

ROTARY VANE VACUUM PUMP

OPERATION MANUAL

CP-10/20 SERIES

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Warning

1. This device is designed for only use in the field of coarse or fine vacuum. It can be used to suck off air or dry gases, which are not poisonous, aggressive or explosive .
2. To avoid damaging this device, it must be absolutely prevented from dropping during transportation.
3. It's not allowed to install and operate this device before reading the instruction manual.
4. For safety reason, please do not modify or repair the rotating part of this device.
5. The manufacturer has the right to modify the product without notice.
6. This unit is only a component, it must be installed in a machine or part of a machine which meets the terms of the machine Directive **89/392/EEC**. Commission will not occur until the end product or machinery conforms with the **EN60204-1**.

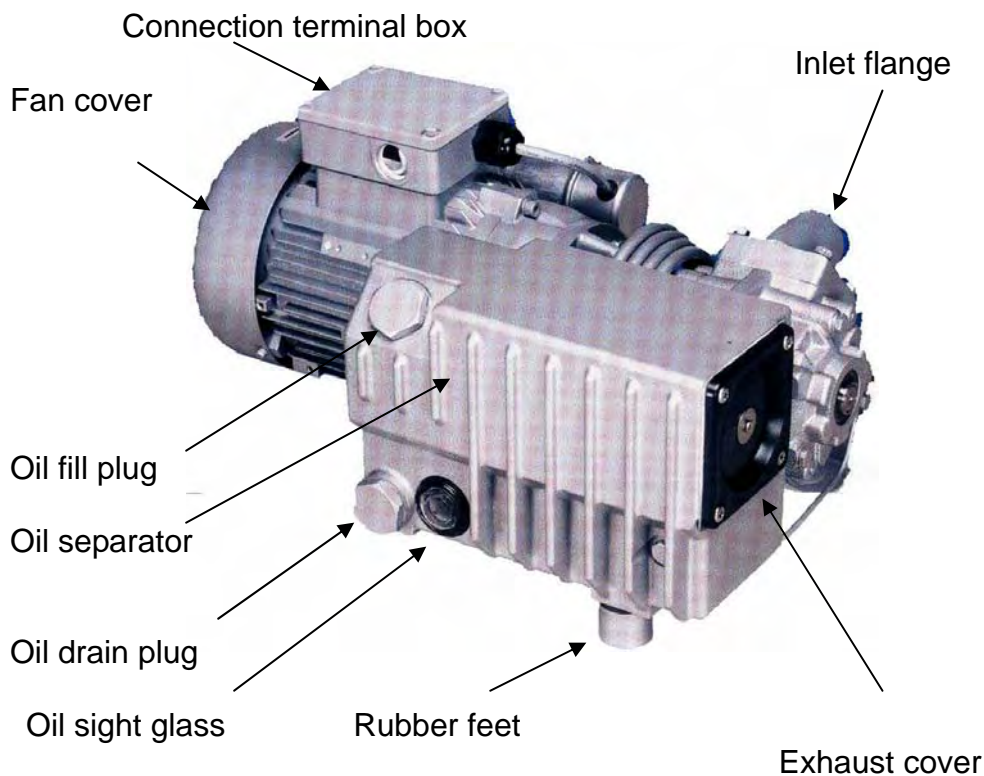
Parts No. 346MR2021

04 / 2007(A0)

1. Safety requirement : 
Caution

- 1) All the works of transportation, installation, maintenance and troubleshooting must be executed by a responsible, qualified personnel ◦
- 2) This device must be set up according to this instruction manual ◦
- 3) The grounding wire must be connected well accordingly ◦
- 4) The lead wires as a conductor to the power supply should be properly sized and have strain relief to the wires at the connection terminals. If this is failed, electric shock and fire will be possible ◦
- 5) Please check the direction of rotation as power turned on ◦
- 6) While rotating, human body must keep away from the rotating portion such as the cooling fan and do not reach into the device through the intake ◦
- 8) If the device couldn't accelerate up to its rated speed from the power switch turned on, please turn off the power immediately and check it carefully ◦
- 9) The power supply must be turned off before moving, maintaining or repairing this device ◦
- 10) Liquid and solid particles must not enter the pump. If suck moist air must equipped gas ballast valve ◦
- 11) The end cover is used to prevent contact and direct the cooling air flow, can not be removed; otherwise the motor will get overheating ◦

