Instruction Manual

Product Name: Cyclone Catcher

Model: C-CAT M100-5
C-CAT M100-6
C-CAT M100K-5
C-CAT M100K-6

Nikuni Co., Ltd.

Contents

Contents 1

1. Safety Precautions 2

2. Introduction 3

3. Package Contents 4

4. Specifications List 5

5. Assembly Preparation 5
   5.1 Assembly preparation 5
   5.2 Electrical wiring precautions 5

6. Assembly 6
   6.1 Assembly precautions 6
   6.2 Assembly 7

7. Installation 15
   7.1 Apparatus movement and carriage 15
   7.2 Installation 15
   7.3 Piping 15

8. Operation 17
   8.1 Operation preparation 17
   8.2 Operation 17

9. Maintenance and Inspection 18

10. Troubleshooting 19

11. Repair and Warranty 20

1. Safety Precautions

In this Instruction Manual, safety precautions are divided into “Warning” and “Caution” according to level to allow you to use the product safely and properly and prevent harm and damage to the user and others in the area.

⚠ Warning	Failure to observe the indicated warning could result in death or serious injury of the user or others in the area. Understand the descriptions fully and follow the instructions without fail.
⚠ Caution	Failure to observe the indicated caution could result in impairment of the user or others in the area or property damage. Understand the descriptions fully and follow the instructions without fail.

The following symbols are also used with those shown above to allow for normal operation and prevent a reduction in product life and failures. Be sure to follow the instructions.

⃠ Prohibited	Indicates what you must not do.
❗ Forced	Indicates what you are forced to do.

⚠ Warning

- ◆ Carry out wiring work properly according to the Technical Standards on Electrical Equipment and Indoor Wiring Regulations. Incorrect wiring work may result in electric shocks or fire.
- ◆ Before maintenance, inspection or parts replacement, turn off the source power. Failure to do so may result in electric shocks, or personal injury due to accidental starting of the machine.
- ◆ Establish a ground securely. Failure to do so may result in electric shocks during a machine failure or short-circuit.
- ◆ Do not open the switch box or the motor terminal box unnecessarily. Doing so may result in electric shocks.
- ◆ Do not splash water on live parts. Doing so may result in a short circuit, electric shocks or a machine failure.

⚠ Caution

- ◆ This apparatus is designed to filter a water-soluble grinding fluid, a wire-cut EDM fluid, etc. Do not use this apparatus for any other purpose.
- ◆ Do not move or carry piping or equipment by hand. Doing so may result not only in property damage but also in personal injury.
- ◆ Do not touch the motor or pump during or immediately after operation. Doing so may result in burns due to high temperature.
- ◆ Do not cover the motor with a blanket or cloth. Doing so may result in ignition by overheating.

2. Introduction

2.1 This apparatus is a unit that uses VDF compatible with a water-soluble grinding fluid and a wire-cut EDM fluid. Consult us when using any fluid other than the above.

2.2 When any work material with a specific gravity of 2.5 or less is used, filtration efficiency decreases due to the property of VDF. Consult us when using any work material with a lower specific gravity.

2.3 Use the apparatus when the height from the coolant tank fluid level to the pump inlet port is within one meter.

Caution

◆ This apparatus is designed to filter a water-soluble grinding fluid, a wire-cut EDM fluid, etc. Do not use this apparatus for any other purpose. Doing so may result in unexpected accidents or personal injury.

3. Package Contents

After receiving the apparatus, make sure that the following parts are contained in the package.
In the case of any defective condition, contact your dealer by specifying the product model and serial number described on the nameplate.

	No.	Part Name	Specification/Remarks	Quantity
	1	Leg 1		2
	2	Leg 2		1
	3	Leg 3		1
	4	Leg Frame		1
	5	Base		1
	6	VDF-stand 1		1
	7	VDF-stand 2		1
	8	VDF-stand		1
	10	Support		2
	11	Hexagon head bolt	M6 × 15 (Plain washer/spring washer integrated)	32
	12	Adjuster		4
	13	Hexagon head bolt	M10 × 40	4
	14	Plain washer	for M10	4
	15	Pump	40CPFD5(6)-15ZEM1-DH *1	1
	17	Hexagonal hose nipple	1.1/2B × 38	1
	19	Hose	Inside diameter 32mm	1
	20	Hose nipple	1B	2
	21	Tee	1B	1
	22	Plug	1B	1
	23	Long nipple	1B × 150	1
	24	VDF	CL-100LW	1
	25	Street elbow	1B *2	1
	26	Hose nipple	1B *2	1
	27	Cross recessed round head screw	M5 × 15	2
	28	Switch box	Thermal set value: 5.3A (Factory default value)	1
	30	CAPCON (cable clamp)	(For centrifugal pump terminal box)	1
	31	SLUDGE-POT	SPD-100LW	1
	35	Ball valve	ZE 1·1/4B	1
	36	Long nipple	1·1/4B × 200	1
	39	Cable	$2mm^2 \times 4P$	1
	40	Tape sealant		2
	43	Banding band	Length: 80 mm	1
	44	Mount base	Adhesive type	1
	45	Hose clamp	ϕ 35～ ϕ 50	2

*1: No. 15 is packed separately.
*2: No. 25 and 26 are packed in an integrated state.

4. Specifications List

The specifications of this apparatus are as shown below.

Installation Place	Indoor (Ambient temperature: 5 - 40°C, Relative humidity: 85% or less)
Working Fluid	Water-soluble grinding fluid, wire-cut EDM fluid
Wetted Part Material	SCS13 (VDF, SLUDGE-POT) SGPW, FCMB, CAC406
Input Power Source	200/200-220V AC 50/60Hz 3φ3W
Rated Current	5.8/5.8-5.3 A (1.5 k W)
VDF	Filtration flow rate: 90/90L/min, 50/60 Hz (drain valve closed, clean water) Filtration accuracy: 90% removal particle size: 20μm (equivalent in iron) Pump : Nikuni 40CPFD5(6)-15ZEM1-DH(1.5kW) VDF : Nikuni CL-100LW SLUDGE-POT : Nikuni SPD-100LW

5. Assembly Preparation

5.1 Assembly preparation

Before performing assembly, prepare the following tools:

- Phillips screwdriver
- Spanner
- Pipe wrench
- Motor wrench (Used with the pipe wrench when tightening the oil-resistant hose. Pipe wrench or monkey wrench also available)

5.2 Electrical wiring precautions

1) Carry out wiring work properly according to the Technical Standards on Electrical Equipment and Indoor Wiring Regulations. Improper wiring work or grounding by unqualified personnel is not only illegal but also very dangerous. Never perform such work.
2) Be sure to install an earth leakage breaker on the source power to prevent electric shock accidents.
3) Match the apparatus source voltage with the power supply voltage.
4) Use an electrical wire with a nominal cross sectional area of 2 mm^2 or more for the power source.

