Non-Transferable

TEST REPORT

No. SHL/16/2022-2023/3000027503/RT/0420 **Date: 02.02.2023**

1.0	**NAME AND ADDRESS OF THE CUSTOMER**		**M TORQ CONTROLS INDIA** B-3,10,19E General Block, Near Pateja Forging, MIDC Bhosari,Pune-411026.
	Name of Contact Person		Mr. B.B. Kadam,
	Contact no.		9422007317
	Email ID		sales@mtorqindia.com
2.0	**CUSTOMERS LETTER REF.**		E-mail Dated: - 02.01.2023
2.1	**CSP Receipt of Date**		05.01.2023
3.0	**DESCRIPTION OF TEST COMPONENT:**		
	a.	**Name of The Component**	Rack &Pinion Pneumatic Actuator Assembly
	b.	**Name of The Manufacturer**	**M TORQ CONTROLS INDIA** B-3,10,19E General Block, Near Pateja Forging, MIDC Bhosari, Pune – 411026.
	c.	**Identification no./ Part No.**	Pneumatic Actuator
	d.	**Model No.**	MTSR/MTDA Series
	e.	**Assembly Drawings No. with Rev. No.**	MT-SR-DA-K-F10/F14-S36-00-01-GA;REVISION NO. 0
	f.	**Photograph of The Component**	

4.0 TEST OBJECTIVE, REQUIREMENTS:

To carry out the IP- 68 protection test as per IEC 60529

4.1 Dust Test for First Numeral '6':

On inspection after the test as per Clause 13.6 of IEC 60529, there should be no deposit of dust inside the enclosure.

4.2 Water Test for Second Numeral '8':

On inspection after the test in accordance with the requirements as per Clause 14.2.7 and 14.3 of IEC 60529, water entered inside the equipment shall not:

> Be sufficient to interfere with satisfactory operation of the equipment.
> Reach live parts or windings not designed to operate when wet.
> Accumulate near the conduit hole (cable entry) or enter the cable.

PREPARED BY:	VERIFIED BY:	AUTHORISED BY:
S. N. LONDHE DEPUTY MANAGER	A. D. DEKATE GENERAL MANAGER	DR. B. V. SHAMSUNDARA DEPUTY DIRECTOR In-charge-Safety and Homologation Laboratory

TEST REPORT NO. SHL/16/2022-2023/3000027503/RT/0420

5.0 TEST PROCEDURE:

5.1 Dust Test for First Numeral '6' (as per Clause 13.6 of IEC 60529):

- The equipment under test was supported inside the test chamber and the pressure inside the equipment was maintained below atmospheric pressure by a vacuum pump.
- During the test, a minimum 80 times the volume of air was drawn into the enclosure, without exceeding an extraction rate of 60 volumes per hour or a depression of more than 200 mm of water on the manometer. The test was carried out by using apparatus incorporating the principle shown in Figure 2 of IS/IEC 60529:2001. The test was stopped after 2 h.

5.2 Water Test for Second Numeral '8' (as per Clause 14.2.7 of IEC 60529:2001):

- The test was carried out by completely immersing the enclosure in the water for 30 mins. at a depth of 1.5 meter from the surface of the water.

6.0 TEST RESULTS:

6.1 Dust Test for First Numeral '6':

No dust ingress was observed inside the "Rack & Pinion Pneumatic Actuator Assembly."

6.2 Water Test for Second Numeral '8'.

No water ingress was observed inside the "Rack & Pinion Pneumatic Actuator Assembly"

6.3	Test Duration	Start Date:- 10.01.2023	End Date:- 12.01.2023

7.0 CONCLUSION:

"Rack & Pinion Pneumatic Actuator Assembly" as mentioned in Sr. no. 3 of this report, tested meet the IP 68 protection test requirements when tested as per IS/IEC 60529:2001.

Disclaimer:

1. ARAI issues Test Reports / Extension Reports / Developmental Test Reports for vehicles/ components/ parts/ assemblies etc. based on the documents produced and/or prototype/ vehicle(s) or sample(s) submitted by the applicant and testing thereof.
2. ARAI issues Test Reports / Extension Reports / Developmental Test Reports in compliance to Motor Vehicle Act / Central Motor Vehicles Rules and their provisions as amended from time to time or any other statutory orders under which ARAI is authorized. Other Rules/ Acts are outside the purview/ scope of Test Reports / Extension Reports / Developmental Test Reports.
3. Test(s) on prototype/ vehicle(s) or sample(s) is/are carried out on the basis of standard procedures as notified under specific rules / requested by the applicant. Results of such tests are the property of bearer of Test Reports / Extension Reports / Developmental Test Reports. These results cannot be disclosed unless specifically so ordered by Government, Court, etc.
4. Unless otherwise supported by a separate Certificate, this Test Reports / Extension Reports / Developmental Test Reports shall not be considered in isolation as valid Type Approval for any vehicle.
5. ARAI is not responsible for testing each vehicles/ components/ parts/ assemblies etc. for which Test Reports / Extension Reports / Developmental Test Reports is issued. Further, ARAI is not responsible for ensuring manufacturing quality of the vehicles/ components/ parts/ assemblies etc. for which the Test Reports / Extension Reports / Developmental Test Reports is/are issued.
6. ARAI is in no way responsible for any misuse or copying of any design/ type/ system in connection with entire vehicle/ components/ parts and assemblies covered under the Test Reports / Extension Reports / Developmental Test Reports is/are issued.
7. Breach of any statutory provision of Indian laws or laws of other countries, will be the sole responsibility of the bearer of Test Reports / Extension Reports / Developmental Test Reports is/are issued and ARAI shall not be liable for any claims or damages. The bearer shall alone be liable for the same, and shall undertake to indemnify ARAI in this regard.
8. ARAI has the right, but not under obligation, to initiate cancellation/ withdrawal of the Test Reports / Extension Reports / Developmental Test Reports is/are issued in case of any fraud, misrepresentation, when it surfaces and comes in the knowledge of ARAI.

