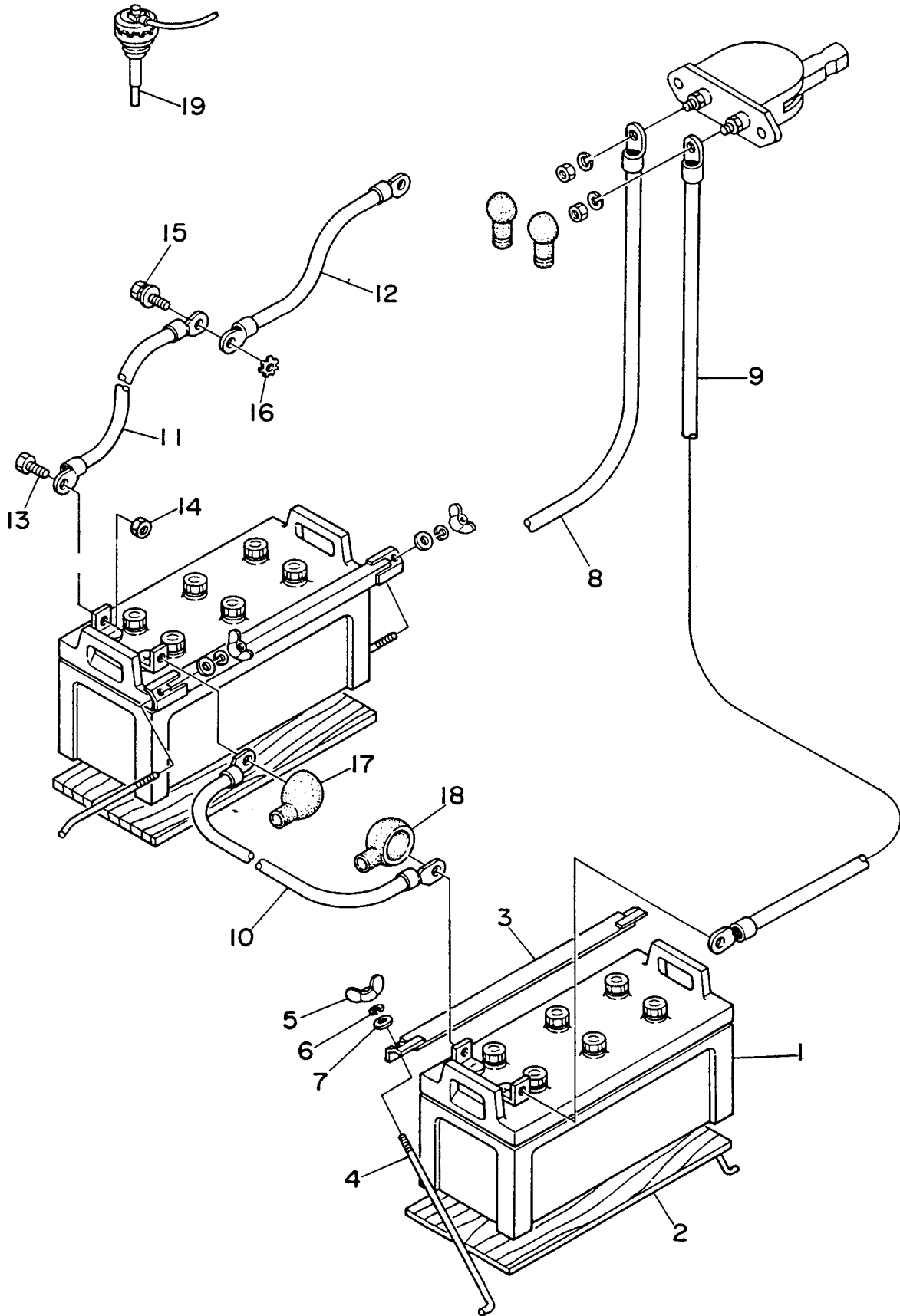
DCA-220SSK — ACTUATOR ASSY.

ACTUATOR ASSY. S/N3690735~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	DYNC11024000024	ACTUATOR	1	REPLACES 0602150091
2	DYNC182	LEVER	1	REPLACES 0602211090
3	C1356200004	BRACKET, ACTUATOR	1	
4	0012310030	HEX. HEAD BOLT	4	
5	0010306035	HEX. HEAD BOLT	4	
	0207006000	HEX. NUT	4	
	0040006000	LOCKWASHER	4	
	0041206000	PLAIN WASHER	4	
6	0602211091	ROD	1	
7	0602180190	BALL JOINT	2	
8	0602211092	HEX. NUT	2	
9	0010106025	HEX. HEAD BOLT	1	
	0207006000	HEX. NUT	1	
	0041206000	PLAIN WASHER	4	
10	0010106025	HEX. HEAD BOLT	1	
	0207006000	HEX. NUT	1	
	0041206000	PLAIN WASHER	1	

DCA-220SSK — BATTERY ASSY.

BATTERY ASSY.



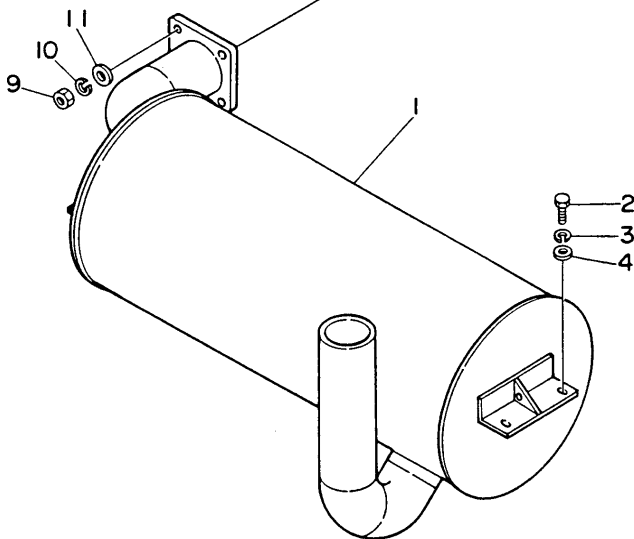
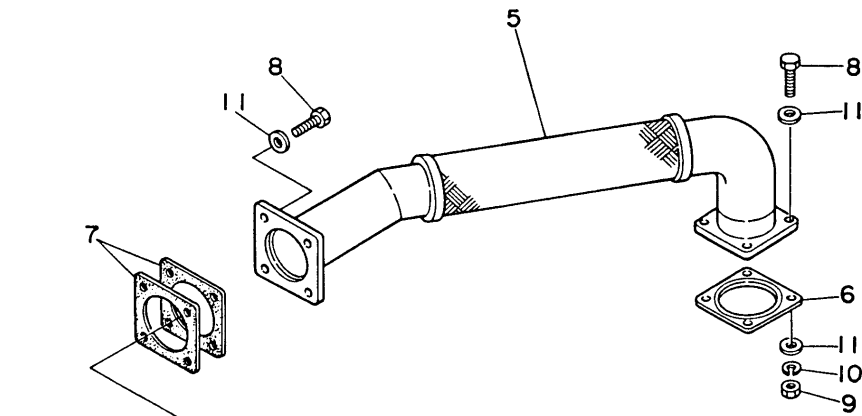
DCA-220SSK — BATTERY ASSY.

BATTERY ASSY.

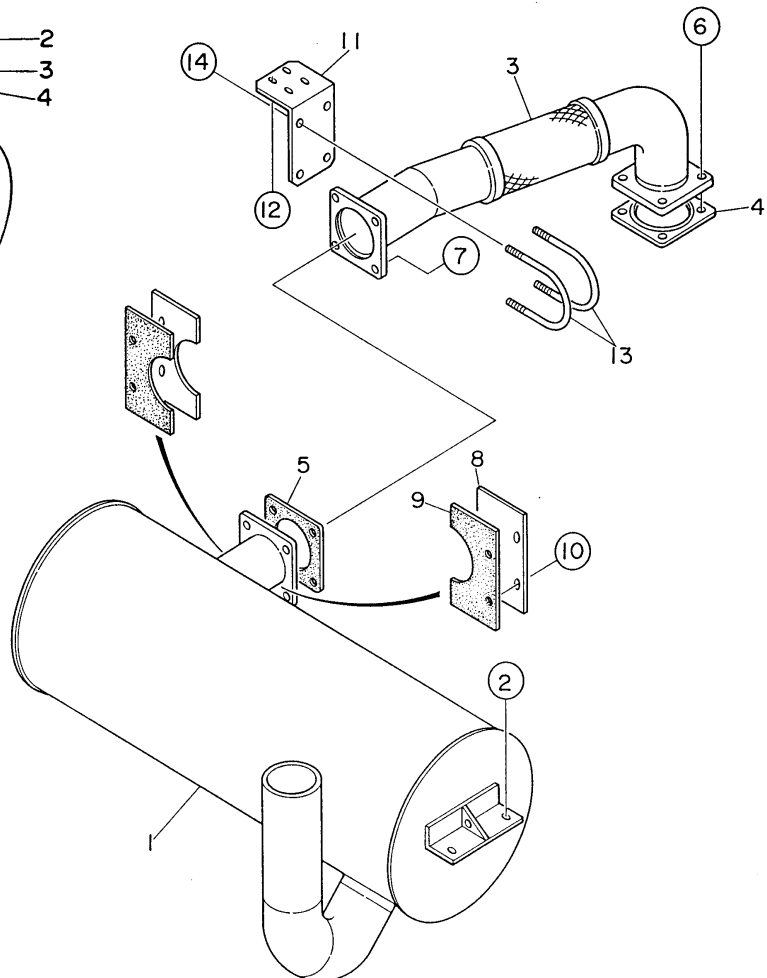
<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	0165614551	BATTERY	2	145G51 12V-150 Ah
2	0805000804	BATTERY SHEET	2	
3	0805000904	BATTERY BAND	2	
4	0805002904	BATTERY BOLT	4	
5	0037808000	WING NUT	4	
6	0040008000	LOCK WASHER	4	
7	031108160	PLAIN WASHER	4	REPLACES 0041608000
8	8182280304	BATTERY CABLE	1	UP TO S/N1337562
	C1347600004	BATTERY CABLE	1	S/N1337563~
9	8182280104	BATTERY CABLE	1	UP TO S/N1337562
	C1347600104	BATTERY CABLE	1	S/N1337563~
10	8182280504	BATTERY CABLE	1	UP TO S/N1337562
	C1347600504	BATTERY CABLE	1	S/N1337563~
11	8182280704	BATTERY CABLE	1	UP TO S/N1337562
	C1347600304	BATTERY CABLE	1	S/N1337563~
12	8182280904	EARTH CABLE	1	UP TO S/N1337562
	C1347200104	EARTH CABLE	1	S/N1337563~
13	012010030	HEX. HEAD BOLT	4	REPLACES 0010010030
14	020310080	HEX. NUT	4	REPLACES 0030010000
15	0017110025	HEX. HEAD BOLT	1	UP TO S/N1337562
	0010110020	HEX. HEAD BOLT	1	S/N1337563~
	0040010000	LOCK WASHER	1	S/N1337563~
	004161000	PLAIN WASHER	1	S/N1337563~
16	0040510000	TOOTHED WASHER	1	
17	0845040414	TERMINAL CAP (+)	2	
18	0845041304	TERMINAL CAP (-)	2	
19	0602220203	BATTERY SENSOR	1	REPLACES 0602220204;

DCA-220SSK — MUFFLER ASSY.

MUFFLER ASSY. UP TO S/N1337562



MUFFLER ASSY. S/N1337563~



DCA-220SSK — MUFFLER ASSY.

