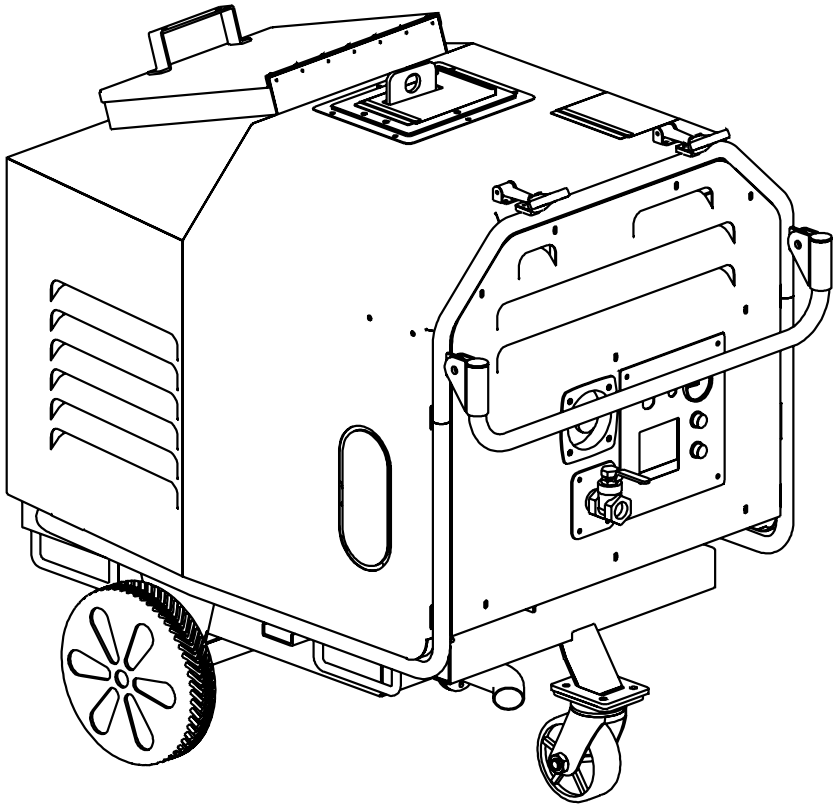
DETROITAIR
COMPRESSED AIR INNOVATION THROUGH TECHNOLOGY

INSTRUCTION MANUAL

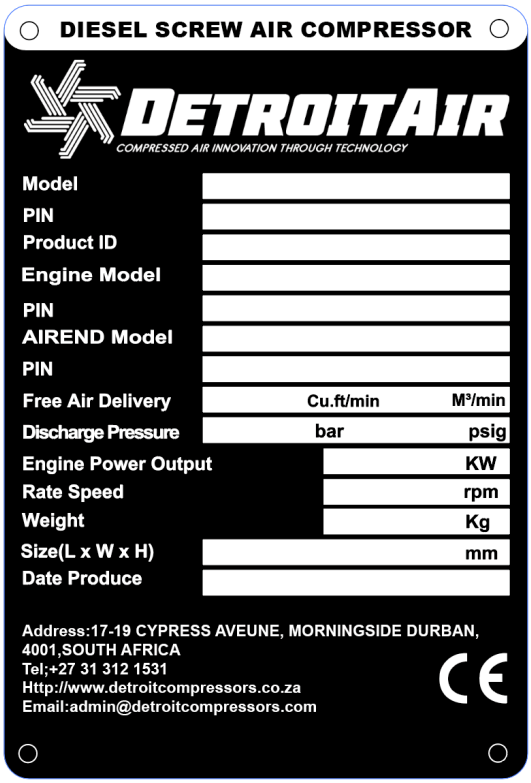


SCREW COMPRESSOR

D-1510

Please be sure to read this manual
before using this machine.

- This manual explains and illustrates proper handling of the unit, method of daily inspection and maintenance to enhance the performance of compressors;
- Before operating the unit, read the manual carefully, fuly understand its operation and maintenance requirement. Maintain "SAFETY OPERATION AND PROPER MAINTENANCE OF THE UNIT";
- For details of handling, maintenance and safety of the engine, see the Engine Operation Manual;
- Keep the manual available at all times for the operaior or safety supervisor;
- If the manual is lost or damaged. place an order with your dealer for another copy;
- Be sure that the manual is inchuded with the unit when it is handed over to another user;
- There may be some inconsistency in detail between the manual and the actual machine due to improvements of the machine. Ask vour dealer if you have anv questions or problerns;
- If you have any questions about the unit, please inform us the model and serial number. A plate stamped with the model and serial number is attached to side of the unit;



Be sure to follow safety warnings and cautions given in the manual. Unsafe operation could cause serious injury or death.

Table of Contents

1. Safety

This manual explains and illustrates general requirements for safety.

Read all safety requirements carefully and fully understand the contents before starting the machine.

For your better recognition, according to the degree of potential danger, safety messages are classified into three hierarchical categories, namely, DANGER , CAUTION , WARNING and with a caution symbol ⚠ attached to each message.

When one of these messages is shown, please take preventive measures and carry out "SAFETY OPERATION AND PROPER MAINTENANCE OF THE UNIT ".

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

IMPORTANT indicates important caution me ssages for the performance or durability of the unit.

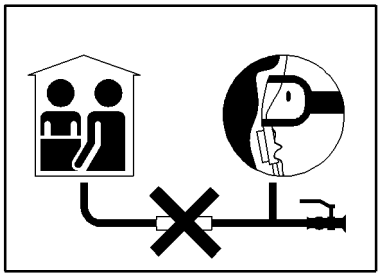
Follow warnings mentioned in this manual. This manual does not describe all safety items. We, therefore, advise you to pay special attention to all items (even though they may not be described in the manual) for your safety.

1. Safety

1.1 Caution before Operation

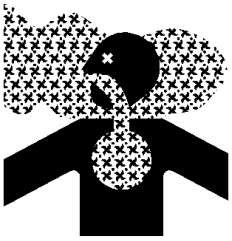
DANGER — ***Air pressurized construction method prohibited***

- Never use the unit directly or indirectly for the following purposes:
- Never use the unit for respirator equipment by which compressed air is supplied for human consumption. The compressed air contains carbon monoxide and other contaminants. Such air may cause serious injury or death if used by a person for respiration.
- This compressor is not designed for air pressurized construction methods and underwater diving jobs.
  Never use compressed air for human consumption such as pressurizing diving air tanks. Consumption of compressed air can cause death while diving.



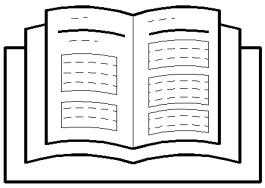
WARNING — ***Ventilation***

- Exhaust gas from the engine is poisonous, and could cause serious injury or death when inhaled.
  Avoid using the machine in an insufficiently ventilated building or tunnel.



WARNING — ***Follow all safety instructions***

- Read each instruction plate which is displayed in the manual or on the unit carefully, understand its content and follow the directions.
- Keep the Safety Warning labels clean. If they are damaged or missing, apply new ones.
- Do not modify the machine without prior approval. Safety of the unit may be compromised, functions may be deteriorated, or machine life may be shortened.
- Never use the unit for the purpose of compression of gases other than air, or as a vacuum pump. Serious accidents may occur.



WARNING — ***Maintain both physical and mental health***

- Do not operate the machine you are tired, intoxicated or under the influence of drugs. Operation under these circumstances may cause unexpected injury or accident.
  Maintain your physical and mental health and be cautious in handling the machine.

1. Safety

WARNING

Safety outfit

- When handling the machine, do not wear;
- loose clothes
- clothes with unbuttoned sleeves
- hanging tie or scarf
- accessories such as dangling jewelry

Such outfit could be caught in the machine or dragged in the rotating portion of the machine which could cause a serious injury.

WARNING

Transportation

- When loading and unloading unit, be sure to use the lifting bail provided on the center of the unit top.
- Never get under the unit which is suspended, it is very dangerous.
- When unit is transferred or moved from a working site, be sure to place it on truck bed, and tie it down firmly. Also be sure to put a set of chocks to fix its wheels firmly in position.
- Never lift unit which is still in operation. It could cause critical damage to each component or lead to serious accident.

WARNING

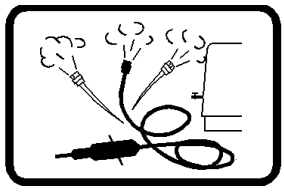
Installation

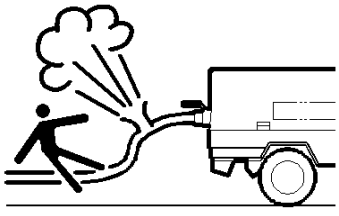
- The machine should be parked horizontally on a level place.
- In case the machine has to be parked on a slope, place it across grade so that the machine does not tend to roll downhill.
- Grade on a slope shall be within 15 degrees

WARNING

Cautions of hose attachment and removal

- Piping or the hose from this machine service valve should use what can be borne enough for the discharge pressure of this machine.
- Please connect piping or a hose to this machine service valve firmly before operation and during operation. If the connection part is loosening, there is a possibility of piping or a hose separating and getting seriously injured.
- Please remove after closing a service valve and extracting pressure remained, in case piping or a hose is removed. If pressure remained should remain, a near thing blows away or there is a possibility of a hose whipping, causing a phenomenon and getting seriously injured.
- In order to use it safely, please read the handling of the work tools often used.



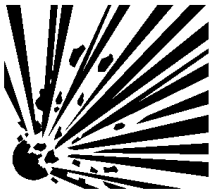


1. Safety

WARNING

Handling battery

- Keep flames away from battery.
- Battery generates hydrogen gas and may explode.
- Therefore, recharging should be done at a well-ventilated place.
- Do not allow sparks or flame near the battery.
- Do not check the battery by short-circuiting the positive and negative terminals.
- Never operate the machine nor charge the batteries with the battery liquid level being kept lower than the "LOWER" level. Continuing operation at this lower level will cause deterioration of such parts as pole plates etc., and also it may cause explosion as well as reduction of battery life. Add distilled water so that the liquid level may reach the middle level between the "UPPER" and "LOWER" level without any delay.
- Do not charge a frozen battery. Otherwise it may explode. If the battery is frozen, warm it up until the battery temperature becomes 61°F to 86°F (16°C to 30°C).
- Battery electrolyte is dilute sulfuric acid.
  In case of mishandling, it could cause skin burning.
- When you deal with a battery, please be sure to wear protection implements, such as protection glasses and a glove.
- When such battery electrolyte contacts your clothes or skin, wash it away with large amount of water immediately.
- If the battery electrolyte gets into your eyes, wash it away immediately with plenty of water and seek medical attention.
- Dispose of battery, observing local regulations.



CAUTION

Check before starting the unit

- Be sure to check the unit before operation.
  When any abnormality is found, be sure to repair it before restarting the unit.
- Be sure to make daily checks before operation. If the unit is operated without prior check and without noticing any abnormality, operation could cause damage of components or may even cause fire.

1. Safety

CAUTION

Protection equipments

- Please wear protection implements, such as a helmet, protection glasses, earplugs, safety shoes, a glove, and a protection-against-dust mask, according to the contents of work for safety.

CAUTION

Safety fittings

- Have first-aid kits and fire-extinguishers near the unit ready for emergency situations.
- It is advisable to have a list of phone numbers of doctors, ambulance and the fire department available in case of emergency.

CAUTION

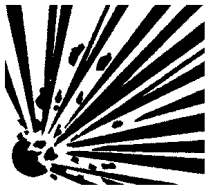
Safety around the machine

- Unnecessary equipment and tools, cables, hoods, covers which are a hindrance to the job, have to be removed.

1.2 Caution during Operation

WARNING — ***Do not replenish compressor oil during operation***

- Do not, under any circumstance, open the oil filler cap of separator receiver tank while running or immediately after stopping operation.
  It is very dangerous and cause serious injury.
- Relieve all pressure before performing any maintenance.

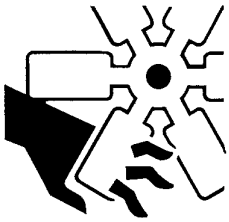


WARNING — ***Draining during operation prohibited***

- Do not, under any circumstance, open the items listed below during operation:
  - Separator receiver tank drain valve
  - Engine oil drain plug
  - Oil cooler drain plug

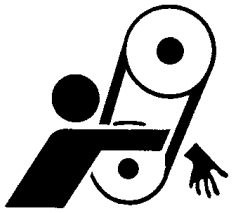
WARNING — ***Beware of cooling fan***

- Never put your hand near the engine cooling fan during operation.



WARNING — ***Hands off from rotating parts and belts***

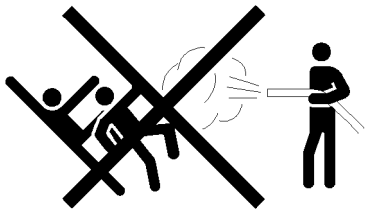
- Keep hands off from the rotating portion or belts while running.



1. Safety

⚠ WARNING — ***Never direct the compressed air to people and foods***

- Never blow compressed air directly at people.
  Scattered dust, or foreign objects in the compressed air may cause serious injuries.
- Blowing compressed air on food is prohibited.



⚠ CAUTION — ***Do not remove radiator cap during operation***

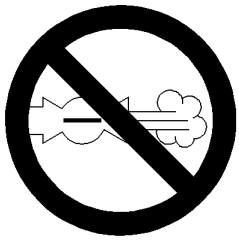
- Do not, under any circumstance, open the radiator cap while running or immediately after stopping operation. Otherwise high temperature steam releases out and this could cause scalding.

⚠ CAUTION — ***Do not touch hot parts***

- Never work near hot portions of the machine while it is running.
- Such parts as engine, exhaust manifold, exhaust pipe, muffler, radiator, oil cooler, compressor, piping, separator receiver tank, and discharging pipe are especially hot, so never touch those parts, because it could cause serious burns.
- Compressor oil, coolant water, and engine oil are also very hot and dangerous to touch.
- Avoid checking or refilling them while the unit is running.

⚠ CAUTION — ***Operation with compressed air supply port opened is prohibited***

- Do not operate the machine with service valves and relief valve open unless air hoses and/or pipes are connected.
- When the machine has to be unavoidably temporarily operated with its port open, be sure to mount a silencer to reduce noise and wear protective materials such as earplugs to prevent damage to hearing. For testing service only.



