

I N S T R U C T I O N M A N U A L

D E N Y O

E N G I N E C O M P R E S S O R

D I S - 1 3 0 E S

1 3 0 E S - C

Before using, be sure to read this manual for the sake of safety.

Be sure to observe the items under symbol marks "◇WARNING" and "△CAUTION" for the sake of safety.

Always keep this manual at your machine for the sake of safety.

 **Denyo Co., Ltd.**

2-8-5, Nihonbashi-horidomecho, Chuo-ku, Tokyo, 103-8566, Japan

FOREWORD

- * Your machine is a portable type engine compressor. (Specifications: See p.50)
- * Do not install, operate or repair this machine without reading this operating manual.
- * This engine compressor (machine) must be operated by a person having sufficient knowledge and skill for the sake of safety.

Notes on instruction manual

- * This instruction manual explains correct operation and maintenance of the machine to ensure its performance.
Incorrect handling of the machine may lead to a serious injury or decease.
Before using, be sure to read this manual carefully.
Particularly, the items under " Safety precautions" .(See p.1 to p.9)
"◇WARNING" and "△CAUTION" must be read thoroughly.
- * Keep this manual in the case behind the rear door for future reference.
- * Read the contents of the warranty card attached to the machine.
- If this manual becomes illegible by spot or damage, contact distributor or our office to get new manual.

- Contents -

1. Safety Precautions	1
2. Construction	10
2-1 Outline and part names	10
2-2 Instrumental panel and part names	11
2-3 Meters	12
2-4 Use of switches and controllers	14
3. Operation	15
3-1 Checking prior to operation	15
3-2 Startup	20
3-3 Starting under cold weather	21
3-4 Precautions during operation	21
3-5 Stopping	22
3-6 Emergency stop and monitor display	23
4. Protection device	24
5. Lubrication, cooling water and fuel etc.	25
5-1 Engine oil	25
5-2 Cooling water	26
5-3 Fuel	26
5-4 Safety valve	26
5-5 Regulator	27
5-6 Compressor lube oil	28
6. Handling of battery	30
6-1 Caution on battery charge	31
6-2 Connection of booster cable, and installation	32
7. Periodical checking and maintenance	33
7-1 Maintenance schedule	33
7-2 Checking/first 50 hours	34
7-3 Checking/every 100 hours	35
7-4 Checking/every 250 hours	36
7-5 Checking/every 500 hours	38
7-6 Checking/every 1000 hours	39
7-7 Other service requirements	41
7-8 Table of periodical maintenance and checking	42
8. Trouble shooting and Countermeasures	44
9. Long - term storage	49
10. Service data	50
10-1 Specifications	50
10-2 Outline drawing	52
10-3 Combined Piping Diagram	54
10-4 Engine wiring diagram	56

1. Safety Precautions

In order to ensure safe operation, the following symbols are used for explanation of the machine operation.

The following symbols, found throughout this manual, alert you to potentially dangerous conditions to the operator, service personnel, or the equipment.

⚠ **WARNING:** This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

⚠ **CAUTION:** This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

[Note] : This symbols show handling precautions for effective operation and many years of satisfactory operation.

Some of the items shown by "⚠CAUTION" may also cause death or serious injury. Be sure to observe all the items, as they are important for safe operation.

- * If the machine is used by an outsider, you are requested to explain him correct handling and advise him to read this instruction manual carefully.
- * Do not modify the machine at your discretion, as it affects the safety, performance or the life of the machine.
- * If the machine is modified or it is used incorrectly against this manual or unauthorized parts are used, the warranty of manufacturer will become invalid.

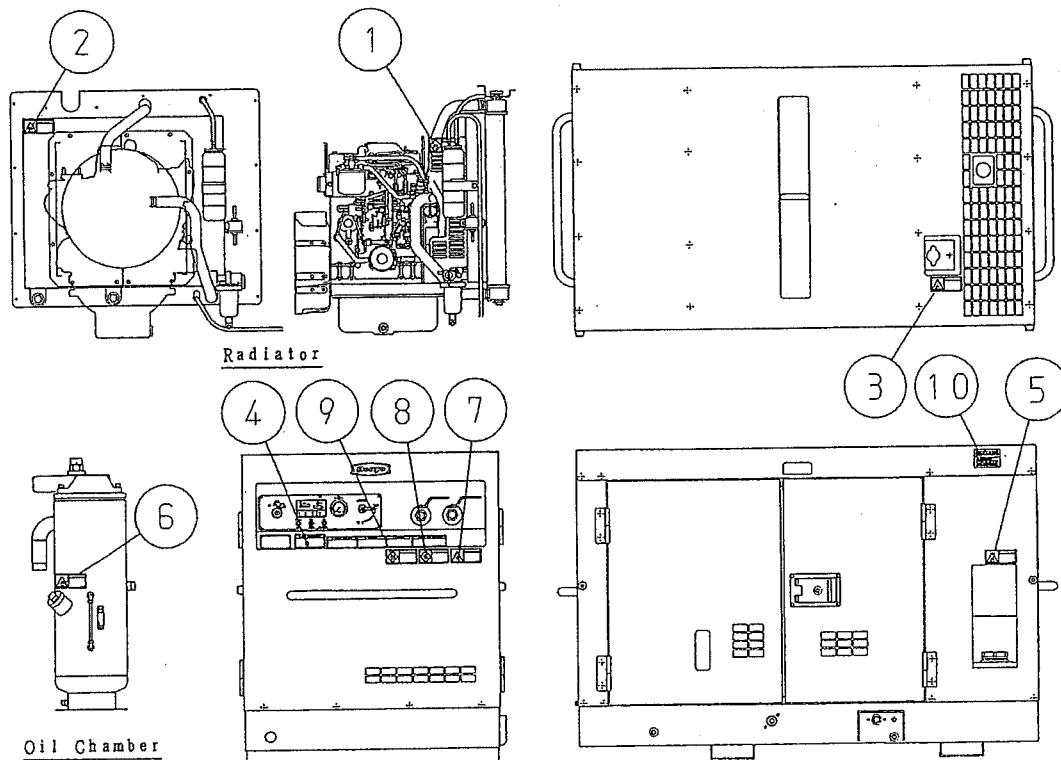
Safety label

Safety labels are attached to the following positions of the machine.

- * Keep these safety labels clean at all times.
- * When safety labels are spoiled or lost, contact distributor or our office specifying the nameplate No. shown below and ask for new ones.

- | | |
|----------------------------------|--------------|
| 1.Warning : Moving parts | (B9040 0040) |
| 2.Caution : Hot surfaces | (B9040 0030) |
| 3.Warning : Hot coolant | (B9041 0010) |
| 4. Safety Instructions | (E9111 0050) |
| 5.Warning : Diesel fuel | (B9045 0000) |
| 6.Caution : High pressure | (E9411 0060) |
| 7.Caution : Residual pressure | (E9411 0070) |
| 8.Warning : Engine exhaust | (B9042 0000) |
| 9.Warning : The air delivered | (E9411 0080) |
| 10.Caution : Against exhaust gas | (B9052 0000) |

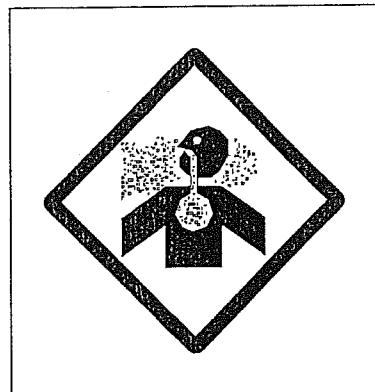
Following is DIS-130ES.



◇ WARNING

ENGINE EXHAUST can kill.

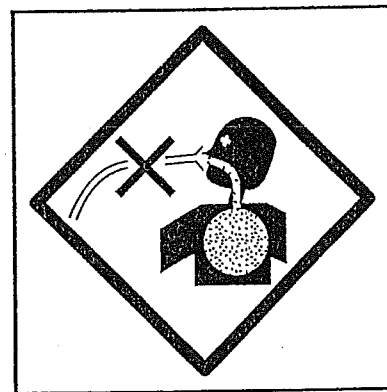
- Insufficient ventilation may lead to death due to lack of oxygen or poisoning by exhaust gases.
- * Do not use the machine in a place of poor ventilation or in a place where exhaust gases stays.
- * Do not use the machine indoors or in storehouse, tunnel, ship hold, tank, etc. of poor ventilation.
- * If it becomes necessary to use the machine in the above places, the exhaust pipe should be extended to a well ventilated place. In this case, use a ventilator to ensure proper ventilation.
- * Do not direct the exhaust outlet to nearby pedestrians and houses.



◇ WARNING

THE AIR DELIVERED can kill.

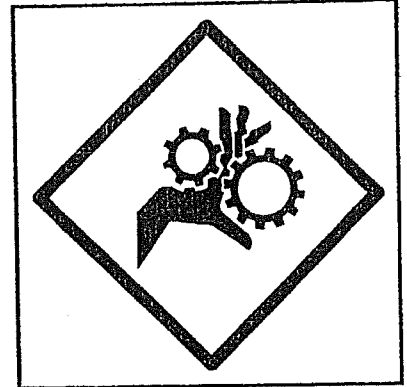
- Do not allow to breathe the air delivered by compressor .Otherwise, it may result in death accident. the compressor must not be used for raising air pressure in a room or for supplying air for diver's breathing.



◇ WARNING

MOVING PARTS can cause severe injury.

- Rotary unit which runs at a high speed is located in the machine.
(Note that it is very dangerous if you touch it.)
- * Be sure to close the door and lock it during operation.
- * When the door needs to be opened during operation, do not get your hands and head in the machine to prevent them from being caught in the machine which may lead to injury.
- * When making check or maintenance of the machine, be sure to stop the machine in advance.



△ CAUTION

DIESEL FUEL can cause fire or explosion.

- Fuel and oil are flammable. Incorrect handling results in danger of ignition or fire.
- * When fuel needs to be supplied to the machine, be sure to stop the engine. Refrain from smoking. Keep the machine away from fire.
- * Do not leave flammable objects (paper, wood chips, etc.) and hazardous objects (oil, powder, etc.) near the machine.
- * Wipe off spilt fuel and oil.



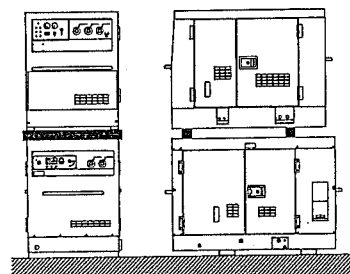
△ CAUTION

Stacking

- Improper stacking of machines may cause falling or dropping accidents.

When stacking other machines on this machine, be sure to observe the following points.

- * Check that the bonnet of the machine is free from damage and that the fixing bolts are not loosened and missing.
- * Put the machine horizontally on a solid foundation which withstands the weight of stacked machines.
- * Machines can be stacked up to 2 stages.
The weight and size of stacked machines should be less than those of this machine.
- * Using square timbers as shown right, put each machine making sure that the weight is even.

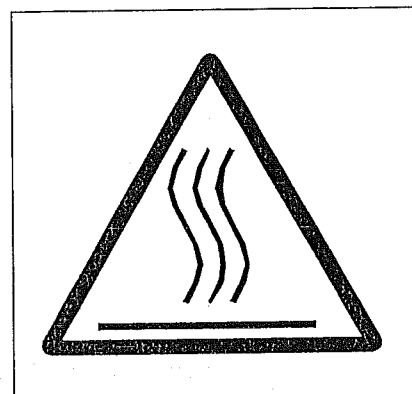


- Do not operate the machines in the state of stacking to prevent falling or dropping accidents.

△ CAUTION

HOT PARTS can burn skin.

