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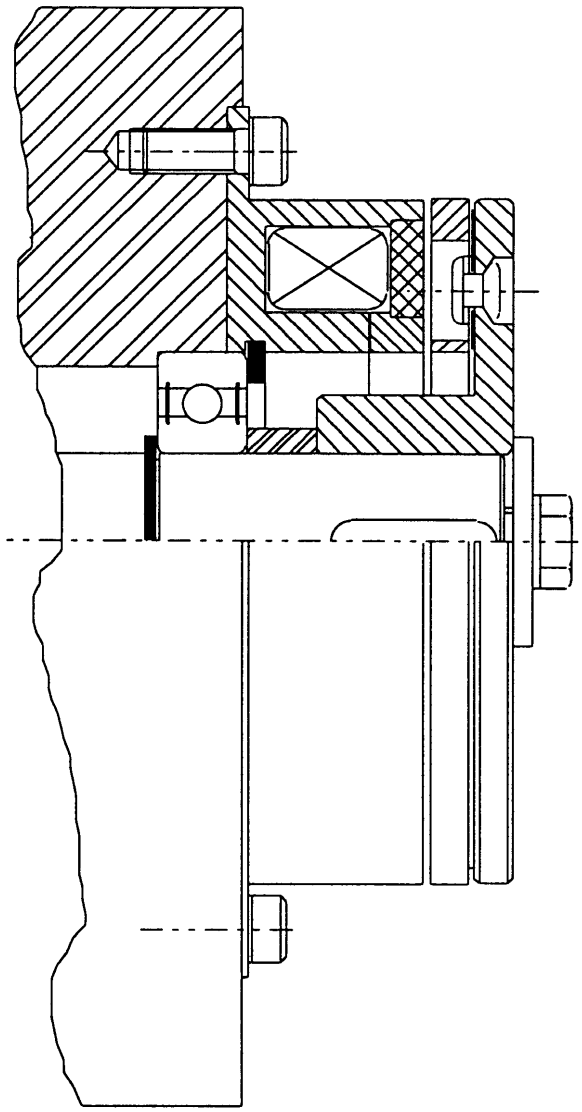
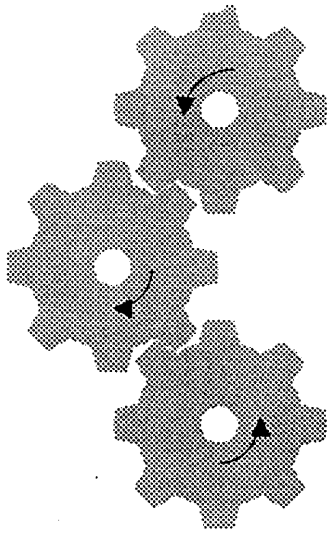
STEPHENSON GOBIN





Stephenson Gobin
Electromagnetic Type 52 Brakes

- Installation
- Operation
- Maintenance

Stephenson Gobin

Installation Section

Brake Type 52 F.M. (Flange Mounted Field).

F.M. brakes are relatively simple devices comprising a brake field and armature supplied separately.

i) The field should be mounted to a stationary surface, perpendicular to the axis of the shaft, using dimensions `a1' or `e4' to ensure good concentricity with the shaft. Often a standard series 6000 ball-bearing can be made to protrude form its housing to form a male spigot for dimension `e4'. A circlip groove is machined in all flange mounted fields to enable the location of such a bearing. Acceptable maximum eccentricity values are as follows : up to and including Size 11 - 0.05mm,
Size 12 and over - 0.10mm

ii) Armature Installation.
For C.L. Armatures : the customer furnished pulley or sproket must be counterbored observing dimensions n2, v and k to clear the fastener heads allowing the armature spring to lie flat against the pulley flange. The air-gap `g' can be set using spacers which may be removed for subsequent wear adjustment. Always use Schnorr type shakeproof washers and a thread locking compound fastening the armature spring assembly to the customer's pulley

For C.C. Armatures (co-axially split shafts) : the input ond output shaft must be concentric within 0.05mm for sizes up to and including Size 11, and 0.08mm for Size 12 and over. The armature is mounted on the input/output shaft using a key to B.S.3673 for torsional locking and the set-screw provided for axial location and setting of the air-gap `g'.

For C.R. Armatures : the armature is mounted on the input/output shaft using a key to B.S.3673 for torsional locking and may be restrained axially either by a circlip on the shaft or an end cap locking wsher locked into place with a suitable fastener. The required air-gap dimension `g' may be obtained by using either a step on the shaft or spacers and shims. C.R. armatures are generally employed where space is limited.

Installation Section

Bedding-in (all Clutch/Brake Devices)

The torque of clutches and brakes of the type we manufacture is affected by the average coefficient of friction across the faces of the armature and the clutch\brake, and the clamping pressure at the interface of these parts. This effective pressure in increased if the surfaces are in good intimate contact when engaged.