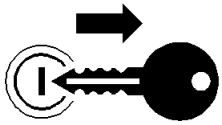
⚠ CAUTION — ***Fire prevention***

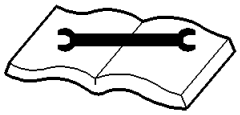
- Do not, under any circumstance, bring lit cigarettes or matches near oils as engine oil and compressor oil, etc.
  They are extremely flammable and dangerous.
- Refilling oils should be done in an outdoor well-ventilated place.
- Refuel after stopping the engine, and never leave the fuel nearby the machine. Do not spill. Clean environmental spills.
- Such parts as muffler and exhaust pipe can be extremely hot. Remove twigs, dried leaves, dried grass and waste paper, etc. from the exhaust outlet of the muffler.
- Keep a fire extinguisher available by the machine in case of a fire.

1.3 Caution during Inspection and Maintenance

⚠ WARNING — ***Hang a "Now Checking and under Maintenance" tag***

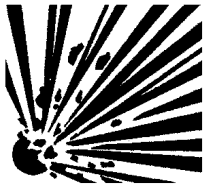
- Remove the starter key from the starter switch before starting inspection, and hang up a "Now Checking and under Maintenance" tag where it can be easily seen. The checker must keep the key during checking and maintenance.
- Remove the negative (–) side cable from the battery.





⚠ WARNING — ***Refilling of compressor oil***

- When you refill the separator receiver tank with compressor oil, stop the engine, and make sure that the pressure gauge indicates 0 psi (0 bar) and there is no residual pressure in it, and then gradually loosen the oil filler cap for refilling oil.
- Note residual pressure in the separator receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.



1. Safety

WARNING

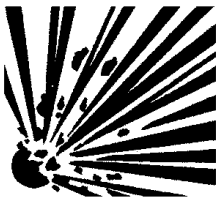
Draining separator receiver tank

- After stopping the engine, confirm that the pressure gauge indicates 0 psi (0 bar) and there is no residual pressure in it, then open the drain valve gradually to drain the compressor oil.
- Note residual pressure in the separator receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.

WARNING

Be careful of high-pressurized air blowout

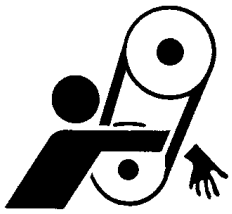
- After stopping the engine, make sure that pressure gauge indicates 0 psi (0 bar). Even when the gauge shows 0 psi (0 bar), open a service valve and further do not fail to make sure that there is no residual pressure in the air piping. Then begin repair and maintenance.
- Residual air under pressure can cause severe injury.



WARNING

Adjusting tension of fan belt

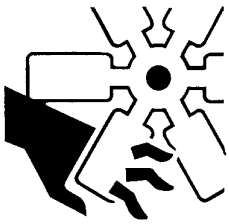
- Be sure to stop the engine and remove the starter key whenever the tension of the fan belt is to be adjusted.
- Remove the negative (–) side cable from the battery.
- If the machine is running, it might catch the operator's hand into the fan belts, and this could cause a serious injury.



WARNING

Hands off from cooling fan

- Be sure to stop the engine and remove the starter key whenever check or maintenance work is carried out near the cooling fan.
- If the cooling fan is rotating, it may catch the operator or part of his body into the fan, and it could cause a serious injury.

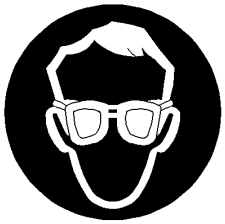


1. Safety

WARNING

Cleaning by air-blow

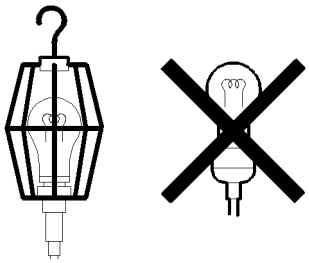
- When cleaning dust accumulated in such devices as the air-filter, by blowing compressed air, wear safety glasses, etc. to protect your eyes.



CAUTION

Lighting apparatus

- It is recommended to use a lamp with safety guard fitted in low light conditions.
- Any lamps without safety guard are not recommended since they can be broken and they could ignite flammables such as fuel, etc.



1. Safety

CAUTION

Refilling or draining of engine oil

- After stopping the engine, wait for 10 to 20 minutes until the engine oil cools off. Then check the level of the engine oil, or refill or drain the oil.
- Engine oil is very hot and highly pressurized during or just after the operation. Hot oil could blow out of the tank and can cause scalding.

CAUTION

Fire warning

- Be sure to perform the periodical check of compressor oil and oil separator.
- Neglecting checks could cause overheat of the oil, resulting in a fire.

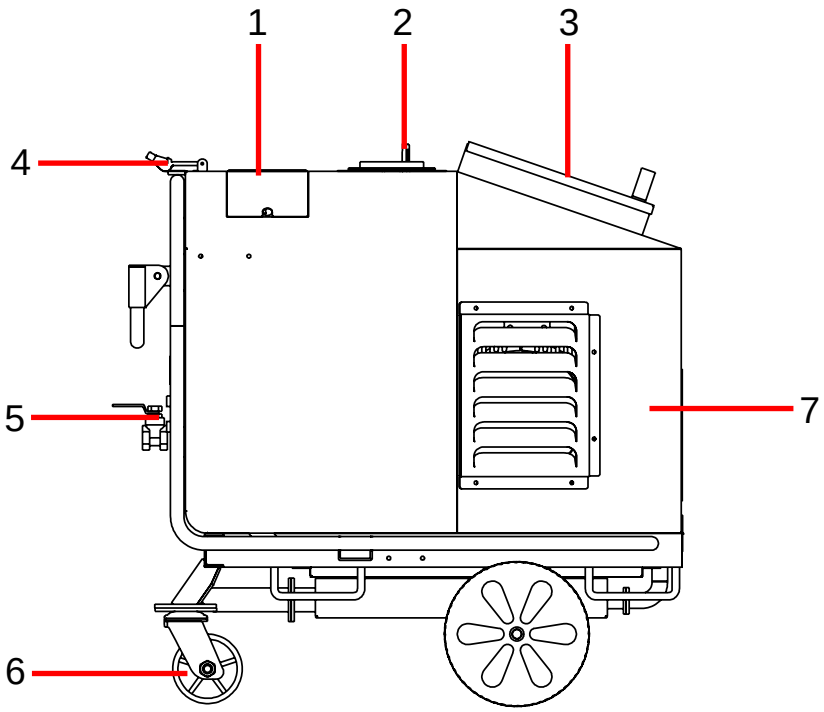
CAUTION

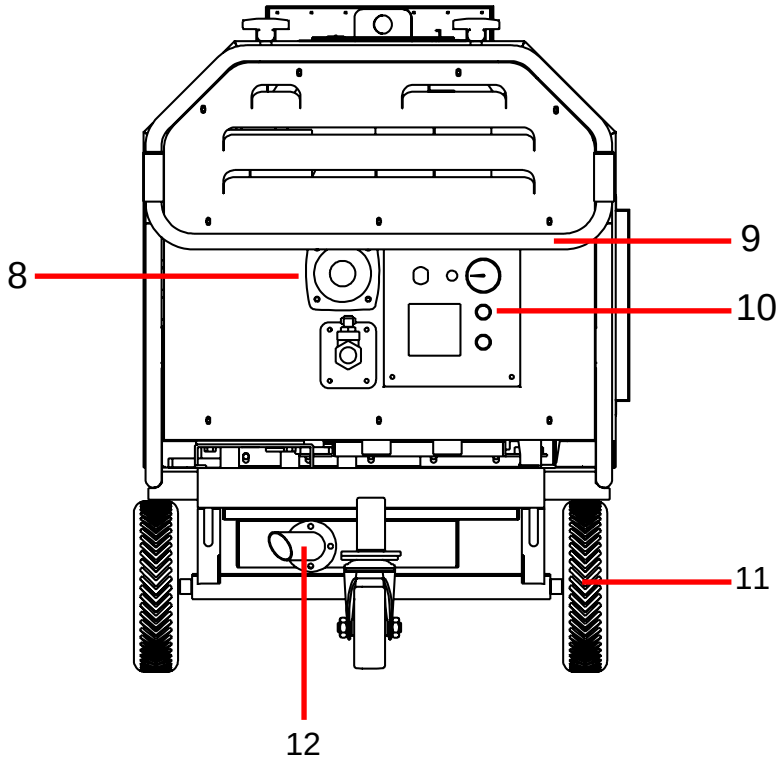
Disposal of waste liquid, etc.

- Waste liquid from the machine contains harmful material. Do not discharge it onto the ground or into the river, lake or sea. Such material will contaminate the environment.
- Be sure to use a container to hold the waste liquid from the machine.
- Be sure to follow the designated regulations when disposing of oil, fuel, coolant (antifreeze), filter, battery or other harmful materials.

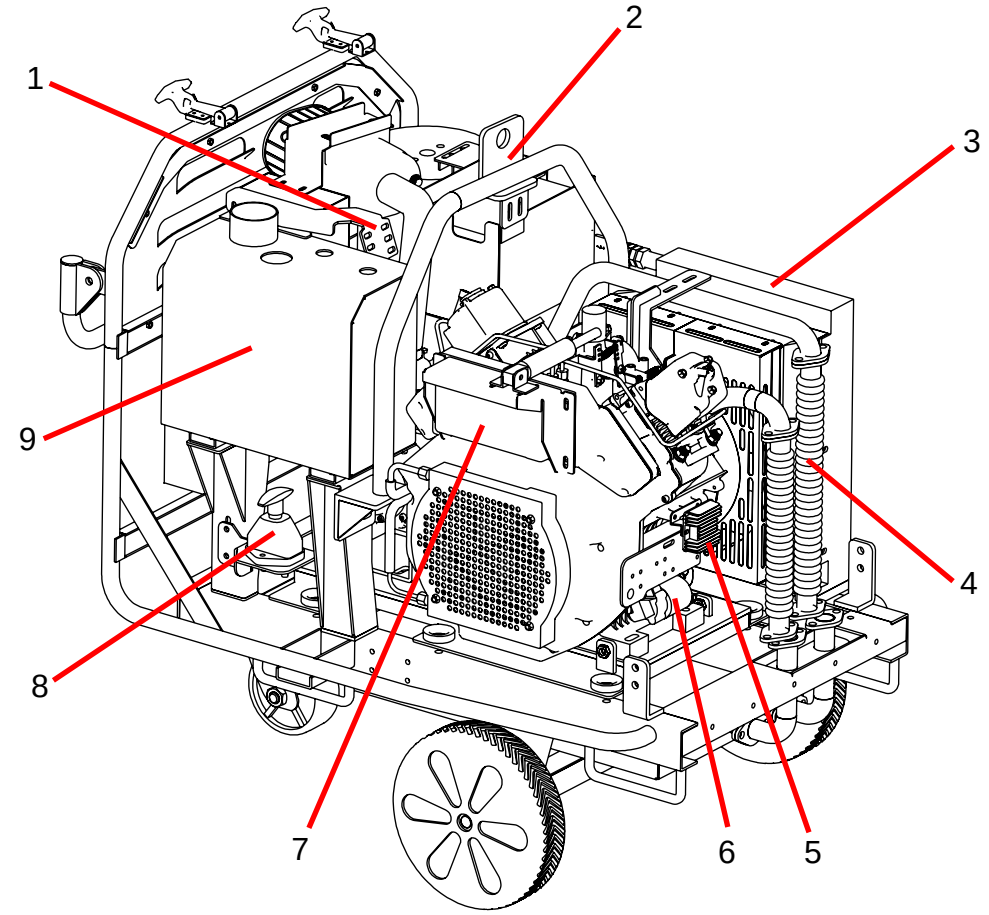
2. Operation

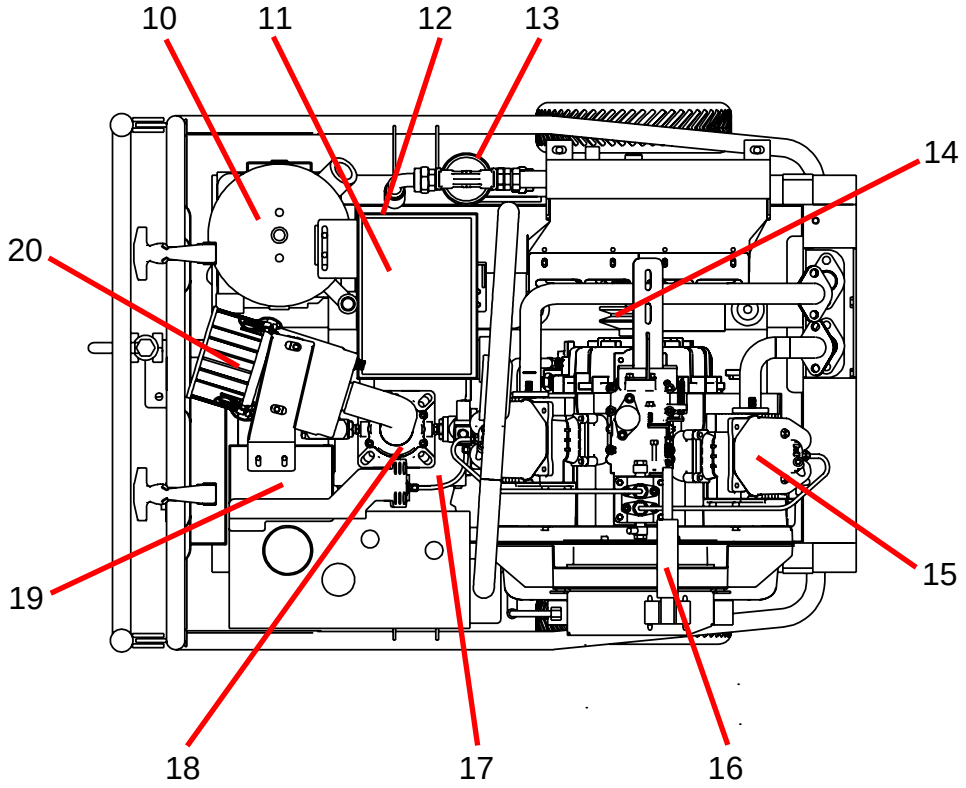
2.1 Unit Appearance and Part Names





1. Fuel filler port
2. Lifting bail
3. Cooling fan
4. Door lock
5. Service valve
6. Guide wheel
7. Canopy
8. Emergency stop button
9. Push bar
10. Control Panel
11. Solid rubber tires
12. Exhaust silencer