MUFFLER ASSY. UP TO S/N1337562

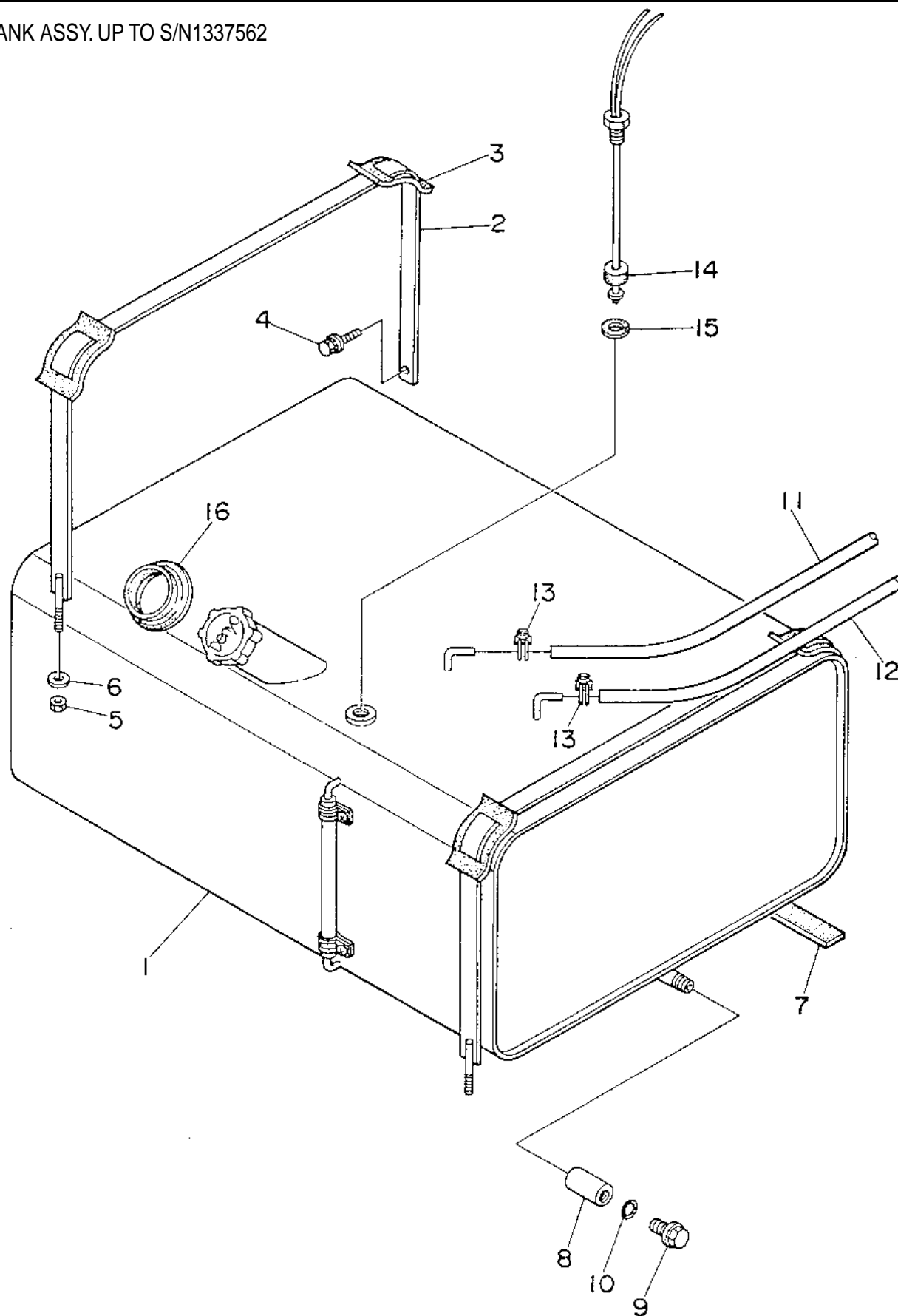
<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8182311002	MUFFLER	1	
2	0019110030	HEX. HEAD BOLT	4	
3	0042310000	LOCK WASHER	4	
4	0042410000	PLAIN WASHER	4	
5	8182350003	EXHAUST PIPE	1	
6	6150115750	GASKET	1	REPLACES 0602320059
7	7502356004	GASKET	2	
8	0010312060	HEX. HEAD BOLT	8	
9	0030312000	HEX. NUT	8	
10	0040012000	LOCK WASHER	8	
11	031112230	PLAIN WASHER	16	REPLACES 0041612000

MUFFLER ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1331100702	MUFFLER	1	
2	0019210025	HEX. HEAD BOLT	4	
3	C1334000403	EXHAUST PIPE	1	
4	6150115751	GASKET	1	REPLACES 0602320142
5	7502356004	GASKET	1	
6	0010312050	HEX. HEAD BOLT	4	
	0030312000	HEX. NUT	4	
	0040012000	LOCK WASHER	4	
	0041212000	PLAIN WASHER	8	
7	0010312055	HEX. HEAD BOLT	4	
	0030312000	HEX. NUT	4	
	0040012000	LOCK WASHER	4	
	0041212000	PLAIN WASHER	8	
8	C1331300104	COVER	2	
9	C1334200104	SHEET	2	
10	0017108020	HEX. HEAD BOLT	4	
11	C1334300104	BRACKET	1	
12	0017108020	HEX. HEAD BOLT	4	
13	0603320129	U BOLT	2	
14	0207010000	HEX. NUT		

DCA-220SSK — FUEL TANK ASSY.

FUEL TANK ASSY. UP TO S/N1337562



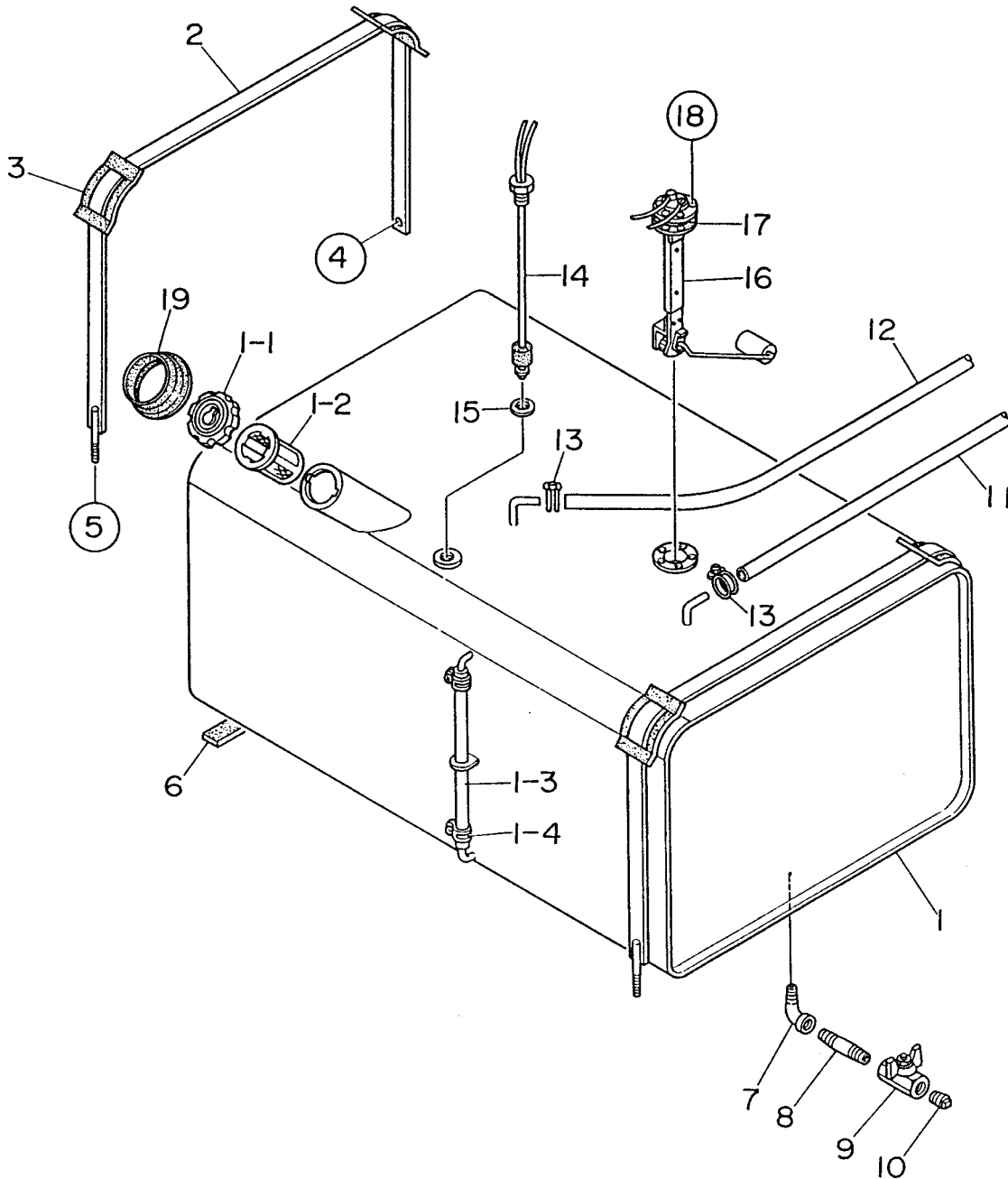
DCA-220SSK — FUEL TANK ASSY.

FUEL TANK ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8185510103	FUEL TANK	1	S/N 1325370 TO 1326838
	8185510703	FUEL TANK	1	S/N1326839 TO1337562
	0845500104	CAP, FUEL TANK	1	
	0810105400	FUEL FILTER	1	
2	8185523104	TANK BAND	2	
3	0805003404	PAD, TANK BAND	4	
4	011008020	HEX. HEAD BOLT	2	REPLACES 0017108020
5	020108060	HEX. NUT	2	REPLACES 0030008000
6	0041608000	PLAIN WASHER	2	
7	0805013804	TANK SHEET	3	
8	0845032204	DRAIN JOINT	1	
9	0802011104	PLUG	1	
10	0150000018	O RING	1	
11	0191302250	SUCTION HOSE	1	
12	0191301850	RETURN HOSE	1	
13	0605515014	HOSE BAND	4	
14	0605503009	FUEL SENSOR	1	
15	0802120604	PACKING	1	
16	0845039604	RUBBER SEAL	1	

DCA-220SSK — FUEL TANK ASSY.

FUEL TANK ASSY. S/N1337563~



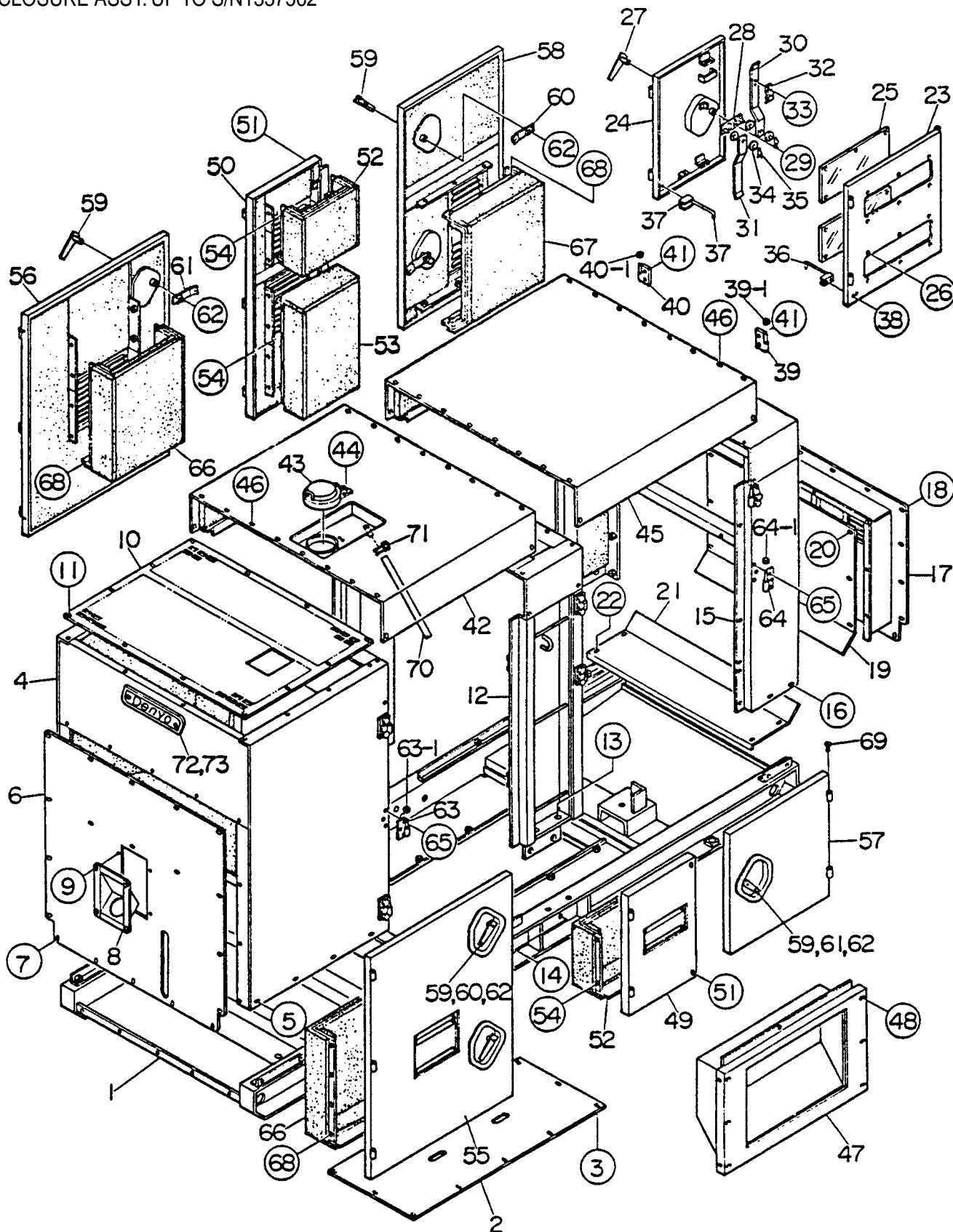
DCA-220SSK — FUEL TANK ASSY.

