



MMC Series Clutch General Installation Instruction and Service Guideline

Proper assembly, installation, and maintenance will assure optimal application performance and extended life. Please read these instructions completely prior to assembly and operation.

If your clutch is supplied as part of preassembled equipment, please refer to the manufactures recommendations for specific maintenance and service information.

A. INSTALLATION

1. A mounting bracket is required to support the clutch. This is normally supplied to the original manufacturer or through a mobile hydraulics distributor. If your clutch did not come with a mounting bracket, this must be purchased and/or fabricated first for proper installation. All bolts used for the installation should be torqued based upon the grade bolt you are using.
2. Mount the clutch to the bracket with the bolts provided from the OEM or distributor that sold you the bracket. For some Ogura model MMC-28 series the bolts go through the u-shaped slots on the Ogura clutch, and the bracket supporting the clutch is tapped. Other 28 series have a 4-bolt pattern where the back of the clutch field is tapped with a half inch space 13 UNC-2B thread. For Ogura models MMC-60 & 140 the support bracket has a through hole and the back of the clutch assembly has 8 holes that require a 3/8"-16 UNC by 5/8" deep. The Ogura model MMC-210 has 8 holes, 7/16" 14-2B thread 1 inch deep. The bolt should be long enough to go through the support bracket and go approximately half an inch into the clutch.
3. Loosely position the clutch/bracket assembly on the mounting platform.
4. If necessary, drill required holes in platform to correspond to the foot mount bracket on the clutch.
5. Loosely install mount bracket bolts, nuts, lock washers, Re-check alignment, and tighten all bolts.
6. Mount pump to foot bracket on opposite side from clutch. (NOTE: lubrication and cleanliness of the pump shaft and clutch bore is important. Thoroughly clean these areas if any contamination.) Apply a thin coating of molybdenum disulfide grease on the shaft and in the bore of the clutch. Wipe away any excess grease and make sure no grease gets on armature or rotor assembly. **Do not use Never Seez or other anti-seize compounds as this will wear down clutch spline.** Use mounting bolts long enough to engage at least three-fourths of the threads in the mounting bracket. Always use lock washers.
7. **For universal joint input**, connect universal joint companion flange to the four holes in the clutch face (or other direct inline coupling. Make sure driveline yoke ears are in phase. If not, remove u-joint, separate joint at the spline and rotate 90 degrees. Shaft misalignment must be less than 3° angularly with a shaft concentricity run out of no more than .003 thousandths of an inch.

8. **For belt input**, make sure the pulley on the clutch is in alignment with the driving pulley, install belt and tighten based upon belt manufacturer's recommendations. Install drive line between clutch and power source. Install bolts, nuts and lock washers and torque to specified limits.

9. Connect clutch to either 12v or 24v power supply. When voltage/current is connected, the clutch will become engaged and with no current/voltage going to the clutch, the clutch will be disengaged. The clutch coil is not polarized, so it does not matter which wire is connected to positive and/or negative. Use of a surge protector is recommended in the Clutch electrical circuit. One is supplied with each clutch at no charge. It is a good idea to replace the surge protector when replacing the clutch. (Information on the surge protector circuit follows below.)

10. If full torque is required of the clutch should be burnished. Burnishing involves running the clutch at around 1,000 to 1,200rpm and cycling the clutch four times per minute at a reduced load. This should be done for 30-50 cycles.

B. ADDITIONAL INFORMATION

1. **CAUTION:** At the moment of engagement, the clutch must accelerate all related inertial load of the clutch components and other components being put into rotary motion. The larger the clutch and related components the higher the inertia load. Higher R.P.M. engagement of the clutch creates an excessive shock load and may cause breakage of the springs and/or clutch slippage and ultimate clutch failure. Please refer to these recommendations regarding maximum clutch engagement R.P.M.

Clutch Model	Maximum Engagement RPM	Maximum Operating RPM
MMC28	2,500	3,600
MMC60	1,800	3,000
MMC100	1,500	2,500
MMC140	1,200	2,500
MMC210	1,200	1,800

2. Soft Start: Ogura does offer a soft start clutch controller for applications where the rapid engagement of the clutch is undesirable. Please contact your factory representative for information. Higher speed engagements are also possible but depending on the value of the inertial loads, life may be reduced.

3. Ball bearings: The unit is supplied with oversized dual bearings permanently sealed and lubricated ball bearings. They are designed for years of use in Marine engine bay environments.

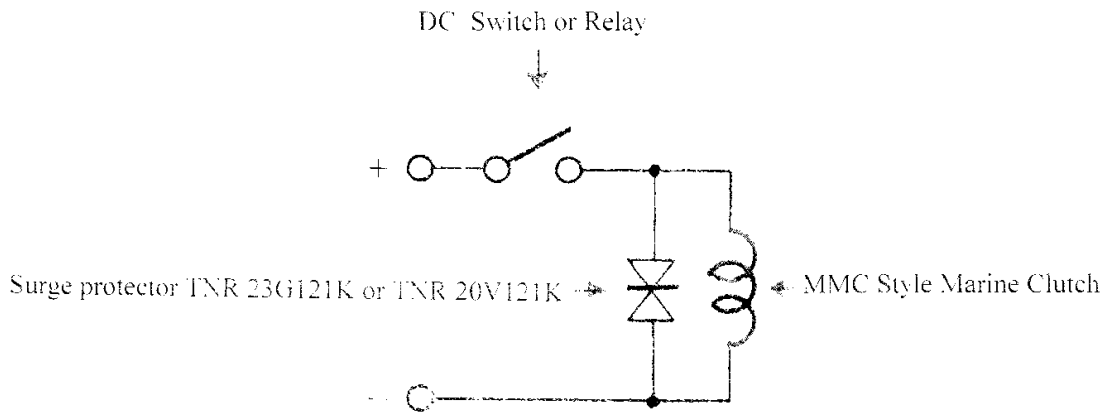
4. Air Gaps: The Air gap between the Rotor and the armature are set at the factory and no adjustment is possible or necessary. That said, a periodic checking of the air gaps is suggested. With each engagement of the clutch there is some wear increasing this air gap.