2. Installation:



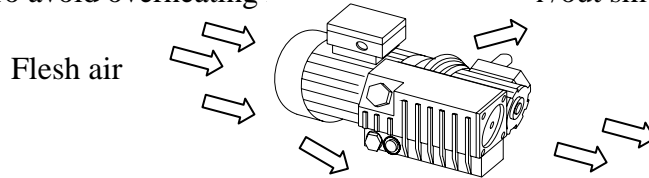
2.1 Installation :

2.1.1 Operation condition :

Ambient temperature : 12 ~ 40°C

Ambient pressure : Atmosphere

2.1.2 To avoid overheating must keep fresh air in /out smoothly ◦



2.1.3 The device must be mount on a flat surface horizontally via the threads of the rubber feet ◦

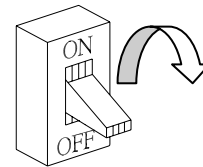
2.1.4 The diameter of pipe must be equal or bigger than that of inlet flange ◦

2.1.5 Air and gases should be filtered before entering into the intake by an inline filter to avoid solid particles entering the pump ◦

2.1.6 Before starting up the pump, please pour lubricant oil into the pump through the oil fill plug to avoid damaging the pump ◦

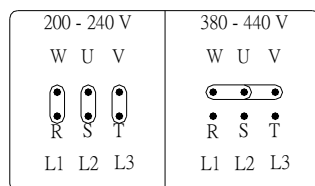
2.2 Electric connection:

Warning  Before connection please turn off the power supply ◦

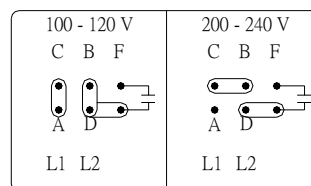


2.2.1 The supplied power voltage and frequency must be as the rating stated on the nameplate ◦

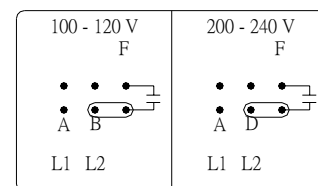
2.2.2 The lead wires must be connected according to the diagram attached on the connection box.. For three phase, changing direction may be done by exchanging any two of the lines of power input ◦





Three phase dual voltage



Single phase dual voltage



Regular single phase

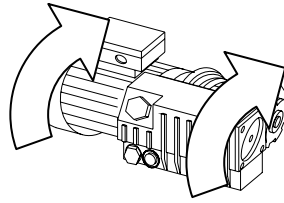
Caution  The protective earth conductor must be connected to the ground terminal 

2.2.3 The drive motor must be protected against overload by a fuse or circuit breaker matching the rating current on the nameplate ◦

3. Operation:

3.1 First flick ON/OFF the switch to check the direction of rotation of the pump ◦ The direction should be counter clockwise from the view of end cover side ◦

Direction of rotating

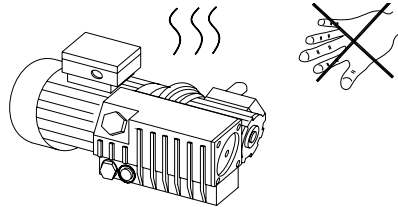


The gas ballast valve must be equipped
minutes pre-running should be done before

for moist air, 30
operation ◦

3.2 To pump moist air, a gas ballast valve should be installed ◦ The pump should run 30 minutes with inlet opened to reach the operating temperature of 75°C; otherwise air can not be transported ◦


3.3 During operation, the surface temperature can reach over 70°C please does not touch it ◦



4. Maintenance:

Attention  : Unless the supplied power , it is not allow to execute any maintenance / repairing work ◦

4.1 Maintenance items :


Items	Check cycle and actions
1. Oil level	The oil level should be checked at least once a day ◦ Check by eye ◦ If the oil level is below the Max mark on oil sight Glass, more oil should be added to MAX mark again (if no mark then Max is at 3/4 of oil sight glass) ◦  3/4
2. Oil changing	1. Oil must be changed after the first 100 hours of operation ◦ 2. Upon operating conditions, the oil should be changed after 500-1500 hours or half year at least ◦ 3. If there is considerable pollution it could be necessary to change the oil more frequently ◦ (CP10 series is 0.5 liter) / (CP20 series is 2 liter) 4. When change oil , must change the oil filter.
3. Filter	1. Each month ◦ 2. If the oil mist escapes from the exhaust cover during the operation of the pump or when the measured pressure reaches 600mbar, the filter must be changed ◦