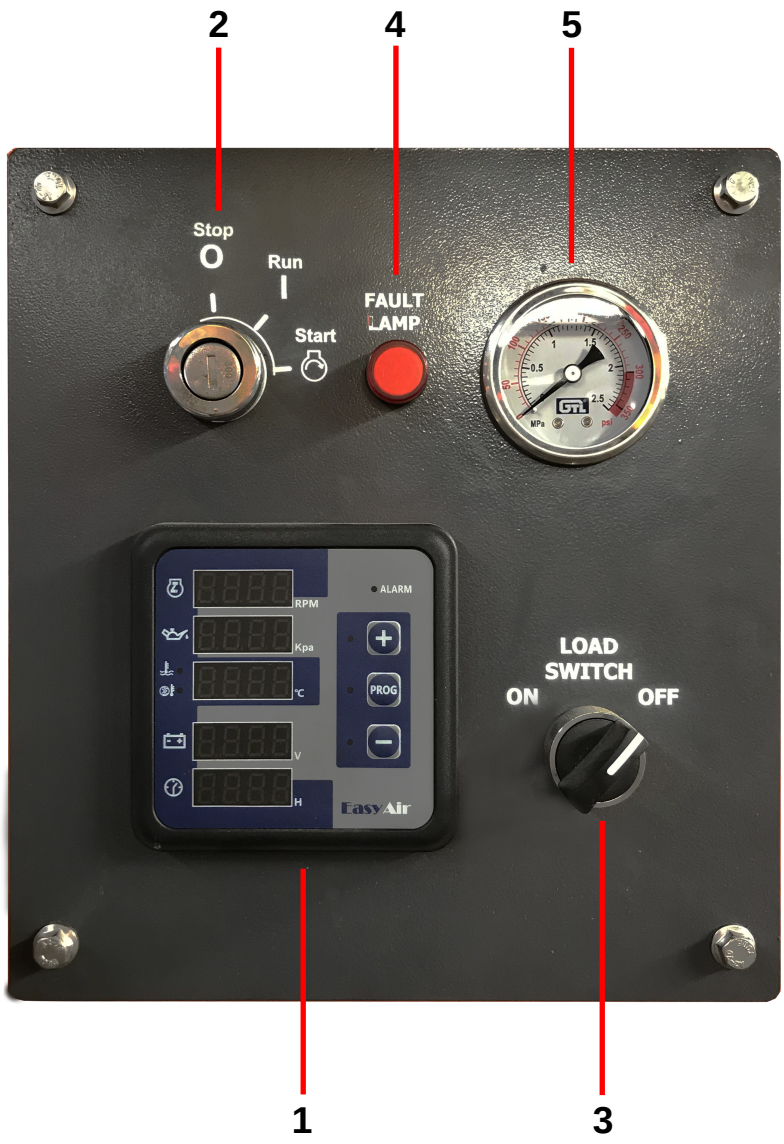




1.Oil filler	6.Starting motor	11.Battery	16.Speed adjusting cylinder
2.Hanger	7.Engine air filter	12.Oil separator	17.Airend
3.Compressor cooler	8.Power switch	13.Oil filter	18.Intake valve
4.Bellows	9.Fuel tank	14.Engine drive pulley	19.Electric cabinet
5.Voltage regulator	10.separation tank	15.Engine	20.Airend air filter

2. Operation

Control Panel



■ **Control Mode**
1、Easy Air EAM1
■ **Operate switch/button**
2、Preheat Start Switch
3、Load Switch
■ **Gauge Display**
4、Fault Lamp
5、Air Compressor Pressure Gauge

Controller

◆Withstanding voltage test

If withstanding voltage test is conducted after the meter has already been installed onto the control panel, please unplug all meter terminal connections in order to prevent high voltage from damaging it.

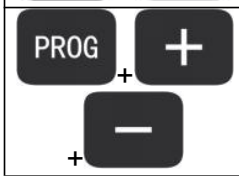
Panel and display

Front Panel Description

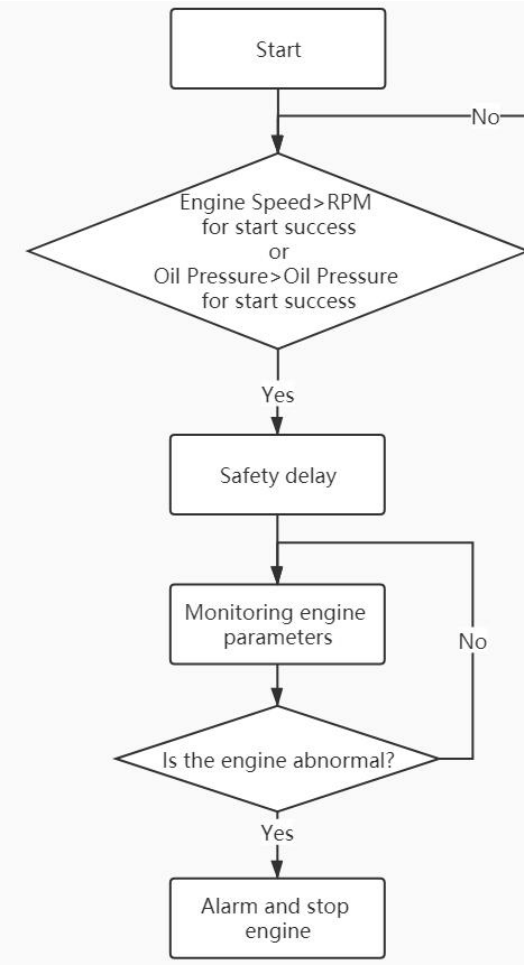
ICON	NAME	Meaning
	Engine speed	The LED screen displays the engine speed in RPM.
	Engine oil pressure	The LED screen displays the engine oil pressure in kPa.
	Engine coolant temperature	The LED screen shows the cooling coolant temperature of the engine in centigrade ℃.
	Oil temperature	The LED screen shows the oil temperature of the engine in centigrade ℃.
	Battery voltage	The LED screen displays the battery voltage of the engine in volts.
	Total running time	The LED screen displays the accumulated working time of the engine in hours H.

◆ **Key Function Description**

KEYS	NAME	Main Function
PROG	Setting	Press for 4 seconds to enter the parameter setting mode. In the parameter browsing interface of setting mode, press to enter the parameter modification interface. In the parameter browsing interface of setting mode, press to enter the parameter modification interface.
+	+	Under display mode, parts of the page can move up. Under edition mode, pressing this key to move the digit or increase the numbers. In the display mode, the coolant temperature and oil temperature change pages.

	-	Under display mode, parts of the page can move down. Under edition mode, pressing this key to move the digit or decrease the numbers. In the display mode, the coolant temperature and oil temperature change pages.
	Custom sensor curve	Press the PROG and + together for more than 4 seconds, can enter the sensor parameter setting interface.
	Check the software version	Press PROG key and - key together to check the software version of the meter.
	LED Test	Test if all LED lights are ok, pressing this key to test if all lighted, all off when loosen it.
	Restore default	Press PROG key, + key and - key together,then all the parameters can be set as defaults.

◆ **Work flow chart**



⚠ Note: within the safety delay time, only the overspeed alarm will be responded, and other alarms will not respond.

Warnings and Shutdown Alarms

◆ Warnings

Notes: Warning is a non-serious failure state, which will not harm the engine system for the time being. It only reminds operators to pay attention to the situation that does not meet the requirements and solve it in time to ensure the continuous operation of the system. When the warning occurs, the engine does not stop. Once the fault is removed, the warning is automatically canceled.

Under battery voltage warning

When the meter detects that the battery voltage is lower than the **"Under battery voltage warning"**, Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of Under battery voltage warning is reported.

ALARM lights will light up, bettery display flashing.

◆ Shutdown Alarms

Warning: After the Shutdown Alarm occurs, the system will be locked immediately and the engine will be stopped. Only after troubleshooting, press key to clear the alarm, can it be re-operated.

Notes：When the shutdown alarm failure occurs, the "**ALARM**" lights will light up and the engine automatically stops.

Over speed alarm

When the meter detects that the engine speed is higher than "**Over speed alarm**", Then start alarm delay and the duration (Emergency delay) have not returned to normal, the alarm of over speed is reported.The alarm light ALARM flashes, the speed display screen locks the alarm speed value, and the alarm relay outputs.

Low oil pressure alarm

When the meter detects that the engine oil pressure is lower than "**Low oil pressure alarm**", Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of low oil pressure is reported.The alarm light ALARM flashes, the oil pressure display screen locks the alarm oil pressure value, and the alarm relay outputs.

High coolant temperature sensor alarm

When the meter detects that the coolant temperature value is higher than the **"High coolant temperature alarm"**, Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of High coolant temperature alarm is reported. The alarm light ALARM flashes, the coolant temperature display screen locks the alarm coolant temperature value, and the alarm relay outputs.

Oil pressure sensor disconnected alarm

When the oil pressure sensor is detected to be disconnected,Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of Oil pressure sensor disconnected alarm is reported. The alarm light ALARM flashes,the oil pressure display shows "---" and flashes.

Coolant temperature sensor disconnected alarm

When the coolant temperature sensor is detected to be disconnected,Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of coolant temperature sensor disconnected alarm is reported. The alarm light ALARM flashes,the coolant temperature display shows "---" and flashes.

Parameters setting

◆ Enter the edition page

Please set the parameters according to below steps:

1) Press PROG for 4 sec, loose it when "P-00"displayed, which means system comes into setting page and display the first option.

2) Press + or − to choose the options and press PROG to set. Press + or − again to set the right value. Then press PROG to revert back to last layer and press PROG again for more than 4 sec to save the value.

3) Press PROG and + simultaneously for more than 4sec: when "nu.1" is displayed, it means system comes into curve setting page. Press + or − to choose the curve needed to be modified (1-Oil pressure,2-coolant temperature,3-oil temperature).Then press PROG to set, choose the value of resistance(A) and sensor value(d) by pressing + or − ,press PROG again to set. Then press PROG to revert back to last layer and press PROG and + for more than 4 sec to save the value.

4) Resistance input data: from min to max.

Note: after the parameter is modified, it will take effect immediately!

▶Parameter setting

Code	Parameter	Range***(defaults)***	Notes
P00	Flywheel teeth	0-300***(0)***	If the setting is 0, RPM sensor Disabled, then RPM is resulted by Hz.
P01	Gens poles	0:2 ***1:4*** 2:6 3:8	When the flywheel teeth is set as 0,the RPM will be resulted by frequency. Pole 2: 50Hz---3000RPM. Pole 4: 50Hz---1500RPM. Pole 6: 50Hz---1000RPM. Pole 8: 50Hz---750RPM.

P02	Oil pressure sensor	0: Disabled **1: *VD0 0-10bar*** 2: EASYAIR-EAM1-003B 3: SGH 4: SGD 5: SGX 6: CURTIS 7: DATCON 10Bar 8: VOLVO_EC 9: 3015237 10Bar 10: FORWIN 0-6Bar 11: ZYDQ 0-8Bar 12: SIQIANG 0-10Bar 13: User defined-Resistance 14: Volt In 1MPa-0-5V 15: Volt In 1MPa-0.5-4.5V 16: User defined-Voltage 17: Normally closed oil pressure alarm switch	Choose the usual oil pressure sensor, if the sensor users choose is not these types, it can be User-defined.
P03	Coolant temperature sensor	0: Disabled ***1: VD0 40℃-120℃*** 2: EASYAIR-EAM1-001B 3: SGH 4: SGD 5: SGX 6: CURTIS 7: DATCON 8: VOLVO_EC 9: 3015238 10: PT100 11:EASYAIR-EAM1-Mier 12: FORWIN 40-120℃ 13: CC073 25-125℃ 14: SIQIANG 30-120℃ 15: Self-defined	Choose the usual coolant temperature sensor, if the sensor users choose is not these types, it can be User-defined.
P04	Oil temperature sensor	0:Disabled ***1:VD0 40℃-120℃*** 2:EASYAIR-EAM1-001B 3:SGH 4:SGD 5:SGX 6:CURTIS 7:DATCON 8:VOLVO_EC 9:3015238 10:PT100 11:EASYAIR-E1-Mier 12:FORWIN 40-120℃ 13:CC073 25-125℃ 14:SIQIANG 30-120℃	Choose the usual oil temperature sensor, if the sensor users choose is not these types, it can be User-defined.

		15:Self-defined	
P05	Over speed alarm	0-6000RPM ***(1650RPM)***	if the value is set as 6000, then the over speed alarm is disabled.
P06	Over speed delay	0.0-5S***(0.5S)***	When the engine speed is higher than the preset value, it is regarded as over speed.
P07	Low oil pressure alarm	0-500 KPA***(100KPA)***	if the value is set as 0, then the low oil pressure alarm is disabled.
P08	High coolant temperature alarm	50-150℃***(95℃)***	if the value is set as 150, then the high coolant temperature alarm is disabled.
P09	High oil temperature alarm	50-250℃***(105℃)***	if the value is set as 250, then the over speed alarm is disabled.
P10	Sensor alarm delay	0.5-15.0S***(5.0S)***	Sensor alarm delay.
P11	Under battery voltage warning	8.0-36.0V***(9.0V)***	if the value is set as 5, then the under battery voltage is disabled.
P12	Page-change delay	1.0-120.0S***(5.0S)***	Interval time for coolant temperature and oil temperature, the max time is manually change.
P13	RPM for start success	200-1000RPM ***(600RPM)***	When the RPM is over than the pre-set value once on power, then it is regarded that engine crank successfully.
P14	Oil Pressure for start success	138-412KPA ***(206KPA)***	When the oil pressure is over than the pre-set value once on power, then it is regarded that engine crank successfully.
P15	Safety delay	3-300S***(10S)***	**Low oil pressure, high coolant temperature, high oil temperature, Under battery voltage are all invalid during this time except for over speed.**
P16	Alarm output time	0~120S***(30S)***	Alarm relay output setting. 0:alarm output disabled; 120:alarm output all the time.
P17	RS485 ID	1-254***(16)***	RS485 ID setting, only for EASYAIR-EAM1
P18	Alarm function	***0:Disabled*** 1:Available	**All the alarm indications and outputs are forbidden if it is set as 0.**

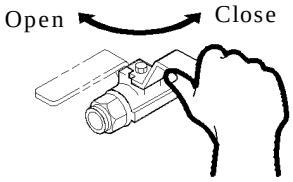
Fault finding

Symptoms	Possible Solutions
Meter no response with power	Check DC voltage. Check DC fuse. Check if the terminal 1 and 2 is with battery voltage.
Speed display error	Check whether the speed sensor is normal; Check whether the number of teeth of the instrument flywheel isset normally.
Oil pressure display error	Check whether the oil pressure sensor is normal; Check the wiring of oil pressure sensor; Check whether the common ground wire of the sensor is well connected to the negative pole of the battery; Check whether the oil pressure sensor type parameters selected by the instrument are consistent with the actual use.
Coolant temperature display error	Check whether the coolant temperature sensor is normal; Check the wiring of coolant temperature sensor; Check whether the common ground wire of the sensor is well connected to the negative pole of the battery; Check whether the type parameters of coolant temperature sensor selected by the instrument are consistent with the actual use.
Engine shutdown	Check whether the engine temperature is too high; Check whether the engine oil pressure is too low; Check the alternator voltage; Check whether the fuel circuit of the engine is normal.
Low oil pressure alarm	Check oil pressure sensor and its wiring. Check the oil pressure sensor type and meter settings must be consistent. Check whether the low oil pressure sensor is normal.
High coolant temperature alarm	Check coolant temperature sensor and its wiring. Check the coolant temperature sensor type and meter settings must be consistent. Check whether the temperature sensor is normal.
Shutdown Alarm in running	Find the fault according to the LED display information.
The meter does not alarm	The instrument does not alarm Check whether the rotating speed is normal; Check whether the oil pressure is normal; Check that the alarm value is set correctly and whether the corresponding alarm function is enabled.
RS485 cannot communicate normally	Check the connection. Check if the communication ID number setting is correct. Check if the A and B lines of RS485 are reversed. Check if the RS485 communication line driver is installed or not. Check if the communication port of the PC is damaged. Add a 120 Ω resistor between the AB of the meter RS485.

