

Cam Clutch BR•BR-P Series Manual

BR20、BR25、BR30、BR35、BR40、BR45、BR50、BR60、BR70、BR80、BR90
BR100、BR130、BR150、BR180、BR190、BR220、BR240
BR20P、BR25P、BR30P、BR35P、BR40P、BR45P、BR50P、BR60P、BR70P、BR80P、BR90P
BR100P、BR130P、BR150P、BR180P、BR190P、BR220P、BR240P

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:

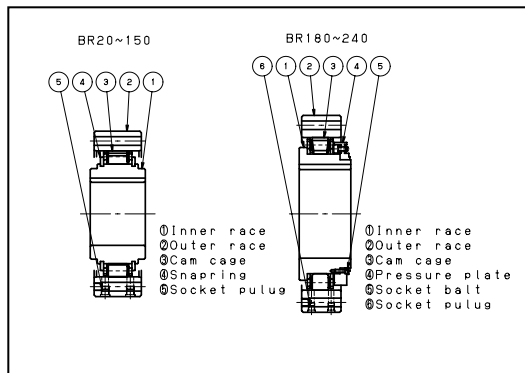
 WARNING	Death or serious injury may result from misusing the product without following the instructions.
 CAUTION	Minor or moderate injury, as well as damage to the product may result from misusing the product without following the instructions.

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 device 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.

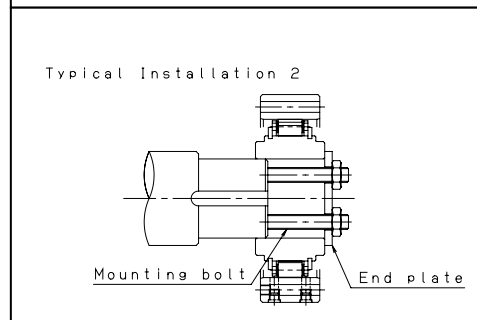
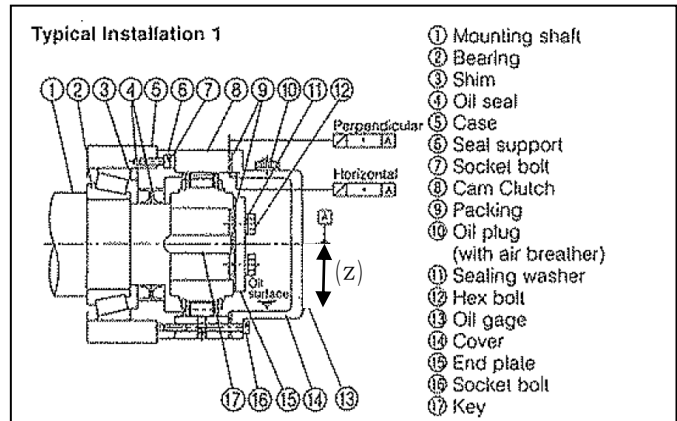
■ USING THE BR SERIES OPEN TYPE CAM CLUTCH

While the Cam Clutch can be disassembled by the user, reassembly may prove difficult. We recommend that you install the Cam Clutch as delivered.



Installation and Usage

- We recommend using shaft tolerances of h6 or h7 for Cam clutch installation.
- Use a ISO R773(DIN 6885.1)parallel key. A loose key will damage the Cam Clutch. Align the key to slide through the keyway smoothly before installation.
- When installing the Cam Clutch over a shaft , please follow the procedure outlined below. Never strikes the clutch with a steel hammer or apply unnecessary inspect loads.
 - Verify Cam Clutch direction of rotation. The arrow on the inner race shows the free running (cam disengaged) direction. Make sure that the direction of cam engagement matches the intended application.
 - Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft. Make sure that the outer race does not become dislodged.
 - Place an end plate over the inner race and use the mounting bolts to pull the Cam Clutch onto the shaft as shown in the diagram at right.
 - Tighten the end plate securely.
- If you are installing the outer race first, check the precision of the fit. The tolerances for outer race mounting are shown in the tables at right. Verify that the correct tolerances can be obtained. Out of spec installation could damage the Cam Clutch.
- To lubricate the Cam Clutch, apply lubricant at the outer circumference of the inner race (Refer to typical installation; Oil level is (Z) position at the shaft center.)
Avoid over lubrication, as it will cause the Cam Clutch to generate excessive heat.
- When using the Cam Clutch at a reduction gearbox, make sure that oil from the gearbox cannot enter the Cam Clutch. Service life can be significantly shortened if the Cam Clutch comes in contact with gear oils that contain viscosity enhancing additives. Refer to page 4 for lubrication guidelines.
- When installing a cover or seal support over the outer race, use bolts with a tensile rating of 10.9 or greater. Use a sealing agent or packing material between the mating services to prevent leakage.



