

*Hey-Wel*

3-lobe Roots Blower

《 OPERATION MANUAL 》

**W**e would like to thank you at the outset for purchasing the Heywel Roots blower. We have though already done strict inspections on every detail of our blowers before shipment, there might be possible accidents occurred due to incorrect operation. Therefore, we strongly recommend the users to fully read this operation manual before proceeding with operations.

**Hey-Wel Mechanical Co., Ltd.**

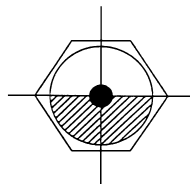
## Installation:

1. Foundation masonry is not necessary to be over concerned for the blowers. 3-lobe design provides slight vibration within 0.01~0.02 mm. It only needs a flat surface.
2. Free space for men should be kept around the blower surroundings for the convenience of future maintenance.
3. Ensure that the suction pipe is properly located, so that it can intake enough fresh air.
4. If the blower room is narrow, a ventilator is necessary. Because when the room temperature is above 50°C, blower motor life will be hugely reduced.

## Operation:

Please carefully check on the following items before operating the blower.

1. Piping:
  - a. Clean inside of pipes, and remove any fragments and sundries that are resident inside the pipes.
  - b. Make sure that all the joints are tightly fixed.
  - c. Valves should be fully opened.
2. Electrical Wiring:
  - a. Wire connections must be securely fastened, and the rating power should be correct.
3. Direction of Rotation:
  - a. The rotation direction must be right in the direction of the arrow, wrong direction will cause intake of water. If water had been sucked into blower casing, correct the rotation direction to the arrow direction, and operate the blower for about 30~60 minutes, water will be thoroughly blown out.
4. Lubrication Oil:
  - a. Confirm that the oil level line on the gear cover is in the middle of the oil level gauge. Fully change the oil every month.



- b. The bearing grease must be heat-resist grease which can resist high temperature up to 200°C. Supply assigned grease once every month.

※ Pay attention to any abnormal events (in sound, pressure, current, temperature...etc) that occur during operation. When something happened, immediately stop the blower and check how it is caused. Carelessness of any above abnormalities might cause serious damage to the blower.

## Inspection and Troubleshooting:

Elements that may influence on the service time of the blowers are many, though. Regular maintenance and inspection on the blowers will ensure performance and lengthen service time of the blowers. Following are criteria table on inspection and troubleshooting table:

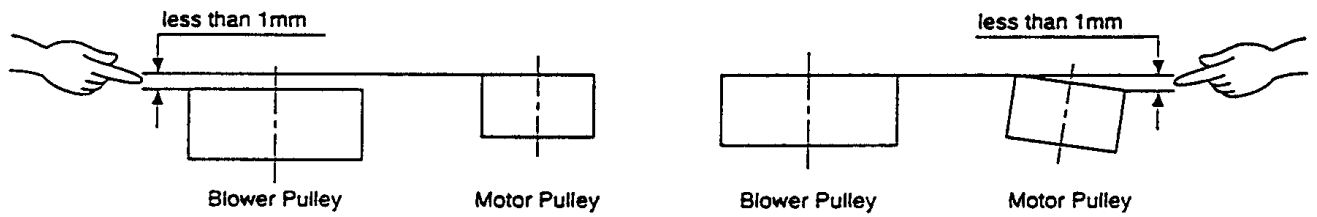
### 1. Inspection:

Inspection Cycle	Before Test Running	Daily	Every 3months	Remarks
Clean sundries from pipes	○			No residents should be inside the pipelines.
Make sure joints are firmly fixed	○		○	Where the joints that blower and pipe are connected.
Open all valves	○	○		Fully opened
Make sure Check Valve is in good condition	○			Make sure that the valve body can be smoothly moved.
Check the wiring connections	○		○	Wires must be tightly connected.
Check Gear Oil Level	○	○		On the middle of level gauge.
Check Safety Valve operation	○		○	Confirm with discharge side valve operation.
Check Power Voltage and Current	○	○		Voltage: within $\pm 10\%$ of rated voltage. Current: below rated current.
Sound of motor and blower	○	○		There should be no strange noises.
Check V-belt tension	○		○	Re-tension if sagging.
Supply Bearing Grease			○	With specified Grease.
Replace Gear Oil			○	Replace all.
Check V-belt	○		○	Will extend initially, re-tensioning will be necessary. Replace all every year.
Clean insides of Suction Silencer	○			Clean it every year.

Recommended Bearing Grease	ESSO Beacon Q2 · MOBIL Mobiltemp 78 · CALTEX Molytex ZP2 ...or equivalent.
Recommended Gear Oil	ESSO Spartan EP 220 · SHELL Omala 220 · MOBIL Mobil Gear 630 ... or equivalent.