Warning

- ◆ Carry out wiring work properly according to the Technical Standards on Electrical Equipment and Indoor Wiring Regulations. Incorrect wiring work may result in electric shocks or fire.
- ◆ Before assembly, turn off the source power. Failure to do so may result in electric shocks, or personal injury due to accidental starting of the machine.
- ◆ Establish a ground securely. Failure to do so may result in electric shocks during a machine failure or short-circuit.
- ◆ Do not open the control panel or the motor terminal box unnecessarily. Doing so may result in electric shocks.
- ◆ Do not splash water on live parts. Doing so may result in a short circuit, electric shocks or a machine failure.

6. Assembly

6.1 Assembly precautions

When performing work, use a large space.

1） Since the pump is heavy, be careful when installing or moving it.

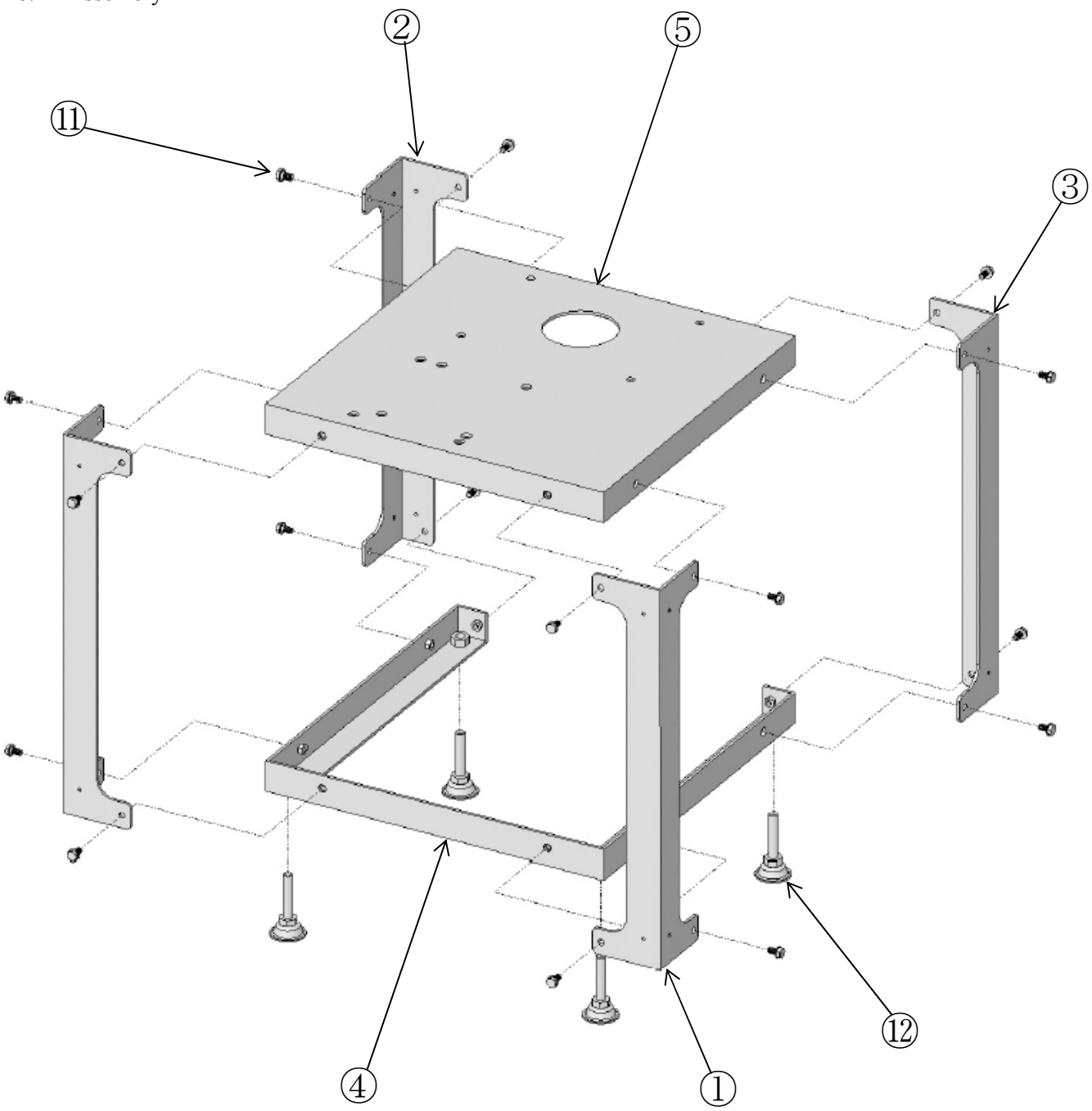
2） When installing piping, be sure to apply tape sealant and perform screwing securely. However, when installing an oil-resistant hose, do not apply tape sealant.

3） Do not get on the stand.

⚠ Caution

- ◆ When performing work, use a large space. Failure to do so may result not only in property damage but also in personal injury of the worker(s) or others in the area.
- ◆ When performing work, wear work gloves. Failure to do so may result in personal injury.
- ◆ Since the pump is heavy, be extremely careful when installing or moving it. Failure to do so may result in personal injury of the worker(s) or others in the area.
- ◆ When installing piping, be sure to apply tape sealant and perform screwing securely. Failure to do so may result in fluid leakage during operation.
- ◆ Tighten bolts securely to prevent looseness. Failure to do so may result in their disconnection during operation.
- ◆ Do not get on the stand, since doing so may result not only in stand damage but also in personal injury.