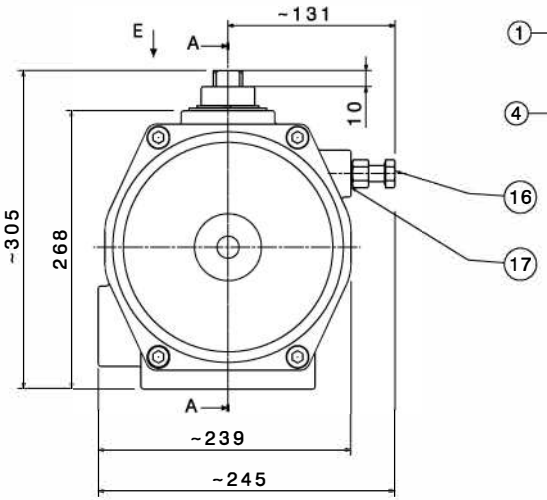
The appropriate local courts at Pune shall have the jurisdiction in respect of any dispute, claim or liability arising out of this certificate / Report.

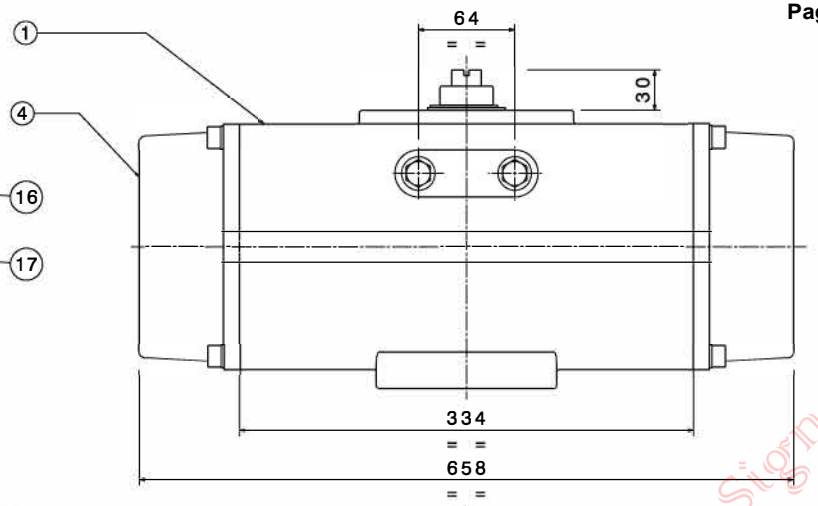
PREPARED BY:	VERIFIED BY:	AUTHORISED BY:
S. N. LONDHE DEPUTY MANAGER	A. D. DEKATE GENERAL MANAGER	DR. B. V. SHAMSUNDARA DEPUTY DIRECTOR In-charge-Safety and Homologation Laboratory

Place of Issue: Kothrud, Pune

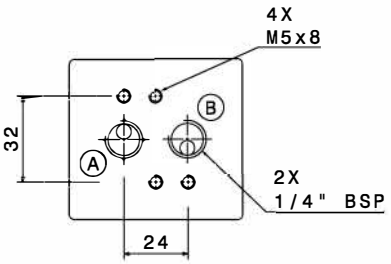
ARAI®
Progress through Research
THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

