



WOOSUNG AUTOMA CO., LTD

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USER INSTRUCTION

for High Vacuum Rotary Vane Pump

W2V10



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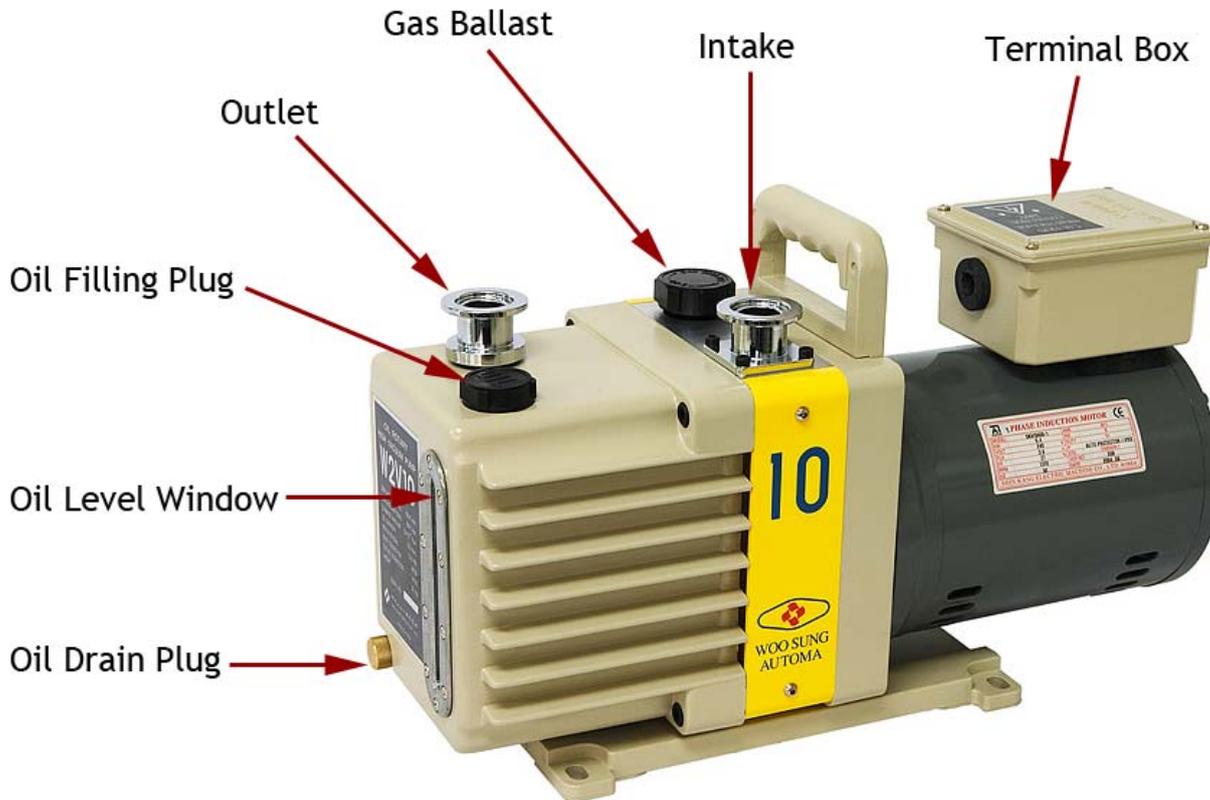


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1. Utility of Basic Parts and Specification



Specification

Pumping Speed	100 ℓ/min	
Ultimate Pressure	Gas Ballast Closed	5X10 ⁻⁴ torr (6.7 X 10 ⁻² Pa)
	Gas Ballast Open	5X10 ⁻² torr (6.7 Pa)
Power Input	Standard	220VAC 1Φ 50/60Hz
	Option	220VAC/380VAC 3Φ 50/60Hz
	Customer's Request (Voltage, Frequency and Phase)	
Full Load Power	0.4 kW (0.5 HP)	
Motor Speed	1700 rpm	
Inlet and Outlet	Standard	NW25
	Option I	Hose Nipple(Φ12 OD, Φ16 OD, or Φ26 OD)
	Option II	Screw Nipple (3/8" Female)
Oil Capacity	500 cc (0.5ℓ)	
Weight	19 Kg	
Ambient Operation Temp. Range	7~40 °C	
Overall Dimension (mm)	150(W) X 398(L) X 251(H)	



2. Inspection

When you receive a pump, you need to check the pump is the same type you ordered.

