
INSTALLATION AND MAINTENANCE

Installation of VC Clutches

There are five options available for VC series clutches:

- **Standard (E)** – The standard unit consists of a combination the field/rotor assembly and the armature. It has a single spring which allows it to perform with zero backlash.
- **Silent (S) type** – This type is equipped with quiet arm that dampens the vibration at the clutch engagement..
- **Higher Torque (H) type** – This type uses coil of higher capacity than the standard type.
- **Auto Adjust (A) Type** – The auto adjust type consists of a combination field/rotor assembly and a combination armature auto adjust hub. This unit is not zero backlash, but had a minimal amount of backlash. This unit also automatically adjusts for wear between the armature and the rotor.
- **One Piece (P) Type** – This type is pre-assembled at the factory and includes a universal mount hub, so customers can mount their sprockets, pulleys or coupling. This unit also has a zero backlash spring.

Installation Procedure for Standard and Auto Adjust (A) Type

1. The complete unit consists of two major sub-assemblies: the field/rotor assembly and the armature assembly.
2. If a modified or special clutch was ordered, a flange or pulley may already be attached to the armature assembly, in which case skip to step 3. If not, the customer-supplied flange or pulley must be mounted onto the armature assembly with one or two bearings, depending on the type of hub connection, to support the assembly on the shaft. For the standard types, the bolts provided with the clutch must be used to connect the leaf spring on the armature to the flange or pulley, and a locking compound should be used to prevent loosening. Washers are not necessary. For auto-adjust (A) types the tolerance for the bearing fit depth should be + 0.002" – 0".
3. Depending upon orientation either the field side or the pulley side can be mounted first. In either case, a shaft step, lock washer or other type of axial restraint should contact the inner race of either the field or the pulley bearing. If the field is installed, first put the key in the key way between the shaft and rotor. Make sure the key does not protrude beyond the end of the rotor.
4. Calculate the distance required between the pulley bearing's inner race and the rotor face to set the proper gap. Use spacers and shims if necessary to set the gap as specified on the V-series data sheet. Then slide the armature/pulley assembly onto the shaft. Verify that the gap

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is within proper range and secure the assembly in place via a center bolt and washer, locking ring or other axial restraint device against the bearing's inner race.

5. Make sure that the torque tab is loosely restrained to prevent the field from rotating due to the field bearing drag a minimum of 1/16” of axial and radial clearance should be allowed so that the field bearing is not pre-loaded.
6. Connect the lead wires to the power source and energize the field. If the armature is not pulled in by the magnetic force of the field, verify and reset the gap.
7. When power is disconnected, the clutch should disengage freely and there should be no contact between the armature and the rotor. If any contact is noted, verify and reset the gap.

For (A) Type:

If the rotor contacts the armature in a power off condition, the armature may have shifted on the automatic air gap mechanism during transit. If this happens, remove the armature/pulley assembly from the shaft and place it onto a flat surface with the armature side up. Press the armature downward towards what would be away from the rotor during installation and then reinstall onto the shaft. If once on the shaft, the clutch does not pull the armature in, manually push the armature towards the rotor until the armature pulls in. (WATCH YOUR FINGERS, ONLY PUSH FROM BEHIND THE ARMATURE.) Once this is done, the automatic air gap is now set.

8. In the first few engagements, the unit may not produce rated torque but will do so after the clutch surfaces wear in. The unit may squeak during initial wear because there is only metal to metal contact. This will diminish as the unit wears itself in. If full torque is required immediately, contact Ogura or a sales representative for proper burnishing procedures.

Installation Procedure for One Piece (P) Type

1. Install the pulley or sprocket onto a universal mounting flange.
2. Slide the clutch onto the shaft and install the key. Make sure there is a step or set collar to restrain movement of the clutch.
3. Install the retaining ring or set collar on the opposite side of the clutch to restrict movement.
4. Make sure that the torque tab is loosely restrained to prevent the field from rotating due to field bearing drag. A minimum of 1/16” of axial and radial clearance should be allowed so that the field bearing is not pre-loaded.
5. Connect the lead wires to the power source and energize the field.
6. When power is disconnected, the clutch should disengage freely and there should be no contact between the armature and the rotor. If any contact is noted, verify and reset the gap.

Maintenance

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Except for the auto adjust series, the gap between the armature and rotor will enlarge as the clutch wears. For the standard series, if the clutch fails to pull in, reset the gap and verify that it is within specified range. Depending on the duty cycle and load, the wear rate should be periodically inspected. Wear produces grooves on the two faces. This is normal, and they should not be removed. Excessive wear will often initially result in loss of torque. When units are worn out, it is preferable and usually necessary to replace both the rotor/field and armature, as they tend to wear at about the same rate. For the P series adjustment is not possible and when the gap becomes too large the clutch needs to be replaced.

