

Safety Brake

Reference manual

CONTENTS

This handbook contains all the data, information and instructions, the design engineer requires to apply the safety brake to rolling curtain products. The information should be taken into consideration by the installer as well as the slow the door before locking and a microswitch to electrically interlock and designer. Both should have a complete understanding of the product, application, and installation.

Please read carefully the following sections contained in the handbook:

- Description
- Installation instructions
- Testing procedures
- Maintenance

NOTICE

GAPOSA offers a broad selection of safety brakes to meet your requirements. All the safety brakes follow the same working principles and unless a model is specified the following instructions should be considered valid for all models

DESCRIPTION

The safety brake is a safety device for rolling curtains. It performs 2 functions:

- a)** a bearing support for the curtain shaft;
- b)** a mechanical brake to stop the descent of the curtain if sudden acceleration occurs.

The safety brake is manufactured with antioxiding materials and consists of a central body with a bearing to insert the curtain shaft, and a metal base with a set of rubber bushings, of suitable density to compensate for a slight misalignment.

GAPOSA safety brakes are equipped with a friction plate to slow the door before locking and a microswitch to electrically interlock and disconnect the operator when the brake locks.

To select the most suitable brake for your application a complete understanding of the brake and its operation is essential:

- **Nominal torque:** is the reference value to select the most appropriate safety brake for the weight of the curtain and the diameter of the drive shaft.
- **Locking torque:** is the maximum stress to which the safety brake is subjected when it blocks the rotation of the shaft.
- **Working speed:** refers to the rotational speed at which the safety brake works as a simple support without functioning as a brake. The nominal speed of the curtain shaft **must not** exceed then the working speed of the safety brake.

For the choice of the most suitable safety brake model as to weight, shutter dimensions and shaft diameter please read **table II** at the end of this handbook.

IMPORTANT. Once a safety brake has been selected make sure that the torque of the operator is less than the nominal torque of the safety brake.

The safety brake is constructed to prevent uncontrolled descent of the rolling curtain, and can be reset by following the procedure below:

- a) loosen the 6 screws (4 for the M3A) on the safety brake's central body according to the order shown in (fig. 1);
- b) reset the electrical interlock pin to the initial position by pushing it downwards until the microswitch is reactivated.
- c) proceed to tighten the screws following the order in (figure 1) and complete the tightening process with a torque wrench using the screw tightening torque values given in **table I**.

Table I: Contain the technical specifications for each safety brake model.

	M3A	M4A	M7A	M10A	M5H
Nominal torque (Lbf.In)	2283	3576	6266	8851	4425
Locking torque (Lbf.In)	8656	17516	29199	31509	15754
Working speed (min ⁻¹)	16	14	12	12	24
Screw tightening torque (Lbf.In)	36	44	53	71	71
Weight (Lbs)	4.6	10.4	22	27.6	27.6
	M15A	M20A	M30A	M11H	M18H
Nominal torque (Lbf.In)	13727	19472	27517	9737	15750
Locking torque (Lbf.In)	78258	146816	161800	34659	97100
Working speed (min ⁻¹)	12	12	8	24	24
Screw tightening torque (Lbf.In)	100	100	260	100	260
Weight (Lbs)	43	44	99.2	43	99.2

INSTALLATION INSTRUCTIONS

Installing a safety brake is not particularly difficult, but to gain the best performance from the brake, the installer should pay particular care to the following precautions:

1. Always install the brake on the opposite side of the operator;
2. Install the safety brake with the arrow pointing to the direction the shutter descends;
3. Install the safety brake with the base as level as possible, in any case the deviation from level should not exceed +/- 3 degrees. Greater angles will cause the locking speed to vary;
4. Use fastening bolts with a suitable diameter for the base;
5. Center the idler shaft such that it is concentric to the barrel;
6. Center the idler shaft (with key) of the barrel into the safety brake hole smoothly; check the alignment between the safety brake hole and opposite support bearing bracing;
7. Avoid a jerky operation of the curtain since it could cause the safety brake to activate. A well-built guide channel and a good curtain profile will insure the correct operation of the brake;
8. Connect the safety brake microswitch (NC contact) to the stop control of the operator;

9. Do not use the safety brake with a chain hoist or the manual override system that could exceed the working speed of the brake;
10. Leave the plastic bag on the brake to prevent water and dust from entering. If installing the brake outside install an additional cover to keep rain out of brake.

TESTING INSTRUCTIONS

The testing process for the safety brake consist of:

- a. a check to insure a perfect installation;
 - b. a check of the safety brake functioning as a support bearing;
 - c. check that the electrical interlock pin is in the full down position and contacts the microswitch;
- For the first check make sure that all the fastening screws of the safety brake base are provided with suitable washers and correctly tightened. Make sure the rubber bushing between the base and the safety brake body are still in their correct positions.

The second check consisted of making sure the brake function as bearing while the curtain is rotating. Since it is impossible to simulate a breakage, you can make sure the brake is functioning correctly by listening to the clicking caused by the internal locking pins. If the clicking is clearly heard the safety brake has passed the working test.