Please check there is any sign of loose bolts, spilt oil, and broken/loose Parts.

If you ordered accessories for vacuum system please check them in the box.

3. Installation

1) Preparation

Select a well ventilated area, free of dust.

The pump should be placed conveniently to monitor the oil level of the pump.

We recommend the pump is operated in the temperature over 7 °C.

(We use vacuum oil named 'MR-200' as our default vacuum oil and it is best performance over 7 °C.)

2) Fastening

The pump should be tightly fastened to the ground or to a secure object so as not to be moved by the vibration of the pump. The pump should be installed and maintained horizontally all the time.

3) Connection by using Terminal box

- ① Open the Cover of Terminal box. You can see there is 6 cords connected.
- ② W2V10's motor is 3 phase one. You need to connect 3 external cords to the pump.
- ③ By referencing the Terminal box cover, you can connect the pump to power.
- ④ After finishing connection please do not connect the pump to the system and check the electronic connection is proper or not. (If the connection is wrong motor will operate opposite and you need to change the connection)

4. Operation

1) Start up

Prior to start up, make sure that the line voltage and type of connections are appropriate.

(For all 200V motors, a "Delta" connection is applied initially)

Make sure that the oil level should be within the region between "LO" and "HI" marks.

(Ideally, 3/4 toward "High from "LO")

Never operate the pump in the condition which vacuum oil is below "LO"

In case of 3 phase line operation, make sure that the direction of motor rotation is the same as indicated on the body of the pump.

2) Emergency Stop and Power Failure

There is no need of a particular procedure to prevent from loosing vacuum in case of an emergency stop or power failure.

The oil regulator build inside pump prevents Back-Flow of oil when the pump stops.



5. MAINTENANCE

1) Random inspection

Check vacuum oil frequently. You need to check whether the oil is brownish, dirty, or contains moisture.

Also you need to check the oil level always you start up the pump.

If oil level is lowered you can add oil to proper level. (Near "HI")

If oil has poisoned by any dust or water, you need to change the entire oil.

Procedure of Oil change is like below.

- ① To change oil, let the pump cool for about 5 minutes.
- ② Drain the contaminated oil completely through the drain plug (backside of pump).
- ③ Close the drain plug.
- ④ Fill the new vacuum oil (MR-200) through the oil filling plug and check the oil level.

* The pump oil temperature should be typically less than 65 °C when operating.

2) Periodic Serviceable Items

- Vacuum Oil

Usually the circumstances are very important key of oil's life so there is no exact solution when you change the oil but usually we recommend you need to change the pump's oil like below.

Application	Chang oil within (Hours)
High Vacuum in Lab environment, or system seldom exposed to the air	2,500
High Vacuum in manufacturing environment, often exposed to the air	1,200
Vacuum furnace, large gas-exhaust diffusion system, system with booster pump.	600
Vacuum drier, vacuum molding, vacuum packing	200
Vacuum distillation, low vacuum tank	120

Again, we need to mention each system has differences so it is better for user to make own oil change plan.

- Oil Seal and other items

WSA supports 2 kinds of repair kits for maintain W2V10.

'Minor Repair Kit for W2V10' is for normal overhaul. Pump consists of various metal and rubber component and some component need to change periodically. Please check the list of Repair kit.

'Major Repair Kit of W2V10' contains vane and other important parts of the pump. Please check the list.

Overhaul is very important for improve pump's performance and pump's life time. We recommend user need to overhaul once a year.