4. Motor fan cover	Each month must clean to avoid overheating
5. Gas ballast valve & inlet flange	If there is visible contamination on them, Clean or replace it ◦

4.2 The exhaust filter is best monitored using a filter pressure gauge (screwed into the thread of the oil fill plug) ◦

4.3 Oil according to DIN 51506, lubricating oil group VC must be used ◦ We recommend ESSO oils of TERESSO series ◦ (If need special oil for vacuum pumps please request to supplier ◦)

ESSO TERESSO	Working temperature
# 32	< 0°C
# 46	0 ~ 15°C
# 68	15 ~ 30°C
# 100	30 ~ 40°C

Caution:  **Used oil must be treated conform with local regulation ◦**

5. Trouble-shooting:

Fault	Cause	Remedy
Motor does not run and without humming noise	1. No power ◦ 2. Two power cords opened ◦ 3. Power switch or starter defected ◦ 4. Motor winding opened ◦ 5. Protector or protector circuit opened ◦	1. Supply power ◦ 2. Checks the power cord ◦ 3. Change the power switch or starter ◦ 4. Change the motor winding ◦ 5. Change the protector or fix the protecting circuit ◦
Motor does not run with humming noise	1. One power cord opened ◦ 2. Power switch or starter defected ◦ 3. Motor winding open ◦ 4. Bearing defected ◦ 5. Capacitor (single phase) defected ◦ 6. Working temperature below 15°C ◦ 7. Wrong lubricant ◦	1. Check the power cord ◦ 2. Change the power switch or starter ◦ 3. Change the motor winding ◦ 4. Change bearing ◦ 5. Change capacitor ◦ 6. Raised up the working temperature to 15°C or change lubricant ◦ 7. Change lubricant ◦