The degree of intimate contact is controlled to a minimum level during production by grinding the opposing faces in contact. This increases during normal operation where some slip occurs naturally, the amount of slip depends upon the magnitude of the load, speed, and cycle rate thus increasing the torque. We consider bedding-in to be essential and in most cases inevitable. If maximum torque is required immediately after installation then this process can be accelerated by lowering the operating voltage to 40/50% of the nominal value. This induces artificial slip during operation and results in an increase in the degree of contact.

Care must be taken not to slip the device excessively as this will lead to an undesirable thermal overload causing electrical failure. Thermal overload may be avoided by cycling the unit `on and off', allowing enough time for cooling between the periods of slip.

Maintenance Section

General

Stephenson Gobin Clutches and Brakes are robustly designed and are virtually maintenance free. However, in cases where they are used to control relatively large inertia loads or high switching frequencies are employed, they may periodically require the air-gap checking and adjusting. Where necessary, these air-gaps should be reset in accordance with the dimension `g' in the dimensional information section of this manual. The period between adjustment is governed by the application and will differ depending upon your specific requirements.

Air-gap Resetting : ALWAYS remove all electrical supplies from machinery BEFORE attempting any adjustment.

Brake Type 52 F.M. : these devices are adjusted by the removal of the correct number of shims between the brake field and armature assembly.

Split shaft arrangements using C.C. style armature assemblies may only require the locking screw in the hub boss loosening and the hub sliding along the shaft unitl the required dimension is obtained

Other Armature styles are adjusted as follows :

i) With the clutch coil de-energised measure the air-gap, in three places, between the clutch face and armature plate using feeler gauges.

ii) If the air-gap exceeds the dimension `g' by more than 0.20mm then some adjustment may be necessary.

iii) Remove the armature assembly from the shaft and measure/remove the required number of shims to obtain the given dimension.

iv) Examine the brake face and armature face for evidence of oil/greese, if the sufaces are contaminated consult the "Operating Problems - Contamination" section of this manual.

v) If the surfaces appear acceptable then re-fit the armature asssemly and re-check the air-gap.

vi) Operate the unit and check it is functioning correctly.

Operating Problems

Excessive Slipping / Inconsistent Operation

Some degree of slip occurs naturally during the operation of electromagnetically operated clutches and brakes. If the unit has been selected correctly then this slip should not be excessive. New units may need bedding-in to obtain immediate optimum torque, see the Installation / Bedding-in Section of this manual.

i) Large Air-gaps : the effective torque of a clutch or brake is affected by the size of the air-gap. A large air-gap reduces the clamping force between the interfaces of the clutch or brake surfaces thus reducing the torque. Excessive air-gaps can also result in inconsistenet or intermitent operation. This occurs when the magnetic field no longer has the strength to pull the armature plate across the air-gap against the action of the of the return spring. The optimum air-gap value `g' is given in the `Dimensional Information Section' of this manual.

ii) Low Supply Voltage : for optimum performance we recommend that the supply voltage to any clutch or brake field is maintained at the device's nominal voltage within the range +5% to -10%. This voltage for d.c. devices must also be full-wave rectified if derived from an a.c. supply, smoothing also improves performance. Any reduction in this supply voltage will affect the mgnetic field strength and may cause performance related problems.

iii) Partial Short Circuit : partial short circuits, where the effective load of the field coil is reduced by an electrical short cicuit within the coil. This reduces the effective number of coil wire turns internally and reduces the magnetic field strength accordingly. The running temperature of the unit may also be increased the the drawing of a higher than normal current, thus increasing the electrical power input. This feature may be checked by measuring the coil resistance against the value indicated in the `Electrical Data' section of this manual. Please note that the indicated values are nominal at 20°C and may inherently vary from +10% to -10% . Units which have been in use must be allowed to cool down to 20°C before a measurement for comparison can be made.