6.2 Assembly

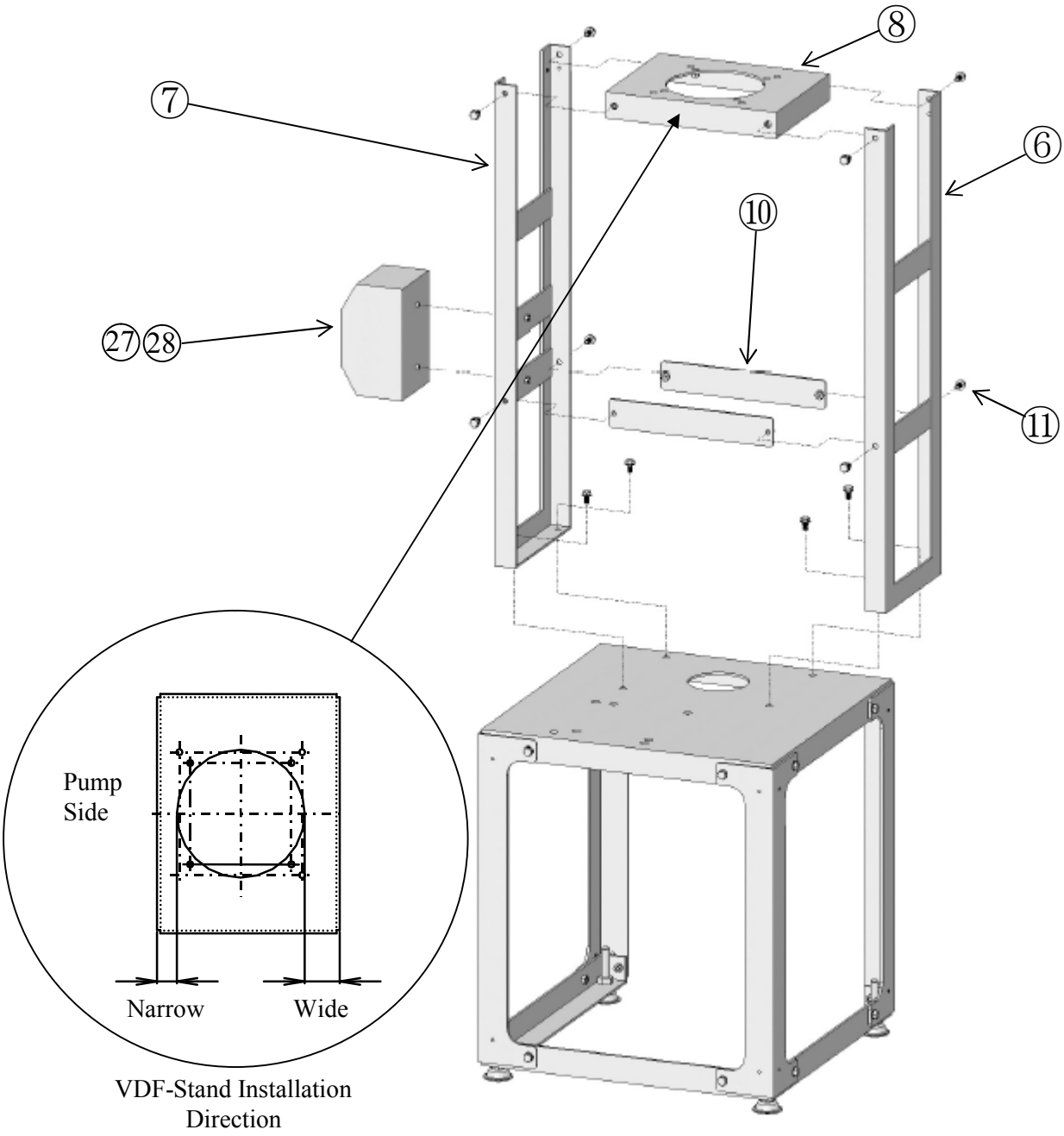


Assembly Drawing 1

Parts Used:

No.	1	2	3	4	5	11	12
Quantity	2	1	1	1	1	16	4

1) Attach No. 12 to No. 4.
2) Attach Nos. 1, 2 and 3 to No. 4 with No. 11. Since there is a projection part on the side of Nos. 1, 2 and 3, they can be installed vertically by aligning each projection part with the edge faces of No. 4.
3) Attach No. 5 with No. 11. Since there is a projection part on the side of Nos. 1, 2 and 3, No. 5 can be installed horizontally by aligning each projection part with the edge face of No. 5. It is easy to install No. 5 if it is assembled in a state where it is placed face down on the floor.