2.2 Compressed Air Service Valve

2.2.1 Service Valve

Open the valve by turning the handle clockwise, and close it by turning the handle counterclockwise.



2.3 Door

2.3.1 Open/Close the Door

⚠ WARNING

- Keep the door closed and locked while running the unit.
- When the door has to be opened, be careful not to touch portions that are rotating or very hot.
  Careless touch may cause serious injury.

- Pull the handle forward to open the door.
- Be sure to close the door tightly so that its latch is firmly caught.

2.4 Check before Starting Unit

⚠ CAUTION

Check before starting the unit

- Be sure to check the unit before operation.
  When any abnormality is found, be sure to repair it before restarting the unit.
- Be sure to make daily checks before operation. If the unit is operated without prior check and without noticing its abnormality, such operation could cause seizure of components or may even cause fire.

2.4.1 Check Items and Locations

1. Check fuel
2. Check V-belt tension
3. Draining of separator receiver tank
4. Check compressor oil level
5. Drain fuel tank
6. Check engine oil level

Check wiring of each part

Check piping of each part

2.4.2 Check Engine Oil Level

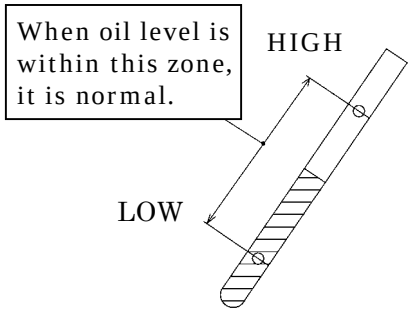
- Unit should be on level before checking oil level.
- When you check oil level after you have once started operation, wait 10 to 20 minutes after stopping engine, before checking the oil level.

(Procedure)

① Pull out the engine oil dipstick, and wipe it with a clean cloth.

② Then, re-insert the dipstick fully and pull it out again. If the dipstick shows the oil level between HIGH and LOW, it is normal.

③ When the oil level is below its LOW, add engine oil.



- While checking oil level, check also for contamination. If the oil is found dirty, contaminated or should it be changed according to the periodic inspection list, change the oil.
- Never fill oil more than HIGH level.

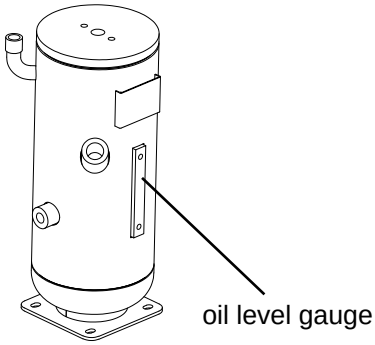
2.4.3 Check Compressor Oil Level

WARNING

Refilling of compressor oil

- When you refill the separator receiver tank with compressor oil, stop the engine, and make sure that the pressure gauge indicates psi (0 bar) and there is no residual pressure in it, and then gradually loosen the oil filler cap for refilling oil.
- Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.

- Place the machine on level ground when checking the oil level.
- Check the oil level of the compressor. Correct oil level is between upper and lower limit of the gauge, when the unit stops. If the gauge shows lower than the middle level, replenish oil.

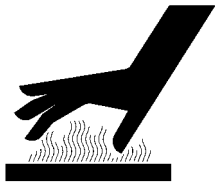


2.4.4 Draining of Separator Receiver Tank

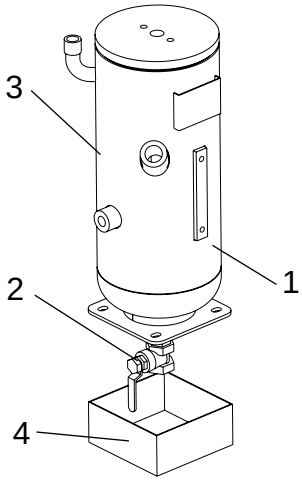
WARNING

Draining of Separator receiver tank

- After stopping the engine, confirm that the pressure gauge indicates 0 psi (0 bar) and there is no residual pressure in it, then open the drain valve gradually to drain the compressor oil.
- Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.



- Gradually opening the drain valve “2”fitted under the separator receiver tank“1”as shown in the fig, drain the condensate.
- Be careful not to fully open the valve. Otherwise, much oil may be lost.
- After draining the oil completely, close the drain valve“2” firmly.
- Drain the condensate in container“4”, dispose of the waste oil according to the designated regulations.



2.4.5 Check Fuel

CAUTION — ***Fire prevention***

- Do not, under any circumstance, smoke cigarettes or light matches during fueling.
- Fuel is extremely flammable and dangerous. It therefore, could catch fire should it flame or other sources of ignition be brought near fuel. Ensure that the engine is cool. Never fuel a hot machine.
- Refuel only after stopping the engine, and never leave an open fuel can near the machine. Do not spill. It could cause a fire. When it is spilt, wipe it up completely.
- Refilling fuel tank should be done in an outdoor well-ventilated place.

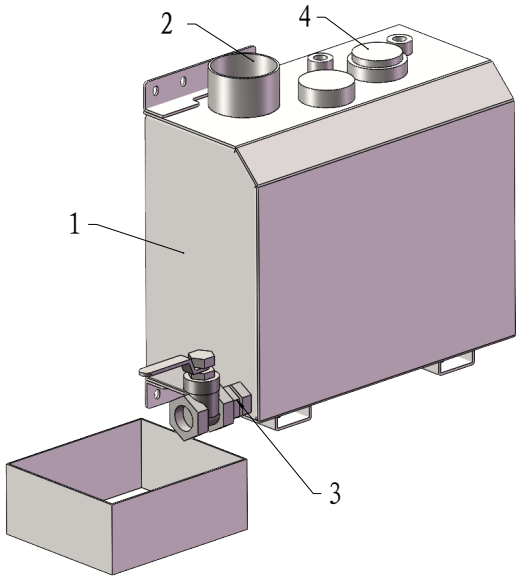
IMPORTANT — ***Choose appropriate fuel***

- Be sure to use diesel fuel oil for diesel engine use.
  (Using other oil will cause low power or damage to the engine.)

- Check fuel level gauge before operation. Replenish enough fuel to prevent fuel shortage during operation, if the level is low.
- When refueling, fill a fuel tank up to the base of fuel filler port“ 4” . Never overfill fuel because it may cause fuel leakage.
- Be sure to fasten the fuel tank cap firmly after replenishment. If fuel is spilt, wipe it up completely.

2.4.6 Drain Fuel Tank

- Opening the drain valve“ 2” fitted under the fuel tank“ 1” , drain the condensate from the tank.
- When completely drained, firmly close the drain valve “ 2” .
- Drain the condensate in container“ 3” , dispose of condensate according to the designated regulations.



2.4.7 Check V-Belt Tension

IMPORTANT

- Too tight belt tension could damage shaft and shorten bearing life. Too loose belt tension may result in damaging belt earlier and machine components due to overheat.

Prerequisites for belt tension measuring device
The machine is shut down.
The machine is fully vented, the pressure gauge reads 0 psig.
Machine cooled down.
All compressed air consumers are disconnected and the air outlet valve is open.
Rear panel removed.
The negative cable to the battery is disconnected.

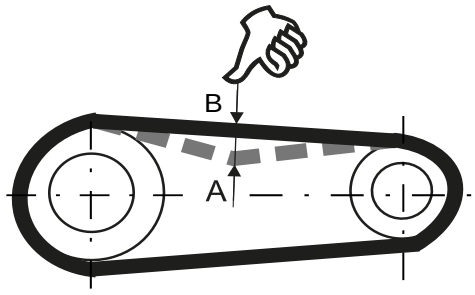
WARNING Beware of rotating pulleys and moving belts.
There is danger of serious injury from pinching.

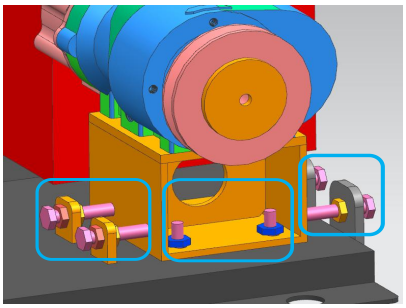
➤Never check the drive belts unless the engine is at standstill.

➤Never run the machine without a belt guard.

Visual check
1.Remove the belt guard, if fitted.
2.Check the belts thoroughly for cracks, fraying or stretching.
Change damaged belts immediately.
3.Reconnect the negative cable to the battery.

Checking belt tension
Belt tension can be checked with a measuring device or by hand.





Belt tension checking by hand
A Permissible movement;
B Approximate pressure exerted: 16.5 lb; Permissible movement: 0.4–0.5 in;

Press the belts in with the thumb at the mid-point between pulleys.

1.Check belt tension by hand .
2.After adjusting the tension force, lock the screws of the mounting feet of the main unit.
3.Install the protective cover for the pulley.

Checking belt tension with a measuring device

1.Check belt tension with the tension measuring device.
2.After adjusting the tension force, lock the screws of the mounting feet of the main unit.
3.Install the protective cover for the pulley.

2.4.8 Check Wiring of Each Part

Check each wiring for any loose connection, damage to insulating sheathed portion, disconnection, and short-circuit.

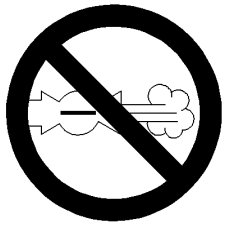
2.4.9 Check Piping of Each Part

Check each piping for any loose connection and also check each hose and pipe for any tear and leaks.

2.5 Unit Operation

CAUTION — ***Operation with compressed air supply port opened is prohibited***

- Do not operate the machine with service valves and relief valve open unless air hoses and/or pipes are connected.
  High-pressurized air blows out and its air pressure could cause injury to the people nearby.
- When the machine has to be unavoidably temporarily operated with its port open, be sure to mount a silencer to reduce noise and wear protective materials such as earplugs to prevent damage to hearing.



2.5.1 Procedure to Start the Unit

IMPORTANT — ***Be sure to warm-up***

- Be sure to let unit warm-up after starting for smooth operation of the engine and the compressor.
  Do not operate the engine at full load immediately after it starts up. This will shorten the equipment life.
- During the warm-up operation, examine the different parts of the equipment for any looseness, leakage of water, oil, fuel, and other irregularities.
- Also, make sure that warning lamps are off.

START

1.Open fully service valve ;
2.Turn the starter switch to the “preheating” position,if in the cold days,and the preheating must be completed in several seconds (≤ 20S),then,turn the starter switch to the start position to start up the engine;
3.Once the engine has started up,Close fully service valve and leave it running to warm-up for 3 minutes;
4.Open fully service valve,set the load/unload switch to the “load” position,the unit is now ready to operate;

Operating Procedures when Engine Fails to Start up on First Attempt

When the engine fails to start up even after performing the startup procedures , do not keep the starter running, but set the starter switch back to ”STOP” and wait about 30 seconds.Then, repeat the startup procedure once again.
If the repeated procedure does not allow the engine to run, the following causes are suspected.
Check the following:
No fuel
Clogging of fuel filter
Clogging of filter inside the fuel air bleeding electromagnetic pump
Discharge of battery (Low cranking speed)

2.5.2 Gauge Indication while Operating

IMPORTANT

- Minimum discharge air pressure is 73 psi (5.1 bar) during operation.
- Continuing equipment operation at a lower pressure than the above pressure may cause overheating, since it affects the separation of lubricating oil inside the oil separator and reduces the oil flow to the compressor air-end, resulting in temperature rise.

- Be sure to check at times to see if gauges or each component of the unit are properly working, or if there is any air-leak, oil-leak, water-leak or fuel-leak etc.
- During normal operation, each indication of instruments is shown in the table below. Refer to the table for daily checks.

		Discharge air pressure gauge
In Operation	unload	152psi (10.5bar)
	Full load	73-145psi(5.1-10bar)

1. Set the load switch to the “unload” position and operate the machine about 3 minutes,until it cools down;
2.Turn the engine control swich to the “Stop” position to stop the engine;
3.Remove the key from the compressor every time when you stop the engine;
4.Close fully service valve.

3. Transportation and Towing the Unit

3.1 Transportation

WARNING — ***Transportation***

- When loading and unloading unit, be sure to use the lifting bail provided on the center of the unit top.
- Never get under the unit which is lifted up, because it is very dangerous.
- When unit is transferred or moved from working site, be sure to place it on truck bed, and fasten it by ropes at the front eye and rear stand. Also be sure to put a set of chocks to fix its wheels firmly on the truck bed.
- Never lift unit which is still in operation, or it could cause critical damage to each component or lead to serious accident.
- When lifting unit up, make sure that all the fixing bolts on the bonnet are surely tightened because it is feared that the unit may fall.
- If towing unit : Make sure machine is towed level.
- Check tire pressure and tire condition before towing.
- Attach safety chains and use correct tow hitch.
- Check operation of lights and brakes before towing.
- Check wheel lug nuts for proper torque.