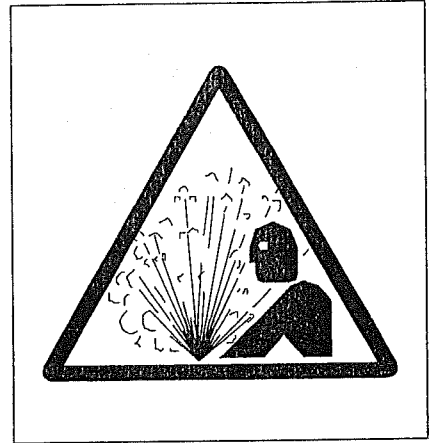
- High temperature units are located in the machine.
(Note that these units are very dangerous if they are used incorrectly.)
- * Be sure to close the door and lock it during operation.
- * If the door needs to be opened during operation, do not get your hands and head in the machine to prevent unexpected burns.
- * When making check or maintenance of the machine, be sure to stop the machine.
- * The bonnet is still hot even after the machine is stopped.
Be careful until the engine is completely cooled.



⚠ CAUTION

HOT COOLANT can cause severe scalds.

- If the radiator cap is opened while the water temperature is high, steam or hot water will spout out.
- * During operation or immediately after stopping the machine, do not open the radiator cap while the water temperature is high.
- * When cooling water needs to be checked or supplied, wait until the engine is cooled (50°C or less as measured with the water temperature gauge).



⚠ CAUTION

Noise

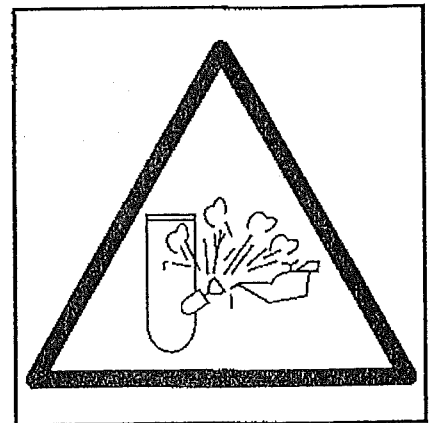
- This machine generates large noise, if the door is open. Surrounding to large noise may cause hearing trouble.
- * Close and lock the door during operation.
- * If opening the door is necessary during operation, be sure to put on the ear protector.



⚠ CAUTION

High pressure

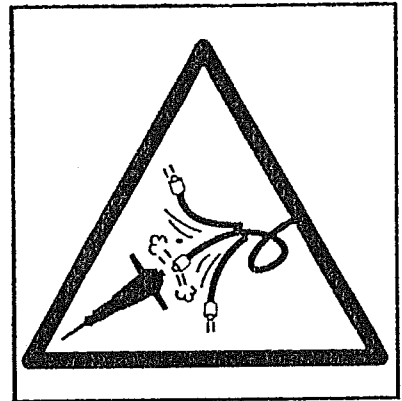
Dangerous High Pressure. Never open the oil filler port, while high pressure remains inside. Otherwise, A serious injury can result. Be sure to stop engine and release the inside pressure before filling oil.



△ CAUTION

High pressure remains

Dangerous Residual Pressure. Never take off the pipings keeping residual pressure, for it can cause a serious injury. Be sure to release the residual pressure before taking off.



△ CAUTION

BATTERY

- Battery generates flammable gases.
Improper handling may lead to explosion or serious injury.
- * Battery should be charged in a well ventilated location. Otherwise, flammable gases are accumulated which may be ignited and exploded.
- * When connecting a booster cable, do not jumper the terminals (+ and -). Otherwise, the flammable gases generated from the battery may be ignited and exploded by sparks.
- * For maintenance of the machine, disconnect the ground cable on the ground side.
- The battery acid is dilute sulfuric acid. Improper handling will cause unexpected burns.
- * When the battery acid gets on your clothes or skin, wash it out with a large volume of water immediately. If it gets in your eyes, wash with a large volume of water immediately and consult your doctor.
- In the worst case, it will put out your eyes.
- For checking or handling of the battery, be sure to stop the engine.



⚠ CAUTION

Transportation

- Do not lift the machine at the support hook or the ladder because it is not strong enough for lifting and may cause a falling accident.

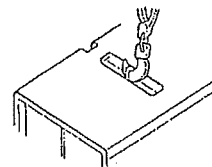
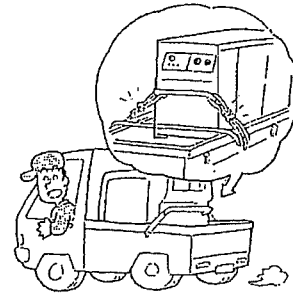
* When lifting the machine, use the hanger located at the roof center.

* Keep out under the lifted machine.

- Do not lift or do not transport the machine during operation, as it may cause damage to the fan or serious trouble.

* When loading the machine on the truck or the like, fix the machine firmly by support hooks on the both side.

The detail as machine size is referred to 「10-1. Specifications See p.50」



⚠ CAUTION

Operator

- Do not operate the machine, if operator is tired too much or drinks some alcohol or take some drugs.

* Otherwise, it may cause unexpected accidents or injury.

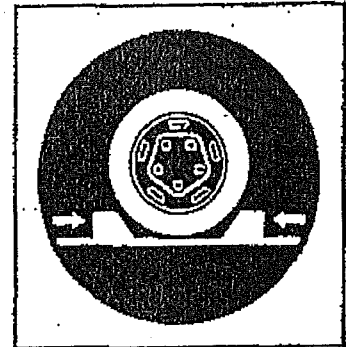
- During checking or maintenance, be sure to put on suitable clothes and protectors.

* Do not put on baggy clothes, necklace, etc., because they are easily caught by projections which may cause injuries.

△CAUTION

Run away

- Be sure to set the wheel stoppers expect for moving. Otherwise, the unit may move or run away and can cause a serious accident.



△CAUTION

Safety instructions on Trailer

Improper operating of the trailer can result in the accident to severe injury or death. for moving or parking, be sure to keep the following instructions:

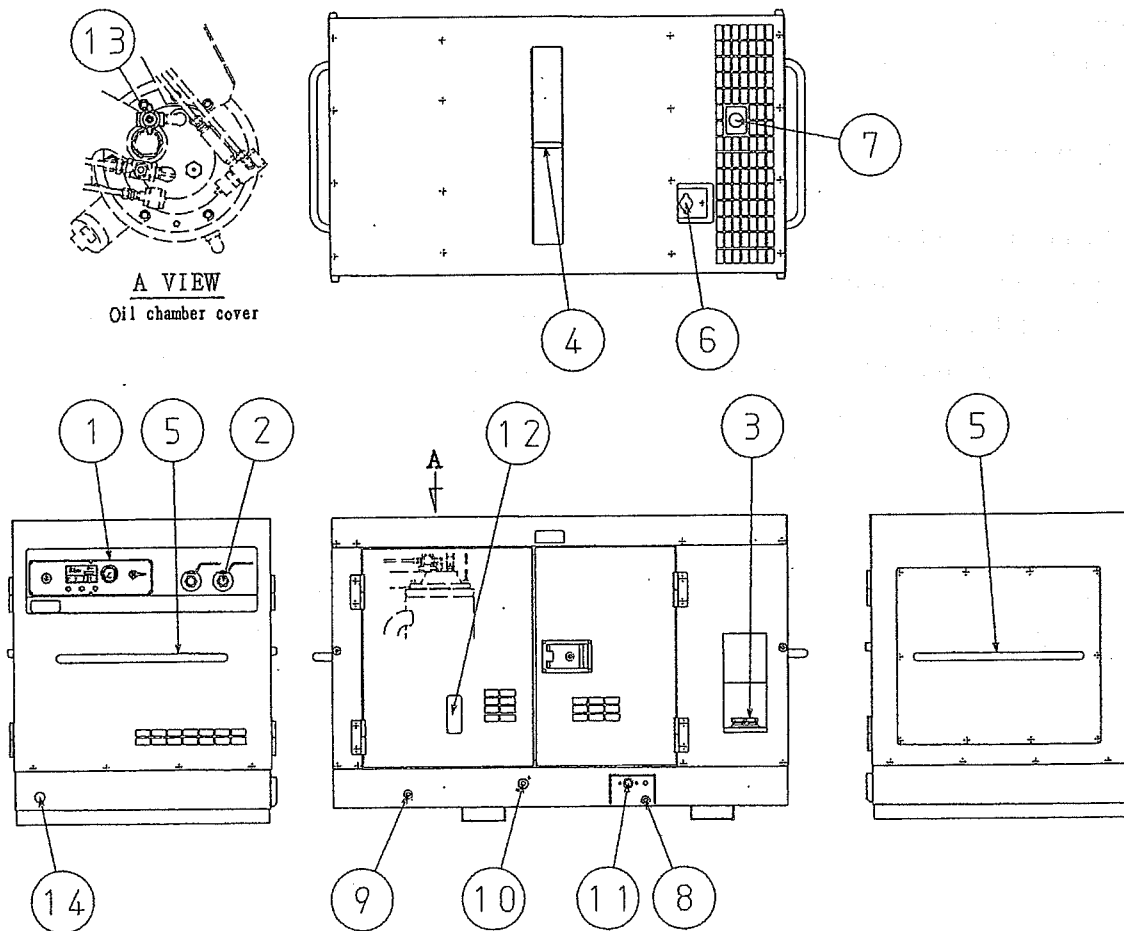
Only pavement ground and going slowly.

1. Place the unit on a level and hard ground. Placing on an inclined location may cause free moving or tumbling down to injury.
2. Except for moving, securely pull the parking brake, if it is fitted, and always put the wheel stoppers. For the 2-wheeled trailer, set up the standing bar or caster to fix the unit securely.
3. For moving, remove the stoppers and release the parking brake if it is fitted. Use the parking brake only for parking, and never use it for braking the unit when transporting.
4. For moving, securely connect the unit to the towing system of the towing vehicle which should have an enough towing capability and should be driven by a qualified driver.
5. Never move the unit at the towing speed of over 10km/h.
6. Put the unit on a truck for transporting the unit from a workshop.

2. Construction

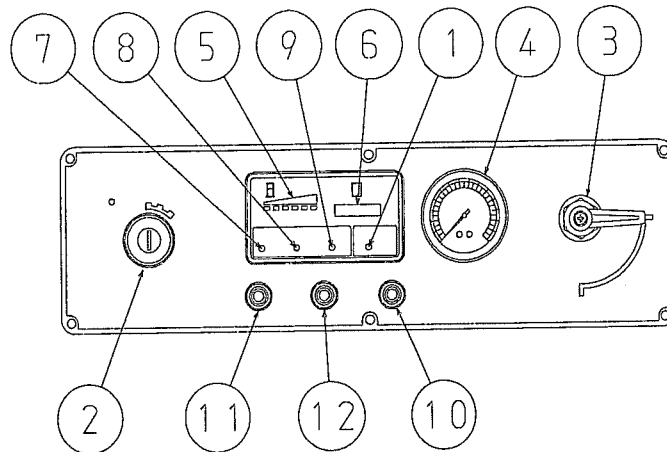
2-1 Outline and part names

- | | |
|----------------------------|-------------------------------------|
| 1. Instrument panel | 8. Fuel drain port |
| 2. Air outlet valve(s) | 9. Compressor lube oil drain port |
| 3. Fuel inlet port | 10. Engine lube oil drain port |
| 4. Lifting hook | 11. Coolant drain port |
| 5. Rope hook(s) | 12. Compressor lube oil level gauge |
| 6. Coolant inlet | 13. Start-run valve |
| 7. Exhaust gas outlet port | 14. After-cooler drain [ES-C] |



2-2 Instrumental panel and part names

The instruments panel contains all the meters, instruments and switches necessary for operating the machine:

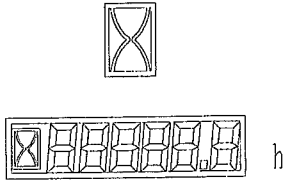


- | | |
|--|--|
| 1. Preheat lamp | 8. Water temperature warning lamp |
| 2. Starter switch | 9. Charging warning lamp |
| 3. Unloader valve | 10. Discharge air temperature warning lamp |
| 4. Delivery air pressure gauge | 11. Engine speed warning lamp |
| 5. Fuel gauge | 12. Residual pressure starting lamp |
| 6. Hour meter | |
| 7. Engine lube oil pressure warning lamp | |

2-3 Meters

Engine indicators

(1) Hour meter

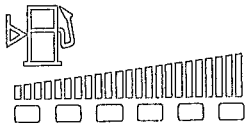


This meter indicates the total running time of the engine. It has hour meter which runs electrically.