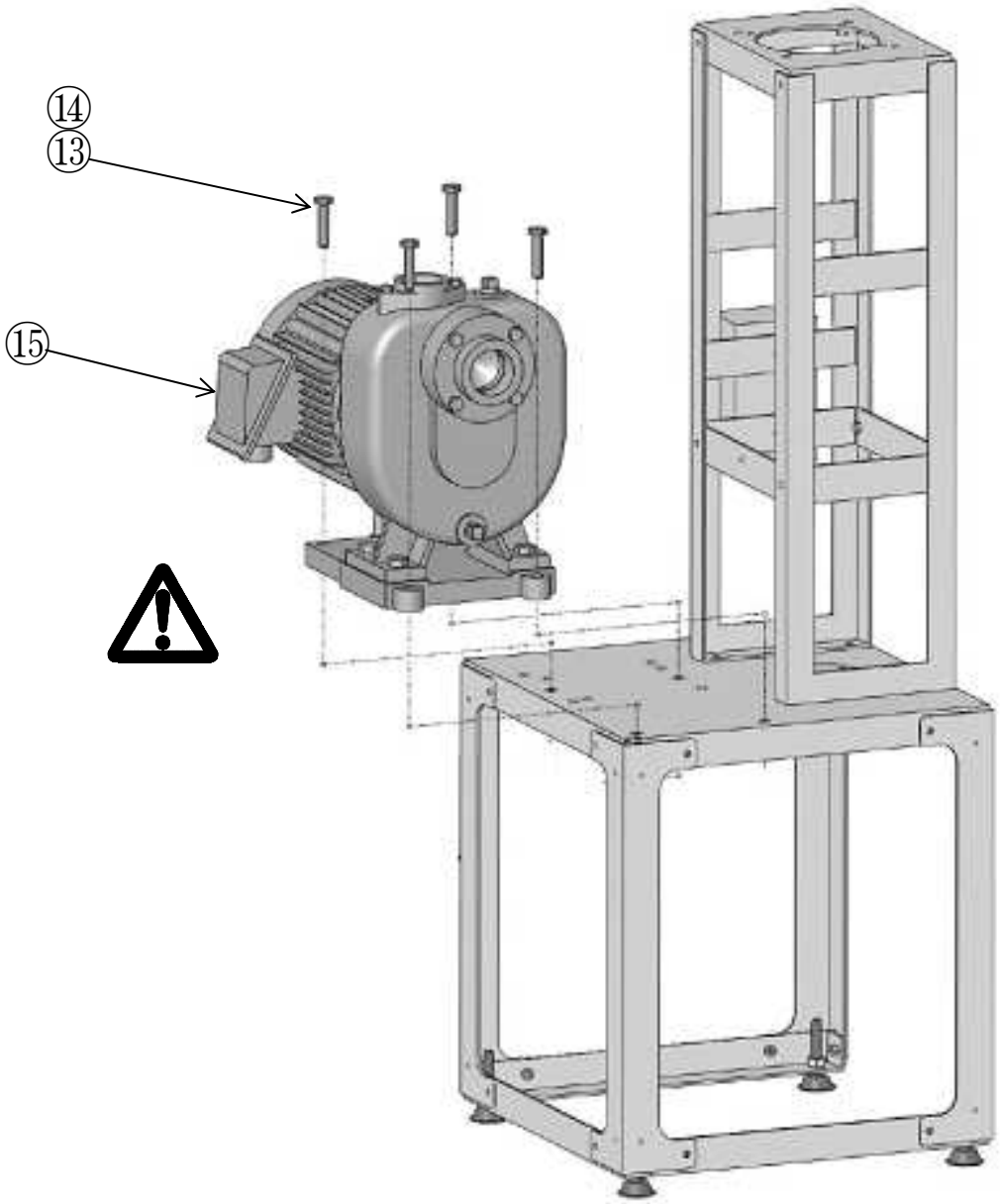


Assembly Drawing 2

Parts Used:

No.	6	7	8	10	11	27	28
Quantity	1	1	1	2	12	2	1

4) Attach Nos. 6 and 7 with No. 11. Attach No. 10 to the inside of Nos. 6 and 7 with No. 11.
5) Attach No. 8 to the inside of Nos. 6 and 7 with No. 11. Since there is a projection part on the side of No. 8, it can be installed horizontally by aligning the projection part with the edge face of No. 7. Be careful about the installation direction of No. 8.
(Refer to the VDF-stand Installation Direction.)
Since No. 8 may be used in piping tilt adjustment, fix it with No. 11 temporarily and tighten it after adjustment.
6) Attach No. 28 to No. 7 with No. 27.



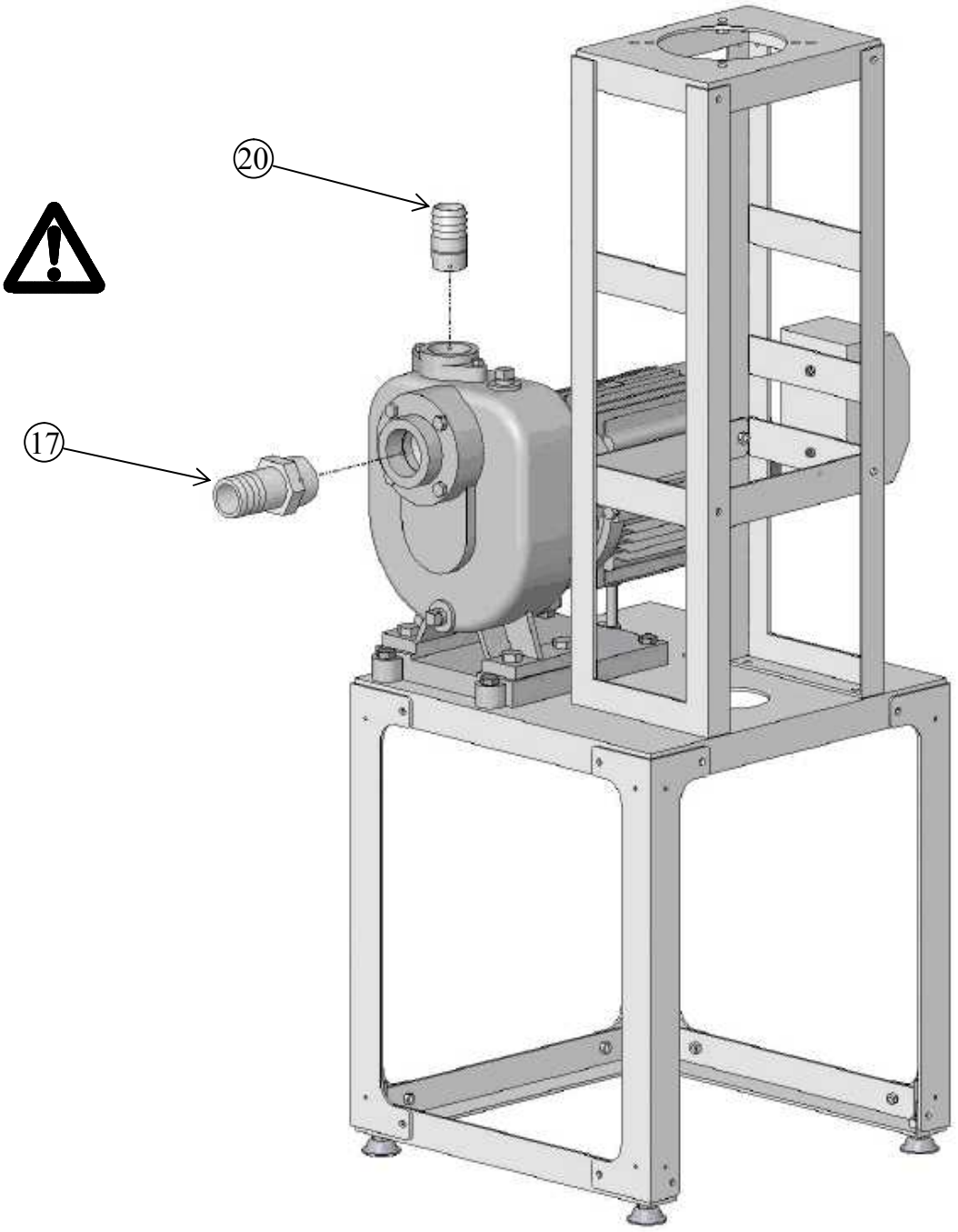
Assembly Drawing 3

Parts Used:

No.	13	14	15
Quantity	4	4	1

7) Mount No. 15 on the stand with Nos. 13 and 14.