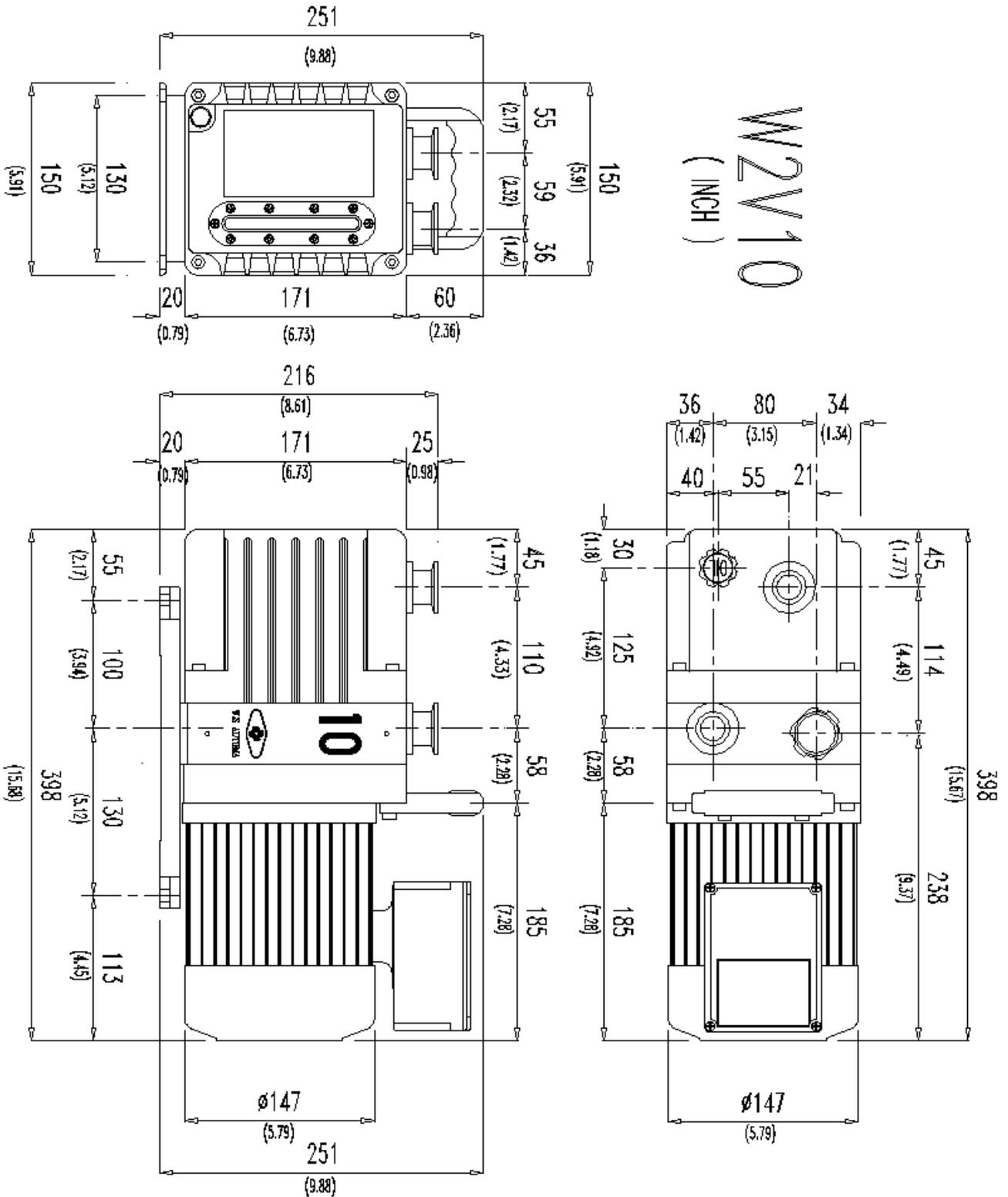


6. TROUBLE SHOOTING

SYMPTOM	CHECK	STEP TO TAKE
Noisy motor would not turn	Power line voltage and connections. Any foreign materials inside the pump. Motor (Open internal circuit).	Correct voltage or connections. Remove the foreign materials, If problem with oil, change it. Replace open windings.
Noise and hot pump	Any Foreign materials inside the exhaust valve. Leakage in the system. If leakage valve is open. All the valves in the vacuum line.	Remove the foreign materials Fix the leakage. Close the valve. Close if found open.
Vacuum Drops (get worse)	Low oil level. Leakage on the device connection. Moisture content of oil. Oil regulator. If Gas Ballast is open.	Add Oil. Close the intake and recheck. Change Oil. Replace the Oil Regulator. Close the gas ballst.
Motor runs but Pump not.	Worn out coupling mechanism. Worn out key between motor and pump.	Replace coupling. Replace the key and the set screws.

