



HIGH FREQUENCY 48V SERIES HIGH FREQUENCY VIBRATION MOTOR OPERATION MANUAL



HKM154VS

EXEN CORPORATION

☆ SAFETY PRECAUTIONS

- ☆ This product is a high frequency vibration motor that is mounted on a formwork to cast concrete secondary products and finishing the surface. Do not use for any other purpose.
- ☆ Be sure to read and understand this operation manual carefully before using the product so that it can be operated safely and efficiently. Improper machine use may result in injury or machine failure. Keep this manual for further reference.
Also, read the operation manual of power supply equipment carefully.
- ☆ The following symbols are DANGER, WARNING, and CAUTION instruction for the use of this product so that the product will not cause harm or damage to users or others.



DANGER

【DANGER】 indicates an imminent dangerous situation which may lead to death or serious injury.



WARNING

【WARNING】 refers to a hazard that may cause death or serious injury.



CAUTION

【CAUTION】 refers to a hazard that may cause minor or moderate injury.

 WARNING

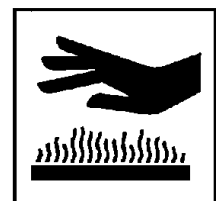
(To prevent death)

-  Never use this product with a commercial power supply.
Using commercial power supply could burn the motor, break the insulation and thus causing electric shock.
-  Do not use the power supply equipment (inverter) of this product that does not have an earth leakage circuit breaker for preventing electric shock. Otherwise, there is a risk of electric shock.
-  When you install it in high places, provide an anti-drop measure. Falling object may cause injury or damage.
-  In the unlikely event that the product falls, be sure to replace it with new one even if there is no abnormality in the appearance of the fall prevention wire.

 CAUTION

(To prevent injury or damages)

-  This product vibrates. When installing this product, select a position that does not resonate and install it securely.
-  Do not operate the product without the side covers. Otherwise, you may get injury.
-  This product becomes high temperature during operation. Never touch the hot surface accidentally after driving. There is a risk of being burned.



○ INTRODUCTION

Thank you for purchasing the high frequency vibration motor.

Be sure to read this operation manual before use.

Be sure to read and understand this operation manual carefully before using the product until it can be operated safely and efficiently. Handle and maintain it appropriately for safety operation.

Keep this manual for further reference.

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○ SAFETY



(For personal protection during operation)

- Wear a safety helmet, safety gloves, safety boots, face protector (protective glasses and mask) and safety harness during the installation work.



Safety helmet



Safety gloves



Safety boots



Face protector



Safety harness

- Make sure you have enough space when working.
- Work in a safe posture.
- Be sure to gain footholds in a safe environment when installing this product.
- When checking this product, be sure to disconnect the plug from the power supply. If not, electric shock may occur.
- Be sure to wear a safety harness when installing and inspecting this product at a high place.



CAUTION

(For longer service life)

- The number of usable units varies with the capacity of the power supply equipment (inverter.) Refer to "NUMBER OF VIBRATION MOTOR UNITS THAT CAN USE" to avoid overloading.
- It is recommended to use an over-current protective device in order to automatically protect vibration motor from over-current (larger than the rated current).

Note : Set the current setting of the overcurrent protection device within the range of 100 to 120% of the rated current value.