FUEL TANK ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1364000403	FUEL TANK	1	
1-1	0605505005	CAP, FUEL TANK	1	
	0605550505	KEY	1	
1-2	0810105400	FUEL FILTER	1	
1-3	0264100385	HOSE, FUEL GAUGE	1	
1-4	0605515079	HOSE BAND	2	
2	8175523104	TANK BAND	2	
3	0805003414	PAD, TANK BAND	4	
4	0017108020	HEX. HEAD BOLT	2	
5	0037908000	HEX. HEAD BOLT	2	
6	0222100200	TANK SHEET	6	
7	0130206000	STREET ELBOW	1	
8	8085512104	DRAIN PIPE	1	
9	0603325011	VALVE	1	
10	0132006000	PLUG	1	
11	0191302300	SUCTION HOSE	1	
12	0191302800	RETURN HOSE	1	
13	0605515019	HOSE BAND	4	
14	0605503020	FUEL SENSOR	1	
15	0802120604	PACKING	1	
16	0605501050	UNIT, FUEL	1 52000KA9810
17	0602021155	PACKING	1 52391KW3700
18	0027104010	MACHINE SCREW	1	
19	0845039604	RUBBER SEAL	1	

DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. UP TO S/N1337562



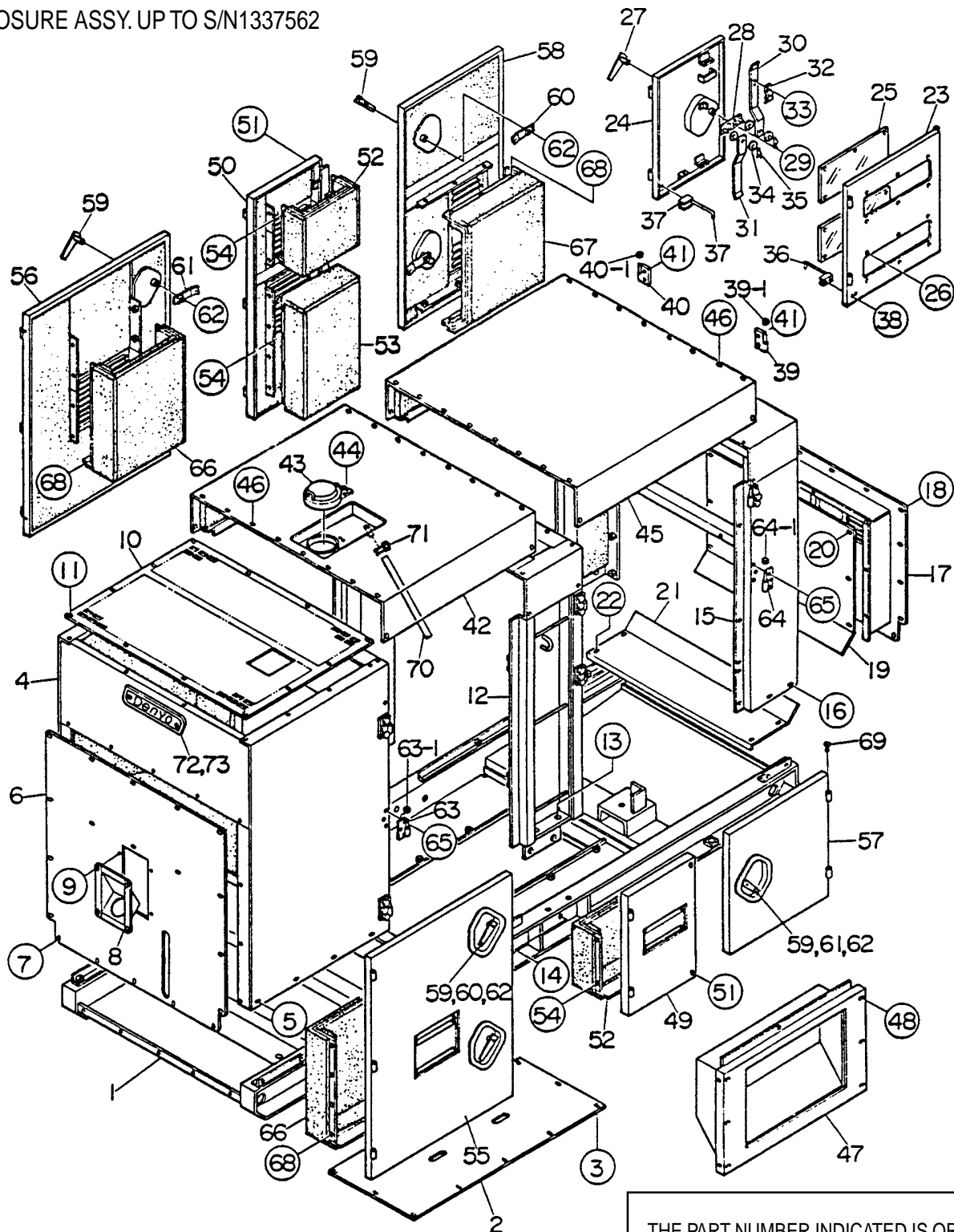
DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8185111002	BASE	1	
	8185111012	BASE	1	
2	8185116004	FLOOR PANEL	1	
3	011008020	HEX. HEAD BOLT	12	REPLACES 0019208020
4	8185121002	FRONT FRAME	1	
	8185121012	FRONT FRAME	1	
	8185102003	LINING	1	
5	0019110025	HEX. HEAD BOLT	8	
	0042310000	LOCK WASHER	8	
	0042410000	PLAIN WASHER	8	
6	8185125104	COVER, FRONT FRAME	1	
	8185102604	LINING	1	
7	011008020	HEX. HEAD BOLT	19	REPLACES 0019208020
8	0845042703	FILLER BRACKET	1	
9	011008020	HEX. HEAD BOLT	4	REPLACES 0019208020
10	8185125003	COVER, FRONT FRAME	1	
	8185125013	COVER, FRONT FRAME	1	
11	011008020	HEX. HEAD BOLT	12	REPLACES 0019208020
12	8185131002	CENTER FRAME	1	
	8185131012	CENTER FRAME	1	
13	0019114050	HEX. HEAD BOLT	4	
	0205014000	HEX. NUT	4	
	0042314000	LOCK WASHER	4	
	0042414000	PLAIN WASHER	8	
14	0019114040	HEX. HEAD BOLT	8	
	0205014000	HEX. NUT	8	
	0042314000	LOCK WASHER	8	
	0042414000	PLAIN WASHER	16	
15	8185141002	REAR FRAME	1	
	8185141012	REAR FRAME	1	
	8185102704	LINING	1	
16	0019110025	HEX. HEAD BOLT	4	
	0042310000	LOCK WASHER	4	
	0042410000	PLAIN WASHER	4	
17	8185155003	COVER, REAR FRAME	1	
	8185102804	LINING	1	
18	01108020	HEX. HEAD BOLT	17	REPLACES 0019208020
19	8185155104	GUIDE PANEL, AIR	1	
	8185102904	LINING	1	
20	01108020	HEX. HEAD BOLT	12	REPLACES 0017108020
21	8185118504	GUIDE PANEL, AIR	1	
	8185103004	LINING	1	
22	01108020	HEX. HEAD BOLT	4	REPLACES 0017108020
23	8185143103	DOOR, REAR FRAME	1	
	8185143113	DOOR, REAR FRAME	1	

DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. UP TO S/N1337562



THE PART NUMBER INDICATED IS ORANGE.
PLEASE ADD THE FOLLOWING LETTERS
WHEN ORDERING COLOR OF UNIT:

MQW-WHITE

THE SERIAL NUMBER MAY BE REQUIRED.