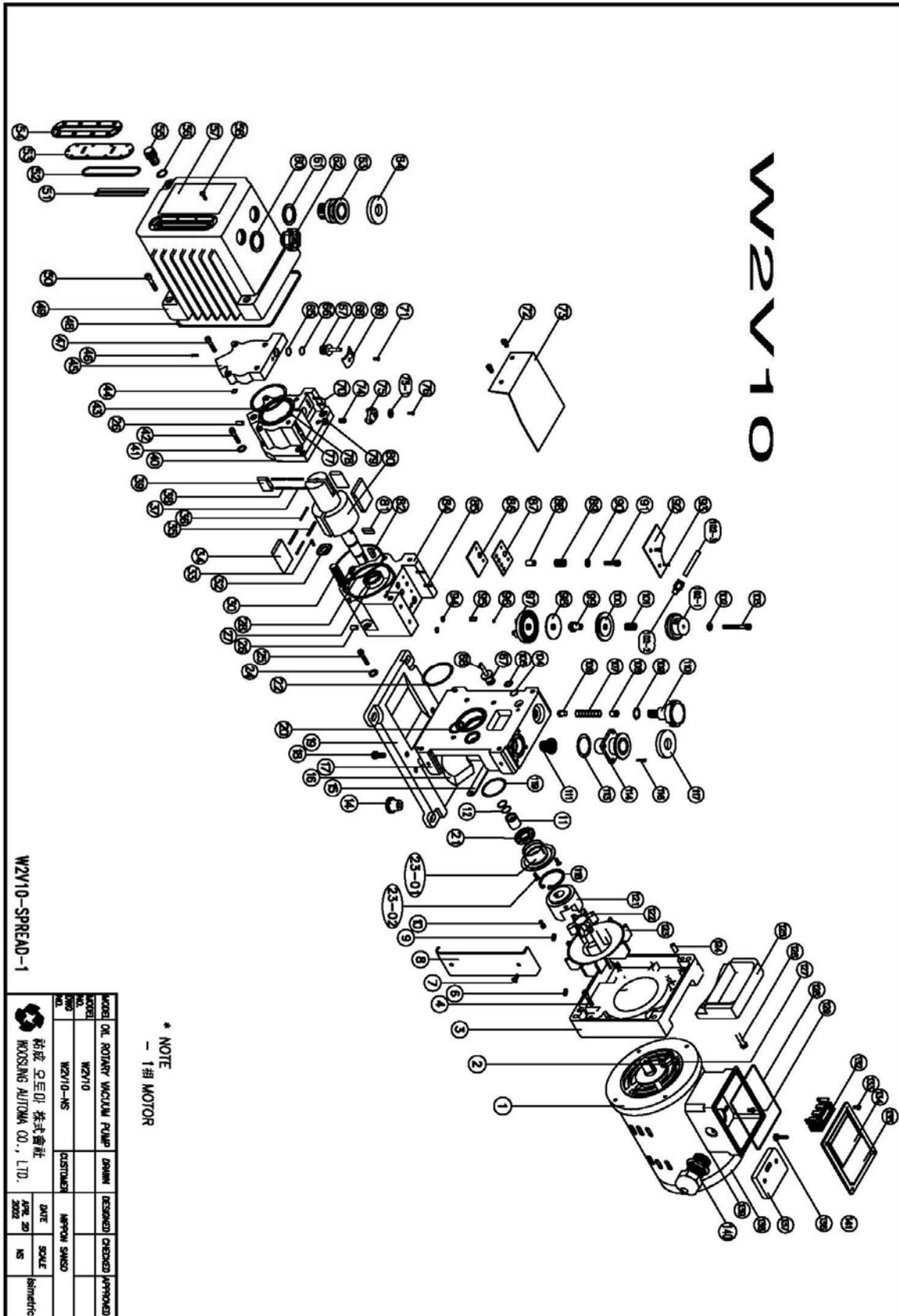


7. Dimension of W2V10





8. Development Figure





9. Bill of Material

BOM of W2V10

2007/02/09

(Standard Type : W2V10)