Since the pump is heavy, be extremely careful when installing or moving it. Failure to do so may result in personal injury of the worker(s) or others in the area.
Do not get on the stand, since doing so may result not only in stand damage but also in personal injury.



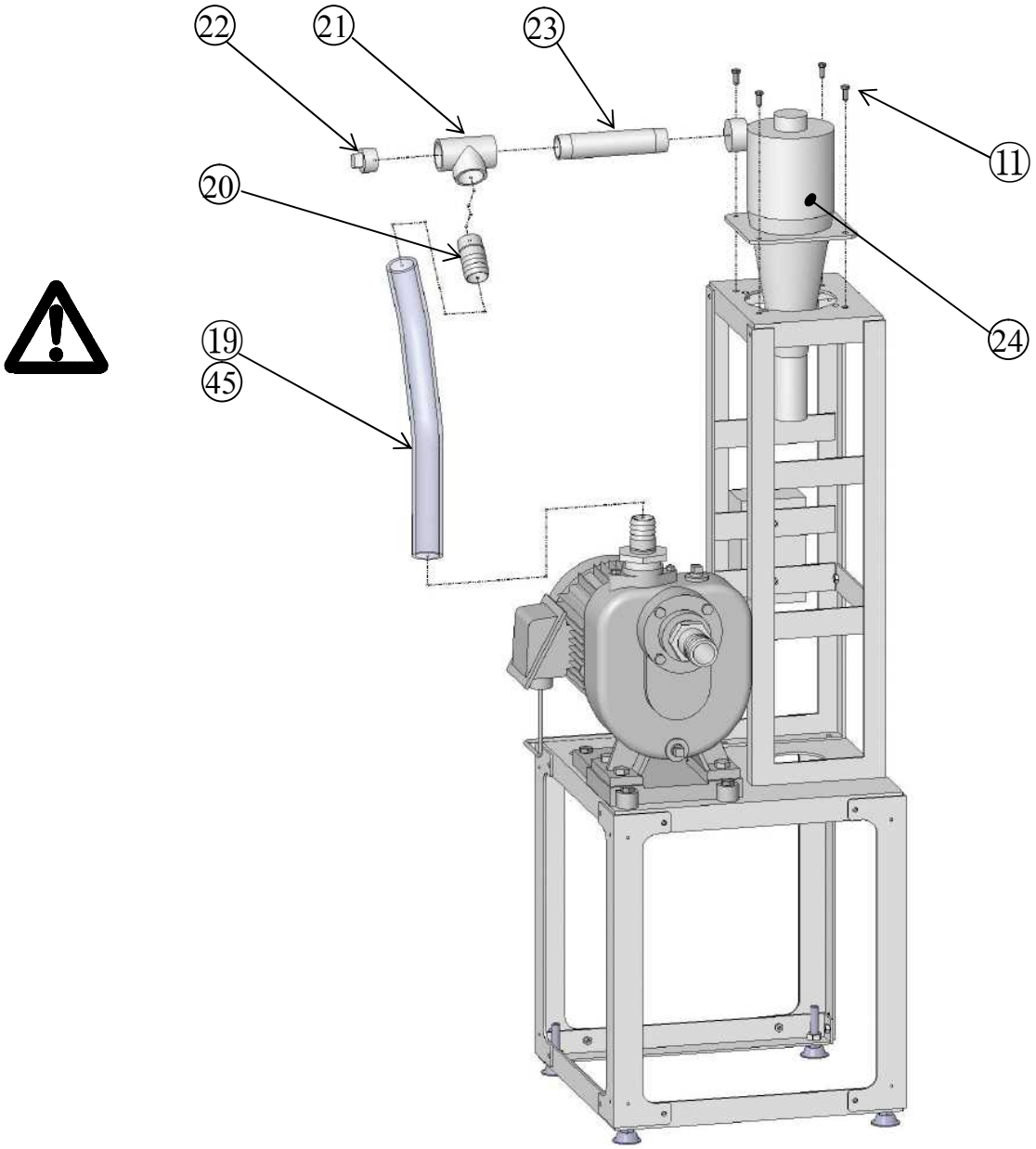
Assembly Drawing 4

Parts Used:

No.	17	20
Quantity	1	1

8) Screw Nos. 20 into the pump outlet port.
9) Screw Nos. 17 into the pump inlet port.

When installing piping, be sure to apply tape sealant and perform screwing securely. Failure to do so may result in fluid leakages during operation.