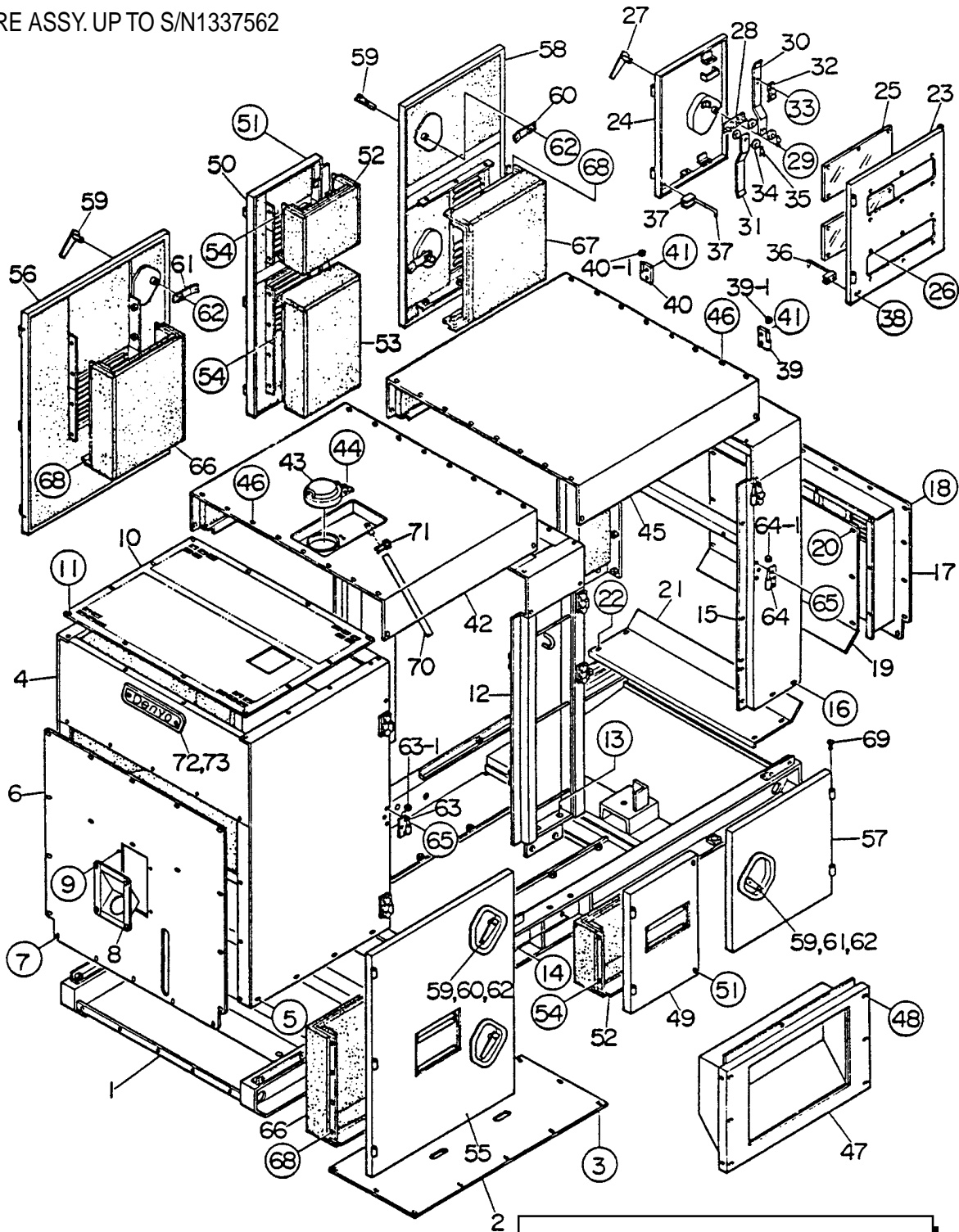
DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
24	8185143003	DOOR, REAR FRAME	1	
	8185143013	DOOR, REAR FRAME	1	
25	3515147104	WINDOW PLATE	2	
26	0025006016	MACHINE SCREW	12	
	0205006000	HEX. NUT	12	
	0042306000	LOCK WASHER	12	
	0042406000	PLAIN WASHER	24	
27	0805037204	DOOR HANDLE	1	
28	0845033904	LINK, DOOR ROD	1	
29	01108020	HEX. HEAD BOLT	1	REPLACES 0019208020
30	8185146104	DOOR ROD	1	
31	8185146004	DOOR ROD	1	
32	0805011404	LOCK	1	
33	0027104010	MACHINE SCREW	2	REPLACES 0041610000
34	031110160	PLAIN WASHER	4	
35	0605010504	SNAP RING	2	
36	0805011304	STOPPER, DOOR	1	
37	0805011204	STOPPER, DOOR	1	
38	0025006020	MACHINE SCREW	4	
	0205006000	HEX. NUT	4	
	0042306000	LOCK WASHER	4	
	0042406000	PLAIN WASHER	8	
39	0845028203	HINGE	2	
	M9110100204	HINGE	2	REPLACES 0845047104
39-1	0845045004	WASHER	2	
40	0845028303	HINGE	2	
	M9110100304	HINGE	2	REPLACES 0845047204
40-1	0845045004	WASHER	2	
41	011008020	HEX. HEAD BOLT	8	REPLACES 0019208020
42	8185161002	ROOF PANEL	1	
	8185102103	LINING	1	
43	0800251701	FILLER COVER	1	
44	0025006016	MACHINE SCREW	2	
	0042306000	LOCK WASHER	2	
	0042406000	PLAIN WASHER	2	
45	8185161102	ROOF PANEL	1	
	8185103104	LINING	1	
46	011008020	HEX. HEAD BOLT	40	REPLACES 0019208020
47	8185181002	SPLASHER PANEL	1	
	8185103704	LINING	1	
48	0019108065	HEX. HEAD BOLT	6	
	030208200	LOCK WASHER	6	REPLACES 0042308000
	031108160	PLAIN WASHER	6	REPLACES 0042408000
49	8185172103	SIDE PANEL	1	

DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. UP TO S/N1337562



THE PART NUMBER INDICATED IS ORANGE.
PLEASE ADD THE FOLLOWING LETTERS
WHEN ORDERING COLOR OF UNIT:

MQW-WHITE

THE SERIAL NUMBER MAY BE REQUIRED.

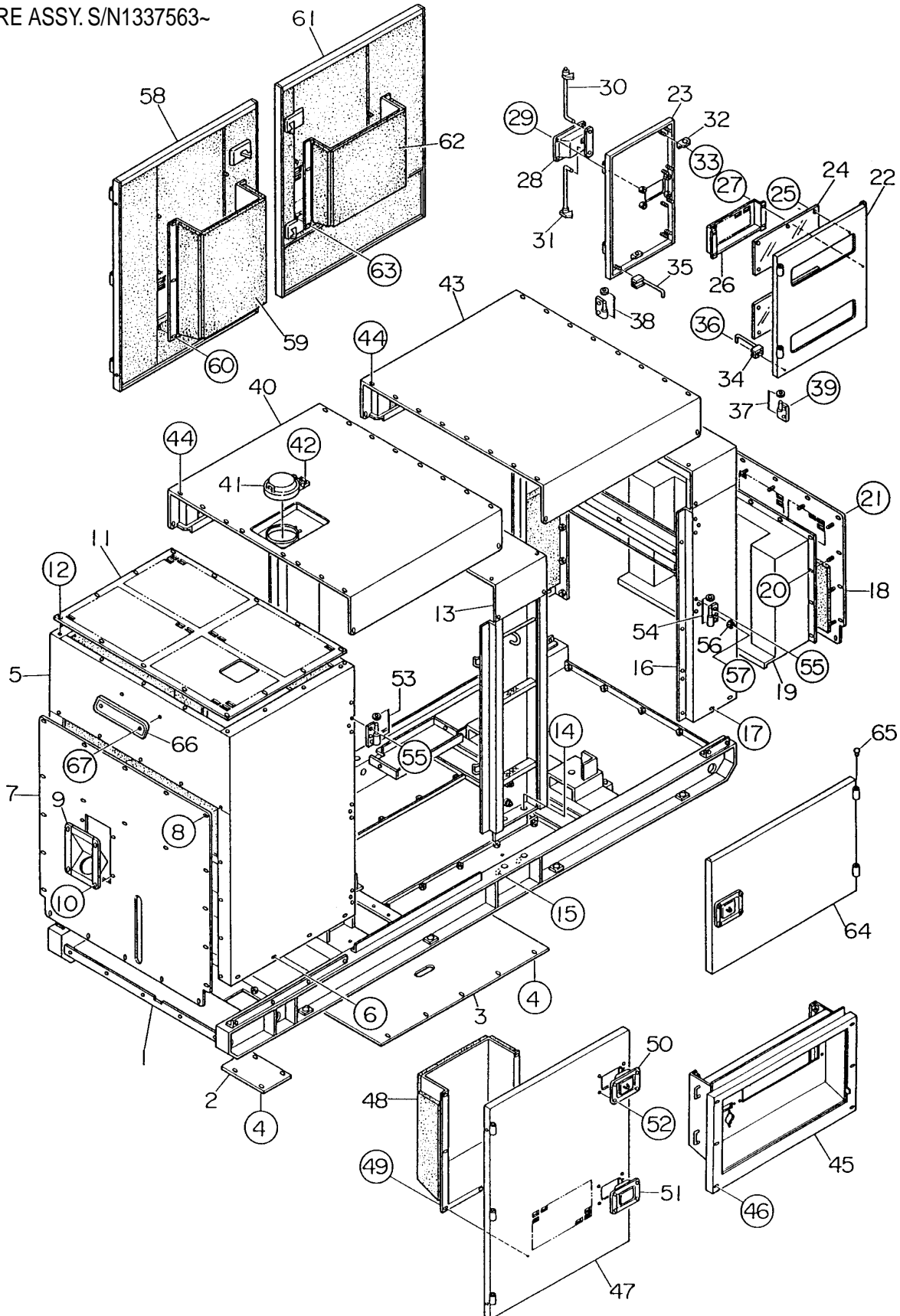
DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
	8185172103	SIDE PANEL	1	
	8185102403	LINING	1	
50	8185172003	SIDE PANEL	1	
	8185172013	SIDE PANEL	1	
	8185102303	LINING	1	
51	0019108065	HEX. HEAD BOLT	4	
	030208200	LOCK WASHER	4	REPLACES 0042308000
	031108160	PLAIN WASHER	4	REPLACES 0042408000
52	8185176204	GUIDE PANEL, AIR	2	
	8185103504	LINING	2	
53	8185176104	GUIDE PANEL, AIR	1	
	8185103404	LINING	1	
54	011008020	HEX. HEAD BOLT	16	REPLACES 0017108020
55	8185171103	SIDE DOOR	1	
	8185171113	SIDE DOOR	1	
	8185103803	LINING	1	
56	8185171003	SIDE DOOR	1	
	8185171013	SIDE DOOR	1	
	8185102203	LINING	1	
57	8185171303	SIDE DOOR	1	
	8185171313	SIDE DOOR	1	
	8185103204	LINING	1	
58	8185171203	SIDE DOOR	1	
	8185171213	SIDE DOOR	1	
	8185102503	LINING	1	
59	0845033304	DOOR HANDLE	7	
60	0845034204	DOOR LATCH	4	
61	0845034104	DOOR LATCH	3	
62	011008020	HEX. HEAD BOLT	7	REPLACES 0019208020
63	0810009103	HINGE	8	
	0845046904	HINGE	8	
63-1	0845045004	WASHER	8	
64	0810009203	HINGE	8	
	0845047004	HINGE	8	
64-1	0845045004	WASHER	8	
65	011008020	HEX. HEAD BOLT	48	REPLACES 0019208020
66	8185176004	GUIDE PANEL, AIR	2	
	8185103304	LINING	2	
67	8185176304	GUIDE PANEL, AIR	1	
	8185103604	LINING	1	
68	011008020	HEX. HEAD BOLT	22	REPLACES 0017108020
69	0845031504	CAP	20	
70	0194500700	HOSE	1	
71	0605515003	HOSE BAND	2	
72	0800517103	EMBLEM	2	
73	0021106020	MACHINE SCREW	4	

DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. S/N1337563~



DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	C1414000412	BASE	1	S/N1337563TO 3690734
1	C1414001202	BASE	1	S/N3690735 TO 3701661
1	C1414001502	BASE	1	S/N3701662~
	C1494000104	LINING	1	
2	C3414100104	FLOOR PANEL	1	
3	C3414100004	FLOOR PANEL	1	
4	0019208020	HEX.HEAD BOLT	16	
5	C1424000602	FRONT FRAME	1	S/N1337563TO 3701661
5	C1424001102	FRONT FRAME	1	S/N3701662~
	C1494100403	LINING	1	
6	0019110020	HEX. HEAD BOLT	8	S/N1337563 TO 3690734
6	0019210025	HEX. HEAD BOLT	8	S/N3690735~
	004231000	LOCK WASHER	8	
	004241000	PLAIN WASHER	8	
7	C1424200204	COVER, FRONT FRAME	1	
	8175924104	LINING	1	
8	0019208020	HEX. HEAD BOLT	21	
9	0845042703	FILLER BRACKET	1	
10	0019208020	HEX. HEAD BOLT	4	
11	C1424200503	COVER, FRONT FRAME	1	
12	0019208020	HEX. HEAD BOLT	14	
13	C1434000202	CENTER FRAME	1	
14	0010114050	HEX. HEAD BOLT	4	
	0030014000	HEX. NUT	4	
	0040014000	LOCK WASHER	4	
	0041214000	PLAIN WASHER	4	
15	0010120050	HEX. HEAD BOLT	4	
	0030020000	HEX. NUT	4	
	0040020000	LOCK WASHER	4	
	0041220000	PLAIN WASHER	4	
16	C1444000412	REAR FRAME	1	
	C1494300504	LINING	1	
17	0019110020	HEX. HEAD BOLT	4	S/N1337563 TO 3690734
17	0019210025	HEX. HEAD BOLT	4	S/N3690735~
	0042310000	LOCK WASHER	4	
	0042410000	PLAIN WASHER	4	