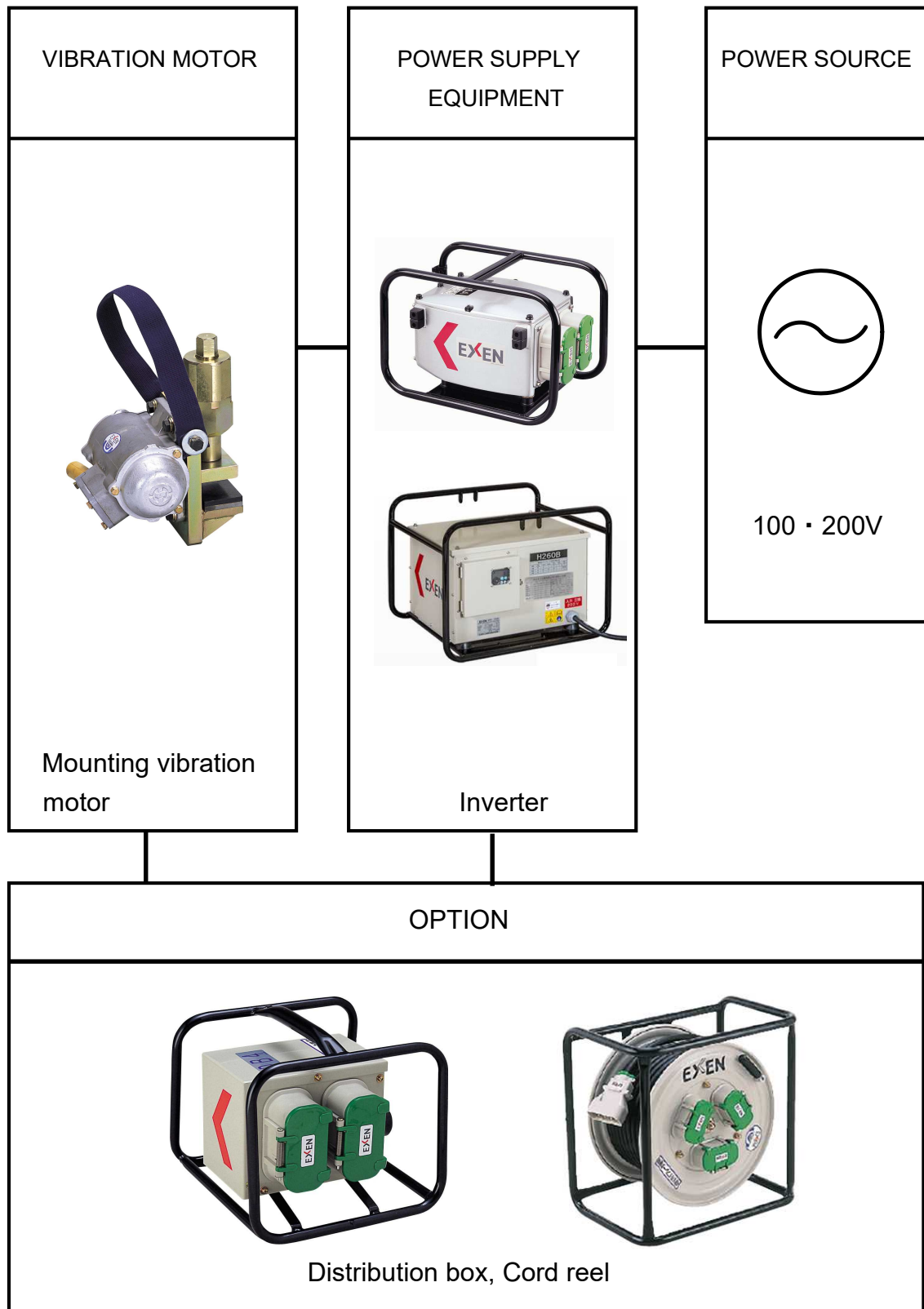
- Grab a belt when transporting this product. Never hang or pull a cable. Otherwise, it may lead to cable disconnection and unusable operation.
- Do not use motors, power supply equipment in locations exposed to rain or water. Failure to do so may result in malfunction or electric shock.
- Clean off any dirt or rust from the plug before inserting it securely into the equipment. Poor plug contact is one of the main causes of motor.