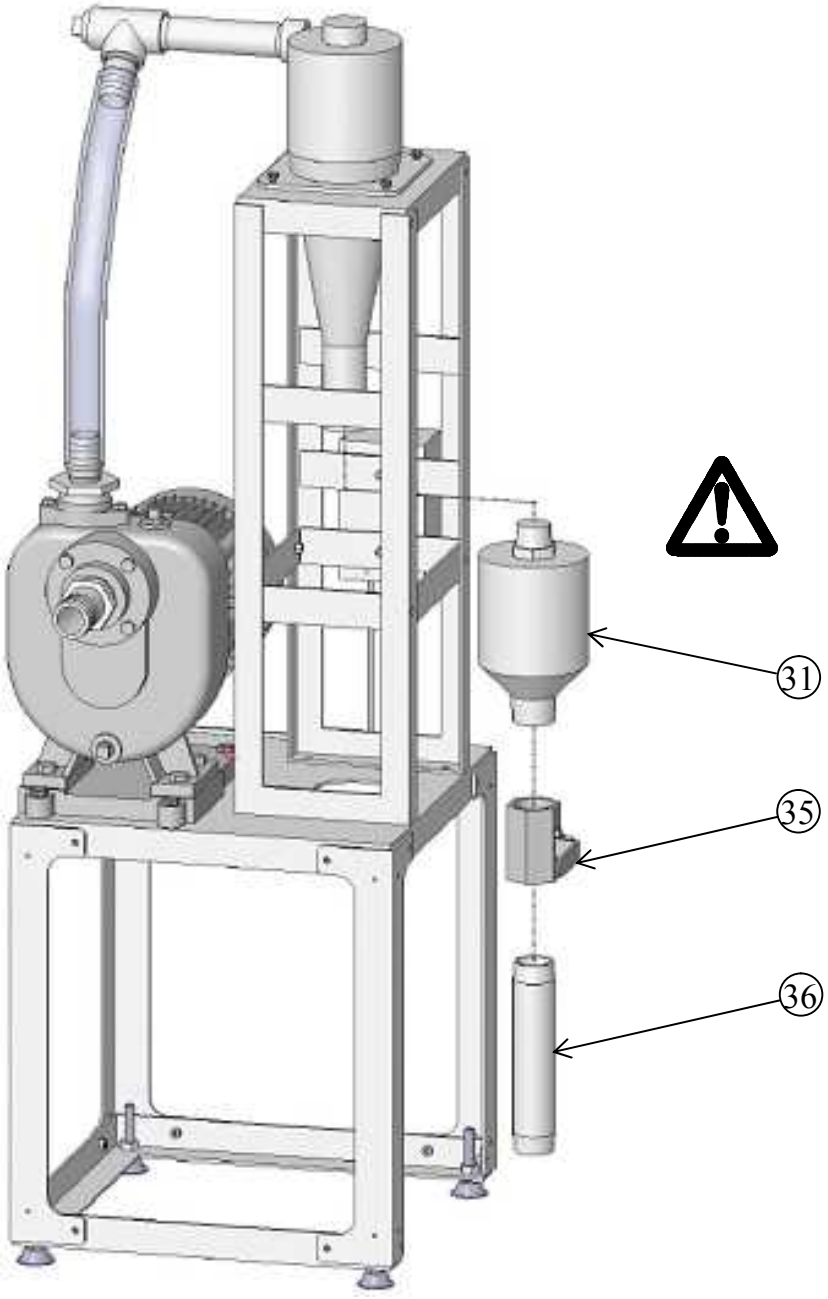
Assembly Drawing 5

Parts Used:

No.	11	19	20	21	22	23	24	45
Quantity	4	1	1	1	1	1	1	2

10) Mount No. 24 on the VDF-stand with No. 11. At that time, direct VDF inlet port toward the pump.
11) Install piping to VDF inlet port in the order of Nos.23, 21 and 22.
12) Connect the No.20 to both ends of No.19, and tightened with No.45.

When installing piping, be sure to apply tape sealant and perform screwing securely. Failure to do so may result in fluid leakage during operation.
However, no tape sealant is required in the connection between Nos. 19 and 20.



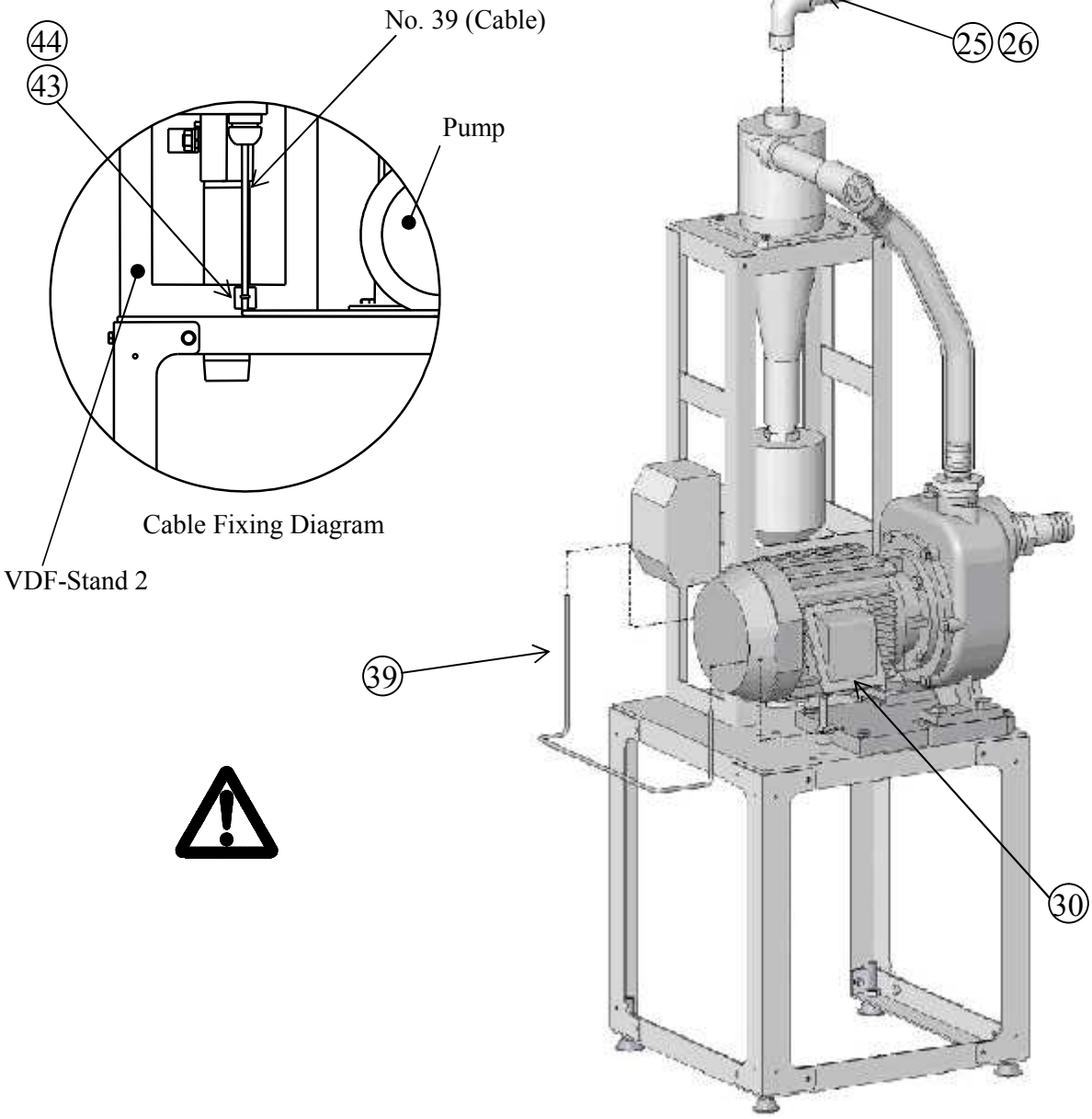
Assembly Drawing 6

Parts Used:

No.	31	35	36
Quantity	1	1	1

13) Install each piping in the order of Nos. 31, 35 and 36 to VDF. At that time, install No. 35 (ball valve) turning its cock downward.
14) If No. 36 contacts the base hole, adjust it by loosening the VDF-stand mounting bolts. After adjustment, tighten them.

