MIKI PULLEY

ELECTROMAGNETIC TOOTH CLUTCH

Type 546

INSTRUCTION MANUAL

MIKI PULLEY CO., LTD.

Head Office
461 Imai-minami-cho, Nakahara-ku,
Kawasaki-city, Japan
Tel:044-733-4371
CONSTRUCTION

Fig.

1 Stator
2 Rotor
3 Armature
4 Adaptor Plate
5 Toothed Ring
6 Toothed Ring
7 Release Spring
8 Threaded hole for attaching Armature
9 Lead Wire
10 Ball Bearing
11 Snap Ring
12 Stop Notch
a Air Gap

Attachment

(1) This clutch is for use on through shafts. They can also be used for butt jointed shafts, but in such
cases, particular attention should be paid to the alignment of the centers.

(2) h6 or j6 is recommended for the fittings of the attaching shaft.

(3) Make adjustments by using collars and shims so that the value for air gap 'a' is as given in Table 1.

(4) Attach all parts so that there will be no play in the axial direction.

(5) Stop notch (12) should be used to hold the stator in position.

Connections

(1) The clutch is operated on a power source of DC 24V. Power source fluctuation should be kept within ±10%.

(2) ON-OFF operation should be carried out by installing a switch on the DC side. If carried out on the AC side there will be a delay in operating time. (Fig. 2)

(3) The protective element (varistor) provided as an accessory to absorb surge should be connected in
parallel with the clutch. This element has no polarity. (Fig. 1)

- **CAUTIONS**

  1. Coupling operations should be limited to non-running or slow speed running times. When the relative rotations are large, the teeth will not mesh properly, which will cause damage or originate noise. (Refer to Table 1)
  2. When load torque is too light, it may only turn on the surface of the teeth.
  3. If the flywheel effect \((GD^2)\) is too great on the load side, proper meshing may not be attained.

- **Specifications**

<table>
<thead>
<tr>
<th>Type &amp; Form</th>
<th>Torque (\text{kgm})</th>
<th>Capacity (\text{W})</th>
<th>Resistance (\Omega)</th>
<th>Operating RPM (Max) rpm</th>
<th>Permissible Coupling RPM</th>
<th>Air Gap (\text{mm})</th>
<th>Varistor (\text{Accessory})</th>
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<td>25</td>
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<td>37</td>
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</table>
ELECTROMAGNETIC TOOTH CLUTCH

TYPE 546

EXPLANATORY MANUAL FOR ATTACHING THE HOLDER ASSEMBLY

The assembly position of the Stator side teeth and the Armature side teeth is of great importance. If the procedures given below are followed, alignment is easily made.

Procedure (If the adaptor plate is not provided with a projection to faciliate alignment, or when the projection is loose)

1. Insert the stator ② on the shaft, and fix by a key.

2. Tighten the holder assembly ⑪ [Armature ④, adaptor plate ⑥ and holder ⑦ (gears,etc.)] temporarily, (do not tighten the bolts ⑤ to the very end, but allow some leeway for the adaptor plate ⑥ to move.)

3. Insert the holder assembly ⑪ on to the shaft. Apply electricity to the stator ② or press the holder assembly ⑪ towards the stator ② by hand to make the teeth mesh.

4. The bolt ⑤ is tightened under these conditions. (Refer to Table 2 on 'tightening torque' of the bolt). A small amount of screw locking paint should be applied.

5. In order to set a gap ③ correctly, draw out the holder
assembly 11 from the shaft, and insert the collar and shims 10 on the shaft. Insert the holder assembly 11 again and check gap 3 with a thickness gauge.

If the load torque is less than 1/3 of the rated torque of the tooth clutch, it is not necessary to drive in the spring pin 8 but for the sake of safety, we recommend the insertion of the spring pin. (#12 does not require a spring pin.)

How to fix the spring pin 8.
After procedure '4' the extract holder assembly 11 from the shaft. Loosen the small hexagon socket head bolt (previously screwed on from the armature side) to separate the armature 4 from the adaptor plate 6.
If at this time the assembly position between the armature and adaptor plate is marked with ink at 1 ~ 2 points, it will be of use when re-assembling.
By utilizing the premachined hole for the spring pin on the adaptor plate 6, bore holes for the spring pin 8, on each of the holders 7 (gears and other parts). Remove the swarf carefully. Apply molybdenum disulfide grease at the spline part of the adaptor plate 6. Tighten the small hexagon socket head bolts to fix the armature and adaptor plate at a torque exceeding the tightening torques on Table 1. (Screw locks are unnecessary). Do not forget the plate washers.
Note 1) The locking washer ① should be set at a point where the stator ② will chatter lightly, and pressure should never be applied in the direction of the shaft, so that the bearing will not be exposed to thrust.

Note 2) \[ \text{Gap 'a'} \] The gap must be measured from teeth top of one side to the other.

Note 3) Permissible voltage to be applied to the Tooth Clutch DC 20 ~ 24 (Full wave rectification)

Note 4) Splashing oil on the teeth will pose no problem, but the impregnation of foreign matter from between the teeth should be cleaned off periodically.

Table 1 Tightening Torque of Small Hexagon Socket Head Bolt (Fixing Armature and Adoptor Plate)

<table>
<thead>
<tr>
<th>Size</th>
<th>Bolt</th>
<th>Classification of Strength</th>
<th>Tightening Torque (kgf-m)</th>
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<tr>
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<td>M4x6</td>
<td>8.8</td>
<td>0.40</td>
</tr>
<tr>
<td>25</td>
<td>M4x8</td>
<td>8.8</td>
<td>0.40</td>
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<td>0.70</td>
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<td>32</td>
<td>M6x10</td>
<td>8.8</td>
<td>1.20</td>
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Table 2  Recommended Tightening Torque for Hexagon Socket Head Bolt (Fixing the Adaptor Plate with Holder)

<table>
<thead>
<tr>
<th>Size</th>
<th>Bolt</th>
<th>10.9 (Classification of Strength)</th>
<th>12.9 (Classification of Strength)</th>
</tr>
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<tbody>
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<td>12</td>
<td>3-M4</td>
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<tr>
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</tr>
<tr>
<td>32</td>
<td>6-M12</td>
<td>9.8</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Diagram:
- Locking Washer 1
- Gap 3
- Armature 4
- Stator 2
- Bolt 5
- Adaptor Plate 6
- Holder 7
- Non-magnetic Collar & Shim 10
- Type C Stop Ring 9
- Holder Assembly 11 (Armature + Adaptor Plate + Holder)