This meter integrates the time, when the starter is at the "RUN" position whether the engine is at a run or stop.

And this meter indicates actual running time irrespective of engine speed.

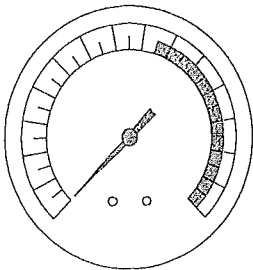
(2) Fuel gauge



This meter indicates the value of fuel in fuel tank.

Compressor indicators

(1) Delivery air pressure gauge



This meter indicates pressure of delivered air by compressor.

Indication / warning lamps

(1) Preheat lamp



This lamp is lit on, when the starter switch is turned to the "RUN" position.

When the preheat lamp lit off, it indicates that preheating is completed.

(2) Engine lube oil pressure warning lamp



When engine oil pressure fail, this lamp lit on.

If the machine is in normal operation, this lamp stays off.

When the starter switch is turned to "RUN" position to start the engine, the lamp lit on, and when the oil pressure rises after start up, it lit off.

(3) Water temperature warning lamp

This lamp lit on when the water temperature rises abnormally.
This is normal when this lamp lit off during operation.



(4) Charging warning lamp

When battery acid is running low, this lamp lit on.
This is normal when this lamp lit off during operation.



(5) Discharge air temperature warning lamp

This lamp lights on when the temperature of the air delivered rises abnormally.

This is normal when this lamp lit off during operation.



(6) Engine speed warning lamp

This lamp lights on when the engine speed has dropped abnormally low.

The engine shut down automatically when this lamp lights on during operation.



(7) Residual pressure starting lamp

This lamp lights on when the engine starts while the residual pressure stays in oil chamber.

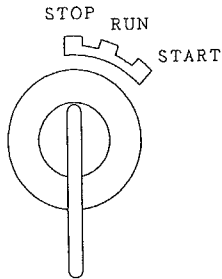
At this time ,engine starter does not run.

Please start again ,after the pressure gauge has become 0 MPa.



2-4 Use of switches and controllers

(1) Starter switch



Functions:

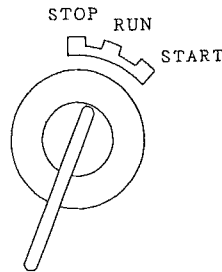
① STOP

This switch should be set in this position unless the machine is in operation.

The key can be inserted or pulled out in this position.

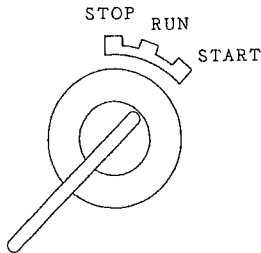
② RUN

This switch should be set in this position when the machine is in operation.



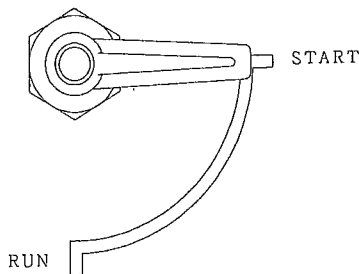
③ START

This is the position to start the engine. When your hand is released from the key after starting, it is automatically set in the position of "RUN".



※There is not the "PREHEAT" position on the starter switch, because it automatically preheats at "RUN" position.

(2) Unloader valve



Functions:

① START

This is the position to start the engine. When engine start, warming up the engine for 5 to 10 minutes.

② RUN

After warming up the engine, set the unloader valve to the "RUN" position. You can use delivered air by compressor.

3. Operation

- From pre-start check to shut down -

Be sure to check the machine prior to starting.

- 1.. Checking prior to operation
- 2.. Startup
- 3.. Starting under cold weather
- 4.. Precautions during operation
- 5.. Stopping
- 6.. Emergency stop and monitor display

3-1 Checking prior to operation

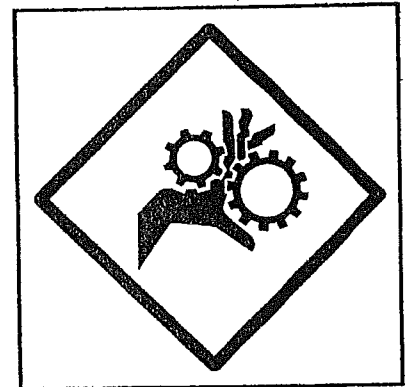
◇ WARNING

MOVING PARTS can cause severe injury.

- Rotary unit which runs at a high speed is located in the machine.

(Note that it is very dangerous if you touch it.)

- * Be sure to close the door and lock it during operation.
- * When making check or maintenance of the machine, be sure to stop the machine in advance.



- To prevent unexpected trouble, be sure to check the following points.

- (1) Check on engine oil (lubricating oil)
- (2) Check on compressor oil
- (3) Draining through oil chamber drain
- (4) Check on engine cooling water
- (5) Checking on fan belt
- (6) Checking on fuel
- (7) Checking on battery acid
- (8) Checking for loose parts
- (9) Removal of foreign objects in machine
- (10) Checking on separator

Inspection:

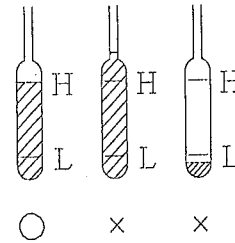
(1) Checking on engine oil

(Read the instruction manual for the engine furnished separately.)

- ① Checking the level of engine oil by the dipstick.

Make sure the oil level is always between H and L.

- ② When it is below the low limit, supply oil immediately.
- ③ At the same time, check condition of oil by the dipstick.

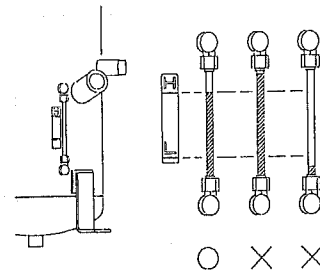


[Note]

Oil is consumed gradually during operation. When the machine is to be used continuously for a long time, be careful with lack of oil.

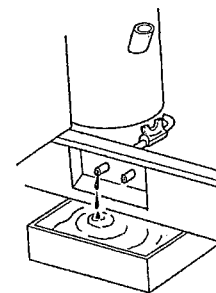
(2) Checking on compressor oil

Check whether or not the oil level is within the scope of the level gauge while the engine is off.



(3) Draining through oil chamber drain

Open the drain valve slightly and extract drainage. Close it immediately after oil flows out.



(4) Check on engine cooling water

(Read the instruction manual for the engine furnished separately.)

◇ WARNING

HOT COOLANT can cause severe scalds.

■ If the radiator cap is opened while the water temperature is high, steam or hot water will spout out.

* During operation or immediately after stopping the machine, do not open the radiator cap while the water temperature is high.

* When cooling water needs to be checked or supplied, wait until the engine is cooled (50°C or less as measured with the water temperature gauge).

- Check (to see) that cooling water in the reserve tank is within the range of FULL-LOW.
- When it is below the low limit, supply (additional) water immediately.
- Normally, only the water level of the reserve tank needs to be checked.

But, the radiator cap should be opened once a week to check that water is full in the radiator.



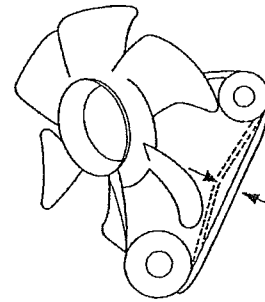
[Note]

When closing the radiator cap after water level is checked or water is supplied, turn the cap fully clockwise so that it can be firmly tightened. Otherwise, cooling water is evaporated which results in serious damage to the engine.

(5) Check on fan belt

(Read the instruction manual for the engine furnished separately.)

- ① Check the belt for tension and elongation.
Also, check it for damage. Replace if necessary.
- ② For adjustment or replacement of the belt, refer to the instruction manual for the engine.

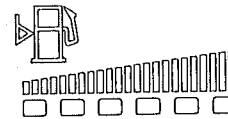


Press {about 100N(10kg)} the position shown by arrow mark(middle of belt) with your thumb. The bend should be within the range of 10mm.

Parts number of fan belt (A38)
Y06020 11498 (YANMAR 129612-42350)

(6) Check on fuel

- ① Be sure to check the quantity of fuel prior to operation to prevent lack of fuel during operation.
- ② Loosen the drain plug of the fuel tank from time to time, and remove sediments and water at the bottom of the tank.



lamp(s)	lighting	fuel residual quantity
6	Green	59L-Full
5	Green	49-58L
4	Green	39-48L
3	Green	30-38L
2	Red (Green)	21-29L
1	Red	Empty-20L

(7) Check on battery acid

⚠ CAUTION

The battery acid is dilute sulfuric acid. Improper handling will cause unexpected burns.

* When the battery acid gets on your clothes or skin, wash it out with a large volume of water immediately.

If it gets in your eyes, wash with a large volume of water immediately and consult your doctor.

- In the worst case, it will put out your eyes.

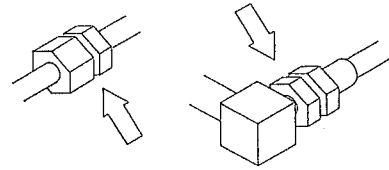
Remove the battery acid plug(cap) and check the liquid level (10-12mm above the electrodes).

Supply distilled water if necessary.

(8) Checking for loose parts

Check for loose bolts and nuts. Loose parts should be tightened firmly.

Particularly, make check on (Nylon pipe union, Rubber house joint, the fitting of air cleaner, muffler, etc.) disconnection of electric wiring, short-circuit and loose terminals.



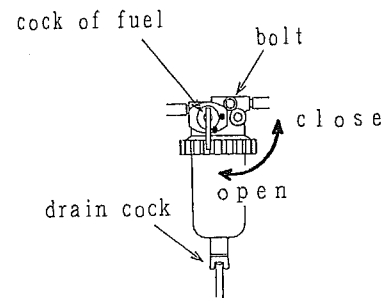
(9) Removal of foreign objects in machine

- Check that tools and cleaning cloth are not left in the machine. Remove if necessary.
- Check the surroundings of the muffler and engine for presence of dust and flammable objects. Remove if necessary.
- Check that the cooling air inlet and the cooling air outlet of the machine are not clogged with dust or other objects. Remove if necessary.

(10) Checking on separator

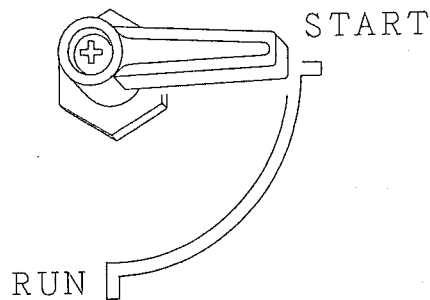
Open the cock of fuel.

When water drain in separator, open the drain cock, close the cock of fuel, and open the bolt (of discharge air).



3-2 Start up

- (1) Turn the Unloader valve to the "START" position.

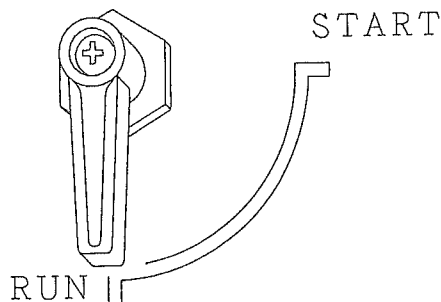


[Caution]

Starting the engine with the unloader valve set to the "RUN" position will shorten the life of the machine and may cause hazards to an operator and neighboring persons. Be sure to start it after confirming start the unloader valve is set to the "START" position.

- (2) Turn starter switch to "RUN" and preheat plugs until preheat lamp turn off.
- (3) Turn the starter switch key to the "START" position to start the engine.
- (4) Release the starter switch key if the engine is started.
The key is automatically reset to the "RUN" position.

- (5) After warming up the engine for 5 to 10 minutes, set the unloader valve to the "RUN" position.

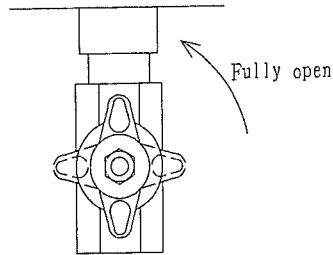


- (6) Open the air outlet valve(s) to deliver compressed air, while confirming that the engine evenly increases speed by opening the valve and smoothly decreases it by closing the valve.