When installing piping, be sure to apply tape sealant and perform screwing securely. Failure to do so may result in fluid leakage during operation.



Assembly Drawing 6

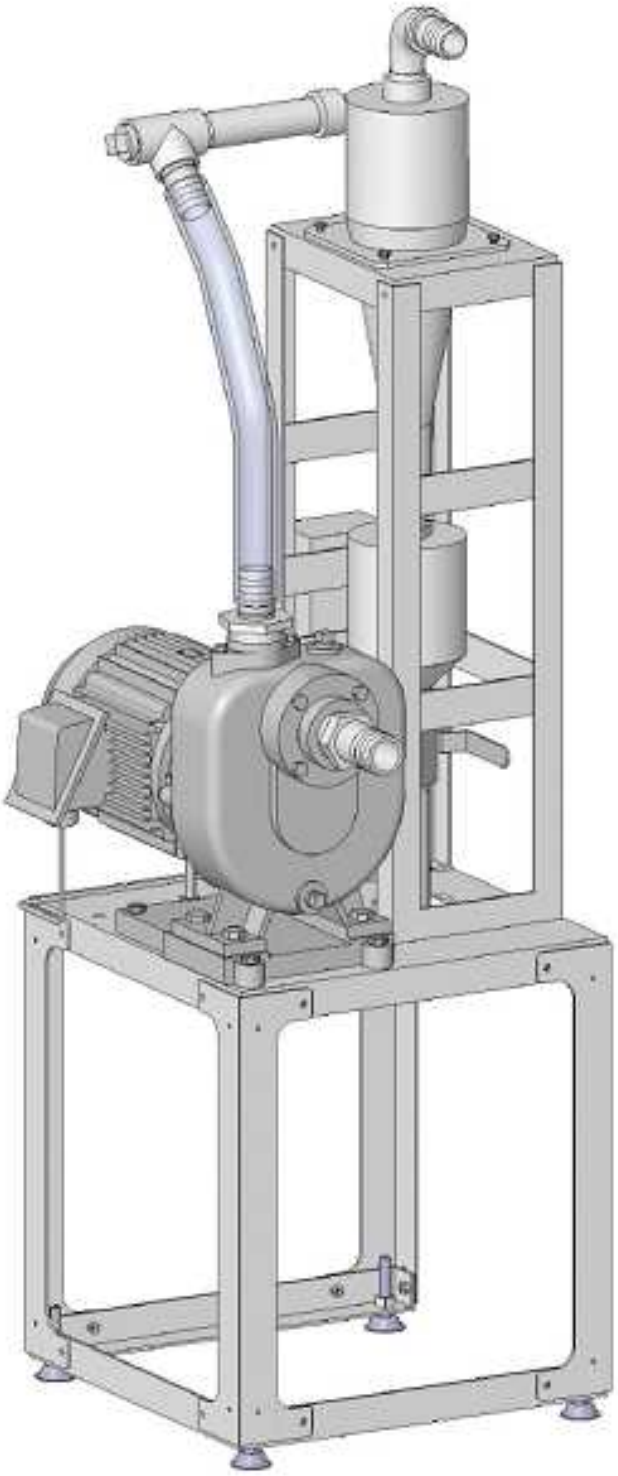
Parts Used:

No.	25	26	30	39	43	44
Quantity	1	1	1	1	1	1

15) Install piping of Nos. 25 and 26 to VDF outlet port.
16) Install wiring between T1, T2 and T3 terminals of the switch box and U, V and W terminals of the pump with No. 39. On the pump terminal box side, fix The CAPCON.
17) Attach No. 44 to VDF-stand 2 and fix No. 39 with No. 43.
(Refer to the Cable Fixing Diagram.)

When installing piping, be sure to apply tape sealant and perform screwing securely. Failure to do so may result in fluid leakage during operation.

Before installing wiring, read “5.2 Electrical wiring precautions” carefully.



Completion Drawing

18) Connect the cable of the source power to L1, L2 and L3 terminals of the switch box.
This completes assembly.

Before installing wiring, read “5.2 Electrical wiring precautions” carefully.

7. Installation

7.1 Apparatus movement and carriage

When moving or carrying the apparatus, lift the stand with a forklift etc.
The apparatus is unstable since its center of gravity is high. Therefore, move or carry the apparatus carefully to prevent it from falling down.

⚠ Caution

◆ Do not move or carry the apparatus in an unstable condition. Doing so may result not only in apparatus damage but also in personal injury.

7.2 Installation

1) This apparatus is designed for indoor installation. Install it above a working fluid tank or on the tank of a machine tool.
2) Prevent the suction piping of the apparatus from sucking in fluid from sludge accumulated places, extremely contaminated tanks or places where sludge of more than 1mm is mixed.
3) Secure a maintenance space as well as space for piping and wiring connections around this apparatus.

❗ Prevent the suction piping of the apparatus from sucking in fluid from sludge accumulated places or extremely contaminated tanks.

7.3 Piping

1) Suction piping
   a) Make the diameter of the suction piping as large as possible.
      (Make it at least the same size as the pump suction diameter.)
   b) In the case of a hose (φ38 × φ48), use a suction hose.
   c) Install piping in such a way as to avoid air suction and dead air space.
   d) Prevent the suction piping from sucking in fluid from sludge accumulated places, extremely contaminated tanks or places where sludge of more than 1mm is mixed.
   e) Install piping appropriate to the fluid temperature and fluid quality used.

❗ In the case of a hose, use a suction hose.

❗ Prevent chips from mixing into the unit.

2) Clean fluid return piping
   a) Connect the clean fluid return piping in the same diameter (25A) as the nipple for the outlet hose.
      (Hose size: φ32 × φ41)
   b) Install piping in such a way as to avoid dead air space.
   c) Install piping appropriate to the fluid temperature and fluid quality used.