Loss of Torque

The most common service problem is loss of torque. The following quick checks can easily be made and will usually take care of the problem:

1. Check for wear: The unit may be worn out and need replacing.
2. Check the friction surfaces for contaminants: Remove if any are present (see Contamination).
3. Check for proper power input: Use a DC voltmeter across the field terminals and verify that normal voltage is being supplied. If the power control has a potentiometer, this should be turned to full power for this test. The voltage should also be read as the potentiometer is turned down and should be approximately proportional.
4. If the voltage is zero or low, the wiring should be checked for a grounded (shorted) or open coil.
 - A. Grounded coil: With the power off and one lead disconnected, measure the resistance between one field terminal and the field shell. The ohmmeter should register no change (infinite resistance) with a good unit. Repeat with other terminal. If the ohmmeter shows a reading, this means there is some grounding to the shell, and the field should be replaced.
 - B. Open coil: With the power off and both leads disconnected, measure the resistance between the two field terminals. The ohmmeter should give a reading very close to the following. An open coil would give no reading (infinite resistance) and must be replaced.

Table 1

Model	0.6	1.2	2.5	5	10	20
Coil Resistance [Ω] (DC 24V – 20°C)	41	35	23	17	15	1.9

Contamination

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Care should be taken so that contaminants such as oil, grease, etc. do not come in contact with the working faces of the unit. In some cases it may be necessary to provide a cover or baffle to prevent this. Oil and grease on the friction surfaces should be removed by wiping with a small amount of environmentally friendly grease solvent. However, depending on the permeability of the grease or oil, it may be impossible to remove completely, so if the unit shows signs of slippage it needs to be replaced.

Heat

If the unit appears to be running hot, first check the temperature on the outside of the field. The field temperature can be around 150°F in an ambient temperature of 72°F due to the heat generated by the coil and operation of the unit. Excessive heat may be a source of failure and can be corrected by:

- Insuring that the input voltage is correct.
- Providing ventilation of the unit.
- Reducing system inertia and/or cycle rate.

Standard Type

Armature mounting

Use included bolts and spacers
Prevent loosening of bolts

Mounting surface perpendicularity

MAX 0.1mm TIR

Pulley
Customer Supplied

Shaft

Eliminate axial play

Use 2 ball bearings

Avoid impact/shock
Customer Supplied

Gap: 0.2~0.3mm \pm 20%

Antirotation
Allow axial movement

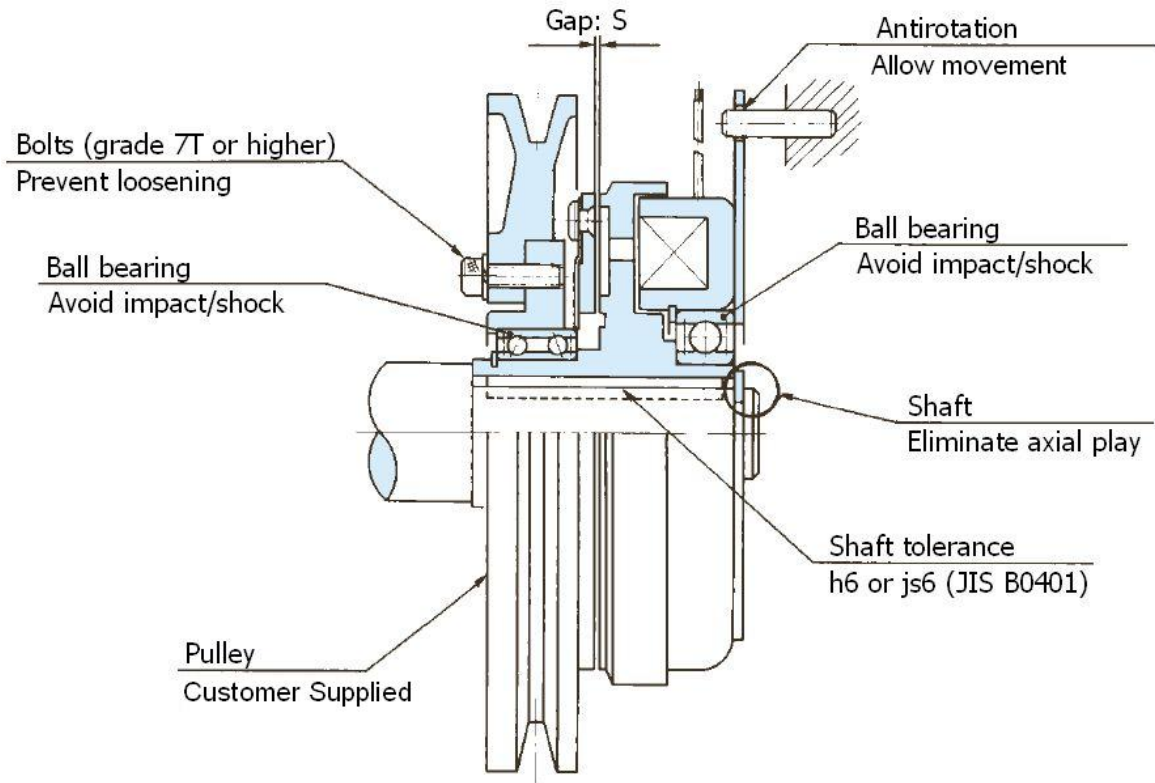
Ball bearing
Avoid impact/shock

Shaft tolerance
h6 or js6 (JIS B0401)

Gap adjustment
Use collar and shims

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One Piece Type



Auto Adjust Type (output bearings and pulley or sprocket supplied by customer)

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