Parallel Tolerances dimensions in mm

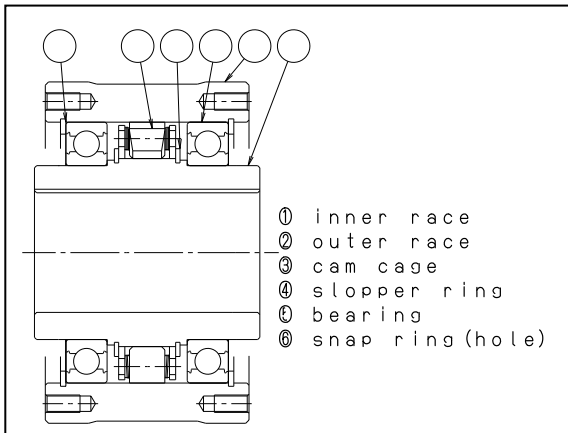
Model	parallelism	Model	parallelism
BR 20	0.10	BR 80	0.15
BR 25	0.10	BR 90	0.15
BR 30	0.10	BR100	0.25
BR 35	0.10	BR130	0.25
BR 40	0.10	BR150	0.25
BR 45	0.10	BR180	0.25
BR 50	0.10	BR190	0.25
BR 60	0.15	BR220	0.25
BR 70	0.15	BR240	0.25

Right Angle Tolerances dimension in mm

Model	Angularity	Model	Angularity
BR 20	0.04	BR 80	0.06
BR 25	0.04	BR 90	0.06
BR 30	0.04	BR100	0.08
BR 35	0.04	BR130	0.08
BR 40	0.04	BR150	0.08
BR 45	0.04	BR180	0.08
BR 50	0.04	BR190	0.08
BR 60	0.06	BR220	0.08
BR 70	0.06	BR240	0.08

■ USING THE BR SERIES PACKAGE TYPE CAM CLUTCH

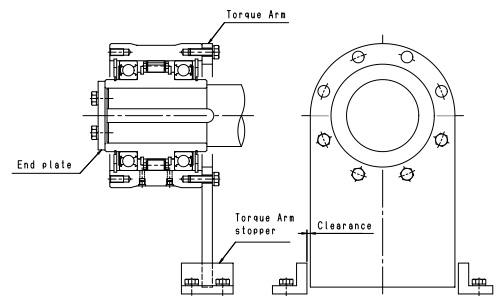
Similar to previous types, the package type Cam Clutch is designed into a ball bearing cassette that makes installation with a torque arm and/or coupling fast and easy. The package type Cam Clutch is grease lubricated.