3-3 Starting under cold weather

The engine may not be started smoothly under cold weather. Start it in the following manner under the cold weather:

- (1) Fully open the start-run valve



- (2) Set the unloader valve to the "START" position and then start the engine.
- (3) After warming up the engine for a few minutes, slowly close the start-run valve while observing the rotation of the engine.
- (4) After confirming that the engine has been fully warmed up, set the unloader valve to the "RUN" position.

3-4 Precautions during operation

Occasionally check all gauges and meters on the operation panel to ensure that the compressor is operating under the standard conditions stated below:

Delivery air pressure gauge (MPa)	0.70(load)	0.73~0.78(no-load)
Monitor lamps	Not lit on	

3-5 Stopping

- (1) Close air outlet valve(s). The speed regulator will reduce engine speed to the idle cycle. Run the engine at idle until it cools.
- (2) Turn the key to the "STOP" position. The engine stops and the compressed air remaining in the compressor will be automatically discharged. Do not attempt to quickly discharge it through the air outlet valve(s) or the start-run valve.

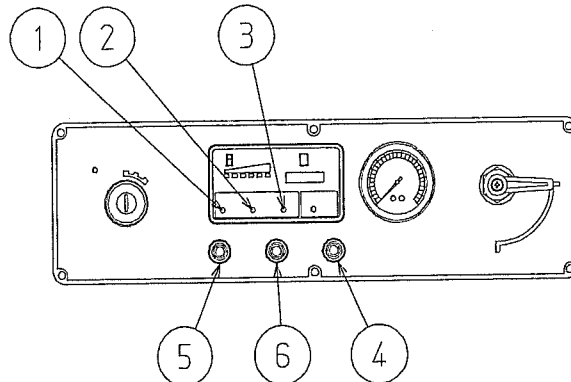
*** Note ***

Never discharge the compressed air through the start-run valve in cold weather; oil may sometimes be mixed with the discharged air.

- (3) The residual air will be discharged in about 90 to 120 seconds. Restart the engine after confirming that the pressure gauge reads zero.

3-6 Emergency stop and monitor display

The monitor indicates the following:



1. Engine lube oil pressure warning lamp (approx.0.05 MPa or more)

If the display lamp is not lit, engine lube oil pressure is normal

Should it come on during operation, the emergency stop device will immediately stop the engine.

The display lamp is kept lit on until the starter switch is turned off.

2. Water temperature warning lamp (more than 110°C)

This lamp comes on if the cooling water temperature rises abnormally.

Should it come on during operation, the emergency stop device will immediately stop the engine.

3. Charging warning lamp

If this display lamp is not lit during operation, the battery is normally charged.

Should it come on during operation, the emergency stop device will immediately stop the engine.

4. Discharge air temperature warning lamp (more than 110°C)

This lamp comes on when the discharge air temperature rises abnormally.

Should it come on during operation, the immediately stop device will immediately stop the engine.

5. Engine speed warning lamp (less than 1600 min⁻¹)

This lamp comes on when the engine speed has dropped abnormally low.

6. Residual pressure starting lamp

This lamp lights on when the engine starts while the residual pressure stays in oil chamber. At this time ,engine starter does not run.

Please start again ,after the pressure gauge has become 0 MPa.

4. Protection device

Protection devices and emergency stop devices are provided for protection of the machine against trouble during operation. When the running caution lamp lights, stop the engine immediately. Check and remove the cause of trouble.

Table of protection device

Indicate by warning lamp

action warning lamp	stop the engine	indicate	function
Engine lube oil pressure	○	○	When the oil pressure falls abnormally, the device act. Set point : 0.05MPa
W a t e r temperature	○	○	When the cooling water temperature rises abnormally, the device acts. Set point : 110°C
C h a r g i n g	○	○	When the battery acid is failure, the device acts.
Discharge air temperature	○	○	When the Discharge air temperature rises Abnormally ,the device acts. Set point : 110°C
A i r f i l t e r	—	(○)	When replace or cleaning of air filter is necessary because of blinds of filter the devise acts.
Engine speed	○	○	When the engine speed has dropped abnormally low, the device acts. Set point : 1600min⁻¹
R e s i d u a l pressure starting	—	○	When the engine starts while the residual pressure stays in oil chamber.

5. Lubrication, cooling water and fuel etc.

5-1 Engine oil

Use specified engine oil, otherwise, it greatly affects the startup operation and life of the engine.

(1) Kind of oil

Use oil, CD class or higher, classified by API service.

(2) Oil viscosity

Recommended oil viscosity is SAE 10W-30, all-season type.

Use oil according to ambient temperature referring to the table below.

Ambient temperature (°C)						
-30	-20	-10	0	10	20	30
←----- S A E 2 0 -----→						
←----- S A E 3 0 -----→						
←----- S A E 5 W - 2 0 -----→						
←----- S A E 1 0 W - 3 0 -----→						
←----- S A E 1 5 W - 4 0 -----→						

[Note]: Do not mix with different kind of oil, or else, it deteriorates the oil quality.

(3) Quantity of replacement oil

6 . 7 L

Value in parentheses is filter capacity.

5-2 Cooling water

(1) Cooling water to be used

Soft water likes with less impurities such as tap water can be used as cooling water.

(2) Cooling water used in cold season

When cooling water is likely to be frozen in a cold season, mix it with Long Life Coolant(LLC).

Mixing rate of LLC should be selected within the range of 30-50%. Standard mixing rate of LLC and operating ambient temperature are as shown below.

30%: -10°C

40%: -20°C

50%: -30°C

In general, LLC needs to be replaced after 2 years of use.

(3) Total quantity of cooling water

5.6 L

Value in parentheses is reserve tank capacity.

5-3 Fuel

(1) Fuel to be used

#2 Diesel Fuel

[Note]

If other kinds of fuel is used or fuel being used contains water or dust, it deteriorates the engine performance or leads to a serious trouble.

5-4 Safety valve

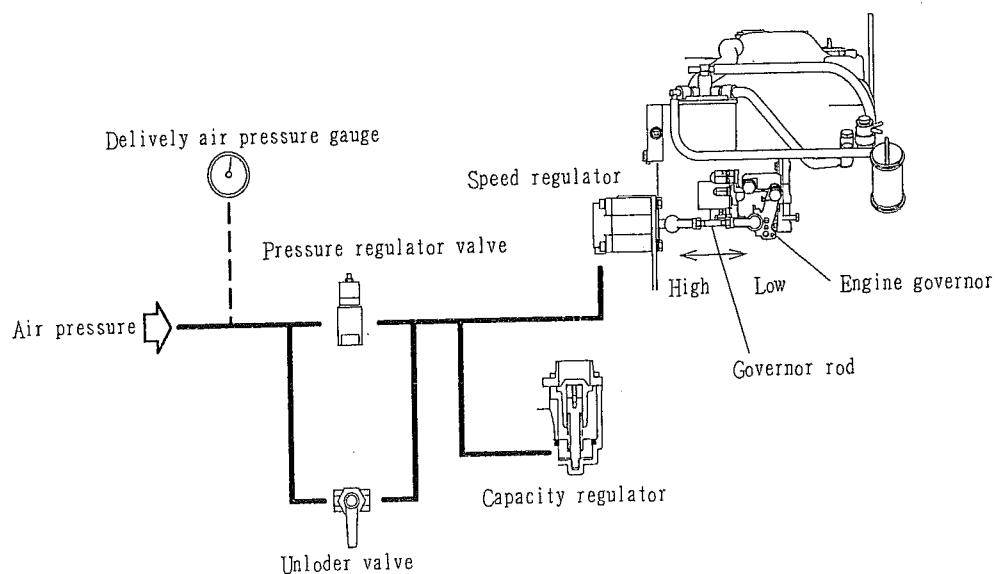
The pressure safety valve is factory adjusted to 0.89 MPa and sealed prior to shipment of the compressor. Do not remove the seal or try to adjust the valve.

5-5 Regulator

The compressor has been correctly adjusted prior to shipment from the factory, and rarely requires further adjustment, if ever.

Should it require any adjustment, however, as a result of overhauling or other cause, follow the following procedures:

- (1) Prior to starting the engine, check whether or not the engine governor lever is set to the high-speed stopper.
Otherwise, the engine will not turn at the maximum speed during full-load operation.
- (2) Start the engine only after confirming that the unloader valve is set to the "START" position.
Should the engine stop running immediately after starting, restart it only after confirming that the delivery air pressure gauge indicates zero.
- (3) Engine start automatically follows for a few minutes.
When the engine is sufficiently warmed, set the unloader valve to the Run position. Then the engine runs at a no-load condition at an idle speed.
- (4) Gradually close the service valve from the Full open position,
Adjust the screw on the pressure regulating valve so that the governor lever shifts to the low-speed side as soon as the air pressure exceeds 0.70 MPa.
(Always set the working pressure to the range from 0.49 to 0.70 MPa.)
- (5) Repeat opening and closing the service valve and confirm that the regulators work smoothly.



5-6 Compressor lube oil

Use lube oil exclusively for this series of rotary compressors.

For engine lube oils, refer to the Engine Instruction Manual.

(1) Recommended compressor lube oil and its standard replacement interval

Compressor lube oil : Denyo genuine compressor oil
Corena Oil RS32 (XHVI) Shell

Replacement interval : Every 1000 hours for normal operation

(2) Precautions on oil replacement

Never mix lube oils of different brands or fresh lube oil with in the tank.

Such mixing occasionally produces insoluble glue, lacquer, or shellacs, which may cause the oil filter to become clogged and break down or cause abnormal wear of the rotor or bearings, resulting in serious damage.

Periodically check the lube for degradation, discoloration, excessive viscosity, and impurities. When the machine is operated under the following conditions, the lube oil changing intervals may have to be shortened to about 100 hours.

- 1) Operation in poorly ventilated locations where the ambient temperature rises excessively.
- 2) Operation for long duration of time, especially in a tunnel or high humidity.
- 3) Operation in dusty or sandy locations

Be sure to change the initial lube oil after 500 hours of operation.

Your compressor is provided with Corena Oil RS32 (XHVI) Shell at the factory prior to shipment. If you replace it with an lube oil of a different brand, be sure to fully extract the old oil before feeding the fresh one.

(3) Quantity of replacement oil

1 5 L

Value in parentheses is filter capacity.

(4) Lube oil changing procedures

- 1) Operate the compressor for a while to warm the oil so that it may be drained easily.
- 2) Shut down the compressor and confirm that the air pressure has reached zero. Then, open the drain valve on the lower part of the oil chamber and drain. Disconnect the oil cooler pipe joints and drain the oil remaining in each pipe and in the oil cooler.
- 3) Close the drain valve and securely tighten the pipe joints.
- 4) Fill the oil chamber with fresh oil until the oil level reaches the upper limit.
- 5) Operate the compressor and thoroughly check each part for any oil leakage.
- 6) Stop the engine. After confirming that the air pressure gauge indicates zero, check the oil level. Add oil necessary.

(5) Recommended compressor lube oils

Brand	Manufacturer
Corena Oil RS32 (XHVI)	Shell
Neurex SHT32	Esso
Rarus 424J	Exxon Mobil
Faircall RA32	Japan Energy

(6) Cold weather operation

The pour point of the Corena Oil RS32 (XHVI) Shell which is provided to the Compressor at the factory, is -20°C. Use lube oil with the pour of -20°C or lower for ambient temperature below -5°C.

6. Handling of battery

△ CAUTION

BATTERY

- Battery generates flammable gases. Improper handling may lead to explosion or serious injury.
- * Battery should be charged in a well ventilated location. Otherwise, flammable gases are accumulated which may be ignited and exploded.
- * When connecting a booster cable, do not jumper the terminals (+ and -). Otherwise, the flammable gases generated from the battery may be ignited and exploded by sparks.
- * For maintenance of the machine, disconnect the cable on the ground side.
- The battery acid is dilute sulfuric acid. Improper handling will cause unexpected burns.
 - * When the battery acid gets on your clothes or skin, wash it out with a large volume of water immediately. If it gets in your eyes, wash with a large volume of water immediately and consult your doctor.
 - In the worst case, it will put out your eyes.
- For checking or handling of the battery, be sure to stop the engine.