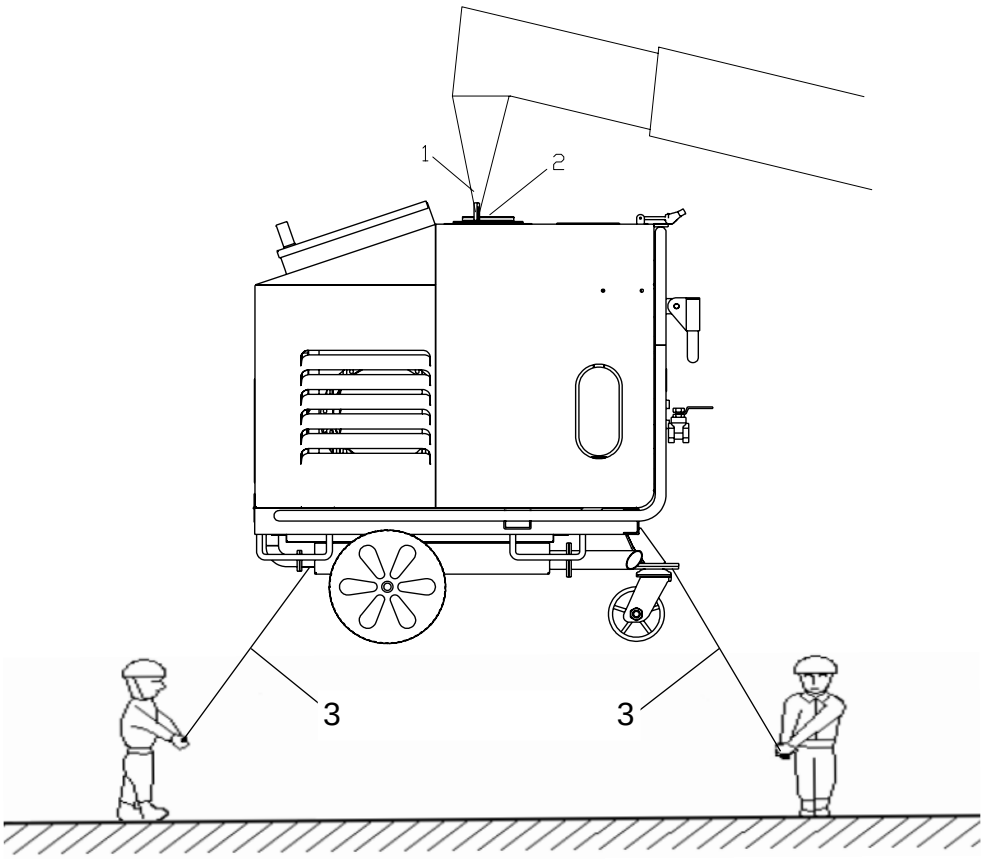
Lifting up

① Before lifting the unit up, make sure to check the lifting bail " 2" for any crack and loosened bolts.

② Connect the hook" 1" of the crane or shackle with lifting bail " 2" eye fitted at the top center of the unit, and make sure that there is no person standing around the unit. Then perform hoisting operation.

③ Use an auxiliary rope" 3" and communicate with the other personnel using signs and signals while lifting operation, so that no swinging motion or twisting happens to the lifted unit.

④ Select a truck or a crane with capacity sufficient for weight and size of the unit by referring to the values.



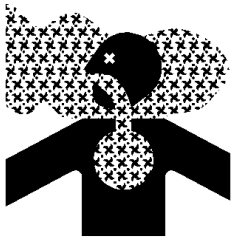
4. Installation

4.1 Location and Installation

WARNING

Ventilation

- Exhaust gas from the engine is poisonous, and could cause death when inhaled.
  Avoid using the machine in an insufficiently ventilated building or tunnel.
- Do not position the exhaust gas outlet in direction of a person or a house.



WARNING

- The machine has to be parked horizontally on a level place.
- In case the machine has to be parked on a slope, place it across grade so that the machine does not tend to roll downhill.
- Grade on a slope shall be within 15 degrees

- The machine should be operated in following conditions:
- Ambient temperature ····· 5°F to 122°F (-15°C to +50°C)
- Humidity ····· Less than 90%
- Altitude ····· Lower than 1,500 m above sea level

◊ Install the machine in a place with good ventilation, lower temperature and with surroundings as dry as possible.

◊ If more than two machines are placed parallel in operation, keep enough distance so that exhaust air from one machine does not affect the other one.

◊ Also, a machine has to be installed in the environment where fresh air is always available.

◊ Keep enough space around the unit for inspection and maintenance access.

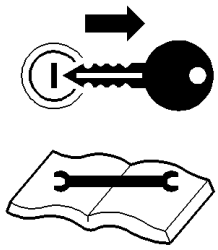
5. Periodic Inspection/Maintenance

5.1 Important Items at Periodic Inspection and Maintenance or after Maintenance

The manual shows proper interval for periodic inspection and maintenance under normally operating conditions. Inspection and maintenance should be performed more often under extremely harsh conditions.

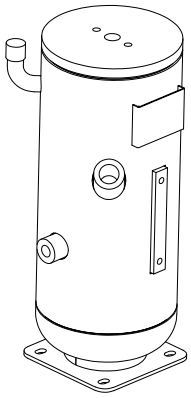
⚠ WARNING — ***Hang a "Now Checking and under Maintenance" tag***

- Remove the starter key from the starter switch before starting inspection, and hang up a "Now Checking and under Maintenance" tag where it can be easily seen. The checker must keep the key during checking and maintenance.
- Remove the negative (–) side cable from the battery.
  If the above procedure is neglected, and another person starts operating the machine during check or maintenance, it could cause serious injury.
- Use tools appropriate for the inspection and maintenance. Any makeshift or improper tools could cause unexpectedly injury by their slippage.



⚠ CAUTION — ***For protecting oil separator from fire accident***

- Be sure to perform oil change basically according to the specified interval. But if such oil is found much more contaminated before the interval, change the oil even before the specified period comes. In doing so, replace the oil completely and use our recommended oil.
- Be sure to perform following periodic inspection and maintenance:
  1. Check and change compressor oil
  2. Change oil separator
- Never mix the oil of different brands, or the mixed oil may deteriorate the oil quality.



5. Periodic Inspection/Maintenance

IMPORTANT ——— ***Precautions for check and maintenance*** ———

- Be sure to use recommended fuel, oil, grease, and antifreeze.
- Do not disassemble or adjust engine, compressor or part(s) for which inspection or maintenance is not referred to in this manual.
- Use genuine parts for replacement.
- Any breakdown, caused by using unapproved parts or by wrong handling, will be out of the scope of "WARRANTY".
- Keep the electrical components away from water or steam.
- Waste from machines contains harmful material. Do not dispose of such harmful fluids to the ground, rivers, lakes or ponds, and sea. It contaminates the environment.
- When draining waste fluid from machines, use leakproof containers to hold such fluids from machine.
- Be sure to follow the designated regulations when disposing of oil, fuel, coolant, filters, battery and other harmful things.

5.2 Daily Inspection and Operation Log

- Be sure to carry out daily inspection every morning before operation. See Chapter 2 "Operation" of the manual for the details of inspection.
- Pay attention to and carefully observe the following points during daily operation or inspection and maintenance work. If any trouble or abnormality is found, immediately investigate its cause and make repairs. If the cause is unknown or not traceable, or if the trouble involves a part or component not described in the manual, ask your nearest dealer for information.

(a) Controls and instruments function properly.
(b) Quantity and any leak of water, fuel, and oil or any contamination should be checked.
(c) Appearance, abnormal noise or excessive heat should be checked.
(d) Loose bolt or nut should be checked.
(e) Any damage, wear or shortage of machine components and parts should be checked.
(f) Performance of each part or component should be proper.

- Keep the operation log to record constant inspection of each component, so that trouble of the unit can be easily discovered and preventive measures can be taken.
  It is very useful to record information such as discharge pressure, oil level, as well as running hour, maintenance items and replenishment of lubricant on a daily maintenance log.

5. Periodic Inspection/Maintenance

5.3 Periodic Inspection List

(Unit:Hour)

	Maintenance	Daily	Every 250	Every 300	Every 500	Every 1,000	Every 2,000	Every 3,000
Compressor	Check compressor oil level.	○						
	Drain of separator receiver tank.	○						
	Check looseness in pipe connecting part, and wear and tear of pipe.	○						
	Check oil, fuel and air leak.	○						
	Check performance of gauge and indication lamps.	○						
	Change compressor oil.			※1○		○		
	Change compressor oil filter.			※1○		○		
	Clean and change air filter element.		○ (Clean)			○ (Change)		
	Clean outside of oil cooler.					○		
	Change oil separator.					●		
	Change nylon tubes.			※1○			●	
	Change O-ring and spring of intake valve							★●
	Change pressure regulator.							★●
	Check rubber hoses.							●
	Check O-ring and spring of combination valve							★●

The items or parts marked ※1○ show that they should be replaced When it first reaches the specified time limit.

Such items marked ○ shall be carried out by customers and they should be replaced primarily.

For the following items or clauses marked ●, contact us directly or our distributors because they require expert technical knowledge on them.

The above table shows the inspection and maintenance intervals under normal operation conditions. In case the unit is operated under harsh environmental conditions and operation conditions, the intervals should be shortened.

The items or parts marked ☆ should be replaced every two years even if they are not in disorder within their periodical maintenance interval because their materials will change or become degraded as time passes.

Also for the same reason, the parts marked ★ should be replaced every three years.Check the function of the unloader. In case the unloader malfunctions, change O-ring or bushing of unloader. This is because either of both parts may be worn out.

5. Periodic Inspection/Maintenance

◎Refer to engine operation manual for inspection and maintenance of an engine.

	Maintenance	Daily	Every 50	Every 250	Every 500	Every 1,000	Every 2,000	Every 3,000	Every 8,000
Engine	Drain fuel tank (Including sedimenter).	○							
	Check fuel level	○							
	Check engine oil level.	○							
	Check looseness in pipe connectors, terminals and tear in wiring.	○							
	Check V-belt tension.	○					○ (Change)		
	Change engine oil.		※1○		○				
	Change engine oil filter.		※1○		○				
	Clean and change air-filter element.			○ (Clean)		○ (Change)			
	Change fuel filter.				○				
	Change rubber hose.						★●		
	Clean inside of fuel tank.						●		

The items or parts marked ※1○ show that they should be replaced When it first reaches the specified time limit.

Such items marked ○ shall be carried out by customers and they should be replaced primarily.

The items or parts marked ☆ should be replaced every two years even if they are not in disorder within their periodical maintenance interval because their materials will change or become degraded as time passes.

Also for the same reason, the parts marked ★ should be replaced every three years.

For the following items or clauses marked ●, contact us directly or our distributors because they require expert technical knowledge on them.

5. Periodic Inspection/Maintenance

5.4 Periodic Replacement of Parts

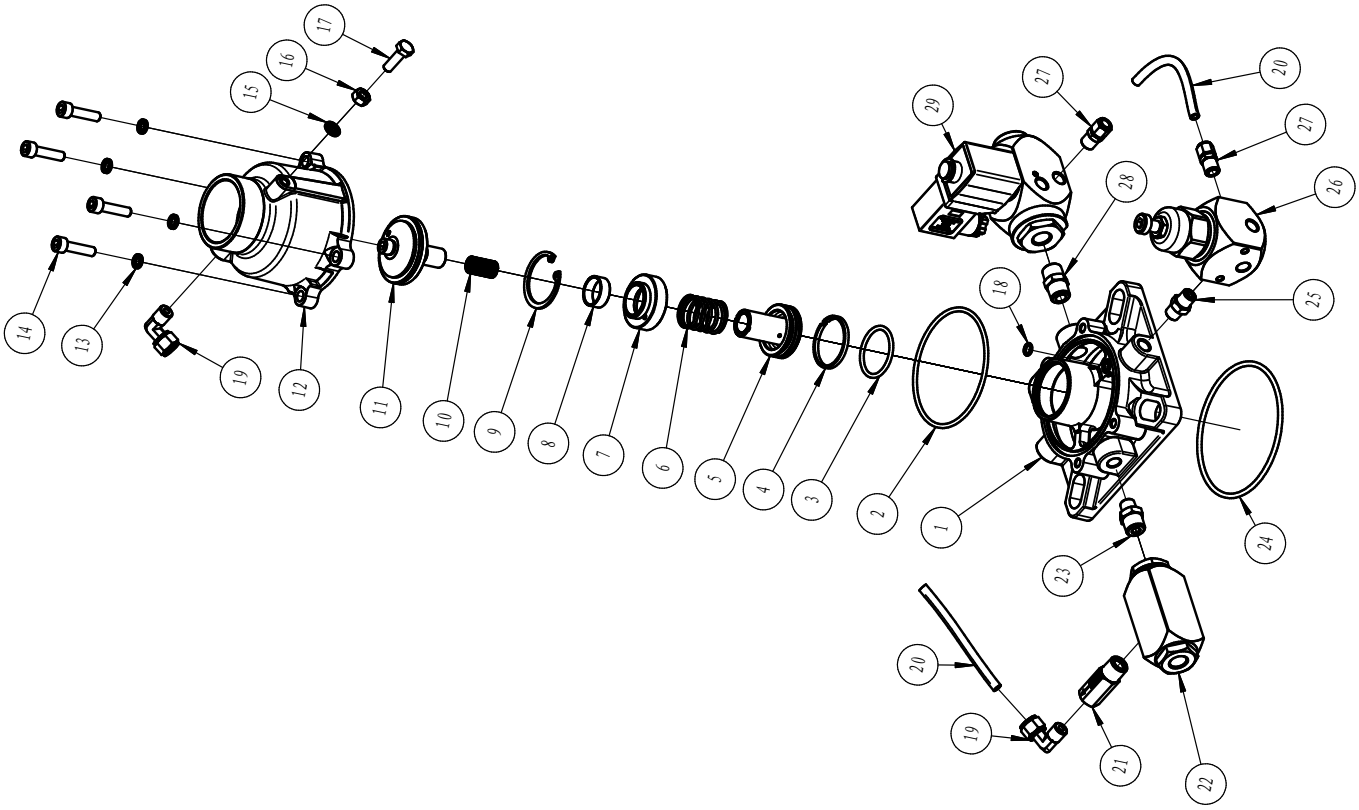
5.4.1 Filters

No.	Part Name	Part Number	Unit	Quantity
1	Intake Valve Repair Kit	JIV-40C-YD(WXB)	Set	1
2	Combination valve Repair Kit	CTV-15HD（WXB）	Set	1
3	Oil Separator	SS2196	Piece	1
4	Airend Oil Filter Element	S01496	Piece	1
5	Airend Air Filter Element	Air Filter Core FCG045S- ELM+ Safety Core FCG045S-SF	Set	1
6	Belt	SPZ-1010	Piece	3
7	Engine Air Filter Element	16546-3AW0A	Set	1
8	Diesel Filter	QH0205	Piece	1
9	Oil Filter	BYD F0	Piece	1
10	Cylinder Head Cover Gasket	192F	Piece	2