○ NUMBER OF VIBRATION MOTOR UNITS THAT CAN USE

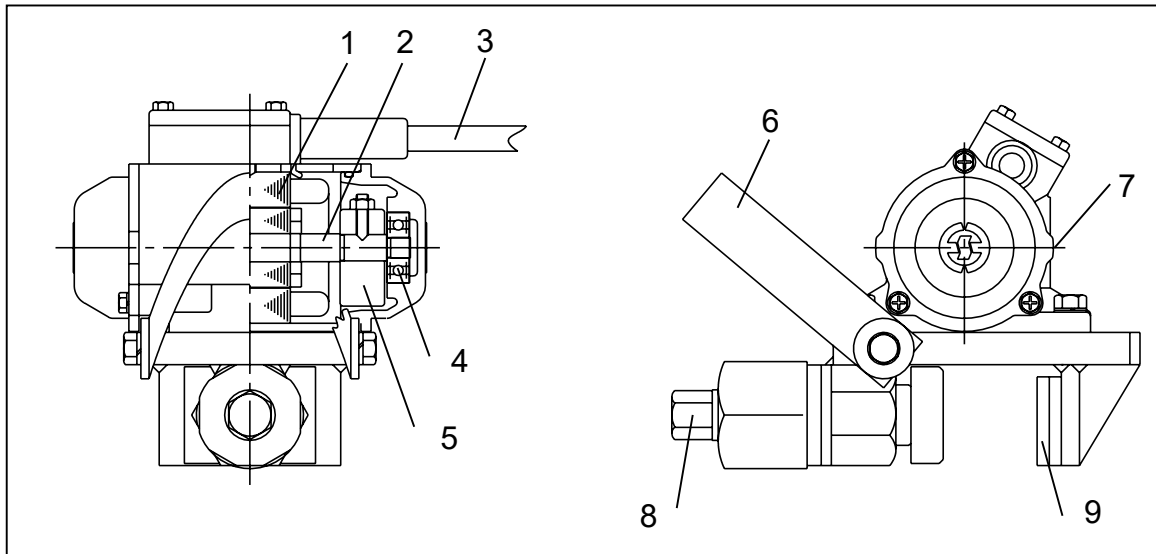
Power supply equipment model		High frequency vibration motor (Kitutuki)	
		HKM154VS	HKM304VS
Inverter	HC111B(RC)	3(2)	1
	HC113B	4(3)	1
	HC116B	5	2
	HC230A/B	10(8)	4(3)
	H260B	20(18)	9(7)

Note : The values in the parentheses () in the table are estimates of the number of external vibration motor that can be used when the vibration motors are simultaneously and continuously used under overload conditions.

○ SYSTEM CONFIGURATION



○ NAMES OF PARTS



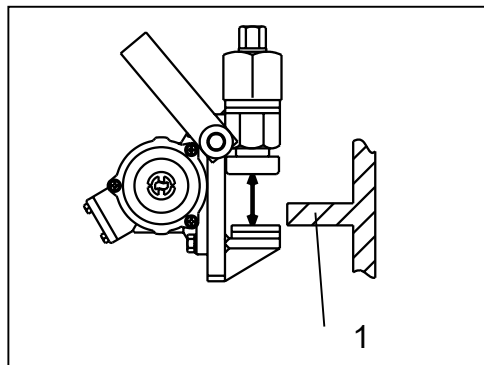
1	Stator	6	Hanging belt
2	Rotor	7	Nameplate
3	Cable	8	Cylinder shaft (hexagonal part)
4	Bearing	9	Vise holder
5	Eccentric weight	—	—

○ INSTALLATION



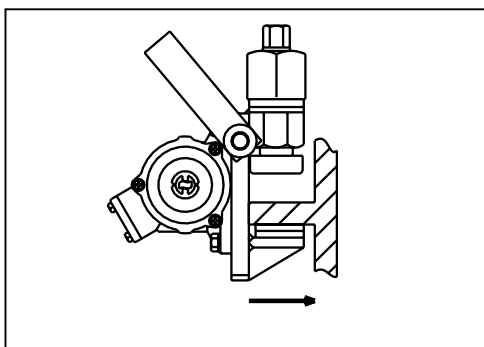
When installing this product on a formwork, be sure to unplug a plug from the power supply. There is a risk of sudden movement and injury.