6-1 Caution on battery charge

Charging of loaded battery

- * Disconnect the wiring cable from the battery terminals before charging. (Otherwise, the alternator may be damaged due to unusual voltage applied to the alternator)
- * When disconnecting the wiring cables from the battery terminals, remove the ground cable first. (If a tool touches the space between the "+" terminal and the machine, electric spark will occur which is very dangerous)
When connecting the wiring cables to the battery terminals, connect the ground cable last.
- * While the battery is being charged, open all the liquid plugs to discharge the gas.
Keep the battery away from fire to prevent unexpected explosion.
Handle the battery carefully to prevent electric sparks.
- * If the battery is overheated (liquid temperature above 45°C), stop charging for a while.
- * At the completion of charging, stop charging immediately.
(The relation between battery charge condition and specific gravity See p.36)

If the battery is still charged, the following trouble will occur.

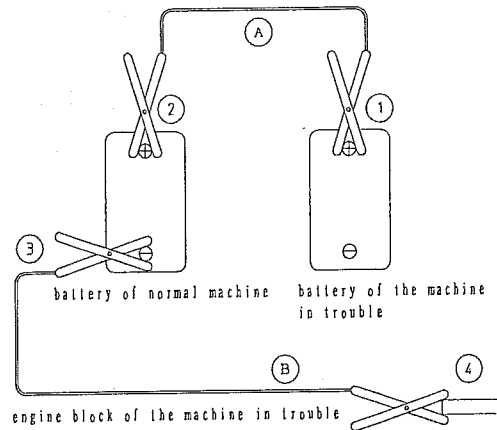
- 1) Battery overheat
 - 2) Decrease in battery acid
 - 3) Deterioration of battery performance
- * Do not connect the battery polarity in reverse (connection of "+" and "-" or "-" and "+") to prevent damage to the alternator or the like.

6-2 Connection of booster cable, and installation

When the engine is started using booster cables, connect the cables as follows.

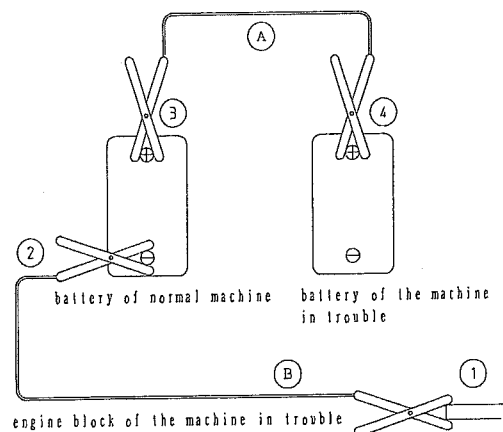
(1) Connection of booster cable

- ① Connect the clip of the booster cable "A" to the terminal "+" of the machine in trouble.
- ② Connect the other clip of the booster cable "A" to the terminal "+" of normal machine.
- ③ Connect the clip of the booster cable "B" to the terminal "-" of normal machine.
- ④ Connect the other clip of the booster cable "B" to the engine block of the machine in trouble.



(2) Removal of booster cable

- ① Remove the clip of the booster cable "B" connected to the engine block of the machine in trouble.
- ② Remove the clip of the booster cable "B" connected to the terminal "-" of normal machine.
- ③ Remove the clip of the booster cable "A" connected to the terminal "+" of normal machine.
- ④ Remove the clip of the booster cable "A" connected to the terminal "+" of the machine in trouble.

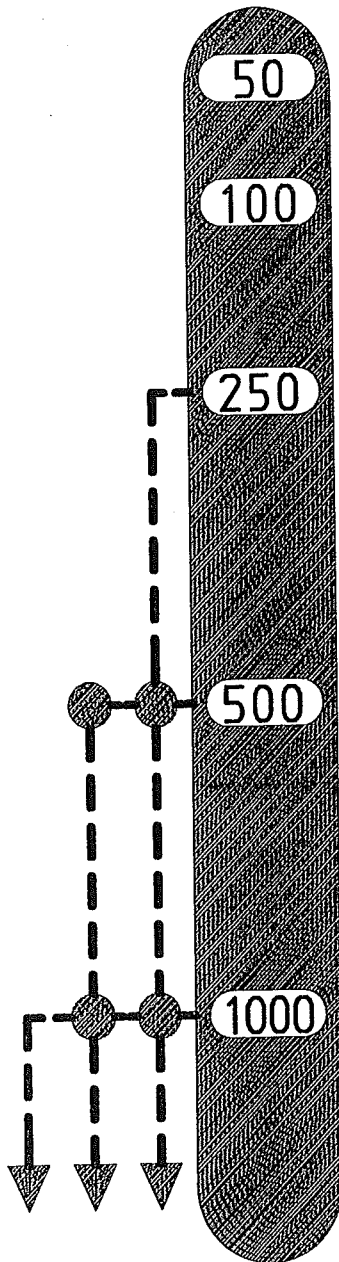


(3) Caution on handling of booster cable

- ① Use booster cables and clips of the size that matches the size of battery.
- ② The battery used for normal machine should be the same in capacity as the battery of the machine in trouble.
- ③ After connection, check that clips are firmly connected.
- ④ When connecting booster cables, make sure that the terminal "+" does not touch the terminal "-".
- ⑤ The engine block should be connected at a place more than 30cm away from the battery.

7. Periodical checking and maintenance

7-1 Maintenance schedule



50 hours: Checking/first 50 hours

- * Replacement of engine oil
- * Replacement of engine oil filter element

100 hours: Checking/every 100 hours

- * Lubricating speed regulator
- * Cleaning of air cleaner element
- * Cleaning of after-cooler filter (ES-C)

250 hours: Checking/every 250 hours

- * Replacement of engine oil
- * Replacement of engine oil filter element
- * Checking on battery specific gravity
- * Checking and cleaning drain filter (ES-C)
- * Checking of drain separator element (ES-C)

500 hours: Checking/every 500 hours

- * Checking and Cleaning Oil return filter orifice
- * Replacement of air cleaner element
- * Replacement of engine fuel filter cartridge
- * Checking operation of the safety valve

1000 hours: Checking/every 1000 hours

- * Replacement of compressor oil
- * Replacement of compressor oil filter element
- * Checking of diaphragm in speed regulator
- * Checking of seal in capacity regulator
- * Replacement of diaphragm in pressure regulator valve
- * Replacement of O-ring in minimum pressure valve
- * Replacement of O-ring in compressor oil filler port
- * Cleaning of after-cooler (ES-C)
- * Cleaning of radiator and oil cooler
- * Cleaning of inside fuel tank
- * Checking of rubber suspension

Other service requirements

- * Checking of oil separator element
- * Checking on nylon and rubber hose
- * Checking & replacing of coupling element
- * Replacement of drain separator element (ES-C)

On the engine system, main checking items only are shown in this manual.
For details, refer to the instruction manual for the engine furnished separately.

7-2 Checking/first 50 hours

(1) Replacement of engine oil

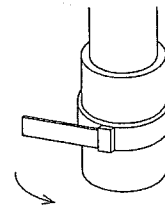
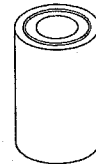
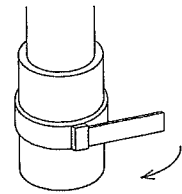
Replace the engine oil at 50 hours only first time and every 250 hours after second time.

- ① Remove the engine oil drain plug and discharge oil completely. It can be discharged easily when the engine is warm.
- ② After engine oil is discharged, tighten the plug firmly.
- ③ Charge new engine oil from the oil filler until it reaches the notched line of the "H" on the dipstick. For oil quantity, (See p.25)
- ④ After engine oil is supplied, run the engine for a few minutes. Check that oil is supplied to the level between H and L .

(2) Replacement of engine oil filter element

- Cartridge type (Cartridge type is unit of filter case and element.)

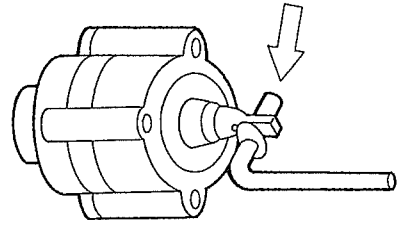
- ① Remove the cartridge type element (cartridge) using filter wrench.
- ② Clean the filter base. Coat the packing of new cartridge with engine oil thin. Then, mount the cartridge.
 - When mounting, tighten the cartridge from 3/4 to 1 turn by using filter wrench after the packing is fitted to the seal of the filter base.
- ③ After the element is replaced, run the engine for a while. Then, check to see that oil is supplied to the level between H and L .



Parts number of oil filter cartridge
Y06020 41281 (YANMAR 129150-35152)

7-3 Checking/every 100 hours

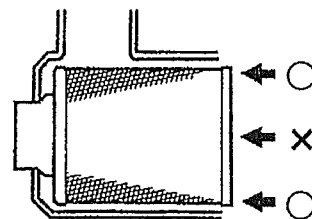
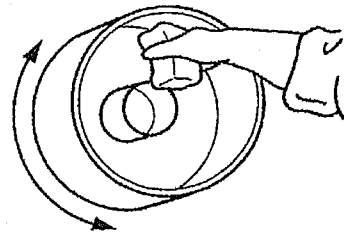
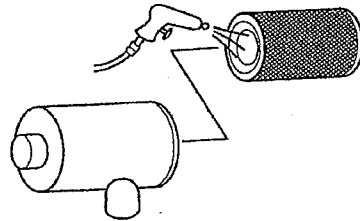
(1) Lubricating speed regulator



(2) Cleaning of air cleaner element

This element should be cleaned, regardless of operating time, when air filter indicator on.

- * While it is being cleaned, check the element for any damage. Replace if necessary.
- * Before installing the air cleaner, wipe off dirt on the element cover.
- * When insert the element, insert the element completely pressing equal edge of element.



Parts number of air cleaner element
Y06020 46365

(3) Cleaning of after-cooler filter (ES-C)

First, take off the after-cooler air intake duct, and clean with the air.

7-4 Checking/every 250 hours

(1) Replacement of engine oil

Replacement is refer to 「7-2.(1) Replacement of engine oil See p.34 」..

(2) Replacement of engine oil filter element

The element should be replaced referring to "Replace of engine oil filter element"
(See p.34)

(3) Checking on battery specific gravity.

If battery is likely to be discharged due to failure in startup of the engine, measure the specific gravity of battery acid.

The relation between battery charge condition (charging rate) and specific gravity is as shown below.

Charging rate \ Liquid temp	2 0 °C	0 °C	- 1 0 °C
1 0 0 %	1.28	1.29	1.30
9 0 %	1.26	1.27	1.28
8 0 %	1.24	1.25	1.26
7 5 %	1.23	1.24	1.25

Each value has a deviation of ± 0.01 .

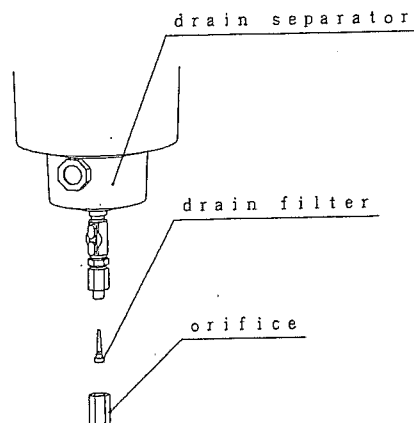
When the charging rate is below 75%, the battery needs to be recharged.

「6-1. Caution on battery charge See p.31」

(4) Checking and cleaning the drain filter (ES-C)

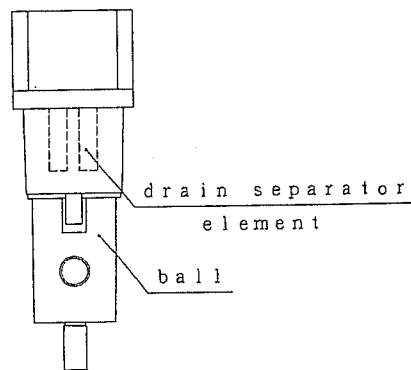
First, take off the drain filter, and clean the filter and orifice with clean well-pressed air.

