Innovation in Motion TSUBAKI

Cam Clutch Manual

MG300, MG400, MG500, MG600, MG700,
MG750, MG800, MG900, MG1000, MG1100, MG1200, MG1300

Thank you for buying Cam Clutch products.
Before installing or working on the product, confirm it is the correct size by checking its label and make sure you have the complete set of parts. If any part is missing, contact your distributor immediately.
This manual should be considered an essential part of the unit and remain with the unit when redistributed.

SAFETY

●Your Cam Clutch is a high quality, sophisticated unit which should be handled by experienced engineers only.
●For safety purposes, make sure this manual is easily accessible by the user at all times.
Safety precautions in this manual are classified into two categories: "WARNING" and "CAUTION". These are defined as follows:

⚠ **WARNING**	Death or serious injury may result from misusing the product without following the instructions.
⚠ **CAUTION**	Minor or moderate injury, as well as damage to the product may result from misusing the product without following the instructions.

Notice that although categorized under "CAUTION", subjects discussed may lead to serious results depending on the situation.

⚠ WARNING

- Make sure turning forces are not applied to Cam Clutch or turning shaft of the equipment when conducting inspection or maintenance. Pay special attention to the back stopping application to prevent accidents.
- Frequent starting and stopping will apply excessive force on the mounting. Verify mounting strength.
- Inaccurate installation and mounting, various load conditions, wear and tear of parts, and life expectancy can all affect the performance of a Cam Clutch. Inspect and maintain periodically and install a safety devise on your equipment.
- Comply with Ordinance on Labor Safety and Hygiene 2-1-1 general standards.

⚠ CAUTION

- To ensure safety and optimal performance, carefully read this instruction manual in its entirety.
- Confirm rotational direction prior to installing.

■ Installation

1. Inner race shaft bore is finished at H7.the recommended shaft diameter tolerance of h6 or h7.
2. In case of interference fit when installing the Cam Clutch, The maximum interference is up to 0.025.in this case, put the Cam Clutch in the recommended oil at a temperature of 80℃ or less and heat it before installation.
3. Attach the sprocket or gear to the outer race by using the outer circumference portion as a spigot facing, and fix it to tap holes at the end face of the outer race by the bolts which have a strength class of 10.9 and above.
4. Use the key in accordance with the JIS B1301-1959(Old JIS)parallel key:second grade.(The MI750 and above include a special dimension hardened key. Make the depth of the shaft keyway according to JIS.)Shaft diameter and key dimensions may not correspond with JIS.
   Align the key to slide through the keyway smoothly before installation.
5. Allow a clearance between the top of the key and keyway. and fix the Cam Clutch axially using an end-plate or snap ring. Never use a tapered key.
6. In the case of using the Cam Clutch to the maximum allowable torque, use thermal or hardened materials for the shaft and key.
7. When fitting the Cam Clutch to the shaft, apply pressure to the end face of Cam Clutch 's inner race.(DO not strike the outer race.)
8. Make sure the rotational direction of the Cam Clutch corresponds with that of the equipment before installation.
9. In case the thrust load is applied to the Cam Clutch, set up the structure to receive the thrust load separately.
10. The Cam Clutch is not shipped packed in oil, so apply the appropriate oil to the Cam Clutch before use.
11. There is an air(internal pressure)release hole on the bottom of the inner race keyway, so make a clearance(0.1mm and above)between the top of the key and keyway to release air (internal pressure).As well, in the case of slow speed (200r/min and slower),oil may leak from the air hole. In this case, contact TSUBAKI for more information.
12. If using the Cam Clutch at middle to high speed operation range, be careful of heat generation by overrunning. In the case the temperature of the Cam Clutch 's outer race portion becomes70℃ or higher, the Cam Clutch cannot be expected to have a long operating life. In this case, either select a different series or change to oil-bath system or forced lubrication system.