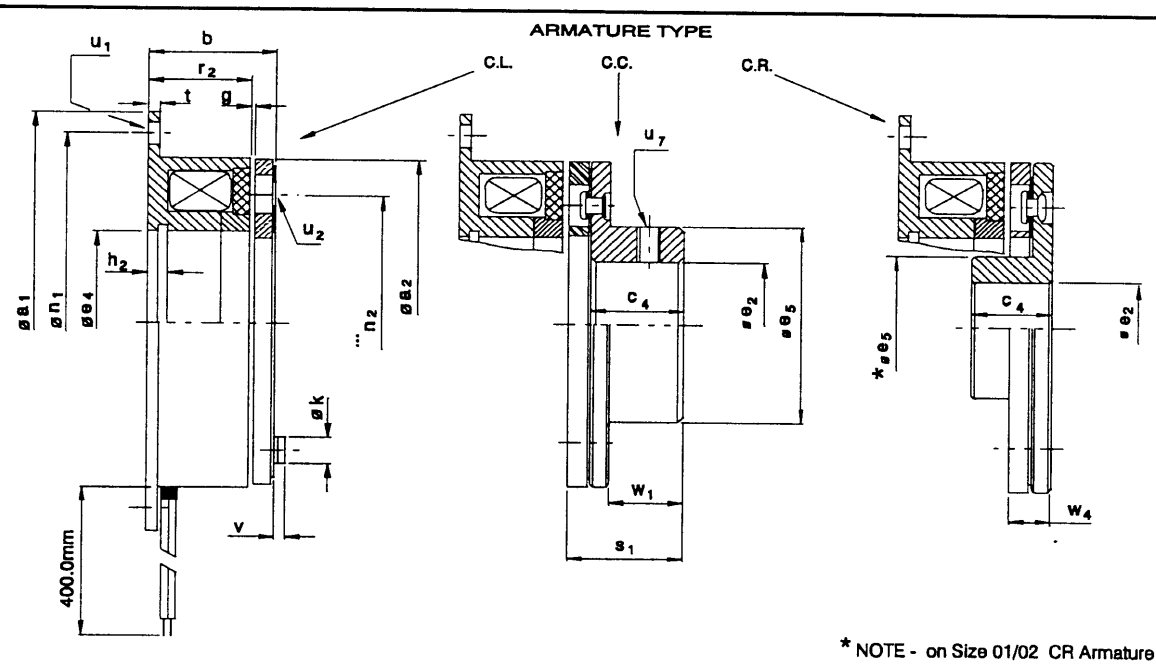
iv) Contamination : this product is designed to be used in DRY running conditions, therefore the presence of water or oil and grease can seriously reduce torque. In applications where such contaminants are present particular care must be taken to prevent these from reaching the friction surfaces, this may be achieved by providing adequate sealing and sealing.
Light contamination of the friction surfaces may be removed by lightly wiping the surfaces with a commercial degreasing fluid. Heavy contamination can never be removed successfully as any contaminant below the surface will inevitably be dissipated throughout the material resulting in a further failure.

v) Excessive Wear : some degree of wear is unavoidable because of natural slip and the presence of abrasive materials or foreign bodies in the atmosphere can accelerate this process. This will undoubtedly result in need for frewquent air-gap resetting operation and the premature failure of the unit. Some degree of shielding may be necessary to obtain maximum service from the device.

High operating temperatures and excessive heat build-up can also result in rapid wear, therefore good natural or forced ventilation may be required in some applications, particularly where rapid cycling or large inertia loads are employed.

Dimensional Information

BRAKE Type 52



* NOTE - on Size 01/02 CR Armature Types Dimension $\varnothing e_5$ = 10.0mm

Field Mounting : F.M.

Size	Torque Ts Nm	Max P_{20} W	a_1 h9	a_2	b	c_4	Max e_2 H7	e_4 H8	e_5	g	h_2	k	n_1	n_2	r_2	s_1	t	u_1 x4	u_2	u_7	v	w_1	w_4
00	0.30	5	38	28.6	17	7	6.5	11	10	0.1	--	5	33.3	19.5	14	9.7	1.5	3.2	2x2.6	M3	1	4.5	4.7
01	0.60	6	38	30	18.5	10	6.5	11.5	12	0.1	--	5	33.3	19.5	16	12.8	1.5	3.2	2x2.6	M3	1	8	--
02	0.75	6	45	32	19.5	10	6.5	13	12	0.1	3	5	38	23	17	12.8	2	3.5	3x2.6	M3	1.5	8	4.5
03	1.20	8	54	40	23.2	12	10	19	17	0.15	3.2	6.1	47	30	20	15.3	2	3.5	3x3.1	M3	1.5	9.5	5.8
04	1.60	8	62	42	23.2	12	10	19	17	0.15	--	6.1	54	29	20	15.3	2	5	2x3.1	M3	1.5	9.5	--
05	3	10	65	50	25.2	12	15	26	24	0.2	3.2	6.1	58	38	22	15.3	2	3.5	3x3.1	M4	1.5	9.5	6
06	8	12	80	63	22	15	17	35	27	0.2	3.5	6.1	72	46	18	19	2	4.5	3x3.1	M5	1.5	11.5	7.5
07	8	12	89	66.5	36	15	17	27	27	0.2	--	6.1	79.5	46	32	19	2	5	3x3.1	M5	1.5	11.5	--
08	16	18	100	80	24.5	20	20	42	32	0.2	4.3	8	90	60	20	24.7	2.5	5.3	3x4.1	M5	2	16	8.7
10	32	25	125	100	28	25	30	52	42	0.2	5	9	112	76	22	30	3	6.5	3x5.1	M6	2	19	11
11	32	25	143	105	44	25	30	47.6	42	0.2	--	9	127	76	38	30	3	7.5	3x5.1	M6	2	19	--
12	65	32	150	125	31	30	35	62	49	0.3	5.5	10	137	95	24	37.2	3.5	6.5	3x6.1	M6	2.5	24	13
13	65	32	165	125	39	30	35	52.4	49	0.3	--	10	149	95	33	37.2	3.5	10.2	3x6.1	M6	2.5	24	--
16	120	45	190	160	35	38	40	80	65	0.3	6	13	175	120	26	48	4	9	3x8.2	M8	9	30	16
20	240	60	230	200	41.6	48	60	100	92	0.5	7	16	215	158	30	59	5	9	3x10.2	M8	11	39	20