Parts number of drain filter
W61432 16004



(5) Checking of drain separator element (ES-C)

First, take off the ball, and take off the element.
Check and clean a drain separator element.

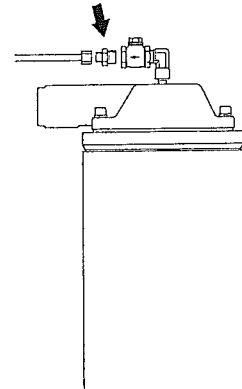


7-5 Checking/every 500 hours

(1) Oil return filter orifice

Check and clean a filter orifice

Parts number of filter orifice
Y06033 10087

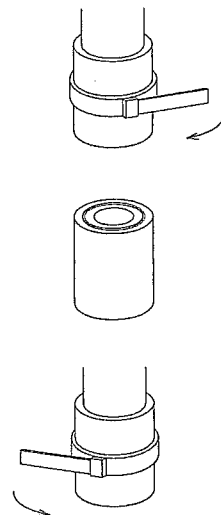


(2) Replacement of air cleaner element

The element should be replaced referring to "Cleaning of air cleaner element"(See p.35) .

(3) Replacing of fuel filter cartridge

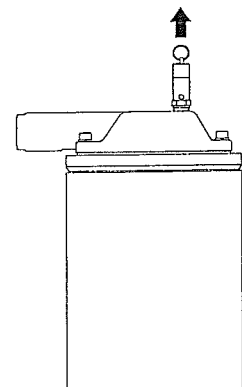
- ① Remove the cartridge type element (cartridge) using filter wrench.
- ② Clean the filter base. Coat the packing of new cartridge with engine oil thin. Then, mount the cartridge.
 - When mounting, tighten the cartridge about from 1/2 to 3/4 turn by hand after the packing is fitted to the seal of the filter base.
- ③ After the cartridge is replaced, discharge air in the fuel piping.



Parts number of fuel filter cartridge
Y06020 42541(YANMAR 119802-55800)

(4) Checking operation of the safety valve

Confirm daily that the safety valve operates correctly. If the safety valve releases air by pulling the lever in a no-load condition (0.73 to 0.78 MPa at the receiver pressure), it is normal.



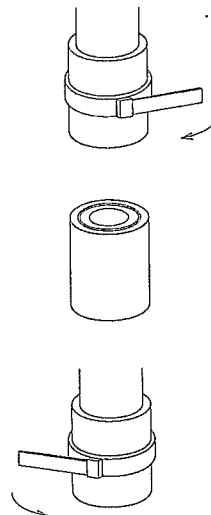
7-6 Checking/every 1000 hours

(1) Replacing compressor oil

Replacing procedures Refer to Lube oil changing procedures (See p.28) .

(2) Replacement. compressor oil filter

- ① Remove the cartridge type element (cartridge) using filter wrench.
- ② Clean the filter base. Coat the packing of new cartridge with compressor oil thin. Then, mount the cartridge.
 - When mounting, tighten the cartridge about from 2/3 turn by using filter wrench after the packing is fitted to the seal of the filter base.
- ③ After the cartridge is replaced, run the engine for a while. Then, check to see that oil is supplied to the level between H and L ,after confirming that the delivery air pressure gauge reads zero.

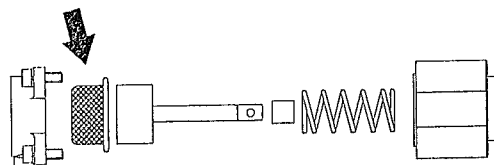


Parts number of Compressor oil filter cartridge
Y06033 10181

(3) Checking Speed regulator diaphragm

Install the diaphragm by placing the cloth surface against the piston.

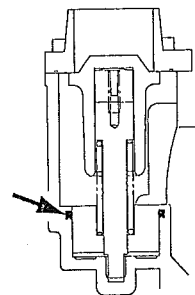
Parts number of diaphragm
Y06034 00004



(4) Checking of seal in capacity regulator

Check the seal in capacity regulator ,and replace it with a new one as required.

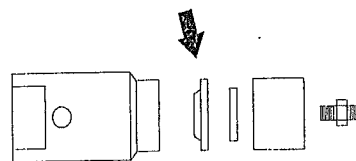
Parts number of seal
Y06030 41649



(5) Pressure regulator valve

Check and replace a diaphragm assembly.

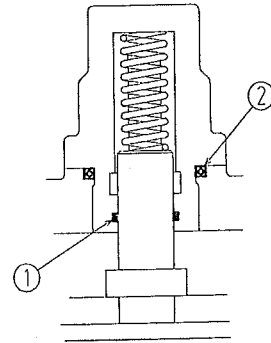
Parts number of diaphragm
E29241 00164



(6) Replacement of O-ring in minimum pressure valve

Remove the minimum pressure valve from compressor oil chamber ,replace the O-ring.

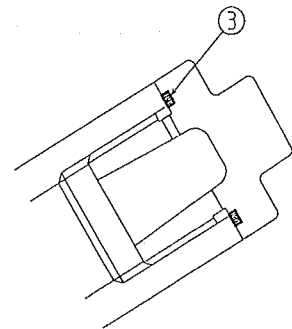
Parts number of O-ring	
①	Y01505 00020
②	Y01500 00042



(7) Replacement of O-ring in compressor filler port

Remove the compressor oil filler port from compressor oil chamber ,replace the O-ring.

Parts number of O-ring	
③	Y01500 00044



(8) Cleaning of after-cooler (ES-C)

When the fin or tube is blinded, it should be cleaned with steam or high pressure water.

(9) Checking of radiator and oil cooler

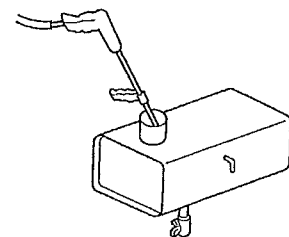
When the fin or tube is blinded, it should be cleaned with steam or high pressure water.

[Note]

When a high pressure washer is used, spray water from a place about 1.5m away to prevent damage to the fin or tube.

(10) Cleaning of inside fuel tank.

Drain the fuel in the fuel tank completely, and wash out deposits and water collected inside the tank.



(11) Checking of rubber suspension

Check on the rubber suspension, whether it is damaged or deformed by the oil.

Contact distributor or our office to replace the rubber suspension, if necessary.

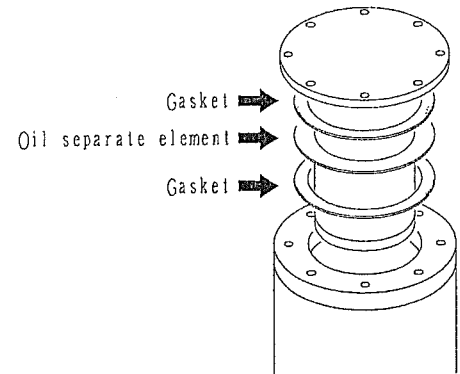
7-7 Other service requirements

(1) Checking of oil separate element

When the oil in the delivery air seems to have increased, check and replace oil separator element (normally about every 2000 hours).

As with an air cleaner element, the service life of an oil separator element differs substantially depending upon operating conditions.

It is high time to replace the oil separator element, when oil contained in the delivery air comes out of the valves.



Parts number of oil separate element
E29230 00063

Parts number of gaskets
E26234 00004 (2pcs.)

- (2) **Checking on nylon and rubber hose** (normally about every 2000 hours or 3 years).
Check on the nylon and rubber hose, whether they are hardened or deteriorate.
Contact distributor or our office to replace the nylon hose and rubber hose, if necessary.

(3) Replacement of drain separator element

Converting is based 0.1Mpa or 2 years after first installing.

Parts number of element Ass'y
E29241 00234

- (4) **Checking & replacing of coupling element** (normally about every 4000 hours).
Check on coupling element, whether they are hardened or deteriorate.
Contact distributor or our office to replace coupling element ,if necessary.

7-8 Table of periodical maintenance and checking

◇:Check or Clean ○:Replacement ☆:Only first time

List of maintenance and inspection	daily	first 50h	every 100h	every 250h	every 500h	every 1000h	every 2000h	every 4000h
E n g i n e								
Checking on oil level and stain of oil	◇							
Checking on cooling water	◇							
Checking on fan belt	◇							
Checking on fuel and drain	◇							
Checking on battery acid level	◇							
Checking on for water and oil leakage	◇							
Checking on bolts and nuts for looseness	◇							
Checking on exhaust color ,sound and vibration	◇							
Checking on meters and warning lamps	◇							
Replacement of engine oil		☆○		○				
Replacement of engine oil filter		☆○		○				
Cleaning air cleaner element			◇					
Checking on specific gravity of battery				◇				
Replacement of fuel filter					○			
Replacement of air cleaner element					○			
Cleaning radiator and oil cooler						◇		
Cleaning inside fuel tank						◇		
Checking of rubber suspension						◇		
C o m p r e s s o r								
Lubricating speed regulator			◇					
Cleaning of after-cooler filter (ES-C)			◇					
Cleaning of drain filter (ES-C)				◇				
Checking & Cleaning Oil return filter orifice					◇			
Checking operation of the safety valve					◇			
Checking of drain separator element (ES-C)				◇				
Replacement of compressor oil						○		
Replacement of compressor oil filter element						○		
Checking of diaphragm in speed regulator						◇		
Checking of capacity regulator						◇		
Checking of pressure regulator valve						◇		

◇:Check or Clean ○:Replacement ☆:Only first time

List of maintenance and inspection	daily	first 50h	every 100h	every 250h	every 500h	every 1000h	every 2000h	every 4000h
Replacement of O-ring in minimum pressure valve						○		
Replacement of O-ring in compressor oil filler port						○		
Cleaning of after-cooler (ES-C)						◇		
Checking of oil separator element							◇	
Checking of on nylon and rubber hose							◇	
Replacement of drain separator element							○	
Checking & replacing of coupling element								◇○

※ Contact distributor or our office.

☆ This symbol represent first time of inspection, next time is ordinary schedule.

Inspection time is different by the engine, in detail, please refer "Engine Instruction Manual" furnished separately.

8. Trouble shooting and Countermeasures

Should the machine be out of order during operation, check for causes and take appropriate measures:

8-1. ENGINE DOES NOT START

Starter does not rotate or rotates only slowly.

Battery has been discharged	... Check electrolyte level and specific gravity.
Battery terminals are disconnected, loosened, and/or degraded	... Clean and securely connect.
Grounding is not sufficiently conducted	... Securely connect the grounding wire.
Starter switch, magnet switch, safety relay, and/or starter are defective	... Call service shop.
Engine controller is defective	... Call service shop.

Starter rotates but the engine dose not start.

No fuel	... Replenish.
Fuel filter is clogged	... Replace.
Fuel used is deteriorated or improper	... Use light oil.
Preheating system is defective	... Call service shop.
Solenoid does not work	... Check fuse. If blown out, check for cause and replace it. Check and replace solenoid. Call service shop.

Cold weather

Fuel is frozen	... Use fuel for cold weather(such as ASTM No.)
Water accumulated in fuel system is frozen	... Warm the system to fully extract water contained in the fuel tank, filter, and pipes.
Engine oil is excessively viscous	... Replace with oil of appropriate viscosity.
Compressor oil is excessively viscous	... Use oil with pour point lower than -30°C.
Battery is not fully charged	... Charge.

8-2 ENGINE STOPS DURING OPERATION

(1) IF THERE IS SOMETHING WRONG WITH THE COMPRESSOR:

Pressure setting is too high.

Pressure regulator is not correctly adjusted	... Lower pressure setting of the regulator.
Pressure regulator is defective	... Call service shop.
Air leaks from pressure regulator pipes	... Check and repair leaking portions.
Pressure regulator is frozen	... Check and repair frozen parts.
Pressure regulator pipes are frozen	... Check and repair frozen parts.

OTHERS

Compressor oil is excessively ... Replace with less viscous oil.