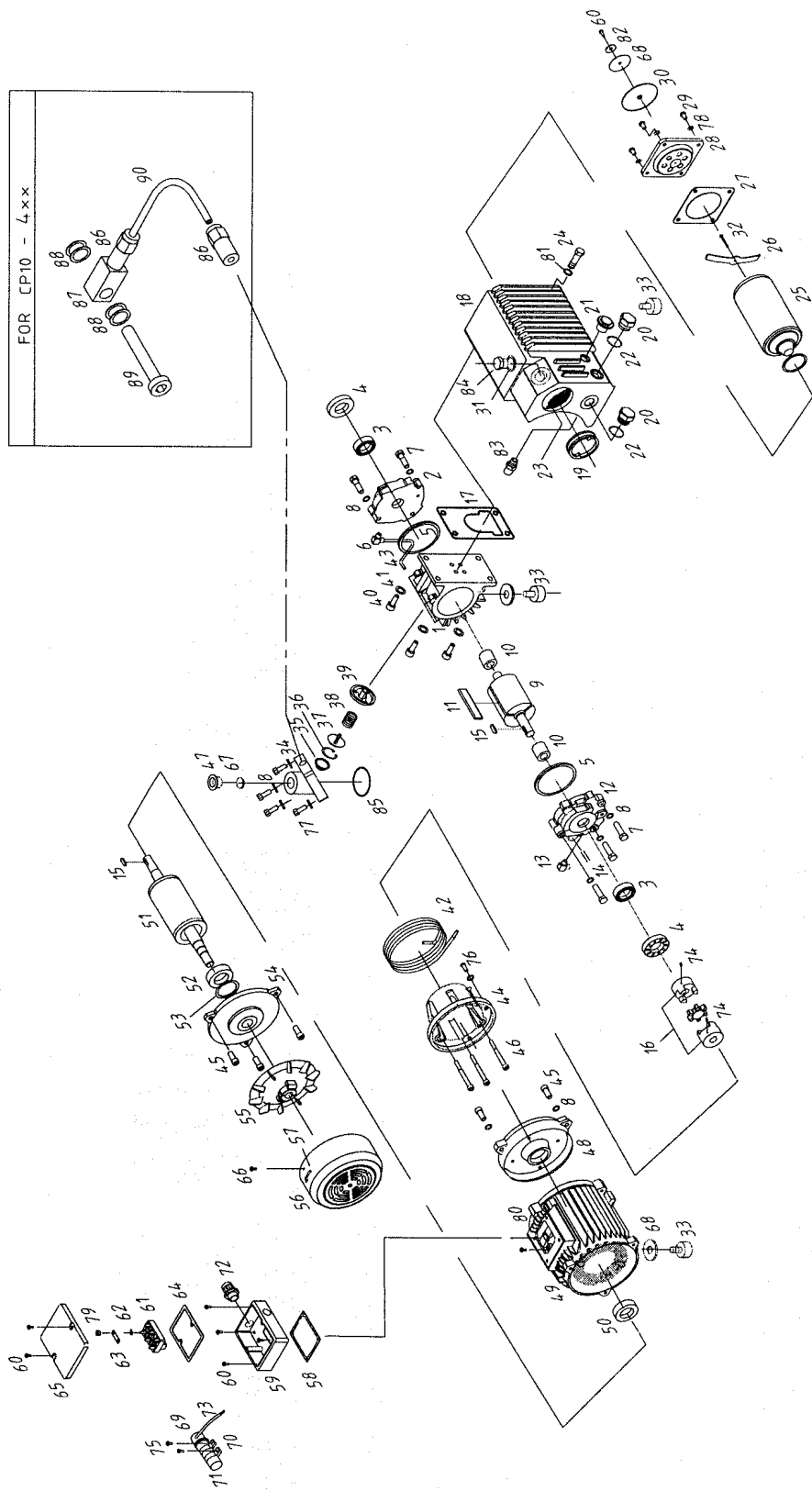
Weak vacuum	<ol style="list-style-type: none"> 1. Pump too small ◦ 2. Wrong power frequency ◦ 3. Wrong direction of rotation ◦ 4. Vacuum leakage ◦ 5. Lubricant defected ◦ 6. Exhaust filter blocked ◦ 7. Air filter blocked ◦ 8. Vane defected ◦ 9. Vacuum meter defected ◦ 	<ol style="list-style-type: none"> 1. Change a larger pump ◦ 2. Adjust power frequency ◦ 3. Change direction ◦ 4. Check system and process leakage test ◦ 5. Change lubricant ◦ 6. Change or clean filter ◦ 7. Change air filter ◦ 8. Change vane ◦ 9. Change vacuum meter ◦
Weak pumping speed	<ol style="list-style-type: none"> 1. Demister blocked ◦ 2. Air filter blocked ◦ 	<ol style="list-style-type: none"> 1. Clean demister ◦ 2. Change air filter ◦
Overheating	<ol style="list-style-type: none"> 1. Working temperature exceed 40°C ◦ 2. Cooling air deficient ◦ 3. Dirt of the housing of motor or cylinder ◦ 4. Less oil ◦ 5. Sucking air temperature too high ◦ 	<ol style="list-style-type: none"> 1. Reduce working temperature ◦ 2. Change installation place or improve air flow ◦ 3. Clean out dirt ◦ 4. Add oil ◦ 5. Reduce temperature of sucking air ◦
White mist from exhaust cover	<ol style="list-style-type: none"> 1. Exhaust filter blocked or damaged ◦ 2. Too much oil ◦ 	<ol style="list-style-type: none"> 1. Change exhaust filter ◦ 2. Leak oil ◦
Emulsify oil	<ol style="list-style-type: none"> 1. Moisture ◦ 	<ol style="list-style-type: none"> 1. Change oil or open gas ballast valve.