5. Periodic Inspection/Maintenance

5.4.2 Diaphragms & O-Rings

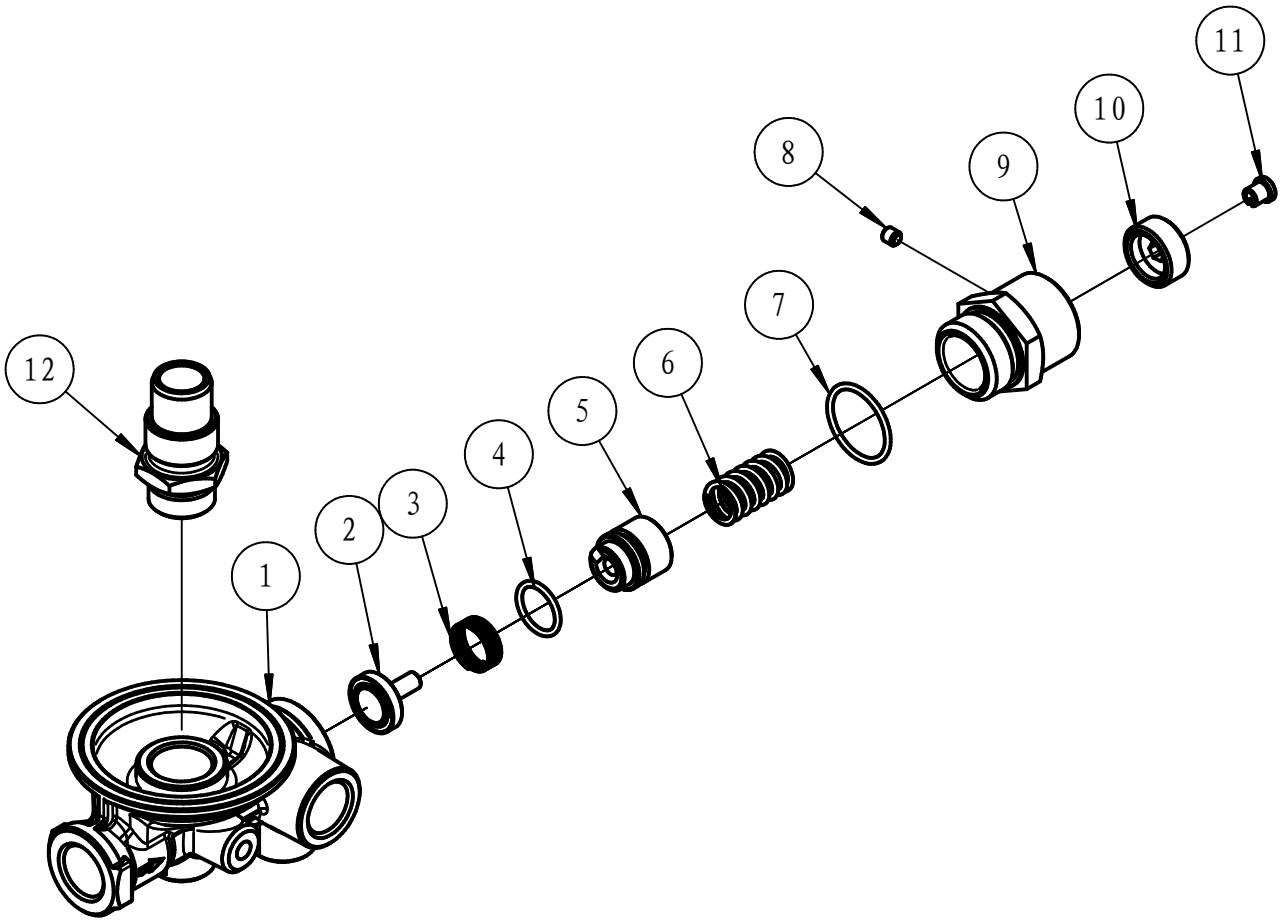
Intake valve



No.	Part No.	Name	Quantity	Description
29	1931704-2	JIV-40B-GJF Air Release Valve	1	Note: Power supply voltage selected according to order
28	090581-11	2X2 External Thread Connector	1	
27	080738-26	Quick Connect Straight Through Valve	2	R1/8-Φ6
26	8215880001	RTL-1YA Proportional Valve	1	
25	080435-17	External Thread Connector	1	R1/8XR1/8
24	1212421-2	O-ring	1	Φ86 Inner X Φ3
23	061209-17	External Thread Connector	1	R1/4 X R1/8
22	071028	FK-2 Air Release Valve	1	
21	1621263	HY-1G Return Oil Check Valve	1	
20	090264-4	Nylon Tube	2	Φ6XΦ4
19	090264-6	Quick-Connect Elbow	2	R1/8-Φ6
18	1212422-4	O-ring	1	Φ5.5 Inner X Φ1.5
17	1310624-3	Hexagon Head Bolt	1	GB/T 5781 M6 x 20
16	061209-16	Hexagon Nut	1	GB 52 M6
15	061209-22	M6 Composite Gasket	1	
14	070311-12	Hexagon Socket Head Cap Screw	4	GB/T 70.1 M6 x 25
13	080435-11	Spring Washer	4	GB/T 93 Φ6
12	8236620002	JIV-40B-EKS Valve Seat	1	
11	1831557-4	JIV-40B-K Check Valve Core	1	
10	1831557-5	JIV-40B-K Check Valve Spring	1	
9	061209-10	Hole Retaining Ring	1	GB 893 Φ36
8	061209-20	Oil-Free Bushing	1	Φ20XΦ18X7.5
7	061209-3	AIV-40B-K Spring Seat	1	
6	061209-7	AIV-40B-K Reset Spring	1	
5	061209-2	AIV-40B Piston	1	
4	061209-21	AIV-40B Piston Ring	1	
3	061209-9	O-ring	1	Φ29.82 Inner X Φ
2	1212421-5	O-ring	1	Φ75.87 Inner X Φ
1	1921682-1	JIV-40C-EJF Valve Body	1	

5. Periodic Inspection/Maintenance

Combination valve



No.	Part No.	Name	Quantity	Description
12	1305499-1A	YF-6Y (N) Oil Separator Connector A	1	Selected according to work order
11	414-06-10	MPV-25A Dust Plug	1	
10	1205336-7	MPV-15A-ZL Spring Seat	1	
9	1205336-5	MPV-15A-ZL Cylinder Body	1	
8	060302-9	Hexagon Socket Head Cap Screw	1	GB/T 77 M5X5
7	1205336-4	O-ring	1	Φ25 Inner X Φ2
6	1205336-6	MPV-15A-ZL Pressure Retaining	1	
5	1205336-3	MPV-15A-ZL Pressure Retaining Valve	1	
4	070413-17-4	O-ring	1	Φ16 Inner X Φ2
3	8215920001	MPV-20JFW Check Valve Spring	1	
2	1205336-2	MPV-15A-ZL Check Valve Core	1	
1	8226620001	CTV-15HD Valve Body	1	

5. Periodic Inspection/Maintenance

5.5 Maintenance Items

5.5.1 Change Engine Oil

- At 50 hours for the first change and at every 250 hours thereafter

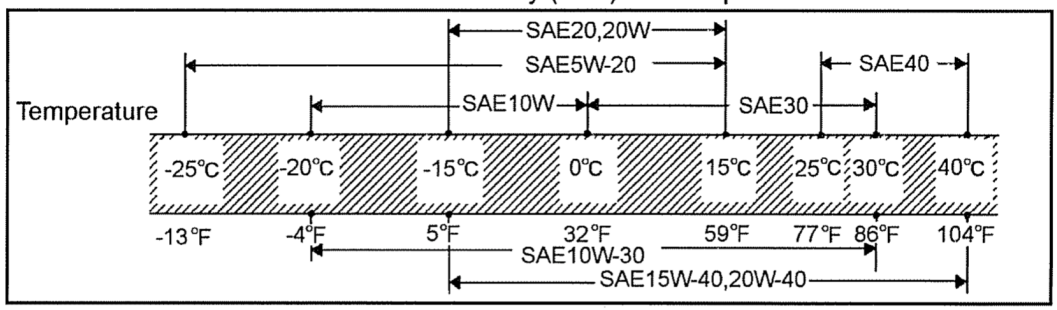
⚠ CAUTION — ***Caution in filling or discharging engine oil***

- After stopping the engine, wait for 10 to 20 minutes until the engine oil cools off. Then check the level of the engine oil, or refill or drain the oil.
- Engine oil is very hot and highly pressurized during or just after the operation. Hot oil could blow out of the tank and can cause scalding.

IMPORTANT — ***How to choose engine oil***

- Be sure to use oil equivalent or superior to CD class engine oil. (Using engine oil with poor quality may shorten the life of the engine.)
- Viscosity of engine oil greatly affects startability, performance, oil consumption of the engine, as well as wear of the moving parts.
- Choose appropriate oil based upon the table below according to the outside air temperature.

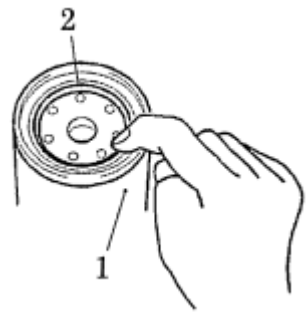
Relation between viscosity (SAE) and temperature



- When two or more different brands of oil are mixed, its performance can be deteriorated. Do not mix oils.
- Follow the designated regulations to dispose of engine oil.

5. Periodic Inspection/Maintenance

5.5.2 Change Engine Oil Filter



● At 50 hours for the first change az d at every 500 hours thereafter (Procedure)

① When new oil filter "1" is installed, spread oil over the packing "o", and then screw it in the housing. When the packing touches the sealing surface, further tighten the filter by turning it 3/4 revolutions by using a filter wrench.

② After the oil filter"1"is assembled, check if there are any oi.leaks during operation.

5.5.3 Check Battery

●Every 250 hours

If there seems to be a problem in starting an engine due to a dead battery, carry out the checks by following the procedures below:

1. Ordinary type battery:
Measure specific gravity of battery electrolyte, and if it shows below 1.24, recharge the battery immediately. Refer to 6.2. for method of specific gravity measurement and recharging the battery.

2. Enclosed type battery:
Check the indicator on top surface of the battery.If the indicator shows that charge is needed, recharge the battery immediately.

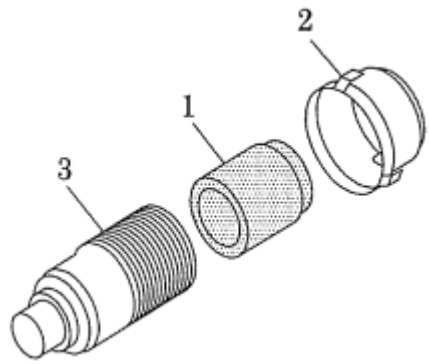
5.5.4 Check and Clean Air Filter Element

●Every 250 hours

IMPORTANT Cleaning of Air Filter Element should be perfectly performed

●Clogged or cracked or pitted element could allow entrance of dust into engine and compressor to cause earlier wear of moving parts. Periodical inspection and cleaning of element should be performed to maintain life of compressor and engine long.

●Remove element "1" and clean it.



●In case you attach the cup "2" after element cleaning, please push into a case "3" firmly by hand, and fasten after checking having applied the hook of the handle for cup fixation to the case "3“

●When it is found difficult to restore the element by cleaning it, replace it.

5. Periodic Inspection/Maintenance

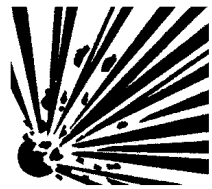
5.5.5 Change Compressor Oil

- At 300 hours for the first change and every 500 hours thereafter

WARNING

Refilling of compressor oil

- When you refill the separator receiver tank with compressor oil, stop the engine, and make sure that the pressure gauge indicates 0 psi (0 bar) and there is no residual pressure in it, and then gradually loosen the oil filler cap for refilling oil.
- Note residual pressure in the receiver tank could force both extremely hot compressed air and oil to jet out and you may be scalded or seriously injured.



IMPORTANT

Do not mix compressor oil

- Be sure to use recommended oil listed below.
- Viscosity of the oil varies depending on the temperature and other environmental conditions.
- Select one from the recommended oil listed below.

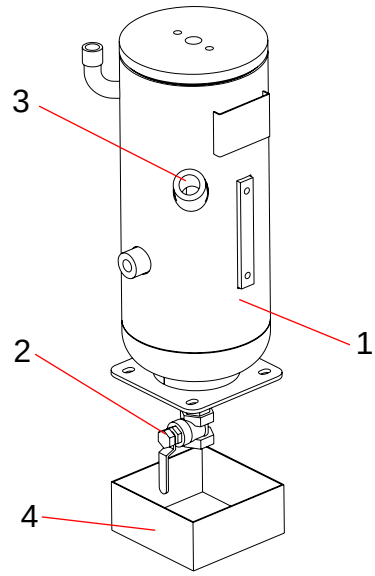
Maker and Brand of Recommended Oil

Maker	Brand
TOTAL	DACNIS SH100
MOBIL	RARUS SHC 1024
SHELL	CORENA AS46

- Even continuous oil replenishment cannot improve its deteriorated condition. Be sure to change the oil completely at every scheduled interval.
- Do not mix it with other brand oil, or it will cause poor performance and shorten the life of the compressor oil. (But fresh compressor oil could accept a mixture of small amount of different brands.)
- Running the unit with old and deteriorated compressor oil will cause damage to bearings, or serious accident like ignition in a separator receiver tank. Be sure to change the oil completely at every scheduled interval.
- Follow the designated regulations to dispose of compressor oil.