■ Lubrication

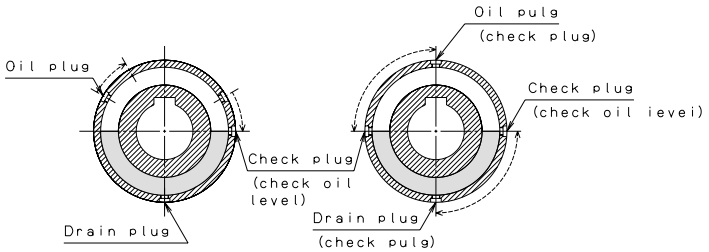
1. Use the brand of lube oil listed on the next page or its equivalent.
   1) Do not use oil with extreme pressure additives as it will shorten the life of the Cam Clutch.
   2) For the Cam Clutch to be able to function correctly with the oil listed on the next page, the ambient temperature range must be between−5℃～40℃.If you intend to run the Cam Clutch at a temperature that exceeds this ambient temperature, contact TSUBAKI for a consultation.
2. Follow the directions on the next page for lube oil amount and lubrication method.
   1) Replenish oil after 100 hours of operation or every two weeks, whichever is sooner. Once every three months, old oil and wash out the inside, then replace it with new oil. Locate the plug hole at the bottom and drain old oil.
   2) When lubricating or washing the Cam Clutch, do not allow any foreign matter to enter the inner portion of the Cam Clutch as this may it to cause it to function incorrectly.

	Shell Oil	Exxon Mobil	JXTG Nippon Oil & Energy	Idemitsu Kosan	Cosmo oil
Overrunning or Backstop Applications①	Turbo Oil T32 Rimulla D Oil 10W Shell ATF Gelco ATF	DTE Oil Light Multipurpose ATF Delvac Hydraulic 10W ATF220	FBK Turbine 32 Automatic D2 FBK Oil R032. Rix Turbine32 ATF Ⅱ (N). ATFK	Daphne Turbine Oil 32 Apolloile ATF-DX	Cosmo Turbine Super 32 Cosmo ATF Ⅱ Cosmo Turbine 32
Overrunning or Backstop Applications②	Rimulla D Oil 20W/20 Rimura D Oil 30	Delvac 1330	FBK Oil R068 Delster F10W-30	Appoloil Dieselmotive S-320, S-330	Cosmo Diesel CD20W

① In the case it is at 1/3 of the allowable rotation speed and less, In addition ambient temperature is 30℃ and less.
② In the case it is used at 1/3 of the allowable rotational speed and less, or in the case ambient temperature is 30℃ and above.

■ Oil Supply Method

1. Remove two of the plugs out of three to four plugs on the outer other race of the Cam Clutch.
2. Place the plugs on their face at the same height.
3. Lubrication from one of the plug hole at upper portion, and continue until oil comes out from the other plug hole.
4. Then, make sure to tighten the plugs to prevent oil leakage.



Cam Clutch Coupling MG－C

MG300C, MG400C, MG500C, MG600C, MG700C, MG750C, MG800C, MG900C, MG1000C

■ Installation

1. After referring to “Cam Clutch Portion Handing” on the previous page, install the Cam Clutch to the high speed shaft.
2. Handing of the coupling

1) Align accurately when installing both sprockets. Install the adapter to the outer race of the Cam Clutch ,secure the distance between both. Sprockets(s dimension),follow the angular and parallel misalignments shown in the following table, then fix the sprockets. Never forget to install the attached oil seal to the hub.
2) After the sprockets have been aligned and installation has been completed, wrap the chain insert the connecting pin and fix it.
3) Fill the prescribed amount of grease into the casing(refer to the following table),then tighten the bolts with an oil seal and packing. On MG1000,apply grease to the chains because there is no case.)