6. Parts list

Pos. No.	Part	Unit		Pos. No.	Part	Unit	
		單相	三相			單相	三相
1	Cylinder	1	1	44	motor flange	1	1
2	A-end plate	1	1	45	Cover screw	6	6
3	Bearing	2	2	46	Screw	3	3
4	Shaft seal	2	2	47	Filter washer	1	1
5	O-Ring	2	2	48	Front cover	1	1
6	Elbow stud fitting	1	1	49	Frame	1	1
7	Hex. Head screw	6	6	50	Bearing	1	1
8	Spring lock washer	13	13	51	Rotor	1	1
9	Motor rotor	1	1	52	Bearing	1	1
10	Sleeve	2	2	53	Spring washer	1	1
11	Vane	3	3	54	End cover	1	1
12	B-end plate	1	1	55	Fan	1	1
13	Elbow stud fitting	1	1	56	Fan cover	1	1
14	Tapper pin	4	4	57	Arrow label	1	1
15	Shaft key	2	2	58	Gasket	1	1
16	Coupling	1	1	59	Terminal box	1	1
17	Seperator gasket	1	1	60	fix screw	6	6
18	Oil seperator	1	1	61	terminal block	1	1
19	Drum plug	1	1	62	contacter	4	6
20	Plug	2	2	63	connect plate	3	3
21	Oil sight glass	1	1	64	Seal	1	1
22	O-ring	2	2	65	Upper cover	1	1
23	Demister	1	1	66	Screw	3	3
24	Hollow core screw	1	1	67	mesh	1	1
25	Exhasut filter	1	1	68	Iron plate	2	2
26	Spring	1	1	69	Capacitor cover	1	N/A
27	Seal	1	1	70	Bend	2	N/A
28	Exhaust cover	1	1	71	Capacitor	1	N/A
29	Screw	4	4	72	Cable gland	1	N/A
30	Rubber gasket	1	1	73	Cable	1	N/A
31	O-ring	1	1	74	Connector screw	2	2
32	Spring screw	1	1	75	Screw	2	N/A
33	Rubber foot	2	2	76	Hex. Lock screw	3	3
34	Inlet flange	1	1	77	Hex. Lock screw	4	4
35	Inlet screw	1	1	78	Screw + washer	4	4
36	Retaining ring	1	1	79	Bolt	4	6
37	Valve plate	1	1	80	Earth screw	1	1
38	Compression spring	1	1	81	Copper washer	1	1
39	Guide	1	1	82	Washer	1	1
40	Lock screw	4	4	83	Straight stud fitting	1	1
41	Spring washer	4	4	84	Plug	1	1
42	Colling spiral	1	1	85	Sealing ring	1	1
43	Oil tube	1	1				

訂單範例：CP10-550，圖號 5，數量：2

CP10-5xx/4xx



6.1 Parts list FOR CP20-6××/CP20-4××

Pos. No.	Parts Name	Unit		Pos. No.	Parts Name	Unit	
		-62X	-42X			-62X	-42X
1	Cylinder	1	1	46	Screw	3	3
2	A-end plate	1	1	47	Rubber plug	1	1
3	Bearing	2	2	48	Front cover	1	1
4	Shaft seal	2	2	49	Frame	1	1
5	O-Ring	2	2	50	Bearing	1	1
6	Hexagon nut	4	4	51	Rotor	1	1
7	Hex Head screw	12	12	52	Bearing	1	1
8	Lock washer	24	24	53	Spring washer	1	1
9	Rotor	1	1	54	End cover	1	1
10	Sleeve	2	2	55	Fan	2	2
11	Vane	3	3	56	Fan cover	1	1
12	B-end plate	1	1	57	Arror label	2	2
13	Angle stud fitting	1	1	58	Gasket	1	1
14	Pin	4	4	59	Terminal box	1	1
15	Shaft key	1	1	60	Fix screw	6	6
16	Shaft key	1	1	61	Terminal board	1	1
17	Separator gasket	1	1	62	Contacter	6	6
18	Oil separator	1	1	63	Connect plate	3	3
19	Cover	1	1	64	Seal	1	1
20	Oil sight glass	1	1	65	Upper cover	1	1
21	Plug	1	1	66	Fix screw	12	12
22	O-Ring	2	2	67	Screw	2	2
23	Demister	1	1	68	Washer	2	2
24	Hollow core screw	1	1	69	O-Ring	2	2
25	Exhaust fillter	1	1	70	Spring	2	2
26	Spring	2	2	71	Plastic plate	2	2
27	Seal	1	1	72	Fix screw	2	2
28	Exhaust cover	1	1	73	Gas ballast valve	1	1
29	Screw	4	4	74	Connector screw	4	4
30	Rubber gasket	2	2	75	Gas ballast valve, adjustable	1	1
31	O-Ring	1	1	76	Hexagon head screw	4	4
32	Spring screw	1	1	77	Hexagon head screw	4	4
33	Rubber foot	2	2	78	Washer	1	1
34	A-inlet flange	1	1	79	Bolt	12	12
35	Screen	1	1	80	Earth screw	1	1
36	B-inlet flange	1	1	81	Silencer	1	1
37	Valve plate	1	1	82	Screw	1	1
38	Compression spring	1	1	83	Straight stud fitting	5	5
39	Guide	1	1	84	Oil fill plug	1	1
40	Lock screw	4	4	85	O-Ring	2	2
41	Spring washer	23	23	86	Straigh stud fitting		2
42	A-tube	1	1	87	Connection block		1
43	B-tube	1	1	88	Copper washer	2	6
44	Motor flange	1	1	89	Hollow core screw		1
45	Screw	8	8	90	Tube		1

CP20-62X/42X