3) Drain piping
   a) Install drain piping if necessary.
   b) Do not make the piping too long or rising, since doing so may result in clogging.
   c) Install piping appropriate to the fluid temperature and fluid quality used.

⚠ Warning

◆ The hose may deteriorate due to the fluid quality or over time and disconnect.
Inspect the apparatus frequently including the hose band for looseness.

8. Operation

8.1 Operation preparation

1) Recheck that installation, piping and wiring are properly executed.
2) Turn the shaft lightly with a flatblade screwdriver from the rear of the pump motor to check that movement is not slow or nonuniform.
3) Turn on/off the pump by inching to visually check from the rear of the motor that the pump rotation direction (clockwise rotation) is proper when seen from the motor side.
4) Before reversing the rotation direction, turn off the power temporarily and interchange 2 of the 3 electrical wires. Check the rotation direction by inching.
5) Prime the pump from the priming cup. After removing the plug from the priming cup, prime the pump with fresh water or the working fluid used until the pump is filled to capacity and tighten the plug.
6) Close the drain valve.
7) Turn on the switch to operate the pump. After operation start, check that the fluid starts to flow from the clean fluid return piping.
8) Open the drain valve to check that there is no fluid flowing from the piping. After checking, close the valve.

Do not run the pump at idle (dry operation), since doing so causes a failure.

Do not run the pump by reversing the rotation direction, since doing so causes a failure.

Prime the pump with certainty. Insufficient priming may not pump fluid up.

After inspecting or cleaning the pump, tank, etc., be sure to prime the pump.

8.2 Operation

1) Recheck that installation, piping and wiring are properly executed.
2) Turn on the switch in the switch box to start operation.
3) Open the drain valve regularly during operation to discharge sludge together with the fluid.
4) Turning off the switch stops operation.
5) Before stopping operation, be sure to open the drain valve to discharge sludge together with the fluid.

Do not run the pump at idle (dry operation), since doing so causes a failure.

Do not run the pump by reversing the rotation direction, since doing so causes a failure.

Open the drain valve regularly during operation to discharge sludge together with the fluid. Failure to do so may result in SLUDGE-POT clogging.

9. Maintenance and Inspection

Inspect this apparatus periodically to prevent troubles from occurring under influence of the operating environment such as temperature, humidity and dust or due to secular change or life of the parts used.

Periodic Inspection Table

Inspection Item	Evaluation Standard	Frequency
Drain valve	Fluid discharge when the valve is opened during operation	Every day
Water leak from pump mechanical seal	Leak rate: 10 cc/hr. or less	Within every 1 month
Motor bearing temperature	Room temperature: ±40°C or 75°C or less	Within every 1 month
Wiring damage	No damage	Within every 1 month
Current value	Not to exceed rated current	Within every 1 month
VDF filtration accuracy	Excellent accuracy	Within every 1 month
Looseness of bolts in each part	No looseness	Within every 1 month

* Before performing maintenance/inspection for the pump or VDF, read each instruction manual carefully.

Warning

◆ Before performing maintenance/inspection or parts replacement, turn off the source power. Failure to do so may result in electric shocks, or personal injury due to accidental starting of the pump.

10. Troubleshooting

In the case of an error occurrence, grasp the cause and take measures against it immediately. If the error does not fall under any in the table below or a part is damaged, contact your dealer or us.
Before performing an overhaul, turn off the source power and check that electric current is not passed.

Trouble	Probable Cause	Remedy
・ The motor does not rotate. ・ The motor groans and does not rotate. ・ The breaker is tripped.	・ Power supply failure ・ Malfunction of motor ・ Voltage reduction ・ Voltage reduction ・ Foreign matter caught in sliding part	・ Inspect and repair it. ・ Inspect and repair it. ・ Check the power supply. ・ Turn it by hand, reassemble it or request the manufacturer to repair it. ・ Remove the foreign matter.
・ No pumping is performed. ・ The specified capacity or specified pump head is not sufficient.	・ No priming ・ Reverse rotation direction ・ Voltage reduction ・ Clogging of piping ・ Impeller wear ・ Large piping loss ・ Occurrence of cavitation ・ Dead air space in suction piping	・ Prime the pump. ・ Check the direction by the arrow and correct connections. ・ Check the power supply. ・ Remove the foreign matter. ・ Replace the impeller. ・ Review the plan. ・ Improve the suction condition. ・ Release air.
・ The filtration accuracy decreases.	・ Clogging of VDF ・ Pump pressure drop	・ Clean it. ・ Inspect the pump.

⚠ Warning

◆ Before performing maintenance/inspection or parts replacement, turn off the source power. Failure to do so may result in electric shocks, or personal injury due to accidental starting of the pump.

11. Repair and Warranty

For repair and maintenance of your purchased product, contact your dealer or us. We shall repair the product at no charge under the conditions shown below.

1) The warranty term of this product shall be one year after the final acceptance.
2) Where the product becomes faulty or damaged due to a defect in our workmanship regardless of your normal use during the warranty term, we shall repair the faulty/damaged part(s) of this product at no charge.
3) However, the following failures/damage and consumables will be repaired or replaced at charge:
   a Failures/damage occurring after the termination of the warranty term
   b Failures/damage resulting from abnormal use or storage
   c Failures/damage resulting from disasters or force majeure such as fire, natural disasters and acts of God
   d Failures/damage occurring where a part is replaced by the user
   e Failures/damage resulting from repair or modification by the user
   f The failure by the assembly, the breakage, and the poor assembly in a use place

   * Consumables are parts for which wear and tear or replacement is expected from the onset, such as packing, mechanical seals and bearings.
4) We shall not provide compensation for various expenditures and other damage resulting from failures occurring during the use of this product. When any abnormal condition is detected during use of this product, stop operation immediately and inspect the product to determine whether it is faulty or not. In the case of a failure, contact us immediately. At that time, inform us of the product model and serial number described on the nameplate as well as the failure (error) conditions.

If you have any questions or comments about your purchased product, feel free to contact us.

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図　書　管　理　シ　ー　ト

図書タイトル：取扱説明書【C-CAT M100K-5(6) 英文】
図書サブタイトル：
図書作成者：蛯名　一成
図書作成日：２０１４年１１月２７日

【注意】この管理シートは社内用です、社外には提出しないこと。

承　認	検　印	作　成

【訂　正　来　歴】

訂正番号	訂正日	訂　正　理　由	訂正者
		・	