NO	SPEC NO	DESCRIPTION	STANDARD	Q`T
1	W1V0001	MOTOR	3ΦX200/380VX400WX50/60	1
2	W1V0002	KEY	5X5X15R	2
3	W1V0003	MOTOR PLATE	DIECAST	1
4	W1V0004	MOTOR PLATE FIXING BOLT	M6X15	4
5	W1V0006	COUPLING FAN FIXING BOLT	M5X10(SET SCREW)	1
6	W1V0007	SIDE COVER FIXING BOLT	M4X8(OVAL HEAD)	4
7	W1V0008	SIDE COVER	ABS	2
8	W1V0009	COUPLING FIXING BOLT	M5X6(SET SCREW)	1
9	W1V0010	SUCTION FELT FIXING BOLT	M4X8	2
10	W1V0011	SEAL BUSHING	Φ22X20	1
11	W1V0012	O-RING	S-18	2
12	W1V0014	BASE RUBBER	NBR	4
13	W1V0015	OIL PAD STRAP	PRESS	1
14	W1V0016	OIL SUCTION FELT	FELT	1
15	W1V0017	MAIN PLATE(BODY)	DIECAST	1
16	W1V0018	BASE PLATE NOUNTING BOLT	M6X15	4
17	W1V0019	BASE PLATE	DIECAST	1
18	W1V0020	O-RING	P-20	1
19	W1V0021	OIL SEAL	22X32X7	1
20	W1V0022	O-RING	G-45	1
21	W1V0023-01	OIL SEAL HOUSING	DICAST	1
22	W1V0023-02	HOUSING FIXING BOLT	M4X10(INCLINE)	3
23	W1V0024	SPRING WASHER	Φ6	3
24	W1V0025	1 ST STATOR FIXING BOLT	M6X25	3
25	W1V0026	COCKING PIN	Φ6.1X7.4	3
26	W1V0027	OIL SEAL	25X35X7	1
27	W1V0028	O-RING	S-80	1
28	W1V0030	OIL STRAINER	F13*50*24#	1
29	W1V0032	OIL STRAINER FIXTURE	DICAST	1
30	W1V0033	OIL STRAINER FIX. BOLT	M4X10	2
31	W1V0034	1 ST STAGE BLADE	25*32 *6	2
32	W1V0035	1 ST STAGE BLADE SPRING	Φ1.8X33X0.5	2
33	W1V0036	1 ST STAGE SPRING GUIDE PIN	Φ1.8X26	2