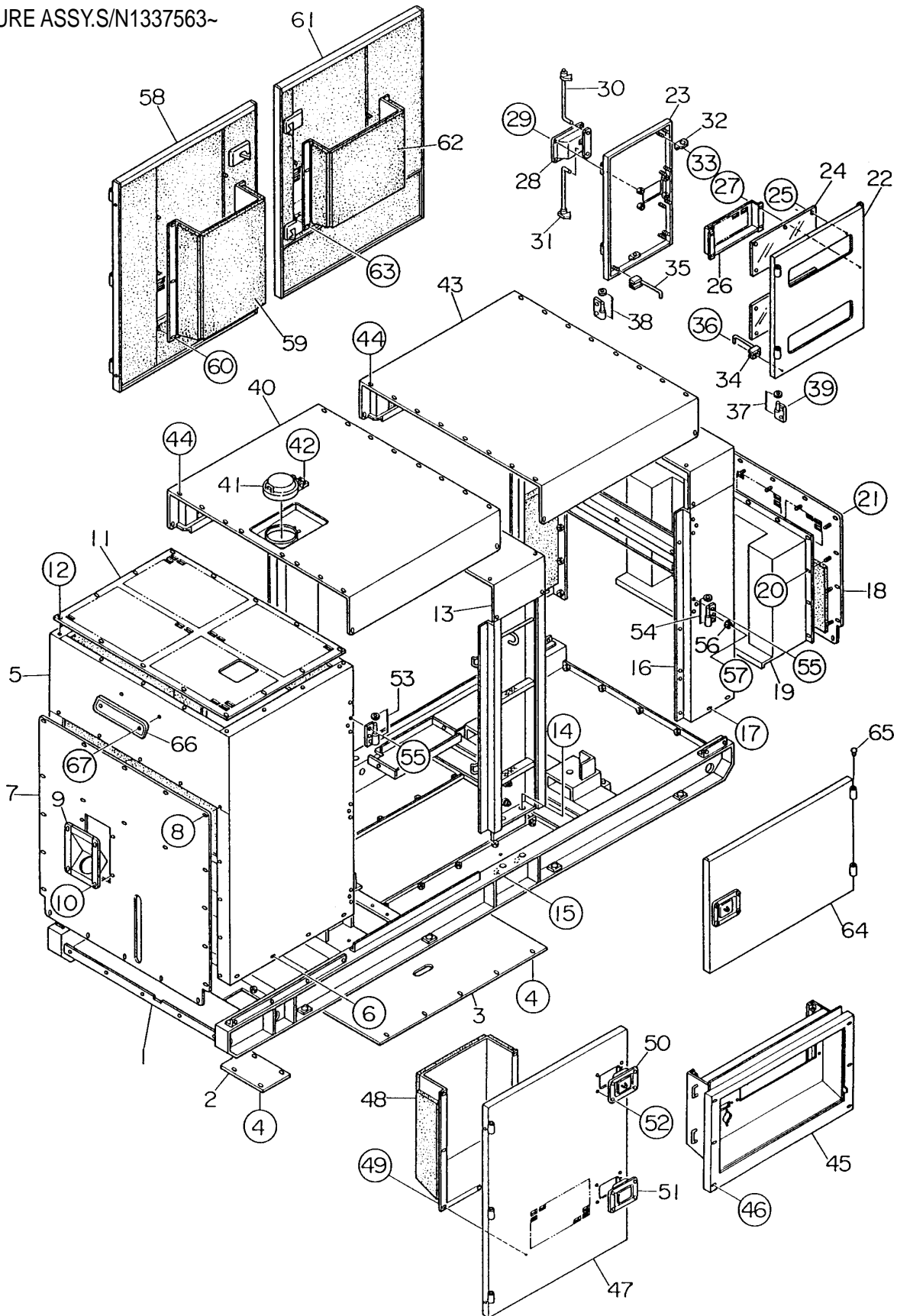
THE PART NUMBER INDICATED IS ORANGE.
PLEASE ADD THE FOLLOWING LETTERS
WHEN ORDERING COLOR OF UNIT:

MQW-WHITE

THE SERIAL NUMBER MAY BE REQUIRED.

DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY.S/N1337563~



DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
18	C1444300403	COVER, REAR FRAME	1	
	C1494300304	LINING	1	
19	C1444300303	DUCT	1	
	C1494300404	LINING	1	
20	0038408000	HEX. NUT	12	
21	0019208020	HEX. HEAD BOLT	17	
22	C1444200103	DOOR, REAR FRAME	1	
23	8175143303	DOOR, REAR FRAME	1	
24	8225147004	WINDOW PLATE	2	
25	0037906000	HEX. NUT	12	
26	B9114500104	DOOR POCKET	1	
27	0207006000	HEX. NUT	4	
28	B9114000102	DOOR HANDLE	1	
29	0021806016	MACHINE SCREW	4	
	0030006000	HEX. NUT	4 S/N3690735~
30	8175146204	DOOR ROD	1	
31	8175146304	DOOR ROD	1	
32	0845050704	STAY	4	
33	0205006000	HEX. NUT	8	
	0042306000	LOCK WASHER	8	
	0042406000	PLAIN WASHER	8	
34	0805011304	STOPPER, DOOR		
35	0805011204	STOPPER, DOOR	1	
36	0207006000	HEX. NUT	4	
37	0845047104	HINGE	2	
	0845045004	WASHER	2	
38	0845047204	HINGE	2	
	0845045004	WASHER	2	
39	0019208020	HEX. HEAD BOLT	4	
40	C1464100102	ROOF PANEL	1	
	C1494500204	LINING	1	
41	0800251701	FILLER COVER	1	
42	0025006020	MACHINE SCREW	2	
	0042306000	LOCK WASHER	2	
	0042406000	PLAIN WASHER	2	
43	C146420002	ROOF PANEL	1	
	C1494500004	LINING	1	

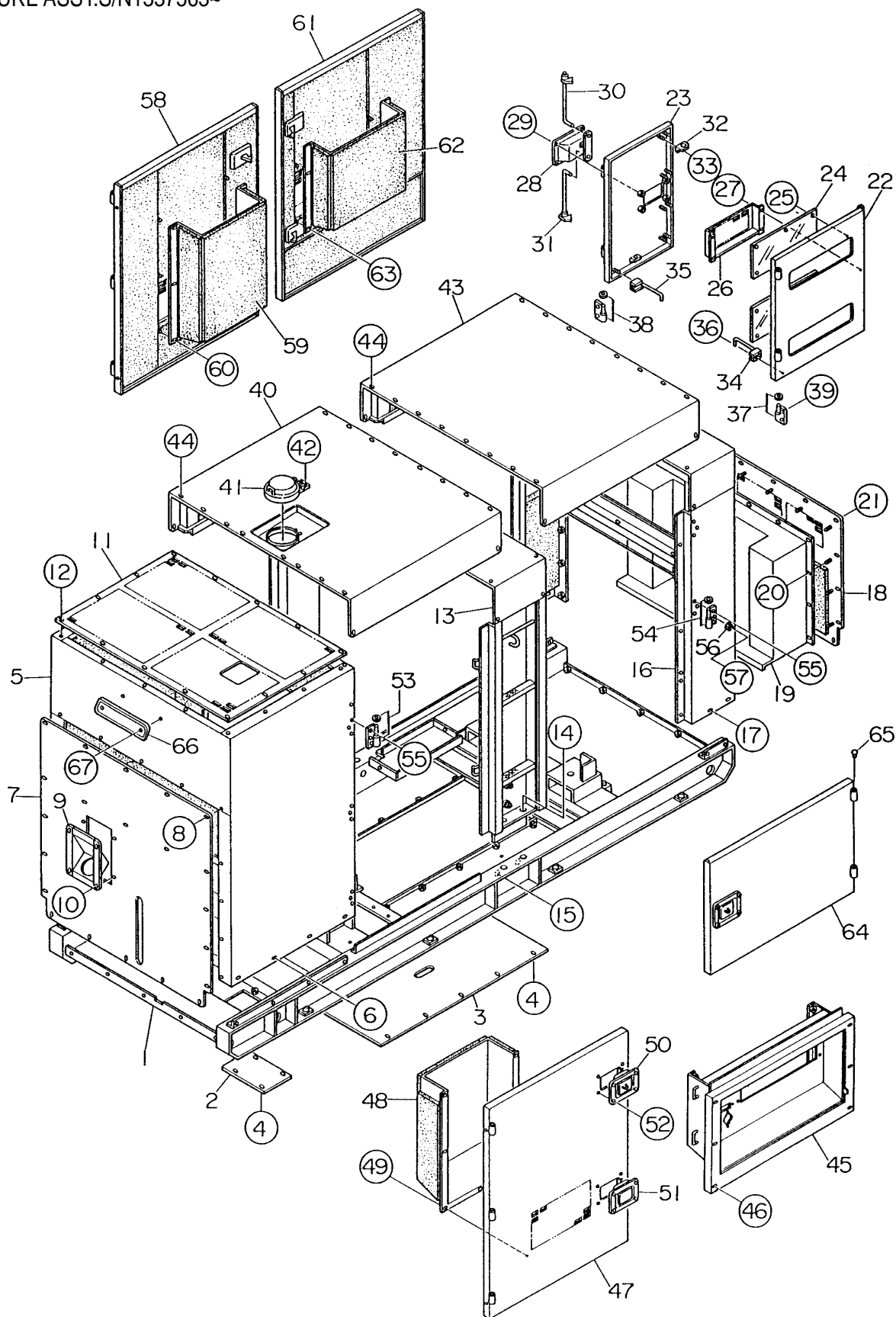
THE PART NUMBER INDICATED IS ORANGE.
PLEASE ADD THE FOLLOWING LETTERS
WHEN ORDERING COLOR OF UNIT:

MQW-WHITE

THE SERIAL NUMBER MAY BE REQUIRED.

DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY.S/N1337563~



DCA-220SSK — ENCLOSURE ASSY.

ENCLOSURE ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
44	0019208020	HEX. HEAD BOLT	40	
45	C1454201212	SPLASHER PANEL	1	S/N1337563 TO3690734
45	C1454201222	SPLASHER PANEL	1	S/N3690735 TO 3696500
45	C1454201232	SPLASHER PANEL	1	S/N3696501 TO 3700670
45	C1455200002	SPLASHER PANEL	1	S/N 3700671~
46	0019108065	HEX. HEAD BOLT	6	
	0042308000	LOCK WASHER	6	
	0042408000	PLAIN WASHER	6	
47	C1454000903	SIDE DOOR	1	
	C1494401604	LINING	1	
48	C1454300604	DUCT	1	
	C1494402904	LINING	1	
49	0038408000	HEX. NUT	7	
50	B9114000002	DOOR HANDLE	4	
51	0825007362	DOOR HANDLE	3	
52	0021806016	MACHINE SCREW	28	
	0030006000	HEX. NUT	28	
53	0845046904	HINGE	6	
	0845045004	WASHER	5	
54	0845047004	HINGE	5	
	0845045004	WASHER	5	
55	0019208020	HEX. HEAD BOLT	25	
56	0601850097	STOPPER	10	
57	0021008025	MACHINE SCREW	10	
58	C1454001003	SIDE DOOR	1	
	C1494401704	LINING	1	
59	C1454300604	DUCT	1	
	C1494402104	LINING	1	
60	0038408000	HEX. NUT	7	S/N1337563 TO 3690734
61	C1454001103	SIDE DOOR	1	
	C1494401904	LINING	1	
62	C1454300704	DUCT	1	
	C1494402004	LINING	1	
63	0038408000	HEX. NUT	5	S/N1337563 TO 3690734
64	C1454001203	SIDE DOR	1	
	C1494401804	LINING	1	
65	0845031504	CAP	15	
66	0600500090	EMBLEM	2	
67	0021106020	MACHINE SCREW	4	

THE PART NUMBER INDICATED IS ORANGE.
PLEASE ADD THE FOLLOWING LETTERS
WHEN ORDERING COLOR OF UNIT:

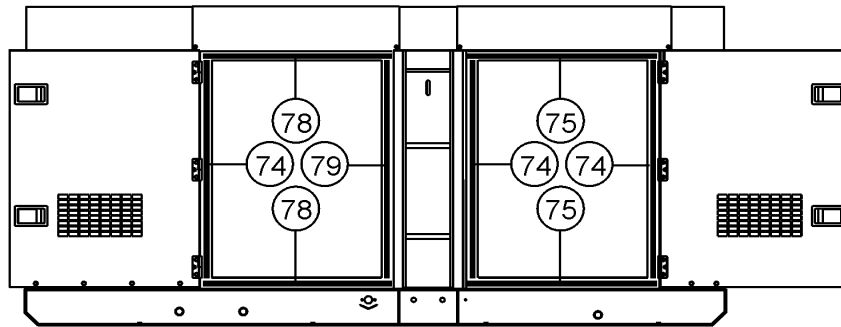
MQW-WHITE

THE SERIAL NUMBER MAY BE REQUIRED.