IMPORTANT

Check that the safety brake has not undergone previous tests and strong stresses.

MAINTENANCE

The material and components used for the safety brake construction have been specially selected to require no maintenance of any kind.

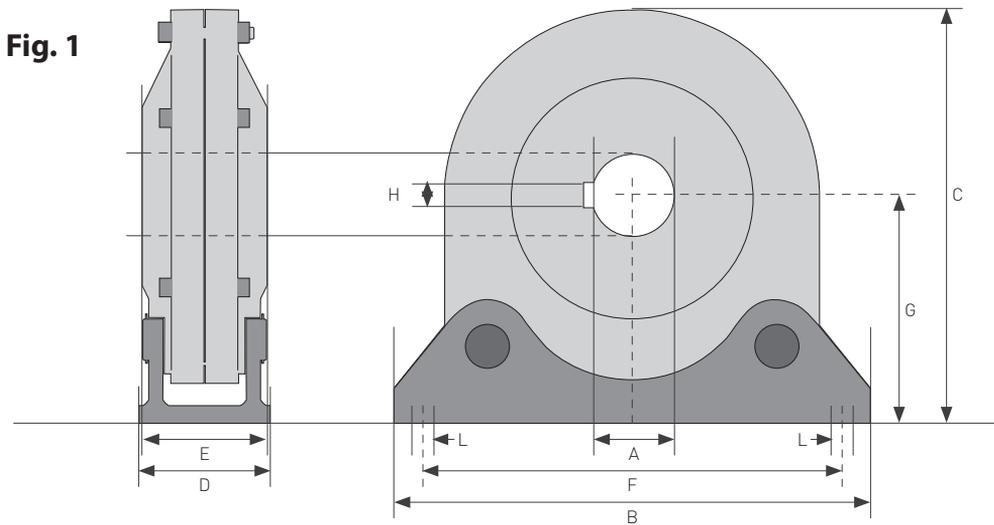


Fig. 1

Segment (inches)	M3A	M4A	M7A	M10A	M15A	M20A	M30A	M5H	M11H	M18H
A	1"	1¼"	1½"	1½"	2"	2 ³ / ₈ "	2 ⁷ / ₈ "	1½"	2"	2 ⁷ / ₈ "
B	6.49	8.50	10.55	11.02	12.60	13.60	16.34	11.02	12.60	16.34
C	6.22	7.95	10.04	10.24	10.43	11.42	13.70	10.24	10.43	13.70
D	1.30	2.09	2.09	2.75	2.79	3.12	3.54	2.75	2.79	3.54
E	1.181	1.97	2.16	2.24	2.24	2.45	3.58	2.24	2.24	3.58
F	5.70	7.32	9.45	9.45	11.42	12.54	14.37	9.45	11.42	14.37
G	3.58	4.85	5.94	6.14	5.51	6.03	7.52	6.14	5.51	7.52
H	0.314	8	12	12	0.71	0.71	0.87	12	0.71	0.87

Table II

TUBE OD	curtain dimension (feet)		M3AP			M4AP			M7AP			M10AP			M15AP	M30AP	
	width	height	10	16	23	10	16	23	10	16	23	10	16	23			
3.5"	10	10	628	364	247												
	16	16	628	364	247												
	23	23	628	364	247												
4"	10	10	793	540	368												
	16	16	688	540	368												
	23	23	615	540	368												
4.25"	10	10	694	615	421												
	16	16	674	615	421												
	23	23	606	606	421												
5.25"	10	10	692	692	472	1087	761										
	16	16	626	624	624	937	761										
	23	23	571	571	569	827	761										
6.625"	10	10	588	586	584	908	900	851									
	16	16	555	553	551	822	814	803									
	23	23	518	518	516	745	734	728									
7.625"	10	10				794	778	765	1122	1113	1000	1814	1799	1784			
	16	16				741	725	712	1085	1047	1036	1673	1660	1645			
	23	23				681	668	655	979	970	959	1526	1515	1501			
8.625"	10	10							983	968	954	1590	1568	1545	2246		
	16	16							955	939	924	1512	1490	1471			
	23	23							900	886	873	1404	1387	1365			
9.625"	10	10							869	847	827	1393	1361	1663	2359	5071	
	16	16							858	838	818	1358	1326	1301			
	23	23							822	803	783	1281	1257	1228			
10.512"	10	10							778	750	723	1243	1206	1166	2161	4630	
	16	16							774	747	721	1228	1191	1151			
	23	23							752	725	701	1175	1140	1102			
11.75"	10	10										1071	1025	977	1940	4145	
	16	16										1067	1021	972			
	23	23										1041	994	948			
12.75"	10	10													1786	3814	
	16	16										941	880	816			
	23	23										928	866	805			
14.0"															1609	3472	
16.0"																1316	3047
18.0"																	2705
20.0"																	2425

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