(2) IF THERE IS SOMETHING WRONG WITH THE ENGINE:

Problems in fuel system

Fuel tank is empty	... Replenish.
Air is not fully extracted	... Fully extract air from fuel.
Fuel filter is clogged	... Replace.
Fuel is deteriorated or different	... Use light oil.
Fuel injection system is defective	... Call service shop.
Engine oil level is higher than the upper limit	... Reduce it to the upper limit
Engine oil is excessively viscous	... Replace with less viscous oil.
Engine oil pressure is reduced	... Reduce it to the upper limit.
Overheating	... Compressor sucks exhaust gas from other compressors operated in parallel.

OTHERS

Warming is insufficient viscous	... Start the engine with the unloader valve set to the "START" position to fully warm the engine.
Governor rod is not correctly adjusted	... Readjust.

(3) IF THERE IS SOMETHING WRONG WITH ELECTRIC INSTRUMENTATION:

Emergency stop circuit is abnormal

Discharge temperature is abnormally high

Switch or sensor is defective.	... Check and repair
Wiring to water temperature switch, hydraulic pressure switch, discharge air temperature sensor is disconnected.	... Call service shop.
Engine control unit is defective.	... Check and repair Call service shop.

8-3 NO AIR IS DELIVERED

Service valve is closed	... Open.
Unloader valve is set to "START" position	... Reset to "RUN" position.
Minimum pressure valve is abnormal	... Overhaul and clean.
Pressure regulator valve is abnormal	... Check and replace diaphragm.

8-4 UNLOADER ROTATION IS EXCESSIVE

Governor rod is not correctly adjusted	... Readjust.
Air leaks from control pressure pipe	... Check and repair.
Air leaks from capacity regulator diaphragm	... Check and repair.
Speed regulator diaphragm is defective	... Replace.

8-5 SAFETY VALVE OPERATES

Pressure regulator valve is not correctly adjust	... Readjust.
Pressure regulator valve interior or pipe is frozen	... Check and repair frozen parts
Air leaks from control pressure pipe	... Check and repair.
Pressure regulator valve is abnormal	... Check and repair.
Safety valve is set to low valve	... Readjust.
Air leaks from capacity regulator diaphragm	... Check and repair.
Pressure regulator diaphragm is defective	... Replace.

8-6 ENGINE SPEEDS DOWN BEFORE AIR PRESSURE REACHES 0.70 MPa.

Unloader valve is not set to "RUN" position	... Reset.
Pressure regulator valve is not correctly adjusted	... Readjust.
Fuel filter is clogged	... Clean filter element.
Fuel is deteriorated or different	... Use light oil.
Engine air cleaner is clogged	... Clean air cleaner element.
Engine fuel system is abnormal	... Call service shop.
Engine is defective	... Call service shop.

8-7 DELIVERY AIR PRESSURE IS EXCESSIVELY HIGH

Pressure regulator valve is not correctly adjusted	... Readjust.
--	---------------

8-8 DELIVERY AIR VOLUME IS SMALL (pressure is insufficient)

Unloader valve is not set to "RUN" position	... Reset.
Engine does not reach rated speed due to poor adjusted governor rod	... Readjust.
Engine does not reach selected speed	... See 8-6
Compressor air cleaner is clogged	... Clean or replace.
More air is consumed by load	... Recheck air consumption by the load.
Air leaks in a load-side pipe	... Check the pipe.
Pressure regulator valve is not correctly adjusted	... Readjust.
Compressor oil filter is clogged	... Replace filter.
Capacity regulator does not work correctly	... Check and repair the regulator.

8-9 OVERHEATING

Re-confirm surrounding conditions	... Reduce suction of exhaust gas
Cooling water is emptied or short	... Check and replenish cooling water. Check and replace radiator cap.
Fan belt is loosened	... Check and retighten.
Radiator and oil cooler cores are clogged	... Clean.
Delivery pressure is high	... Check and repair pressure regulator valve.
Engine thermostat is abnormal	... Check and readjust

8-10 OIL IS MIXED IN DELIVERED AIR (oil not fully separated)

The machine is not installed on level ground	... Install it on level ground (allowable inclination is 10° forward/backward and left/right directions).
Delivered air pressure is low	... Set pressure retaining valve to 0.49 to 0.54 MPa
Compressor oil level is higher than the upper limit	... Confirm that the level is within the specified range when the engine is stopped.
Drainage is larger than usual	... Open the drain valve to extract drainage in the oil chamber.
Filter orifice of the oil return pipe are clogged	... Check and clean the orifice.
Engine was started with the unloader valve set to "RUN" position	... Start the engine with the unloader valve set to "START" position and operate it in a no-load condition.
Service valve(s) or start run valve has been quickly opened after the engine stopped	... Do not attempt to quickly discharge it through the air outlet valve(s) after the engine stopped.
Life of the oil separator has come to an end	.. Replace.

8-11 COMPRESSOR AIR TEMPERATURE IS HIGH

Delivery air pressure is too high	... Readjust the set pressure.
Re-confirm surrounding conditions	... Reduce suction of exhaust gas.
Compressor oil filter is clogged	... Check and clean.
Fan belt is loosened	... Check and retighten.
Oil cooler cores are clogged	... Clean.
Compressor oil is short	... Replenish.
Oil cooler core interior is clogged	... Clean.

8-12 No air blowdown

Blowdown valve is not correctly adjusted	... Readjust
--	--------------

9. Long-term storage

When the machine is to be stored for a long period of time, choose a cool place free from moisture and dust, and observe the following points.

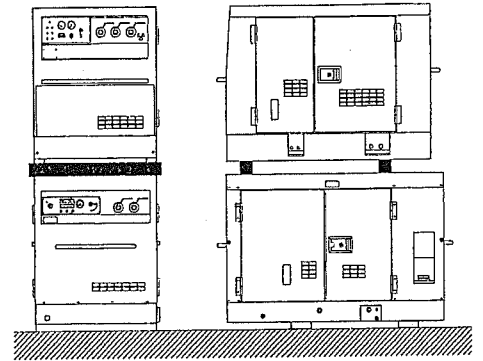
- (1) Remove dirt clung the machine and clean it thoroughly.
If painting is peeled off, it should be repaired.
- (2) Remove the battery from the machine. The battery should be charged completely before it is stored.
- Battery is discharged of itself. Recharge it once a month.
- (3) If any defects are found, check and repair the machine so that it can be used for future operation.
- (4) For details of handling the engine, refer to the instruction manual for the engine provided separately.

⚠ CAUTION

Stacking

- Improper stacking of machines may cause falling or dropping accidents.
When stacking other machines on this machine, be sure to observe the following points.

- * Check that the bonnet of the machine is free from damage and that the fixing bolts are not loosened and missing.
- * Put the machine horizontally on a solid foundation which withstands the weight of stacked machines.
- * Machines can be stacked up to 2 stages.
The weight and size of stacked machines should be less than those of this machine.
- * Using square timbers as shown below, put each machine making sure that the weight is even.



- Do not operate the machines in the state of stacking to prevent falling or dropping accidents.

10. Service data

10-1 Specifications

MODEL	DIS-130ES	
Compressor		
Type	Single stage, oil-cooled, screw type rotary compressor	
Actual free air delivery	3.7 m ³ /min (130 cfm)	
Operating pressure	0.70 MPa (105 psi)	
Lube oil capacity	15 L (4.0 gal)	
Oil chamber capacity	0.030 m ³ (7.9 gal)	
Engine		
Maker and model	YANMAR 3TNV88-F Diesel	
Type	4-cycle, water-cooled diesel engine, direct injection	
Bore × stroke	88 mm × 90 mm (3.46 in. × 3.54 in.)	
Displacement	1.642 L (100.2 cu.in.)	
Rated output / speed	25.8 kW / 3000 min ⁻¹	
Speed, rated / no-load	3000 / 1850 min ⁻¹	
Lubricate oil capacity	6.7 L (1.7 gal)	
Cooling water capacity	5.6 L (1.5 gal)	
Fuel	Diesel fuel (ASTM No.2 or equivalent)	
Lubricating oil	API service class (cc class or higher)	
Fuel tank	70 L (18.4gal)	
Battery	80D26R × 1	
SET		
	Machine with 2 wheel trailer	machine
LENGTH OVERALL	2632 mm	1700 mm
WIDTH OVERALL	1385 mm	875 mm
HEIGHT	1420 mm	1050 mm
DRY WEIGHT	Approx.680 kg(1510 lbs)	585 kg (1300 lbs)
TOTAL WEIGHT	Approx.760 kg(1690 lbs)	665 kg (1478 lbs)

The above specifications and set dimensions are subject to change.

Dry weight : This weight does not contain the cooling water, engine oil and fuel.

Total weight : This weight contains the cooling water, engine oil and fuel.

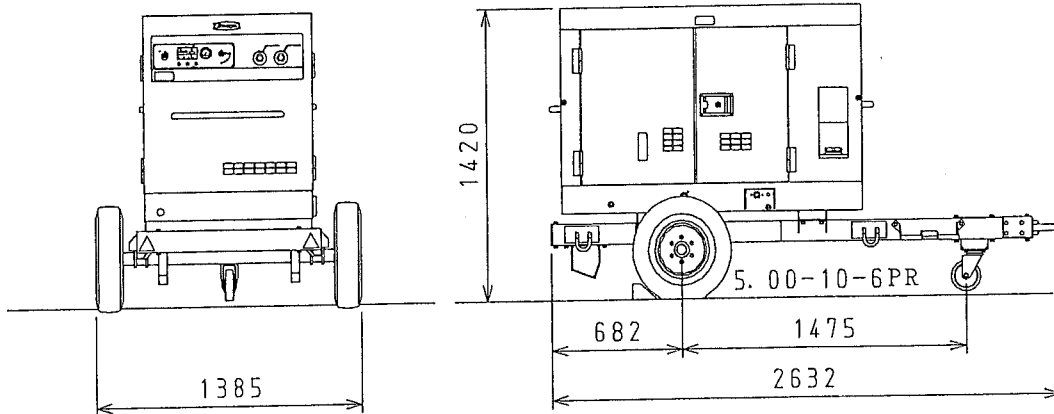
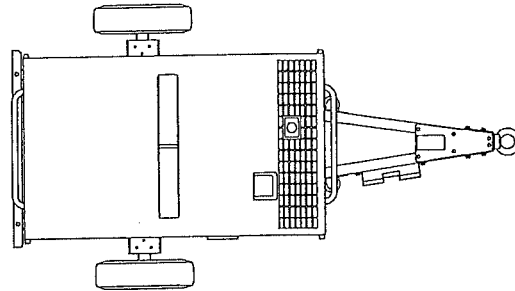
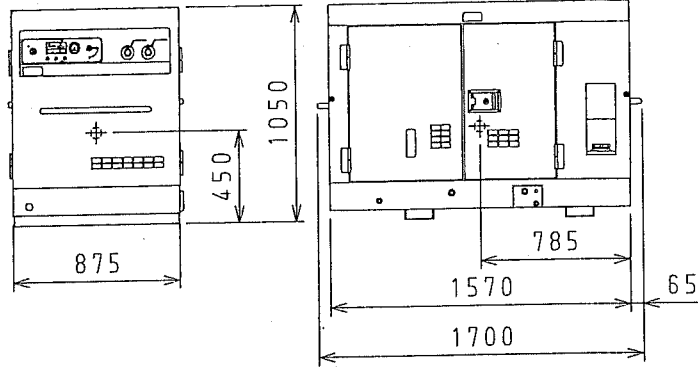
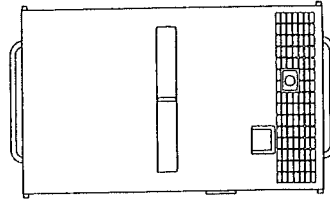
MODEL	DIS-130ES-C	
Compressor		
Type	Single stage, oil-cooled, screw type rotary compressor	
Actual free air delivery	3.7 m ³ /min (130 cfm)	
Operating pressure	0.70 MPa (105 psi)	
Lube oil capacity	15 L (4.0 gal)	
Oil chamber capacity	0.030 m ³ (7.9 gal)	
Engine		
Maker and model	YANMAR 3TNV88-F Diesel	
Type	4-cycle, water-cooled diesel engine ,direct injection	
Bore × stroke	88 mm × 90 mm (3.46 in. × 3.54 in.)	
Displacement	1.642 L (100.2 cu.in.)	
Rated output / speed	25.8 kW / 3000 min ⁻¹	
Speed, rated / no-load	3000 / 1850 min ⁻¹	
Lubricate oil capacity	6.7 L (1.7 gal)	
Cooling water capacity	5.6 L (1.5 gal)	
Fuel	Diesel fuel (ASTM No.2 or equivalent)	
Lubricating oil	API service class (cc class or higher)	
Fuel tank	70 L (18.4gal)	
Battery	80D26R × 1	
SET		
	Machine with 2 wheel trailer	machine
LENGTH OVERALL	2632 mm	1700 mm
WIDTH OVERALL	1385 mm	875 mm
HEIGHT	1420 mm	1050 mm
DRY WEIGHT	Approx.710 kg(1565 lbs)	615 kg (1356 lbs)
TOTAL WEIGHT	Approx.790 kg(1742 lbs)	695 kg (1532 lbs)

The above specifications and set dimensions are subject to change.