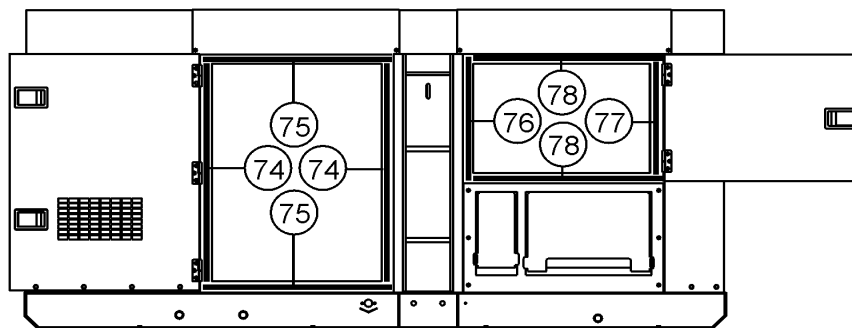
DCA-220SSK —RUBBER SEAL ASSY.

DCA220SSK
RUBBER SEALS

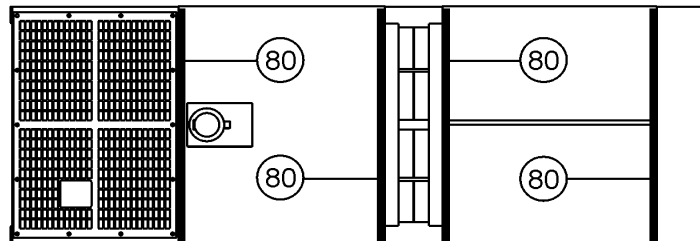
LEFT SIDE VIEW



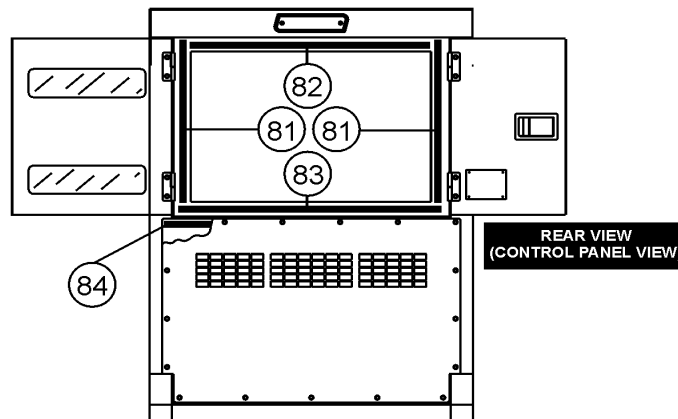
RIGHT SIDE VIEW



TOP VIEW



(RUBBER SEALS ARE LOCATED UNDER ENCLOSURE ROOF)



REAR VIEW
(CONTROL PANEL VIEW)

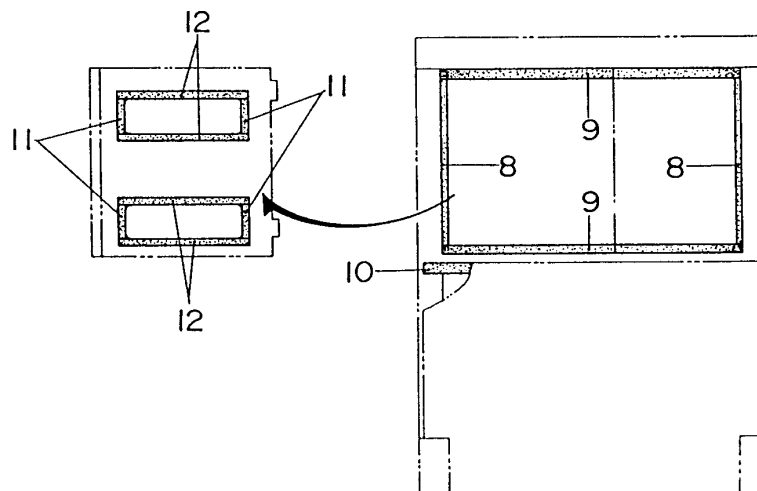
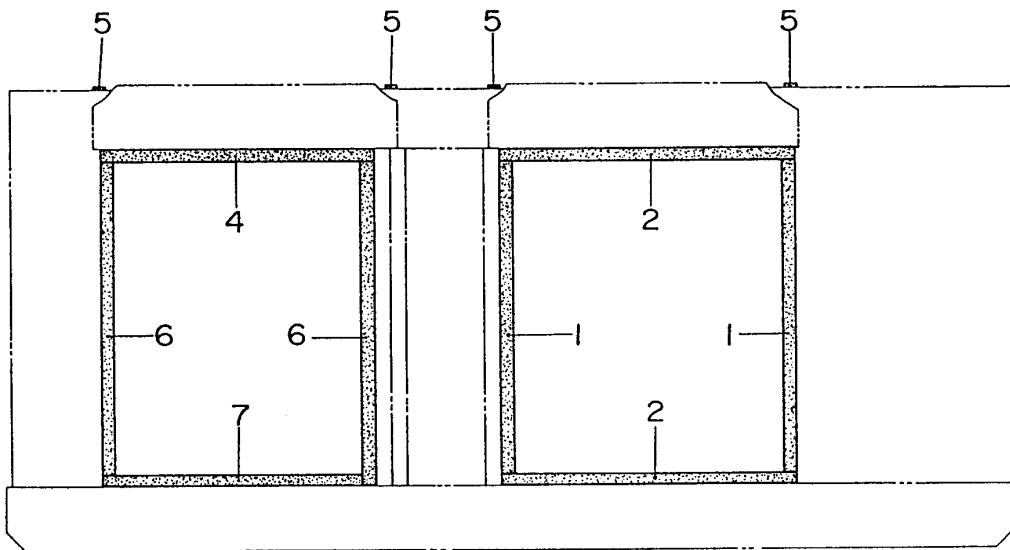
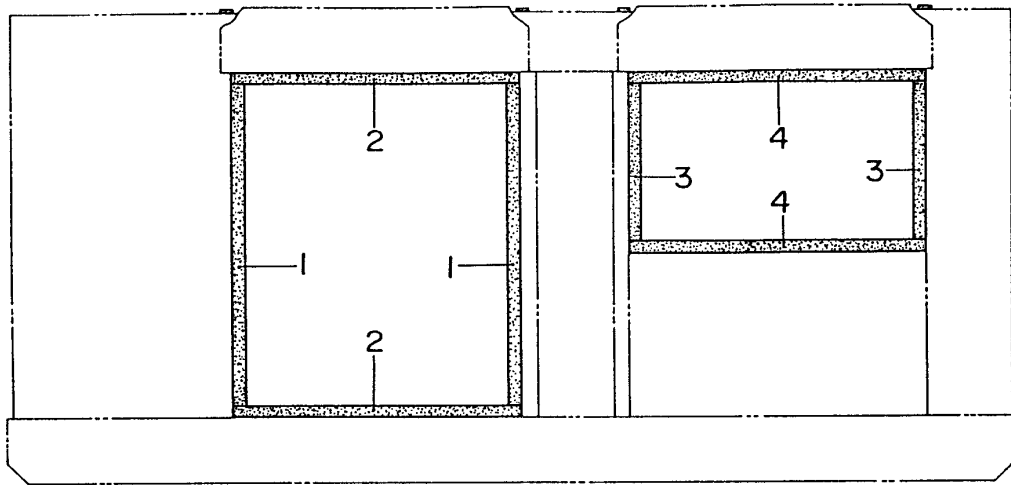
(RUBBER SEALS LOCATED BEHIND CONTROL PANEL)

DCA-220SSK —RUBBER SEAL ASSY.

RUBBER SEAL ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
74	0223301230	RUBBER SEAL	5	
75	0223300965	RUBBER SEAL	4	
76	0223300710	RUBBER SEAL	1	
77	0223300630	RUBBER SEAL	1	
78	0223300640	RUBBER SEAL	4	
79	0223301310	RUBBER SEAL	1	
80	0225101400	RUBBER SEAL	4	
81	0221200695	RUBBER SEAL	2	
82	0221201120	RUBBER SEAL	1	
83	0221201180	RUBBER SEAL	1	
84	0225101200	RUBBER SEAL	1	

DCA-220SSK —RUBBER SEAL ASSY.



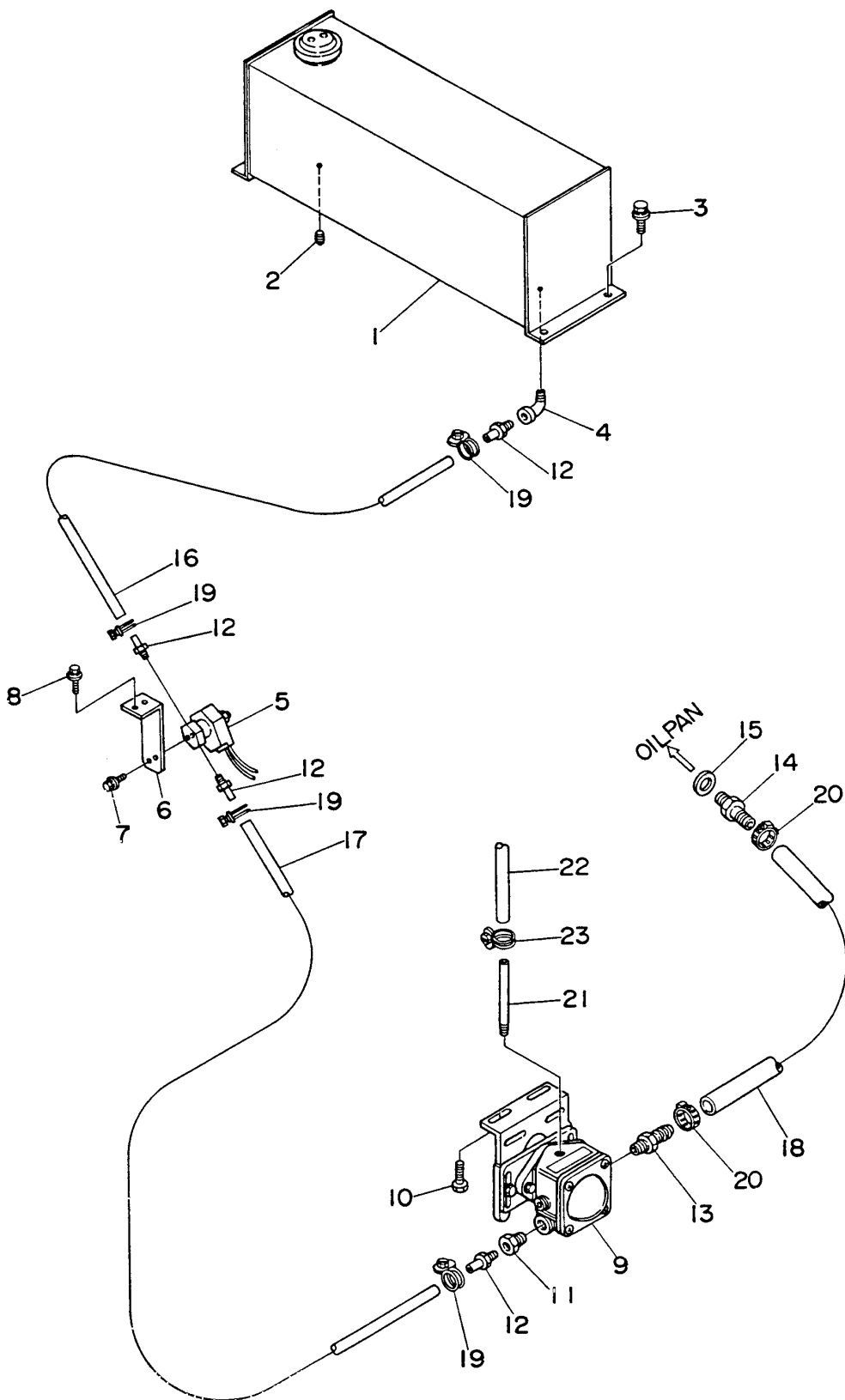
DCA-220SSK —RUBBER SEAL ASSY.