1. In advance, widen the jaws of the vise holder more than the thickness of the mounting part.

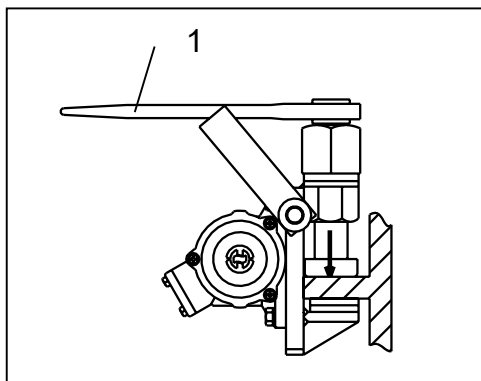


▶ 1. Mounting part

2. Press it until the end face of the mounting part touches the bottom of the vise holder.



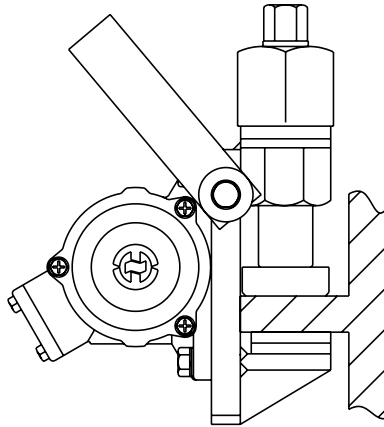
3. Tighten the hexagonal part of the cylinder shaft securely with a ratchet or wrench (Width across flat: 21mm).



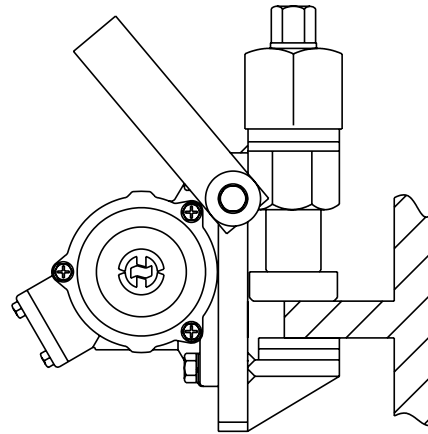
▶ 1. Ratchet or wrench

Note : The thickness of the applicable mounting part should be 20-40mm. If a thin object is sandwiched, the thread engagement lengths in the cylinder might be reduced, causing a cylinder failure.

Note : If oil or mortar adheres to the surface of the mounting part, or if the mounting is incorrect, it may fall. Wipe off any dirt on the mounting part and install it securely.