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34	W1V0037	2 ND STAGE SPRING GUIDE PIN	Φ1.8X26	2
35	W1V0038	2 ND STAGE BLADE SPRING	0.5X2.9X30	2
36	W1V0039	2 ND STAGE BLADE	22X22X6	2
37	W1V0040	2 ND STAGE STATOR	FC-25	1
38	W1V0041	2 ND SPRING WASHER	Φ6	4
39	W1V0042	2 ND STAGE STATOR FIX. BOLT	M6X25	5
40	W1V0043	O-RING	G-55	1
41	W1V0044	O-RING	P-6	1
42	W1V0045	END PLATE	FC-25	1
43	W1V0046	COCKING PIN	Φ2.9X3.3X7	1
44	W1V0047	END PLATE FIXING BOLT	M6X20	4
45	W1V0048	O-RING	AN-166	1
46	W1V0049	OIL CASING	DIECAST	1
47	W1V0050	OIL CASING FIXING BOLT	M6X35	4
48	W1V0051	OIL LEVEL PLATE	10X95X0.2	1
49	W1V0052	O-RING	S-75	1
50	W1V0053	OIL LEVEL WINDOW	34X122X3	1
51	W1V0054	OIL LEVES BACK PLATE	DIECAST	1
52	W1V0055	OIL DRAIN PLUG	M-10	1
53	W1V0056	O-RING	AN-109	1
54	W1V0057	NAME PLATE	STICKER	1
55	W1V0058	OIL LEVEL BACK PLATE FIX. BOLT	M3.5X11(+)	10
56	W1V0060	O-RING	20X30X2.5	1
57	W1V0061	O-RING	20X30X2.6	1
58	W1V0062	OIL FILLING PLUG	M-24	1
59	W1V0063	EXHAUST ASSEMBLY	NW-25	1
60	W1V0064	EXHAUST ASSEMBLY CAP	NW-25	1
61	W1V0065	O-RING	AN-109	1
62	W1V0066	O-RING	P-10A	1
63	W1V0067	G/B NIPPLE	BRASS	2
64	W1V0068	G/B TUBE	Φ4.8	1
65	W1V0069	GAS BALLAST CLAMP	PRESS	2
66	W1V0070	VALVE GUIDE PIN (ROLL PIN)	Φ3X20	2
67	W1V0071	GAS BALLAST FIXING BOLT	M4X12	2
68	W1V0072	DISCHARGE BAFFLE FIX.BOLT	M5X8	2
69	W1V0073	DISCHARGE BAFFLE	100X156X1	1
70	W1V0074	2 ND VALVE SPRING	Φ0.5X7.3X8.3X17	1
71	W1V0075	SPRING SUPPORT	DIECAST	1

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72	W1V0075-1	TWIST WASHER	Φ5	1
73	W1V0076	SPRING SUPPORT FIX. BOLT	M5X20	2
74	W1V0077	TAPPER PIN	Φ7X40	2
75	W1V0078	NUT	M6	2
76	W1V0079	2 ND STAGE VALVE	Φ14.5X7	1
77	W1V0080	ROTOR ASSEMBLY	FCD-64	1
78	W1V0081	OIL PUMP BLADE	6X8X21	1
79	W1V0082	KEY	5X5X18R	1
80	W1V0084	1 ST STAGE STATOR	FC-25	1
81	W1V0085	1 ST VALVE GUIDE PIN(ROLL PIN)	Φ3X20	2
82	W1V0086	1 ST VALVE	24X36X2	1
83	W1V0087	1 ST VALVE BACK PLATE	25X36X1.6	1
84	W1V0088	1 ST VALVE SPACER	Φ8X13	1
85	W1V0089	1 ST VALVE SPRING	Φ9X11X15.5X0.5	1
86	W1V0090	WASHER	Φ5	1
87	W1V0091	1 ST VALVE FIX. BOLT	M5X22	1
88	W1V0092	1 ST VALVE OIL BAFFLE	52X45X1.2T	1
89	W1V0093	1 ST VALVE OIL BAFFLE FIX.BOLT	M4X8	2
90	W1V0094	O-RING	P-6	2
91	W1V0095	DISTRIBUTER SLEEVE AL PIN	Φ5.7X10	1
92	W1V0096	DISTRIBUTER SLEEVE BALL	Φ4	1
93	W1V0097	DISTRIBUTER BODY	DLECAST	1
94	W1V0098	DISTRIBUTER VALVE	Φ45	1
95	W1V0099	DISTRIBUTER SPACER	DICAST	1
96	W1V0100	DISTRIBUTER WEIGHT	Φ44X4.7T	1
97	W1V0101	SPRING	0.6X9.5X10X17	1
98	W1V0102	WASHER	Φ5	1
99	W1V0102-1	DISTRIBUTER CAP	AL	1
100	W1V0102-2	DISTRIBUTER NIPPLE	Φ8	1
101	W1V0102-3	DISTRIBUTER TUBE	Φ8	1
102	W1V0103	DISTRIBUTOR WASHER FIX.BOLT	M5X50	1
103	W1V0104	O-RING(FOR G/B)	AN-109	1
104	W1V0105	O-RING(FOR G/B)	P-10A	1
105	W1V0106	GAS BALLST VALVE PIN	4.5X6.2X11.5	1
106	W1V0107	GAS BALLST SPRING	Φ4.5XΦ6.3X33X0.9	1
107	W1V0108	GAS BALLST SPRING PIN	4.5X6.2X11.5	1
108	W1V0109	O-RING	P-10A	1
109	W1V0110	GAS BALLST KNOB	Φ40	1