5. Periodic Inspection/Maintenance

(Procedures)
① Remove the oil filler cap “3” of separator receiver tank “1”.
② Open drain valve "2" to discharge waste oil from the tank.
③ In case of replacement, completely discharge all the oil left in the compressor body, separator receiver tank "1”, pipes and oil cooler. If wasted oil is left in the unit, this residual oil will greatly shorten the life of the newly replenished oil.
④ Be sure to close drain valve "2" after the wasted oil is completely discharged.
⑤ Fill the designated quantity of new oil into the oil filler port.
⑥ After oiling, tighten the cap "3" in its place while paying attention not to let dust get in the tank.
⑦ Start the engine for a short while, then replenish the oil to fill shortage. Repeat this procedure for 2 to 3 times to check if the oil level has reached its appropriate point. Be careful not to overfill the oil.



5.5.6 Change Compressor Oil Filter

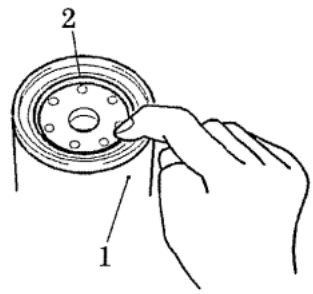
- At 300 hours for the first change and every 1,000hoursthereafter

IMPORTANT —— **Use our genuine oil filter** ——

- Poor quality oil filters do not trap dust sufficiently and will cause damage to the bearings in a short period.

(Procedure)
① Use a filter wrench to remove the cartridge "1”.
② Spread thin film of oil on a packing "2" of a new cartridge "1" and screw it in.
③ After a packing touches the sealing face, tighten it 3/4 or one time turn, using filter wrench.
④ After installing oil filter, be sure to check for oil leak during the operation.

- For replacez ent parts, refer to 5.4.1.



5. Periodic Inspection/Maintenance

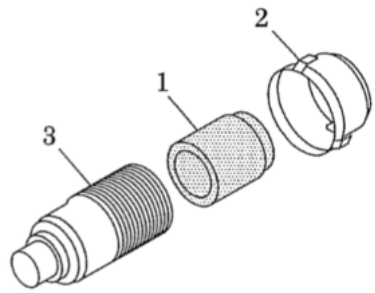
5.5.7 Change Air Filter Element

- ElementEvery 500 hours

IMPORTANT ———— **Use our genuine part** ————

- Air filter is an important part which is crucial to machine's performance and life. Be sure to use genuine parts.

- Even before 500 hours of use, if it is used under harsh conditions, remove the element "1", check and clean it. If it is found difficult to restore it, change it a little earlier.
- For replacement parts, refer to 5.4.1.
- In case you attach the cup "2" after element change, please push into a case "3" firmly by hand, and fasten after checking having applied the hook of the handle for cup fixation to the case "3".



5.5.8 Change Fuel Filter

Fuel System Filter -Replace

WARNING

Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire. To help prevent possible injury, turn the start switch off when changing fuel filters or water separator elements. Clean up fuel spills immediately.

NOTICE

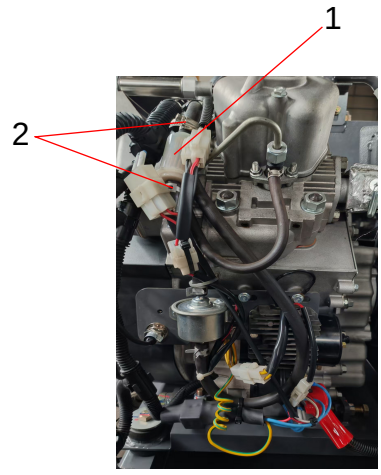
Do not allow dirt to enter the fuel system. Thoroughly clean the area around a fuel system component that will be disconnected. Fit a suitable cover over disconnected fuel system component.

NOTICE

Care must be taken to ensure that fluids are containedduring performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.
Dispose of all fluids according to local regulations and mandates.

Fuel Filter with Canister

1. Close the fuel supply valve.

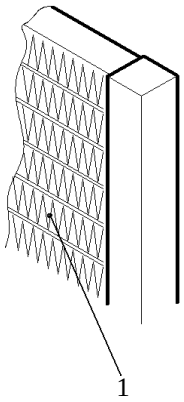


Typical example

2. Clean the outside of the fuel filter assembly (1).
3. Remove the filter element fuel inlet and fuel outlet clamp (2).
4. Remove the filter element （1）. Make sure that all fuel is drained into a suitable container.

5. Periodic Inspection/Maintenance

5.5.9 Clean outside of Oil Cooler



- Every 1,000 hours
- When the finned tubes "1" of the oil cooler are clogged with dust or other foreign matter, the heat exchange efficiency drops, which increases the exhaust gas temperature. These tubes and fins should be washed according to the state of the clogged finned tubes "1" even before the 1000 hours maintenance schedule.
- Do not use a high pressure washer to protect fin tubes from being damaged.

5.5.10 Clean inside of Fuel Tank

- Every 2,000 hoursAsk your nearest dealer for cleaning the inside of fuel tank.

5.5.11 Change Oil Separator

- Every 2,000 hours.
- If even before scheduled interval of 2,000hours operation, consumption of compressor oil is unusually high, some oil is found in discharged air, replace the oil separator.
- Ask your nearest dealer for replacing oil separator.

5.5.12 Change Nylon Tubes

- Every 2,000 hours.
- Replace nylon tubes used for the oil and air pipings.
- Ask your nearest dealer for its replacement.

5.5.13 Change Rubber hose

- 2.000 hours or every 3 years.
- In case various rubber hoses for fuel system and engine lubrication system are hardened or deteriorated, replace them even before the specified replacement time.
- Replacement of the hoses requires expert technical knowledge. So contact directly us or distributor.

5. Periodic Inspection/Maintenance

5.5.14Change Pressure Regulator

- Every 3,000 hours
- Remove pressure regulator and rebuild or replace with a new unit.

5.5.15Check Hoses

- Every 3,000 hours or every 3 years
- Check hoses used for oil piping for any crack or tear, and replace when an abnormality is found.
- Ask your nearest dealer for replacing hoses.

5.5.16Change Oil Cooler Hoses

- Every 3,000 hours or every 3 years
- When any crack or wear is found on the hoses, change it even before the scheduled time.
- Ask your nearest dealer for replacement oil cooler hoses.

5.5.17Check O-ring

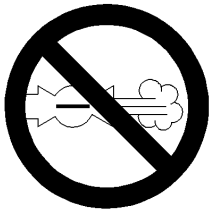
- Every 3,000 hours or every 3 years
- Disassemble and clean the component, and check O-ring Then, replace O-ring
- For replacement parts, refer to 5.4.2.

6. Maintenance/Adjustment

6.1 Adjustment of Regulator

CAUTION ***Do not run the compressor with compressed air supply port open***

- When adjusting the regulator, be sure to mount a silencer at the discharge opening to eliminate sound. Wear protective materials such as earplugs to prevent hardness of hearing.

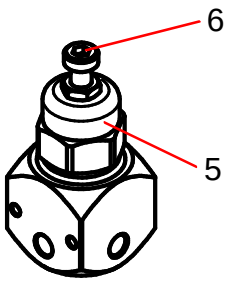


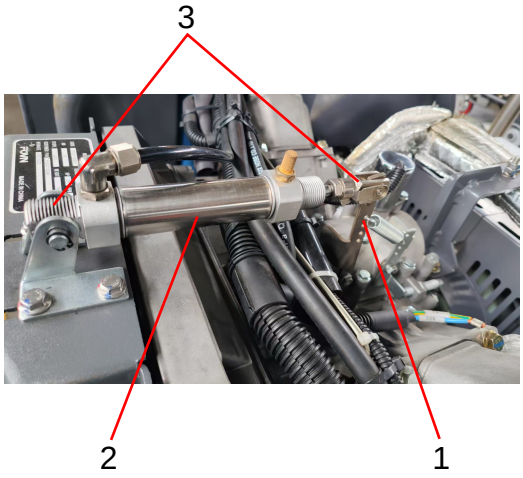
- Regulator is pre-adjusted at delivery from the plant. Never turn the bolt and rod. Otherwise it leads to maladjustment.
- In accordance with the following adjustment procedures,Make sure the engine speed is set at rated speed . If the pressure in separator receiver tank with engine speed set lower than rated speed drops lower than 44 psi (3 bar) discharge air temperature could rise so much to cause a serious trouble.
- Be sure to follow the procedure below when the component is required to be re-adjusted (such as when the unit has been disassembled).
- Ask your nearest dealer if you have any questions.

(Procedure)

① Stop the compressor and adjust the length of the rod“3”which is connected to the speed regulator “2” until its engine governor lever“1”is pulled fully to its high-speed side. (By shortening length of “L”, the regulator increases high-speed.) If the engine governor lever“1”does not reach the end of stopper“1”at its high-speed side, sufficient speed of the engine, at its full-load condition, cannnot be obtained. There is no need for unload revolution readjusttment.

② Adjust the pressure regulator “ 5 ” by turning its pressure adjustment screw“6”, so that the speed regulator“2”starts its actuation and decreases the engine speed when the pressure exceeds . (Tighten the adjusting bolt clockwise to increase the pressure and counterclockwise to decrease the pressure）



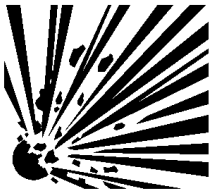


6. Maintenance/Adjustment

6.2 Maintenance of Battery

WARNING — ***Handling battery***

- Keep flames away from battery.
- Battery generates hydrogen gas and may explode.
- Therefore, recharging should be done at a well-ventilated place.
- Do not allow sparks or flame near the battery.
- Do not check the battery by short-circuiting the positive and negative terminals.



- Do not charge a frozen battery. Otherwise it may explode. If the battery is frozen, warm it up until the battery temperature becomes 61°F to 86°F (16°C to 30°C).
- When you deal with a battery, please be sure to wear protection implements, such as protection glasses and a glove.
- When such battery electrolyte contacts your clothes or skin, wash it away with large amount of water immediately.
- If the battery electrolyte gets into your eyes, wash it away immediately with plenty of water and seek medical attention.

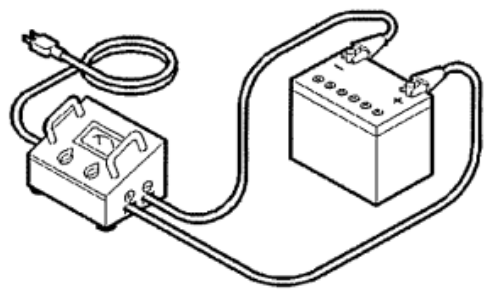
- Dispose of battery, observing local regulations.

CAUTION — ***Do not connect the cables backwards***

- If a booster cable has to be used or when cables are connected at battery replacement, be careful not to connect (+) and (–) terminals backwards. A wrong-connection will cause spark and damage components. Explosion may result.

6. Maintenance/Adjustment

6.2.1 Charge Battery



- Disconnect the cable between battery and the unit, and charge the battery with a 12V battery charger. Do not charge two batteries at the same time.
- Be sure not to connect (+) and (-) terminals backwards.
- Be sure to read the operation manual of the battery charger to know if it is applicable, before using it.

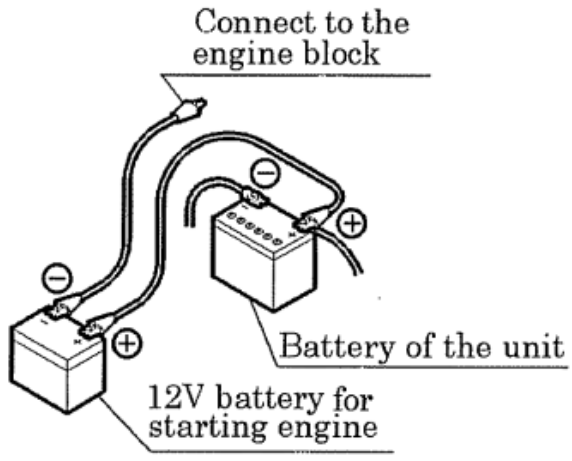
6.2.2 How to Use Booster Cable

⚠ CAUTION — **Do not connect the cable reversely**

- If a booster cable has to be used or when cables are connected at battery replacement, be careful not to connect (+) and (-) terminals backwards. Such a wrong-connection will cause spark and damage each component.

(Procedure for using a booster cable)

① Stop the engine.
② Connect one end of the (+) cable to the (+) terminal of the machine battery.
③ Connect the other end of the (+) cable to the (+) terminal of the 12V battery used to start the engine.
④ Connect one end of the (-) cable to the (-) terminal of the 12V battery.
⑤ Connect the other end of the (-) cable to the engine block of the machine.
⑥ Start up the engine.
⑦ Disconnect the booster cable by following the procedure back in the reverse order.



6. Maintenance/Adjustment

Symptom	Cause	Countermeasures
Engine oil pressure alarm	(1) Engine oil shortage. (2) Engine oil filter clogging. (3) Malfunction of engine oil pump (4) Faulty oil pressure switch. (5) Loosened or disconnected wiring or connector.	Replenish oil Change Change Change Check/Fasten
Discharge air temperature alarm	(1) Oil cooler clogging. (2) Oil filter clogging. (3) Faulty discharged air temperature switch. (4) Looseness, disconnection of wiring or connectors. (5) Slippage of fan belt. (6) Shortage of compressor oil. (7) Malfunction of by-pass valve.	Clean Change Check/Change Check/Fasten Adjust tension Replenish oil

- Contact your nearest dealer if you find it difficult to repair by yourselves.
- Refer to the engine operation manual for trouble concerning the engine.