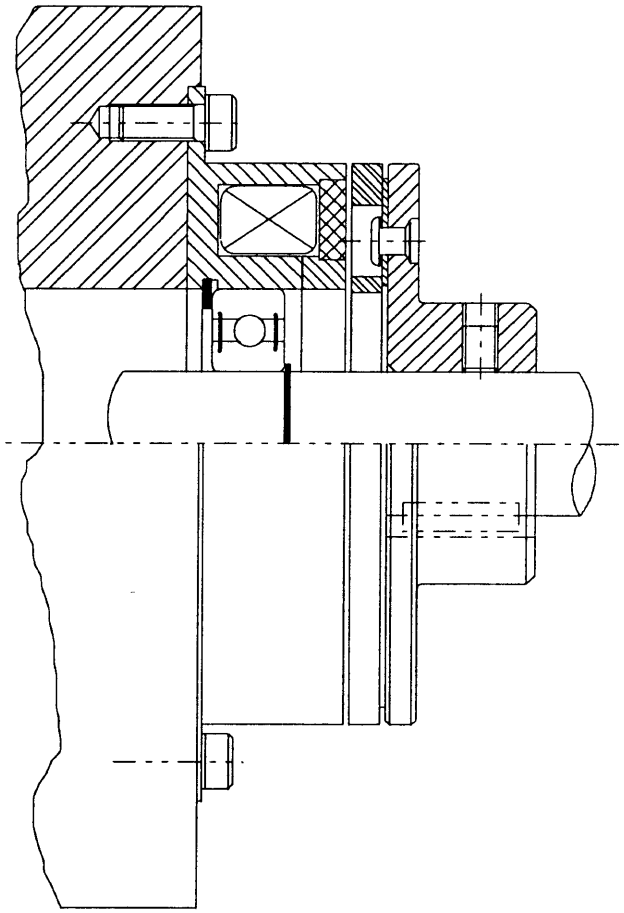
Keyways to B.S. 4235 Circlip Grooves to B.S. 3673 Insulation Class B

TYPICAL IDENTIFICATION CODE

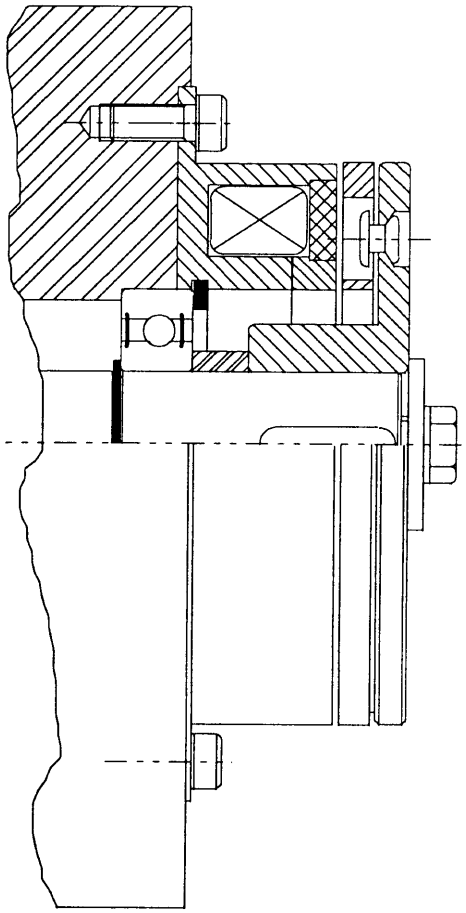
52 - 1212 - U001 - 24V= - 32W - 1295

- 52 — PRODUCT TYPE
- 1212 — DESIGN NUMBER (includes SIZE, ARMATURE TYPE, FINISH)
- U001 — DESIGN NUMBER (includes SIZE, ARMATURE TYPE, FINISH)
- 24V= — VOLTAGE
- 32W — NOMINAL WATTAGE
- 1295 — DATE CODE (WEEK & YEAR)

- Brake F.M.C.C.



- Brake F.M.C.R.



MOUNTING EXAMPLES