✓ Correct mounting



✗ Incorrect mounting

○ HOW TO REPLACE BEARINGS

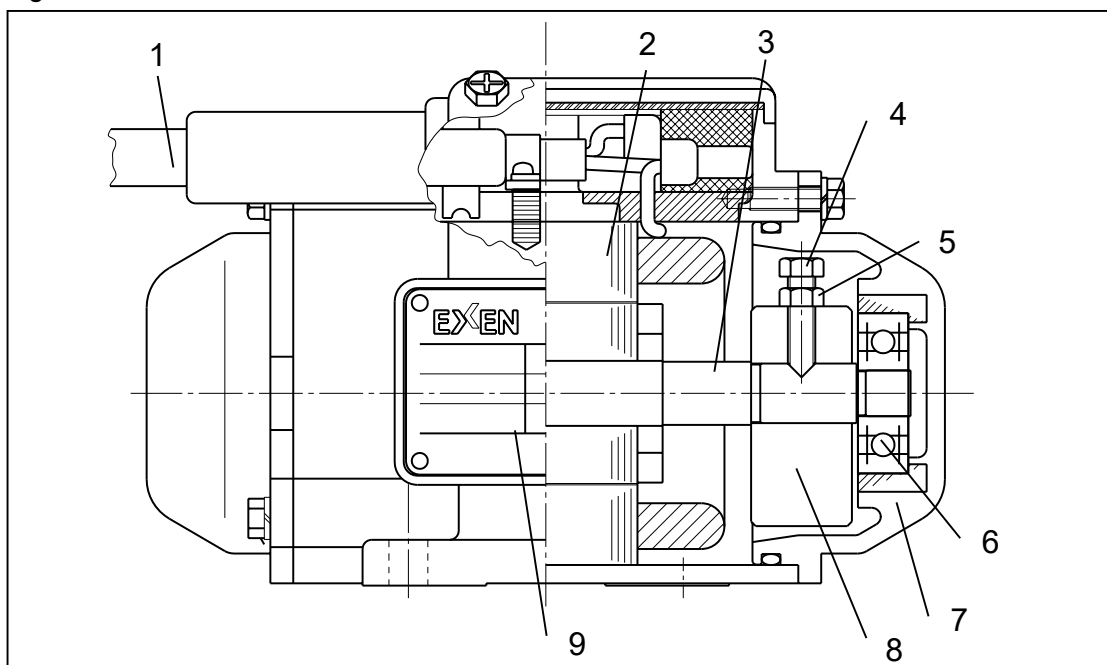
⚠ **Before replacing the bearings, be sure to disconnect the cable from the power socket, remove the motor from the installation part, and place it on a workbench for task. Otherwise, you may get an electric shock or injury.**

⚠ **During replacement, be careful not to damage the stator coil with weights or fixing bolts.**

1. Loosen the side cover bolts on both sides and remove the side covers.
2. Remove the bearings attached to both ends of the rotor.
3. Loosen the bolts and nuts securing the eccentric weight, remove the eccentric weights on one side, and remove the rotor from the shaft.
4. Replace old bearing with new one.

Note : Please fit the side cover with the bearing.

5. Insert the rotor into the main body and attach the removed eccentric weights with bolts and nuts.
6. Attach the side covers to both sides of the main body and press to assemble.
7. Tighten bolts on the side covers.



- ▶ 1. Cable 2. Stator 3. Rotor 4. Fixing bolt 5. Fixing nut 6. Bearing 7. Side cover
8. Eccentric weight 9. Nameplate

○ TRIAL OPERATION

○ Be sure to confirm that it is not resonating.

1. Is the motor current exceeding the rated current during operation?
2. Does abnormal vibration noise occur?
3. Do you see the motor doubly?

Note : If any of the above apply, it is resonating. Take the following measures.
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○ Resonance measures

1. HKM304VS type reduces the centrifugal force and avoids resonance.
(Refer to Eccentric weight adjustment)
2. Reinforce the motor mounting part, if necessary by welding, adding a stiffening rib or increasing plate thickness.
3. Reinforce the resonating part of the formwork, if necessary by welding, adding a stiffening rib or increasing plate thickness.

○ CLEANING AFTER USE

○ After use, be sure to clean it well.

1. Remove concrete on the motor, base holder and cable before it hardens.
2. Clean and remove dirt and dust from the motor, base holder and cable.

○ INSPECTION

- Be sure to check the following items before and after use. The inspection is in order to reduce the trouble during use as much as possible.

1. Does it emit any irregular sounds such as bearing sounds or metal sounds?
2. Is the operation sound normal?
3. Does the current value exceed the rated current value?
4. Is it possible to adjust the vise holder?
5. Can the switch be turn "ON and/or OFF"?
6. Are bolts and nuts loose?
7. Are there wear, cracks and scratches on cables?
8. Is the insulation resistance value correct?
(DC500V, 10MΩ or more)

■ Bearing replacement period

If the motor overheats or abnormal noise (such as metal noise) occurs during operation of this product, it is considered at the end of a bearing product's life. Disassemble the body and replace the old bearing with new one.

The estimated product life of the bearing is about 1,000 hours or more at the maximum centrifugal force. It depends on the usage conditions such as the machines used and operating environment.