For all MMC series clutches, the preset factory air gap is from 0.015-0.028.

Repair or user serviceable parts:

There are no user or serviceable parts in the MMC series clutches. We are attaching a parts list and exploded view for your reference only. Please allow only an authorized Ogura warranty service center to repair or replace worn or damaged clutches.

Diagram for using Surge protector for Ogura Clutch:



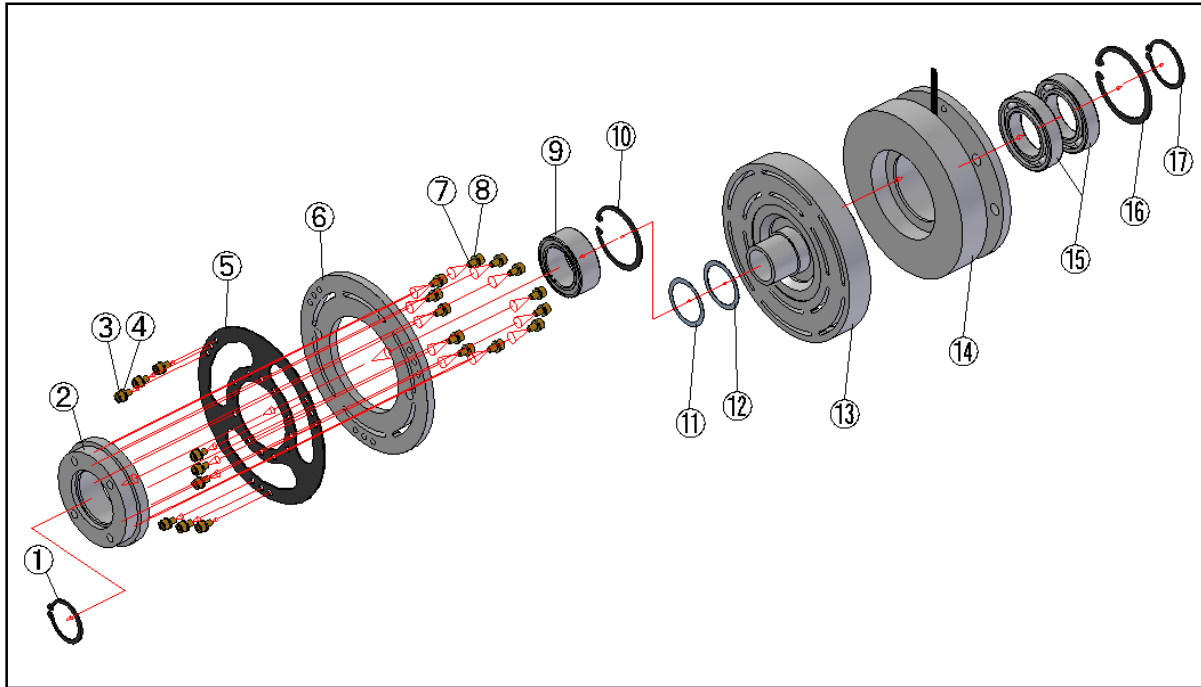
Use of the Surge Protector in the insulation is optional. The surge protector is not for the protection of the clutch, but for the protection of the customer's clutch control circuitry.

In general, each time you turn off the clutch, there is an inductive "surge" of power (voltage) back from the clutch coil into the power circuit, switch and relay. This is a brief (tens of milliseconds) voltage that can cause arcing at the switch or relay contacts. Repeated arcing at these contacts can cause the switch or relay to prematurely fail over time. The use of a surge protector can extend the life of the switch or relay.

In addition, the switch or surge "noise" can sometimes be heard as a "pop" over radios. The surge protector will eliminate or greatly reduce this noise.

INSTALLATION: The surge protector needs to be connected to the clutch leads after the switch. The protector can be anywhere along the two clutch leads. Most of the time it's installed at the beginning of the clutch lead and can sometimes be connected right with the customer's terminal and terminal housing.

MMC-2 Specific exploded view & reference Parts list



NO.	PARTS NAME	QTY
1	Retaining rings	1
2	Armature hub	1
3	Hexagon socket head cap screws	9
4	Plain washers	9
5	Plate spring	1
6	Armature	1
7	Hexagon socket head cap screws	12
8	Spring washers	12
9	Ball bearings	1
10	Retaining rings	1
11	Shim	Proper
12	Shim	Proper
13	Rotor assembly	1
14	Field	1
15	Ball bearings	2
16	Retaining rings	1
17	Retaining rings	1

The above chart is for a 12 Volt MMC-28E-04

Ogura's Warranty:

Products are warranted against defects in Material and Workmanship for a period of 12 months from date of shipment, when applied in proper applications within specified ratings. This Warranty covers repair or replacement, FOB Somerset New Jersey. There is no further warranty or implied representation as to any product. The company shall not be liable for any consequential damage caused by improper application or installation of its product.