Installation and Usage

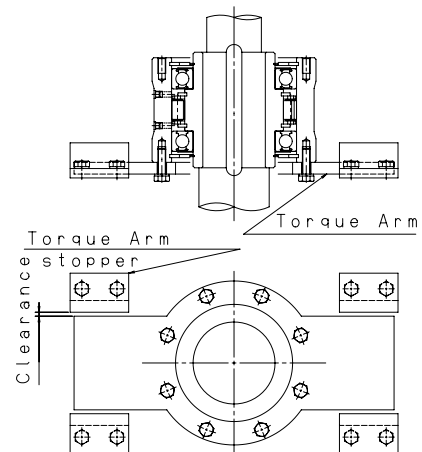
1. We recommended using shaft tolerances of h6 or h7 for Cam Clutch installation.
2. Use a ISO R773 (DIN 6885.1) parallel key. Make sure that the key does not move in the keyway. A loose key will damage the Cam Clutch. Adjust the key to slide through the keyway smoothly before installation.
3. When installing the Cam Clutch over a shaft, please follow the procedure outlined below. Never strikes the clutch with a steel hammer or apply unnecessary loads.
 - 1) Verify Cam Clutch direction of rotation. The arrow on the inner race shows the free running (cam disengaged) direction. Make sure that the direction of cam engagement matches the intended application.
 - 2) Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft. Make sure that the outer race does not become dislodged.
 - 3) Place an end plate over the inner race and use the mounting bolts to pull the Cam Clutch onto the shaft as shown in the diagram at right.
 - 4) Tighten the end plate securely to make sure that the Cam Clutch cannot move on the shaft.
4. If you using a torque arm, make sure that the bolts used to mount the torque arm have a tensile strength of 10.9 or greater, and tighten them securely.
5. Set a 2mm clearance between the torque arm is rigidly mounted, it will be applying a load to the Cam Clutch which can eventually damage it.
6. Install an appropriate coupling if there is a chance that the shaft will elongate from thermal expansion as encountered in some exhaust fan auxiliary drive system applications.
7. If thrust loads are encountered, install a thrust bearing which will prevent those thrust loads from being transferred to the Cam clutch.
8. The Cam Clutch is pre-packed with grease before shipment and is ready for installation and operation. Refer to page 4 for lubrication guidelines.

Horizontal Installation



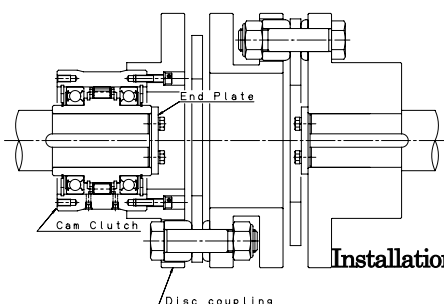
Installation example 1:

Vertical Installation



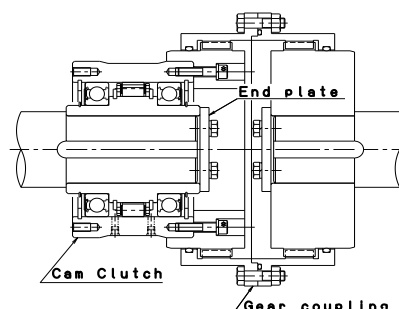
Installation example 2:

Flexible Coupling Installation



Installation example 3:

Gear Coupling



Installation example 4:

■ LUBRICATION

BR • BR-P Series Cam Clutches need periodic maintenance and lubrication to provide maximum performance throughout their service life. Lack of the prescribed maintenance and lubrication will shorten the Cam Clutch's service life and may result in unnecessary mechanical damage. The Cam Clutches in the BR • BR-P series can be lubricated with oil or grease depending on the type of application.

Recommended Oil

Brand	Type
JXTG Nippon oil & Energy	FBK Turbine 32, Pantorque Dexron
Shell	Rotera 10W, Rimura 10W, Turbo Oil T32
Exxon Mobil	DTE Oil Light, ATF 220
	Teresso 32, Dexron II

Recommended Grease

Brand	Type
JXTG Nippon oil & Energy	Multinoc Grease No.1
Shell	Alvania Grease 1
Exxon Mobil	Mobil Grease 77
	Listan 1

Oil Level (Z)

(Please refer to the Typical Installation 1 on page 2)

dimensions in mm

Model	Oil level z	Model	Oil level z
BR 20	21	BR 80	64
BR 25	23	BR 90	74
BR 30	25	BR100	72
BR 35	28	BR130	87
BR 40	33	BR150	122
BR 45	35	BR180	122
BR 50	43	BR190	132
BR 60	46	BR220	147
BR 70	54	BR240	162

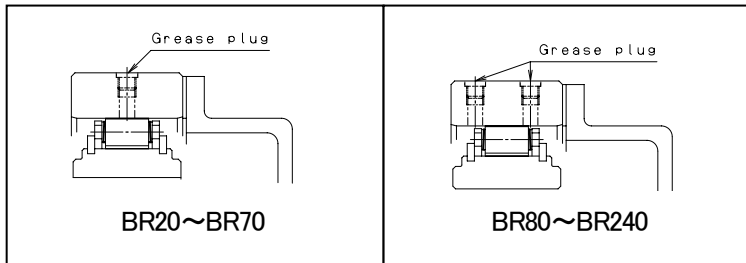
1. Do not use any EP additives in the oil as they will shorten the Cam Clutch's service life.
2. The above oils are recommended for operating environments ranging from -5°C to +40°C. Contact TSUBAKI when the environmental temperature is out of this range.
3. Package type Cam Clutches are shipped pre-packed with grease
4. Cam Clutch oil(1 liter can)and grease(500g can)are available from TSUBAKI.