■ Recommended Bearings to be used

- HKM154VS: 6300ZZC3-N

○ TROUBLESHOOTING

Operation	Phenomena	Cause	Solution
Enabled	Noise (metallic or other noise)	Bad bearings (Rough, Worn)	Bearing replacement
	Weak vibration	Bad stator	Stator replacement
Disabled	Humming noise	Open phase	Repair it
		Bad stator	Stator replacement
		Bad bearings (Locking/Broken)	Bearing replacement
	No sound	Burned stator	Stator replacement
		Broken cable	Repair or replace the cable

○ SPECIFICATIONS

■ Specifications

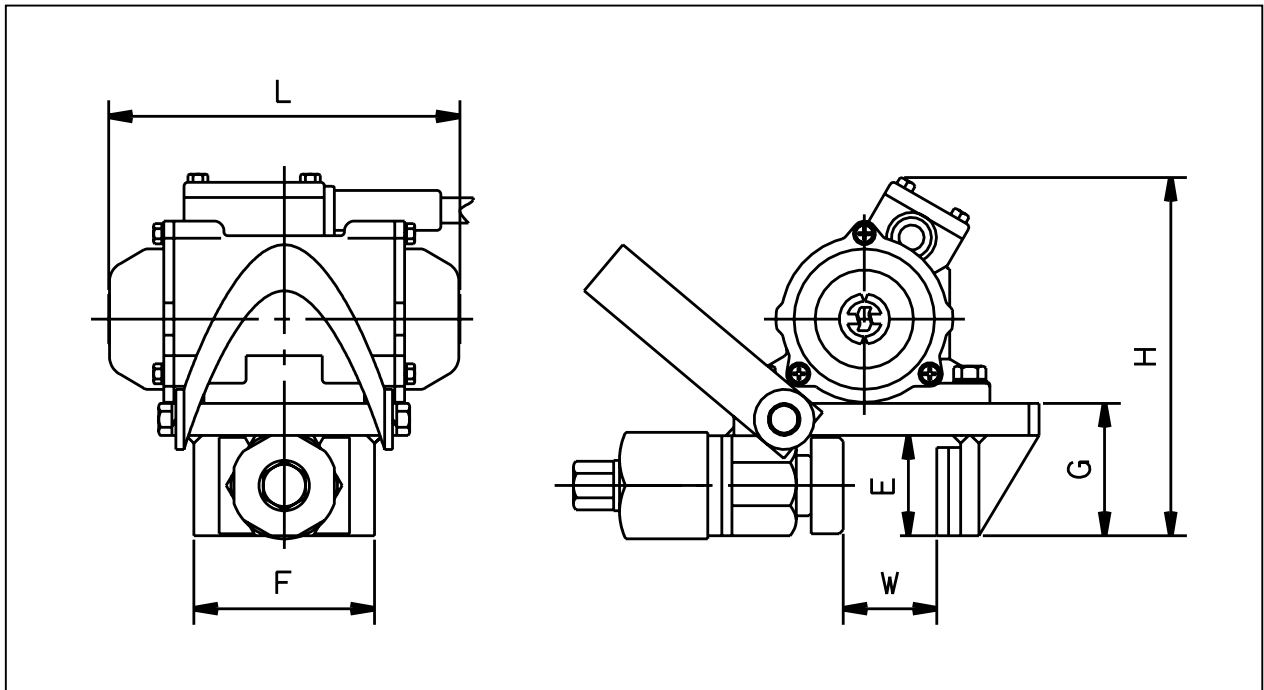
Model	Output (W)	Voltage (V)	Current (A)	Cycle (Hz)	Frequency (Hz)	Centrifugal force (kN) 100Hz-240Hz	Mass (kg)
HKM154VS	150	48	3.6	100-240	50-120	0.32-1.86	10.0

■ Dimension

Unit: mm

Model	L	W	H	F	G	E
HKM154VS	175	0-40	179	90	66	50

■ Dimension drawing



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