RUBBER SEAL ASSY. S/N1337563~

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	0228901250	RUBBER SEAL	4	
2	0228901010	RUBBER SEAL	4	
3	0228900650	RUBBER SEAL	2	
4	0228901050	RUBBER SEAL	3	
5	0229201300	RUBBER SEAL	4	
6	0228901280	RUBBER SEAL	2	
8	0228800760	RUBBER SEAL	2	S/N1337563TO 3701661
8	0221200760	RUBBER SEAL	2	S/N3701662~
9	0228801100	RUBBER SEAL	2	
10	0229201200	RUBBER SEAL	1	
11	0228100120	RUBBER SEAL	4	
12	0228100510	RUBBER SEAL	4	

DCA-220SSK — AUTOMATIC OIL FEEDER ASSY.

AUTOMATIC OIL FEEDER ASSY. UP TO S/N1337562



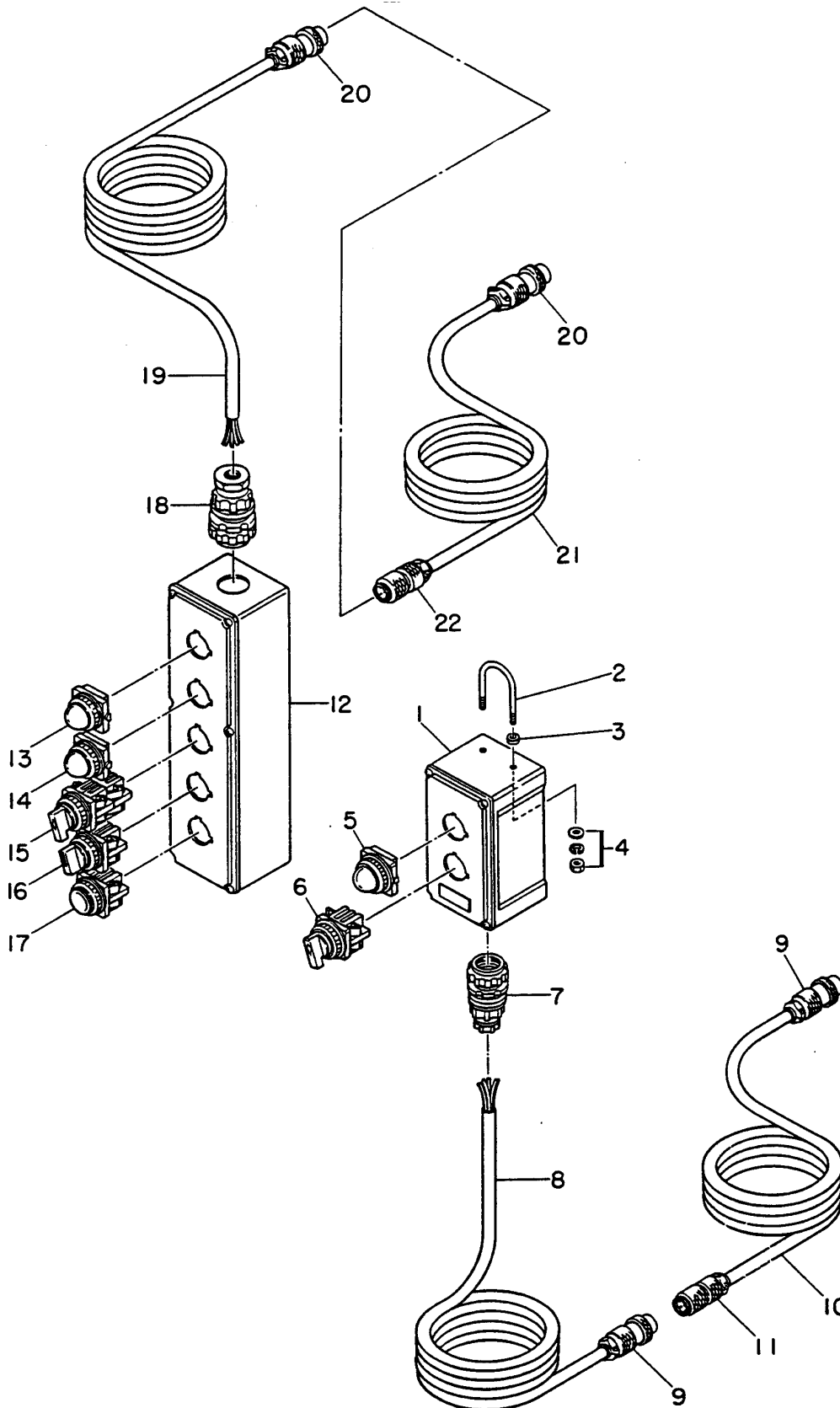
DCA-220SSK — AUTOMATIC OIL FEEDER ASSY.

AUTOMATIC OIL FEEDER ASSY. UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8195591103	OIL TANK	1	
	0810105104	CAP, OIL TANK	1	
2	0132000000	PLUG	1	
3	01120825	HEX. HEAD BOLT	4	REPLACES 0017108025
4	0130200000	STREET ELBOW	1	
5	0602211212	SOLENOID VALVE	1	
6	8185524504	BRACKET, SOLENOID VALVE	1	
7	0011305100	HEX. HEAD BOLT	2	REPLACES 0017105012
8	011606025	HEX. HEAD BOLT	2	REPLACES 0017106025
9	0605511090	OIL LEVEL REGULATOR	1	
10	012210035	HEX. HEAD BOLT	2	REPLACES 0010010035
11	0805531204	BUSHING	1	
12	0805531304	HOSE JOINT	4	
13	4542025004	HOSE JOINT	1	
14	3475512004	HOSE JOINT	1	
15	3475006304	PACKING	1	
16	0193101600	HOSE	1	
17	0193101600	HOSE	1	
18	0191600270	HOSE	1	
19	0605515000	HOSE BAND	4	
20	0605515098	HOSE BAND	2	
21	7432051504	HOSE JOINT	1	
22	0197301200	HOSE	1	
23	0605515014	HOSE BAND	1	

DCA-220SSK — CONTROL BOX ASSY. REMOTE (OPTIONAL PARTS)

CONTROL BOX ASSY. REMOTE (OPTIONAL PARTS) UP TO S/N1337562



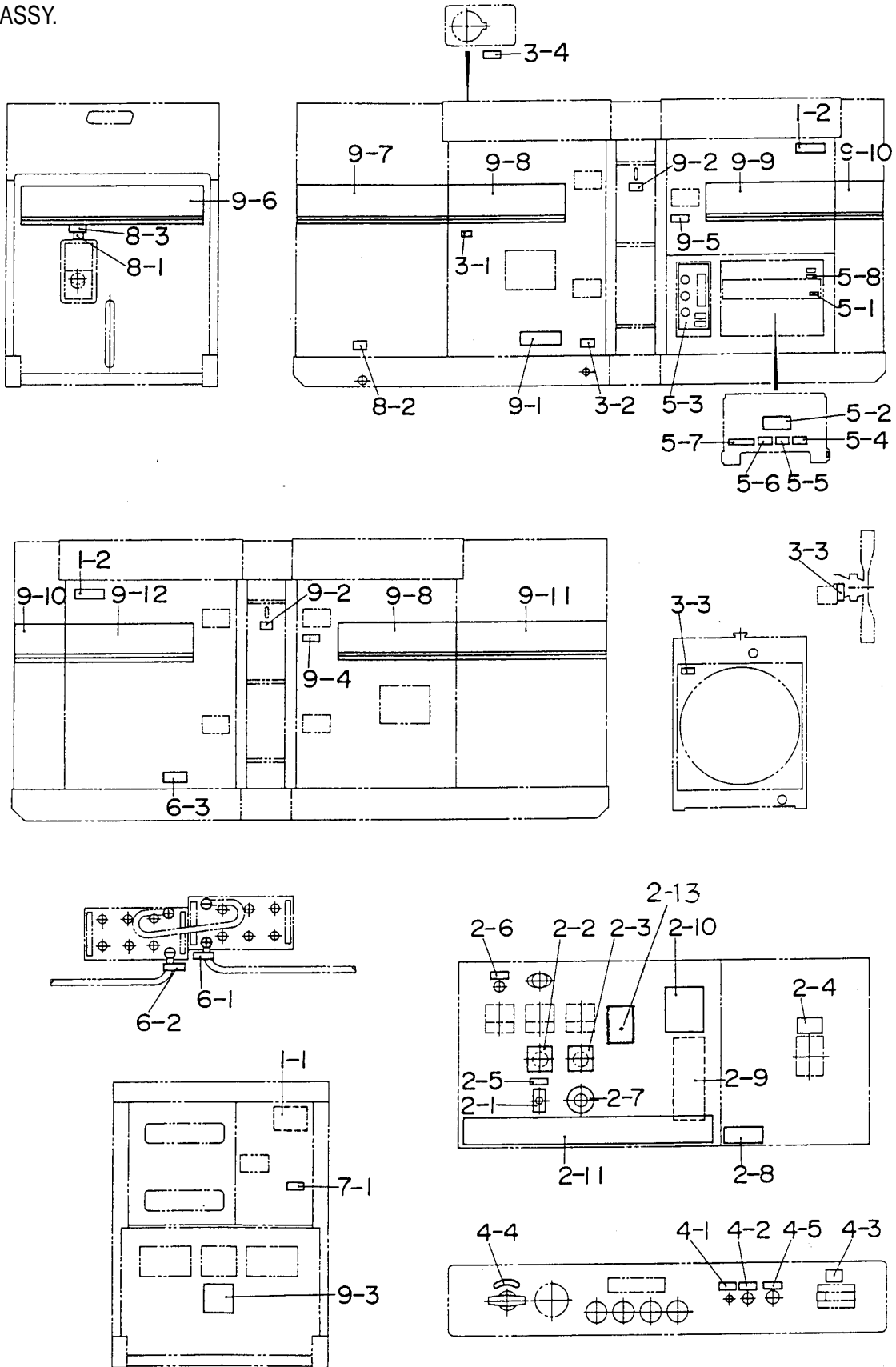
DCA-220SSK — CONTROL BOX ASSY. REMOTE (OPTIONAL PARTS)

CONTROL BOX ASSY. REMOTE (OPTIONAL PARTS) UP TO S/N1337562

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	0841000604	CONTROL BOX, REMOTE	1	
2	0802710204	U BOLT	1	
3	0802710304	WASHER	2	
4	020106050	HEX. NUT	2	REPLACES 0030006000
	0040006000	LOCKWASHER	2	
	952404470	PLAIN WASHER	2	REPLACES 0041606000
5	0601810475	PILOT LAMP, SLOW SPEED	1	APNE133-R
	0601810256	BULB	1	
6	0601830613	SELECTOR SWITCH, ENGINE SPEED .	1	ASN30L10
7	0601851503	CABLE FITTING	1	HNG21R12
8	0840306704	CABLE	1	
9	0601811367	PLUG	2	NWPC254PM11
10	0840306904	EXTENSION CABLE	1	
11	0601811515	RECEPTACLE	1	NWPC254AdF11
12	0606302020	CONTROL BOX, REMOTE	1	AGF511
13	0601810461	CAUTION LAMP, PREHEAT & IDLING	1	APNE188R
	0601810254	BULB	1	
14	0601810460	PILOT LAMP, ENGINE SPEED	1	APNE188G
	0601810254	BULB	1	
15	0601830607	STARTER SWITCH	1	ASN20L5S
16	0601830608	SWITCH, SLOW DOWN	1	ASN310
17	0601830417	EMERGENCY STOP BUTTON	1	ABN110
18	0601851501	CABLE FITTING	1	HNG33
19	0840301104	CABLE	1	
20	0601811332	PLUG	2	NCS4410PM
21	0840200800	EXTENSION CABLE	1	
22	0601811516	RECEPTACLE	1	NCS4410AdF

DCA-220SSK-DECALS ASSY.