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110	W1V0111	SUCTION PORT STRAINER	0.2X32#X23	1
111	W1V0113	O-RING	P-30	1
112	W1V0114	INTAKE FLANGE	NW25	1
113	W1V0116	INTAKE FLANGE FIXING BOLT	M4X12	4
114	W1V0117	INTAKE FLANGE CAP	NW-25	2
115	W1V0118	SNAP RING	R-40	1
116	W1V0119	O-RING	G-35	1
117	W1V0121	COUPLING	DIECAST	1
118	W1V0122	COUPLING JOINT	NBR	1
119	W1V0123	FAN	DIECAST	1
120	W1V0124	MOTOR PLATE GUIDE PIN	Φ6X13	2
121	W1V0125	HANDLE	DIECAST	1
122	W1V0126	HANDLE FIXING BOLT	M6X20	2
123	W1V0127	MOTOR BODY FIXING BOLT	M6X35	4
124	W1V0128	O-RING	AN-048	1
125	W1V0129	TERMINAL BOX FIX. BOLT	M5X15(+)	2
126	W1V0132	3P TERMINAL	3P/20A	1
127	W1V0133	COVER FIXING BOLT	M4X8	4
128	W1V0134	NAME PLATE	STICKER	1
129	W1V0135	TERMINAL BOX COVER	DIECAST	1
130	W1V0136	3P TERMINAL FIXING BOLT	M4*12(+)	2
131	W1V0137	TERMINAL BOX BUTTOM RUBBER	NBR	1
132	W1V0138	ROTATION MARK	STICKER	1
133	W1V0139	TERMINAL BOX	DIECAST	1
134	W1V0140	POWER CORD PROTECTOR		1



10. Service Kits

W2V10 Service KIT

Code #	Description	Q'ty	Standard	Remarks
W1V0012	O-RING	2	S-18	Minor and Major
W1V0016	OIL SUCTION FELT	1	FELT	Minor and Major
W1V0020	O-RING	1	P-20	Minor and Major
W1V0021	OIL SEAL (VITON)	1	22X32X7	Minor and Major
W1V0022	O-RING	1	G-45	Minor and Major
W1V0027	OIL SEAL (VITON)	1	25X35X7	Minor and Major
W1V0028	O-RING	1	S-80	Minor and Major
W1V0043	O-RING	1	G-55	Minor and Major
W1V0044	O-RING	1	P-6	Minor and Major
W1V0048	O-RING	1	AN-166	Minor and Major
W1V0052	O-RING	1	S-75	Minor and Major
W1V0079	2 ND STAGE VALVE	1	Φ14.5X7	Minor and Major
W1V0086	1 ST VALVE	1	24X36X2T	Minor and Major
W1V0094	O-RING	2	P-6	Minor and Major
W1V0098	DISTRIBUTOR VALVE	1	Φ45	Minor and Major
W1V0104	O-RING	1	AN-109	Minor and Major
W1V0113	O-RING	1	P-30	Minor and Major
W1V0119	O-RING	1	G-35	Minor and Major
<i>Until here for Minor Kit</i>				
W1V0011	SEAL BUSHING	1	Φ22X20	Major Only
W1V0034	1 ST STAGE BLADE	2	22X32X6T	Major Only
W1V0035	1 ST STAGE BLADE SPRING	2	Φ1.8X33X0.5	Major Only
W1V0036	1 ST STAGE SPRING GUIDE	2	Φ1.8X26	Major Only
W1V0037	2 ND STAGE SPRING GUIDE	2	Φ1.8X26	Major Only
W1V0038	2 ND STAGE BALDE SPRING	2	Φ1.8X30X0.5	Major Only
W1V0039	2 ND STAGE BLADE	2	22X22X6T	Major Only
W1V0074	2 ND VALVE SPRING	1	Φ0.5X7.3X8.3X17	Major Only
W1V0081	OIL PUMP BLADE	1	6X6X21	Major Only
<i>Total for Major Kit</i>				



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