6. Maintenance/Adjustment

6.3 Troubleshooting

- Should any trouble occur during operation, do not leave it. Investigate the cause and take appropriate measures.
- Read the manual carefully and fully understand what to do in case of trouble.
- The better you understand the construction and function of the unit, the faster you can find a problem and solution.
- This chapter describes the state, cause and countermeasures of important troubles in detail:

Symptom	Cause	Countermeasures
Low starter revolution speed.	(1) Battery malfunction.	Check battery → Charge, change
Starter rotates but engine does not start.	(1) Fuel filter clogging. (2) Malfunction of fuel cut solenoid or motor stopper. (3) No fuel.	Disassemble, clean, and change Check fuse Change solenoid or motor stopper Check connector Replenish fuel
Discharge air pressure does not reach (10 bar).	(1) Pressure regulator insufficient adjustment. (2) Starting unloader valve is left at its start position.	Re-adjust (Fasten) Place it at “RUN” position
Engine does not reach its maximum speed.	(1) Improper length in speed regulator rod. (2) Unloader orifice clogging. (3) Faulty speed regulator. (4) Engine trouble. (5) Fuel filter clogging.	Re-adjust Disassemble/Clean Disassemble/Check Call your nearest dealer Disassemble/Change
Revolution drops before discharge air pressure reaches (10 bar).	(1) Pressure regulator insufficient adjustment. (2) Trouble of pressure regulator. (3) Unloader orifice clogging.	Re-adjust (Fasten) Change Disassemble/Check
Engine does not reach minimum revolution at unload.	(1) Improper length in speed regulator rod. (2) Faulty speed regulator.	Re-adjust Disassemble/Check
Safety valve relieves at unload.	(1) Pressure regulator insufficient adjustment. (2) Speed regulator diaphragm damaged. (3) Intake valve damaged and seat malfunction. (4) Faulty safety valve. (5) Improper length of speed regulator rod.	Re-adjust (loosen) Change Change Change Re-adjust (elongate)
Oil mixes in Air. (Poor oil separation)	(1) Scavenging orifice strainer clogging. (2) Excessive oil in tank. (3) Low discharge pressure. (4) Oil separator deteriorated.	Disassemble/Clean Drain to its proper level Disassemble unloader/Check Disassemble/Change
Insufficient free air delivery.	(1) Air filter element clogging. (2) Unloader valve cannot fully open. (3) Engine does not reach rated speed.	Clean element or change Call your nearest dealer .

7. Storage of the Unit

7.1 Preparation for Long-term Storage

When the unit is to be kept unused in storage for a long time, be sure to follow the preparations below and put the unit in a dry and less dusty place.

- Put the unit in a temporary cabin if it is stored outside. Avoid leaving the unit outside with a sheet cover directly on the paint for a long time, or this will cause rust to the unit.
- Perform the following treatments at least once every three months.

(Procedure)

① Drain existing lubricant from the engine oil pan. Pour new lubricant in the engine to clean its inside. After running it for a while, drain it again.

② Spread lubricant on moving parts like speed regulator and rod end, beforehand.

③ Completely charge the battery and disconnect grounding wires. Remove the battery from the unit, if possible, and store it in a dry place. (Charge the battery at least once every month.)

④ Drain fuel from the unit.

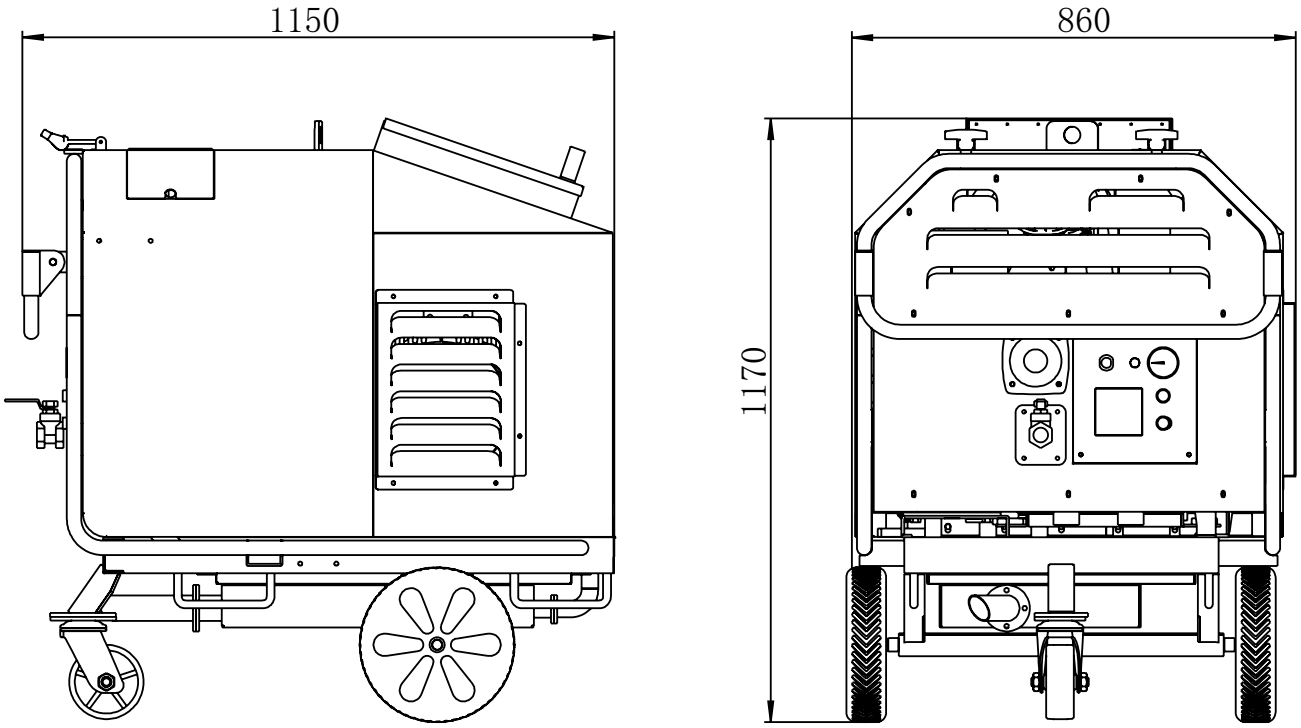
⑤ Seal the engine, air-intake port and other openings like the muffler with a vinyl sheet, packing tape, etc., to prevent moisture and dust from getting in the unit.

⑥ Be sure to repair any trouble and maintain the unit so that it will be ready for the next operation.

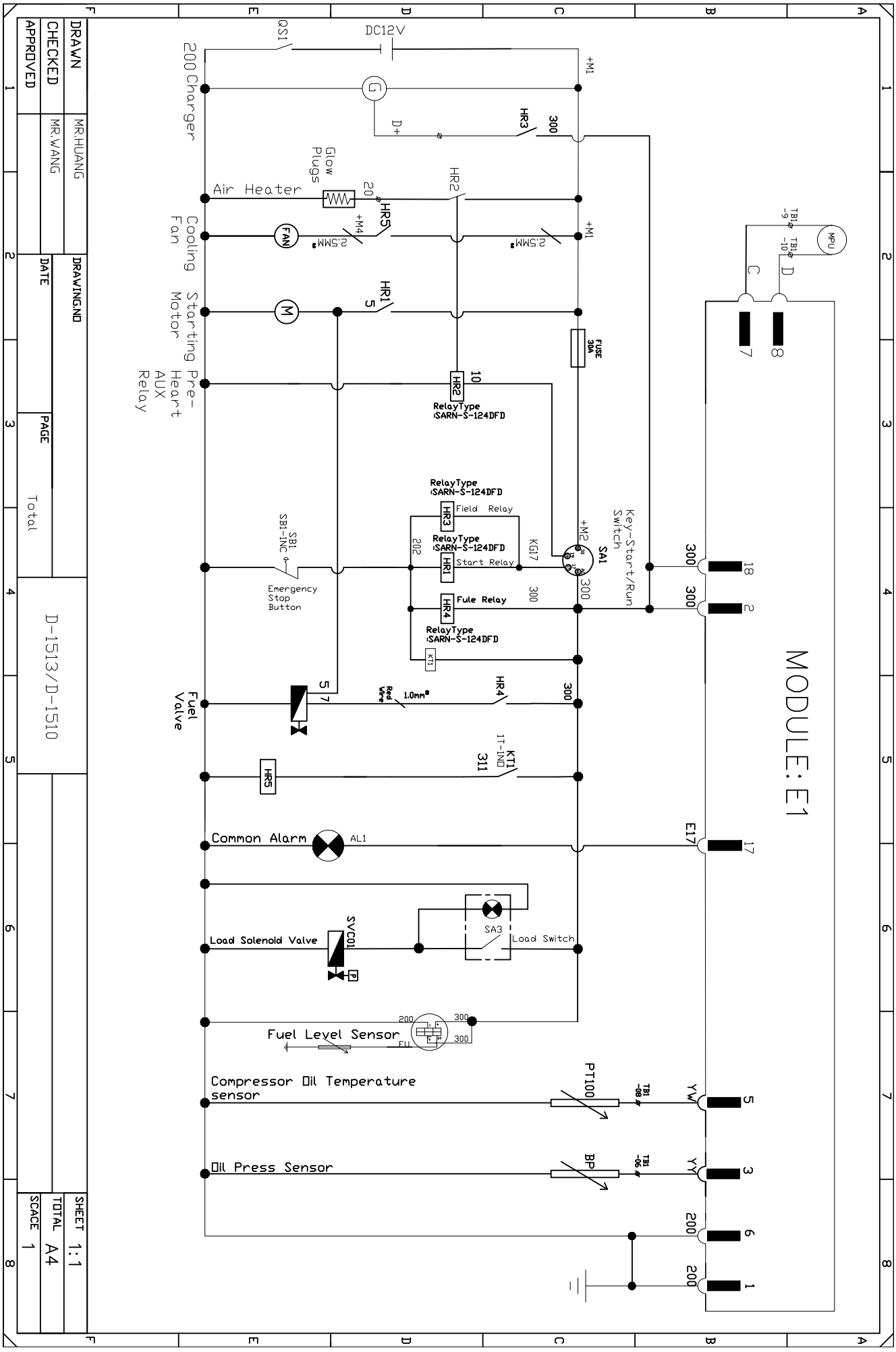
8. Specifications

Model			D-1510
Compressor	Free Air Deliver	m3/min	1.98
		cu.ft/min	70
	Discharged Pressure	bar	10
		psig	145
	Lubricating Oil Capacity	L	10
Diesel Engine	FOVN		FD2V95
	Cylinder Number		2
	Rotation Speed(rpm)	Operating	3600
		Idle	2600
	Rated Output	KW	19
	Displacement	L	1.247
	Lubricating Oil Capacity	L	4
	Battery	L2-400,62AH,580CCA	

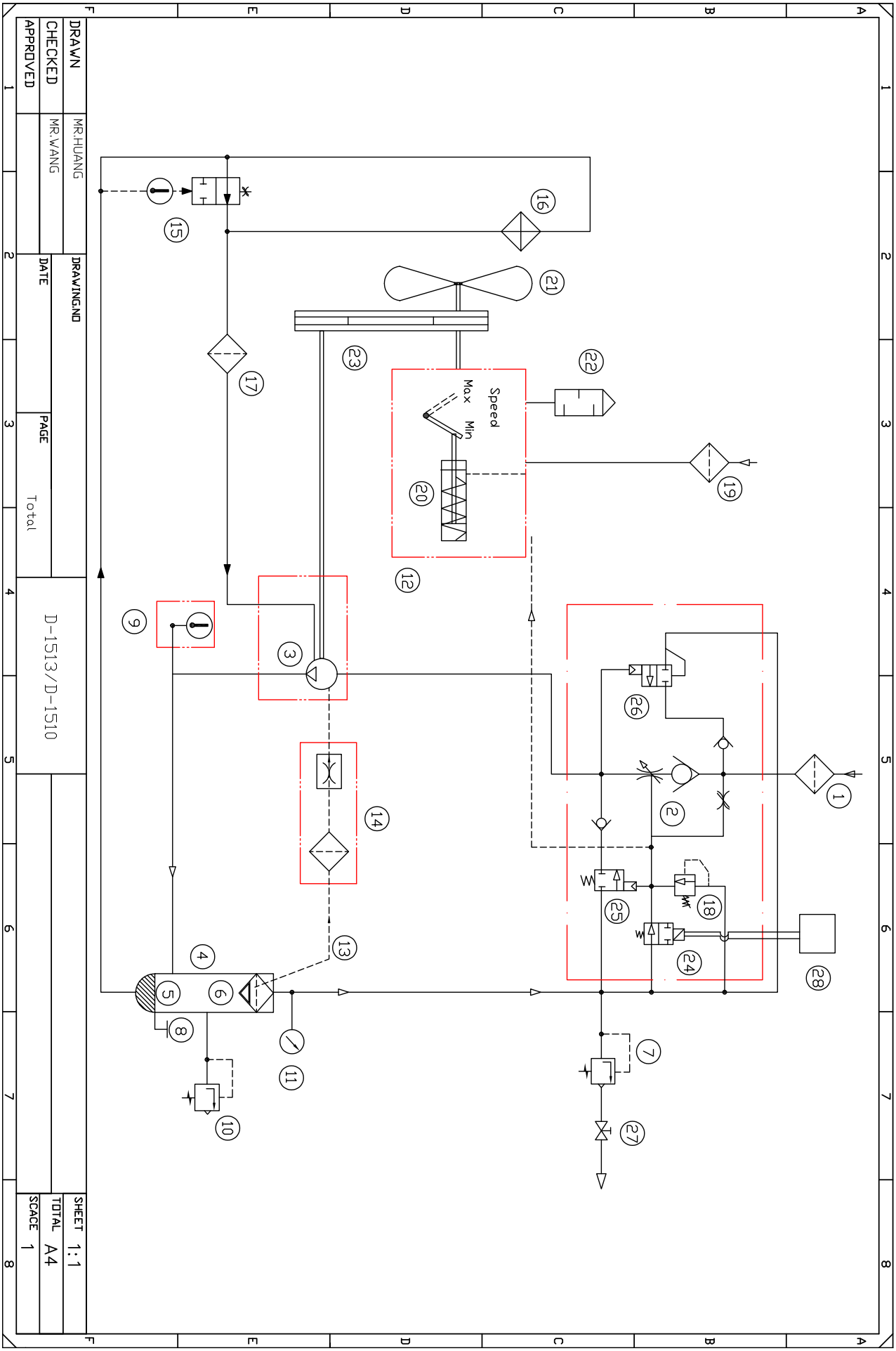
D-1510



9. Wiring Diagram



Control System Schematic Diagram



10. Piping Diagram

Control System Parts List

1	Copmressor air filter	15	Combination valve
2	Inlet valve	16	Oil cooler
3	Airend	17	Oil filter
4	Oil seperator tank	18	Pressure regulat valve
5	Oil reserve	19	Engine air filter
6	Oil seperator cartridga	20	Engine speed adjusting piston
7	Minimum pressure valve	21	Fan
8	Oil filler with screw plug	22	Exhaust silencer
9	Temperature switch	23	V belt
10	Pressure relief valve	24	Unloading valve
11	Pressure gauge	25	Supplementary air valve
12	Engine	26	Auto-relief valve
13	Oil return line	27	Service valve
14	Visible oil stop valve	28	Controller