DECALS ASSY.



DECALS ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1-1	0840626802	DECAL; HANDLING PROCEDURES;S3181A	1	S/N1325370 TO 1326266
1-1	0840632002	DECAL; HANDLING PROCEDURES;S3387	1	S/N1326267 TO 1337562
1-1	0800655603	DECAL; HANDLING PROCEDURES;S2763A	1	S/N1337563 TO 3696500
1-1	C1551000503	DECAL; HANDLING PROCEDURES;C1510050	1	S/N3696501 TO 3701661
1-1	C1552000403	DECAL; HANDLING PROCEDURES;B15200010	1	S/N3701662~
1-1	0840614303	DECAL; HANDLING PROCEDURES;S2633	1	WITH SLOW DOWN
1-2	0840601604	DECAL; CAUTION;S1679	1	WITH SLOW DOWN
1-2	B1552000103	DECAL; CAUTION;B15200010	2	S/N3696501 TO 3701661
1-2	C9522100003	DECAL; CAUTION;C92210000	2	S/N3701662~
1-2	0840621803	DECAL; PROC. FOR PARALLEL OPER;S2753	1	S/N1325370 TO 1326266
1-2	0840632203	DECAL; PROC. FOR PARALLEL OPER;S3391	1	S/N136267 TO 1337562
1-2	0840621902	DECAL; PROC. FOR PARALLEL OPER-;S2754	1	S/N1325370 TO 1326266
1-2	0840632302	DECAL; PROC. FOR PARALLEL OPER-;S3392	1	S/N136267 TO 1337562

CONTROL BOX GROUP

2-1	0800520100	PLATE;ON/OFF;AT202	1	
2-2	0800520904	PLATE; AMMETER CHG.OVR.SWITCH;N2438	1	
2-3	0800520814	PLATE; VOLTMETER CHG.OVR.SWITCH;N2439	1	
2-4	0800664504	DECAL;CIRCUIT BREAKER;S1307	1	UP TO S/N1337562
2-4	0840624504	DECAL;CIRCUIT BREAKER;S3031	1	S/N1337563~
2-5	0800667204	DECAL;PANEL LIGHT SWITCH;S809	1	UP TO S/N1337562
2-5	0840624604	DECAL;PANEL LIGHT SWITCH;S3032	1	S/N1337563~
2-6	0800662004	DECAL;PILOT LAMP;S848	1	UP TO S/N1337562
2-6	0840624704	DECAL;PILOT LAMP;S3033	1	S/N1337563~
2-7	0800623504	DECAL;VOLTAGE REGULATOR;S708A	1	UP TO S/N1337562
2-7	0840624804	DECAL;VOLTAGE REGULATOR;S3034	1	S/N1337563~
2-8	B9531100604	DECAL;WARNING ELECTRICAL SHOCK;B93110060	1	S/N1337563~
2-9	0800640703	DECAL;SETTING FOR OUTPUT VOLTAGE;S1322	1	UP TO S/N1337562
2-9	C0551000903	DECAL;SETTING FOR OUTPUT VOLTAGE;C05100090	1	S/N1337563~
2-10	C2551000004	DECAL; SAFETY INSTRUCTIONS	1	S/N1337563~
2-11	C1561101603	DECAL;WHISPERWATT220	1	S/N1337563~
2-12	C9502400004	DECAL; HIGH IDLE SPEED;C90240000	1	S/N3701662~
2-13	0600500091	DECAL; ENGINE CONTROLLER	1	S/N3696501~

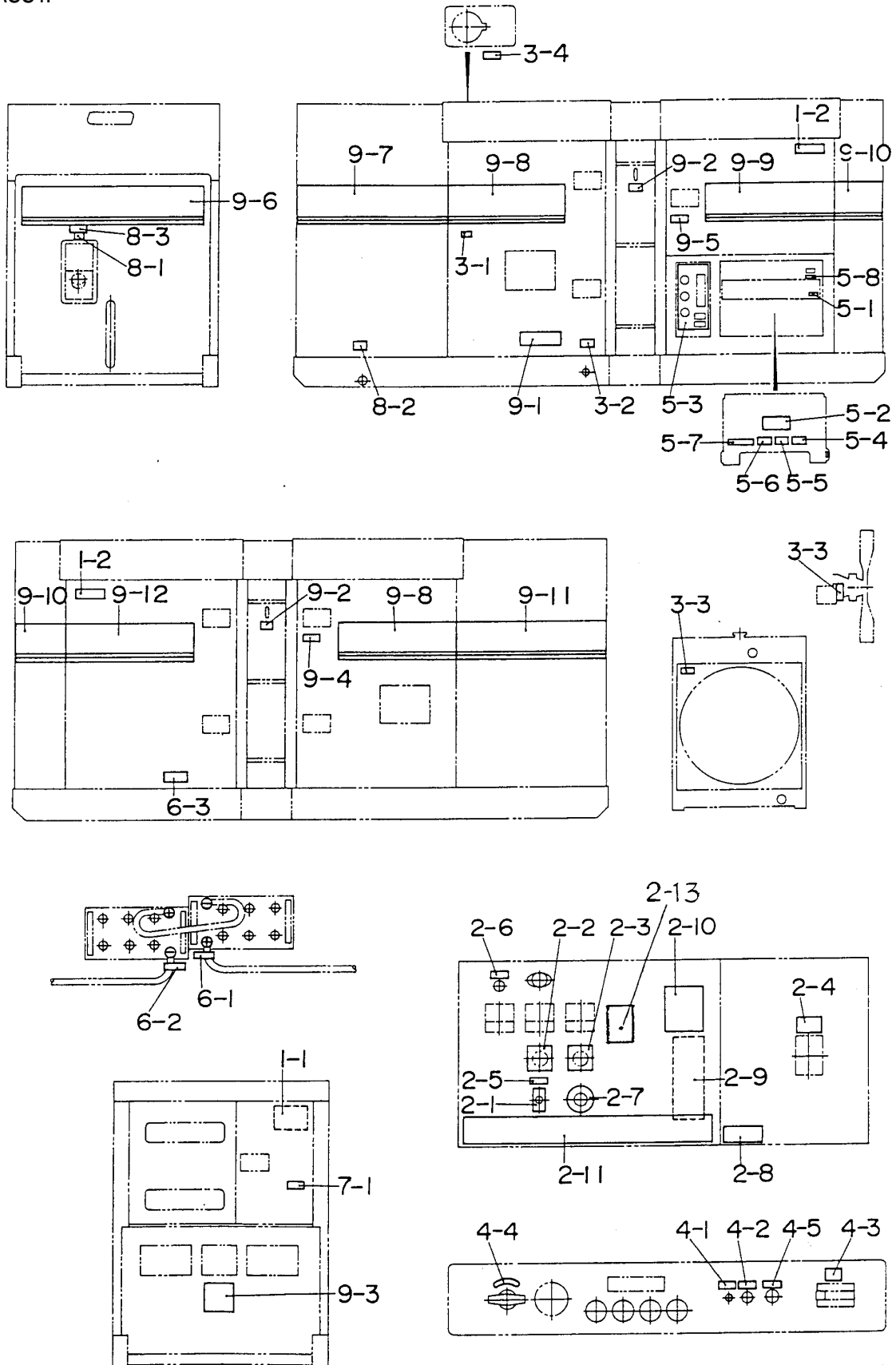
ENGINE AND RADIATOR GROUP

3-1	6360610304	DECAL; WATER;S1880	1	
3-2	6360620204	DECAL;OIL DRAIN PLUG;S1885	1	
3-3	B9504000404	DECAL; WARNING-MOVING PARTS;B9040040	2	
3-4	B9504100104	DECAL;WARNING-HOT COOLANT;B90410010	1	

FUEL TANK GROUP

8-1	1320620904	DECAL; DIESEL FUEL;S1756	1	
8-2	6360620004	DECAL;FUEL DRAIN PLUG;S1883	1	
8-3	B9504500004	DECAL;WARNING-FLAMMABLE;B90450000	1	

DECALS ASSY.



DCA-220SSK-DECALS ASSY.

DECALS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
<u>ENGINE OPERATING GROUP</u>				
4-1	0840625004	DECAL;PREHEAT LAMP;S3036	1	UP TO S/N3701661
4-1	C15520000103	OPERATING PANEL;C15200001	1	S/N3701662~
4-2	0840625104	DECAL;STARTER SWITCH;S3037	1	UP TO S/N3696500
4-2	C9501400304	DECAL;PREHEAT BUTTON;C90140030	1	S/N3696501 TO 3701661
4-3	C0551000504	DECAL;BATTERY SWITCH;C05100050	1	
4-4	C0551000704	DECAL;THROTTLE HANDLE;C05100070	1	UP TOS/N3701661
4-5	C0551000804	DECAL;EMERGENCY STOP;C05100080	1	UP TO S/N3696500
4-5	0840647804	DECAL;EMERGENCY STOP;S4100	1	S/N3696501 TO 3701661
<u>OUTPUTTERMINAL GROUP</u>				
5-1	0840614104	DECAL;GROUND;S2635	1	
5-2	0840619904	DECAL;DANGER;S2731	1	
5-3	B4551000103	DECAL;RECEPTACLE AND CIR. BREAKER;B45100010	1	UP TO S/N3690734
5-3	C0551001503	DECAL;RECPTACLE AND CIR.BREAKER;C05100150	1	S/N3690735~
5-4	B9511100304	DECAL;WARNING-ELECTRICAL SHOCK;B91110030	1	
5-5	B9511100404	DECAL;WARNING-ELEC. SHOCK;B91110040	1	
5-6	B95531100504	DECAL;WARNING-ELEC. SHOCK;B91110050	1	
5-7	C0551000404	DECAL;3-PHASE OUTPUT TERMINAL;C05100040	1	
5-8	C1551000404	DECAL;240/139V;C15100040	2	UP TO S/N3696500
5-8	9039209064	DECAL;START CONTACT;S4468	1	S/N3696501~
<u>BATTERY GROUP</u>				
6-1	0800689404	DECAL;+;S2090	2	
6-2	0800689504	DECAL;-;S2091	2	
6-3	C9505300004	DECAL;CAUTION;C90530000	1	S/N3696501~
<u>MUFFLER GROUP</u>				
7-1	B9504200004	DECAL;WARNING-EXHAUST;B90420000	1	
<u>BONNET GROUP</u>				
9-1	1320610603	DECAL;WATER-OIL;S1760	1	
9-2	1320621504	DECAL;SUPPORT HOOK;S2257	2	
9-3	0840625902	DECAL;MQ;S3057	1	
9-4	B9504000304	DECAL;CAUTION-HOT PARTS;B90400030	1	
9-5	B9531100604	DECAL;WARNING-ELEC. SHOCK;B93110060	1	
9-6	C1561100503	DECAL;STRIPE	1	
9-7	C1561100603	DECAL;STRIPE	1	
9-8	C1561100304	DECAL;STRIPE	2	
9-9	C1561100703	DECAL;STRIPE	1	
9-10	C1561100104	DECAL;STRIPE	2	
9-11	C1561100403	DECAL;STRIPE	1	
9-12	C1561100203	DECAL;STRIPE	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 Multiquip 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 nor 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.

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

Manufactured for Multiquip Inc.
by
DENYO MANUFACTURING, CO., USA



MULTIQUIP INC.

POST OFFICE BOX 6254
CARSON, CA 90749
310-537-3700 • 800-421-1244
FAX: 310-537-3927
E-MAIL: mq@multiquip.com
WWW: multiquip.com

Atlanta • Boise • Dallas • Houston • Newark
Quebec, Canada • Manchester, UK • Rio De Janeiro, BR • Guadalajara, MX

Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>