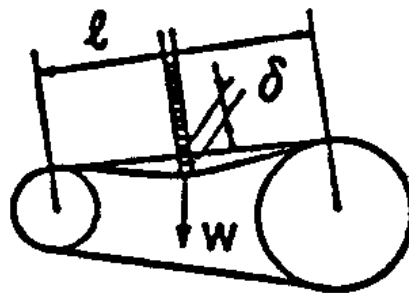
## 2. Belt Tension Adjustment:

### I. Pulley Alignment:



1. Loosen the motor side pulley fixing bolt, and using a metal scale or another similar tool, attach it to both walls of motor pulley and the blower pulley, adjust to make both pulleys more parallel and make them to the correct alignment.

### II. Belt Tensioning:



1. Find out the center of “ $l$ ”, depress vertically with under listed tension forces “ $W$ ” (measured by a tension meter), you will find the flexibility “ $\delta$ ” (belt shifting in mm). If the measured values are according to following relationship, the belt tension will be good for operation.

$$\underline{\delta = 0.016 \times l}$$

Tension Force “ $W$ ” (kg)

Belt Type	A	3V	5V
Min. Value	1.0	1.5	3.5
Max. Value	3.0	3.0	5.0

2. Recheck the belt tension after 7 ~ 10 days of first operation. Owing to initial extension, the belts should be re-tensioned after some period of operation time.

### 3. Troubleshooting:

<b>Abnormality</b>	<b>Cause</b>	<b>Antidote</b>
Blower can not rotate	Rotor sticking.	Rotate by hand, perform an inching operation.
	Indraft foreign objects in the casing.	Remove the foreign objects
	V-belt sagged or slipping.	Re-tensioning the belt or replace it.
Strange noise or vibration	Insufficient grease, or grease transmuted, or grease is inferior.	Replace (add) assign grease.
	Indraft foreign objects in the casing.	Remove the foreign objects
	Contact between rotors.	Re-align the rotor position.
	Abnormal pressure rising.	Remove the sources that cause it.
	Safety valve ejected.	Inspect on the safety valve.
	Bur or protrusion on pulley surface.	Remove them.
	Belt too tight.	Re-tensioning it.
	Contact between belt cover and belt.	Re-tensioning the belt, or adjust the belt cover.
	Bad blower foundation, cause to vibration.	Strengthen the foundation.
	Looseness in the fixing area.	Tighten the loose joints.
	Piping bent.	Replace the bent segment.
	Co-vibration occurred from piping.	
	Insufficient gear oil, or gear oil transmuted, or gear oil is inferior.	Replace (add) assigned gear oil.
Abnormal heat emission	Discharge pressure increased.	Remove sources that cause it.
	Insufficient room ventilation.	Increase ventilation to lower room temperature.
	Clogging of the suction pipeline.	Cleaning silencer and the piping.
Oil leakage	Too much Grease supplied.	Reduce the Grease volume.
	Too much Gear Oil added.	Adjust to the middle level of the level gauge.
	Looseness in the fixing area.	Tighten the loose area.
	Gasket damage.	Replace gasket.
Insufficient air or no air	Leaking from piping.	Make up the leakage.
	Safety valve ejected.	Inspect on the safety valve.
	Clogging of the suction pipeline.	Cleaning silencer and the piping.
	Discharge pressure increased.	Remove sources that cause it.
	V-belt sagged or slipping.	Re-tensioning the belt or replace it.
Discharge pressure increased	Insufficient motor RPM	Increase the RPM.
	Valve closed or not fully opened.	Fully open the valve.
	Water level of pond ascended.	
	Sludge density or sedimentation increased.	Remove the sludge sedimentation.
	RPM too high cause to high air volume supply.	Reduce RPM.
	Clogging of the diffusers.	Clean the diffusers.
	Check valve malfunctioned, or connected in wrong direction	Replace, or adjust the direction of the check valve.

**Spare Parts List:**

<b>PARTS MODE</b>	<b>Bearings for SHAFTS (Front/Rear)</b>	<b>V-Ring</b>	<b>V-Belts</b>	<b>Oil seal</b>	<b>Remarks</b>
RSS/V-40	Rear : 6306Z x 2 Front: 6207Z x 2	VA-40	3V500*2	28*45*10	
RSS/V-50	Rear : 6306Z x 2 Front: 6207Z x 2	VA-40	3V500*2	28*45*10	
RSS/V-65	Rear : 6306Z x 2 Front: 6207Z x 2	VA-40	3V500*2	28*45*10	
RSS/V-80	6309Z x 4	VA-55	SPZ1537x3	40*62*10	
RSS/V-100	6309Z x 4	VA-55	SPA1600x3	40*62*10	
RSS/V-125 RSS/V-125A	6312Z x 4	VA-70	SPB2000x3	70*85*10	
RSS/V-150	6312Z x 4	VA-70	SPB2000x3	70*85*10	
RSS/V-200 RSS/V-200A	6315Z x 4	VA-95	SPB2750x5	89*115*13	
RSS/V-250	6315Z x 4	VA-95	SPB2750x6	89*115*13	
RSS/V-300	6320Z x 4	VA-120	SPC4250*4	150*120*12	