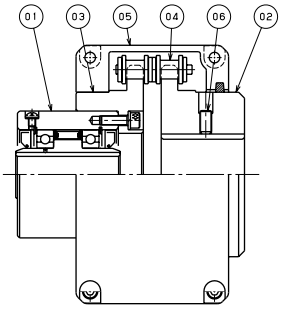
CAM CLUTCH COUPLING TYPE TURN	MG300C	MG400C	MG500C	MG600C	MG700C	MG750C	MG800C	MG900C	MG1000C
MAX. Allowable Angular Misalignment (°)	1°	1°	1°	1°	1°	1°	1°	1°	1°
MAX. Allowable Parallel Misalignment (mm)	0.38	0.38	0.50	0.75	0.75	1.02	1.02	1.27	1.27
Clearance S (mm)	11.5	11.5	15.2	22.7	22.7	30.1	30.1	37.5	37.5
GREASE FILL (kg)	0.4	0.5	0.8	3.3	4.3	8.3	10	15.3	-

Lubrication

1. Lubrication of the Cam Clutch Refer to the previous page.
2. Lubrication of the coupling

1) Use the following grease of its equivalent.
2) Changing lubrication grease

・ For the MG300C-MG900C, change the grease after the first 2000 hours of operation .Then change the grease every 4000 hours thereafter.
・ For the MG1000C, lubrication the chain once per week.



① Cam Clutch
② Sprocket A
③ Sprocket B
④ Roller chain
⑤ Coupling case
⑥ Set screw

Grease	Shell Oil	Exxon Mobil	JXTG Nippon Oil & Energy	Idemitsu Kosan	Cosmo	Nihon Grease
EXTREME-PRESSURE Li SYSTEM	ALVANIA GREASE EP No1・No2	MOBILUX GREASE EP No1・No2	EPI KNOCK AP No1・No2	DAPHNE CORONEX EP No1・No2	DYNA MAX EP No1・No2	Nigutaito LY No1・No2

Warranty

TSUBAKIMOTO CHAIN CO.: *hereinafter referred to as "Seller"*
Customer: hereinafter referred to as "Buyer"
Goods sold or supplied by Seller to Buyer: hereinafter referred to as "Goods"

1. Warranty period without charge
18 months effective the date of shipment or 12 months effective the first use of Goods, including installation of Goods to Buyer's equipment or machines - whichever comes first.

2. Warranty coverage
Should any damage or problem with the Goods arise within the warranty period, given that the Goods were operated and maintained under instructions provided in the manual, Seller would repair and replace at no charge once the Goods are returned to Seller. The following are excluded from the warranty.
1) Any costs related to removing Goods from the Buyer's equipment or machines to repair or replace parts.
2) Costs to transport Buyer's equipment or machines to the Buyer's repair shop.
3) Costs to reimburse any profit loss due to any repair or damage and consequential losses caused by the Buyer.

3. Warranty with charge
Seller will charge any investigation and repair of Goods caused by:
1) Improper installation by failing to follow the instruction manual.
2) Insufficient maintenance or improper operation by the Buyer.
3) Incorrect installation of Goods to other equipment or machines.
4) Any modifications or alterations of Goods by the Buyer.
5) Any repair by engineers other than the Seller or those designated by the Seller.
6) Operation in an inappropriate environment not specified in the manual.
7) Force Majeure or forces beyond the Seller's control such as natural disasters and injustice done by a third party.
8) Secondary damage or problem incurred by the Buyer's equipment or machines.
9) Defected parts supplied, or specified by the Buyer.
10) Incorrect wiring or parameter setting by the Buyer
11) The end of life cycle of the Goods under normal usage.
12) Loss or damage not liable to the Seller.

4. Dispatch Service
Service to dispatch a Seller's engineer to investigate, adjust or trial test Seller's Goods is at the Buyer's expense.

5. Disclaimer
1) In our constant efforts to improve, TSUBAKIMOTO CHAIN CO. may change the contents of this document without notice.
2) Considerable effort has been made to ensure that the contents of this document are free from errors. However, TSUBAKIMOTO CHAIN CO. makes no warranties with respect to the accuracy of information described herein. In the meantime, we would appreciate comments or reports on any inaccuracies or omissions found in this document to help us make timely amendments as necessary. Your cooperation is greatly appreciated.

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