■ RUN - IN TEST

After installation and confirmation of lubrication, run-in of Cam Clutch is recommended.

■ MAINTENANCE FOR THE BR SERIES Open Type Cam Clutch

1. Follow the guidelines listed below for oil lubrication.
 - 1) Make sure there are no oil leaks at installation surfaces.
 - 2) Use the correct amount of oil, and when needed, replenish oil to the specified level only. Avoid over lubrication as it will case the Cam Clutch to run hot.
 - 3) Change oil at least once every six months according to the following procedure.
 - (1) Dispose of old oil.
 - (2) Spin the Cam Clutch for 10minutes in detergent oil in a free running condition (no clutch engagement).
 - (3) Remove the detergent oil, and fill with new oil to the specified level.
2. Follow the guidelines below for grease lubrication.
 - 1) Before running the Cam Clutch , remove the grease port plug and inject grease into the cam cage. The amount in the Grease Volume Table on the right.
 - 2) Run the Cam Clutch disengaged for 30 minutes with the grease port open. Excess grease around the clutches will flow out of the tapped holes.
 - 3) Wipe off the excess grease, and re-install the grease port plug.
 - 4) The Cam Clutch should be re-greased once a year according to the procedure outlined in steps 1 through 3 above.



Grease Volume table (g)

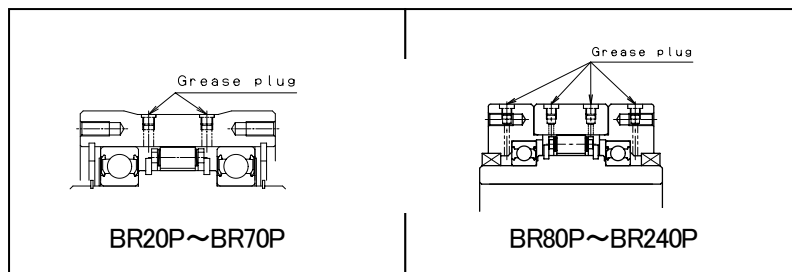
Model	Cam Clutch	Model	Cam Clutch
BR 20	0.7	BR 80	5.0
BR 25	0.7	BR 90	6.0
BR 30	1.0	BR100	14
BR 35	1.0	BR130	16
BR 40	1.2	BR150	25
BR 45	1.5	BR180	25
BR 50	1.5	BR190	40
BR 60	3.5	BR220	45
BR 70	4.0	BR240	50

The grease quantity is total amount.

Package Type Cam Clutch

Package type Cam Clutch are Clutches are shipped pre- greased at the factory and be re-greased once a year after installation. Follow the procedure below.

1. Remove the grease port plugs at the bearing and cam cage.
2. Inject equal amounts of grease into the cam cage and bearing. Refer to the Grease Volume Table for the correct amount.
3. Run the Cam Clutch disengaged for 30 minutes with the grease port plugs removed. Excess grease in the clutch area will flow out of the tapped holes. Be careful to avoid over greasing. Too much grease in the Cam clutch will case in to run hot, interfere with the clutch action, and may lead to mechanical damage.
4. Wipe off excess grease and re-install the grease port plugs.



Grease Volume table (g)

Model	Bearing	Cam Clutch	Model	Bearing	Cam Clutch
BR 20P	—	1.3	BR 80P	—	25
BR 25P	—	2	BR 90P	—	35
BR 30P	—	4	BR100P	—	55
BR 35P	—	4.2	BR130P	—	80
BR 40P	—	6	BR150P	—	105
BR 45P	—	6.5	BR180P	20	25
BR 50P	—	9.5	BR190P	30	40
BR 60P	—	13	BR220P	30	45
BR 70P	—	23	BR240P	50	50

The grease quantity is total amount.

■ 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 mean time, 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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