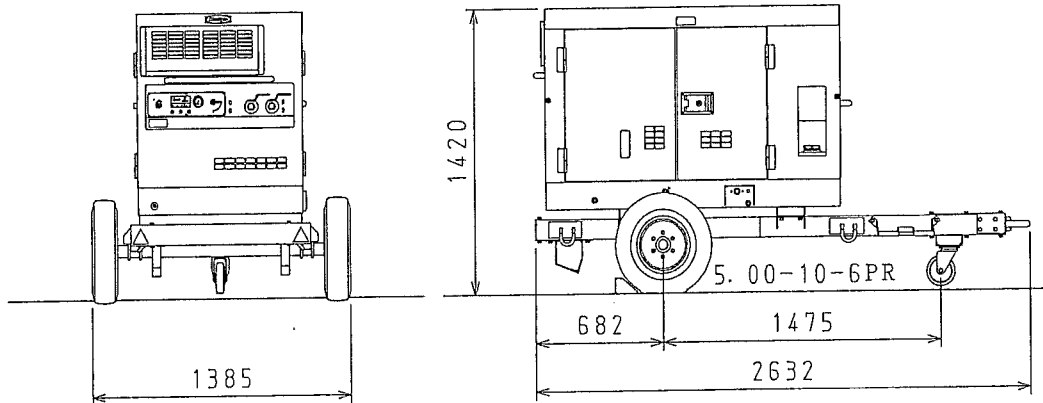
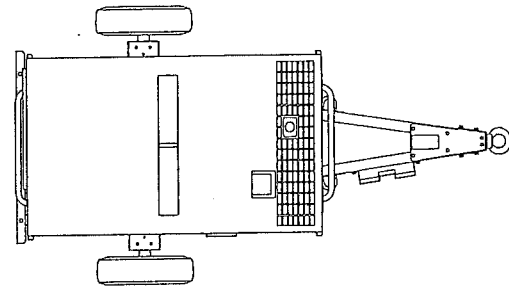
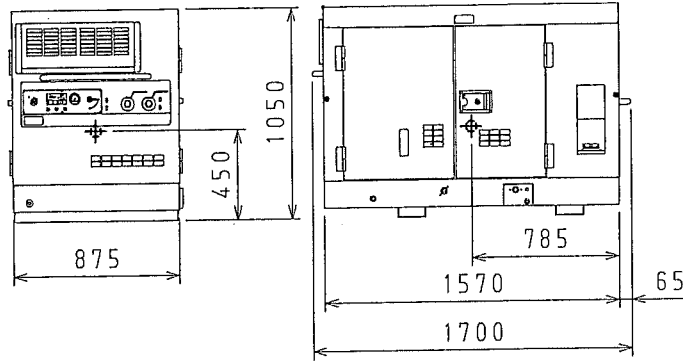
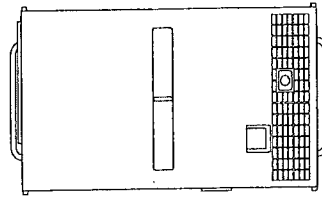
Dry weight : This weight does not contain the cooling water, engine oil and fuel.

Total weight : This weight contains the cooling water, engine oil and fuel.

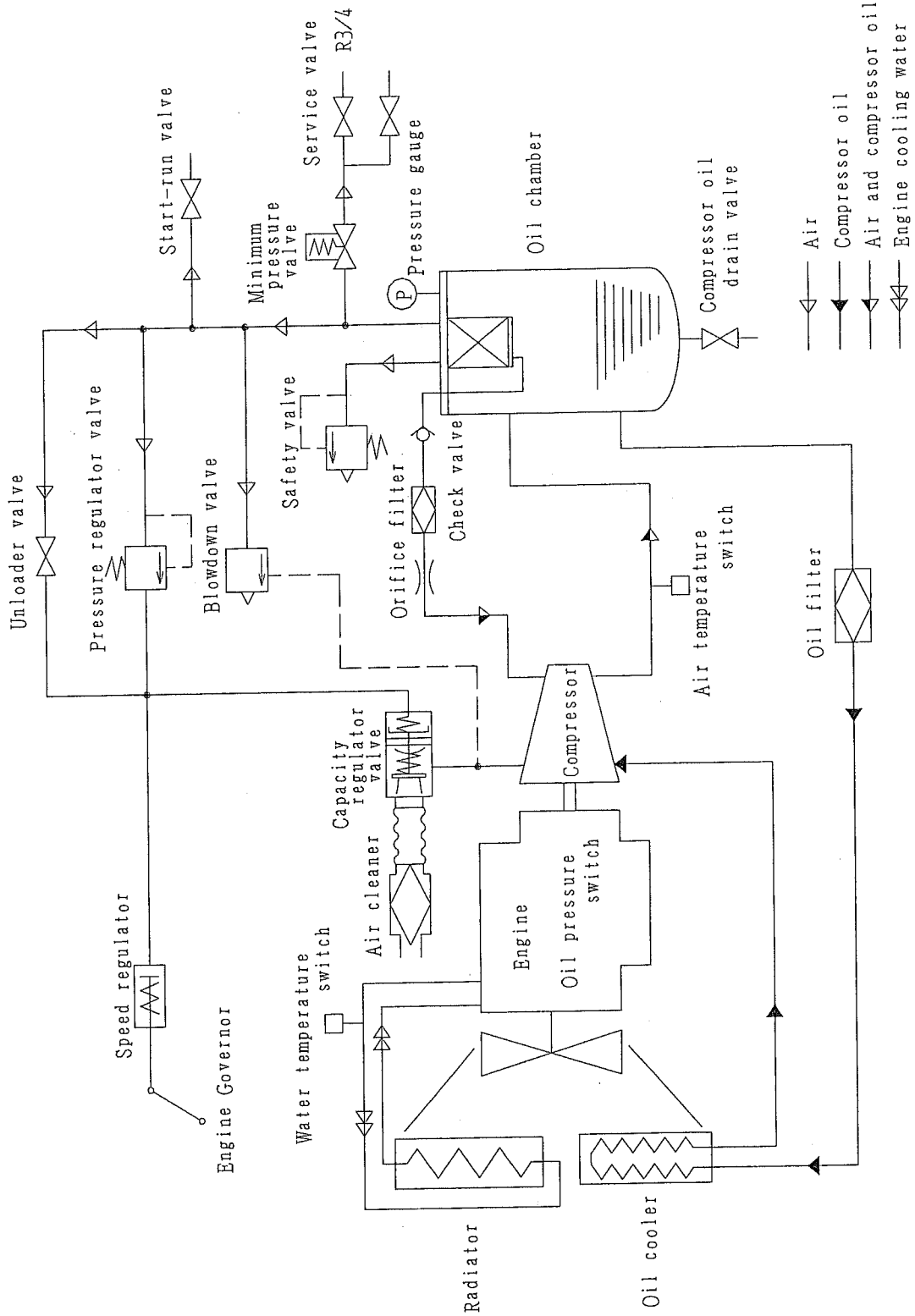
10-2 Outline drawing
 【DIS-130ES】



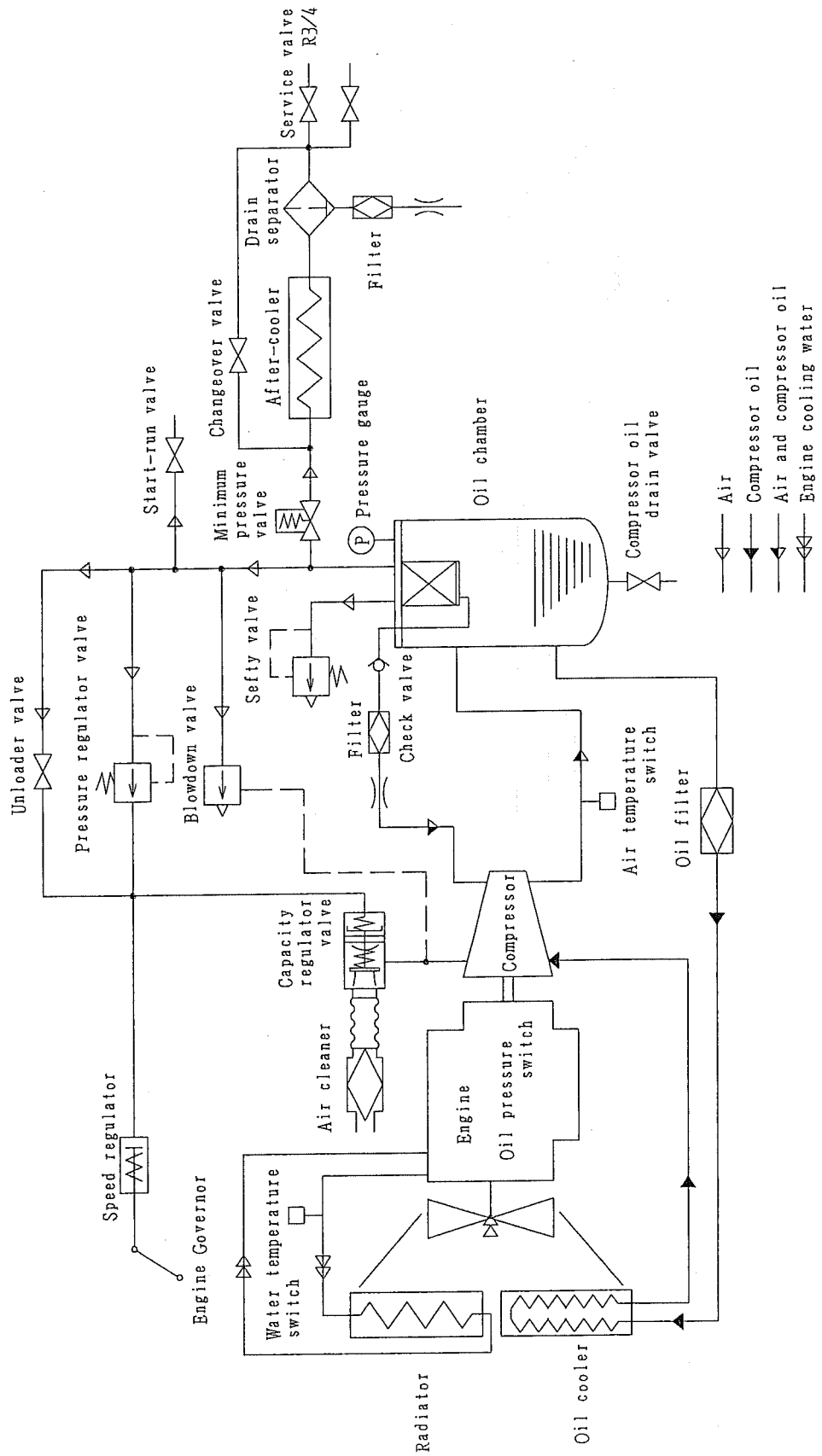
【DIS-130ES-C】



10-3 Combined Piping Diagram [DIS-130ES]



[DIS-130ES-C]



10-4 Engine wiring diagram