TEST REPORT NO. SHL/16/2022-2023/3000027503/RT/0420



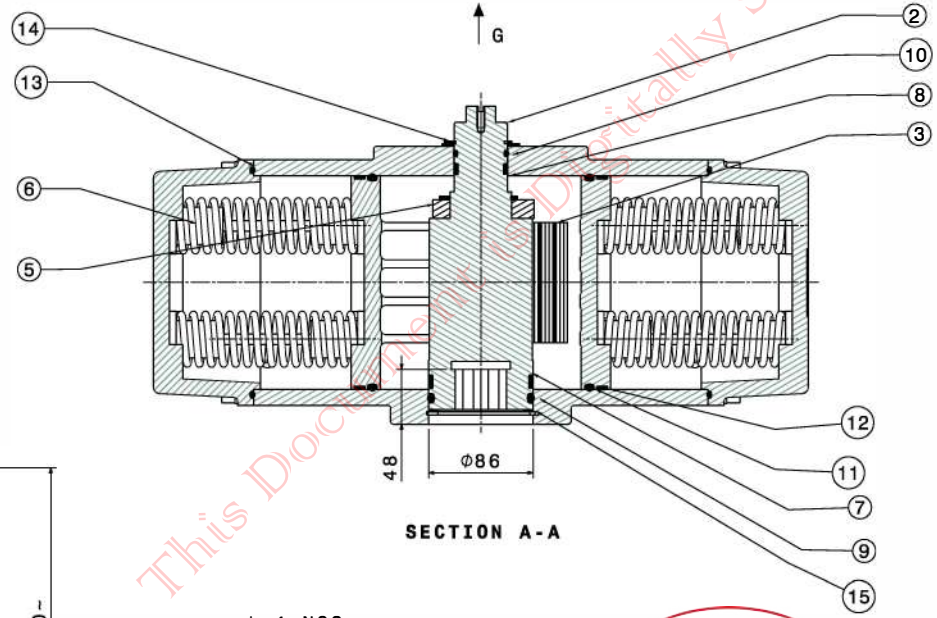


SR NO.	DESCRIPTION	MATERIAL
1	HOUSING / BODY	HIGH GRADE ALUMINIUM
2	PINION	EN8-D
3	PISTON RACK	DIE CAST ALUMINIUM
4	END CAP	DIE CAST ALUMINIUM
5	CAM	EN8
6	SPRING CARTRIDGE	SPRING STEEL
7	PINION GUIDE (BOTTOM)	NYLON
8	PINION GUIDE (TOP)	NYLON
9	PINION O-RING (BOTTOM)	NBR
10	PINION O-RING (TOP)	NBR
11	PISTON RACK O-RING	NBR
12	PISTON RACK GUIDE	NYLON
13	CAP O-RING	NBR
14	TOP WASHER	SS-316
15	BOTTOM WASHER	NBR
16	STOPPER BOLT	SS-316
17	STOPPER BOLT O-RING	NBR

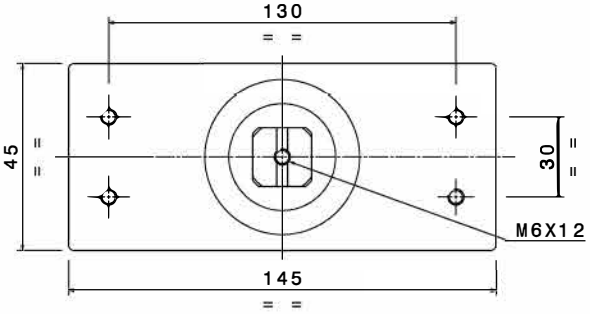


AIR CONNECTION
(ISO 228/-G 1/4")

VIEW 'C'

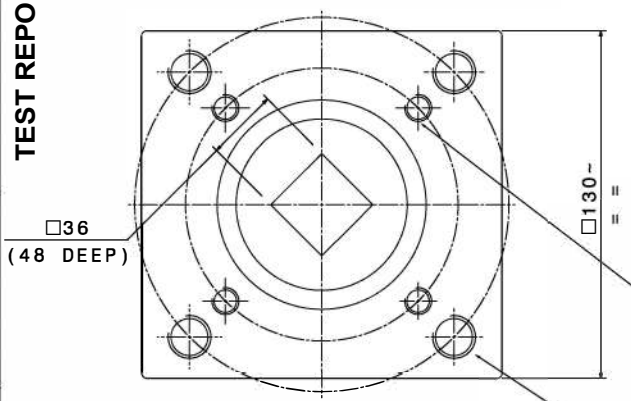


SECTION A-A



TOP MOUNTING
NAMUR INTERFACE (VDE/VDI 3845)

VIEW 'E'



BOTTOM MOUNTING
(ISO 5211)

VIEW 'G'

* 4 NOS
DRILL Φ8.5 x 20 DEEP
TAP M10 x 1.5P x 15 DEEP
EQUISPACED ON 102 PCD
AS SHOWN
(ISO-5211-F10)

* 4 NOS
DRILL Φ14 x 30 DEEP
TAP M16 x 2P x 25 DEEP
EQUISPACED ON 140 PCD
AS SHOWN
(ISO-5211-F14)

STANDARD FEATURES:
1) ENCLOSURE: IP 68.
2) LUBRICANT: GREASE FILLED FOR LIFE.
3) VALVE MOUNTING AS PER ISO 5211.
4) TEMPERATURE RANGE: (-)20°C TO (+)80°C.
5) STROKE 0° TO 90° (±5°) AND SS-316 FASTENERS.

NOTE:
MtorQ RESERVES RIGHTS TO AMEND AND CHANGE SPECIFICATIONS AND DIMENSIONS WITHOUT PRIOR NOTICE.

ARAI Progress through Research
THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

MTSR/MTDA SERIES

DRN	DATE	CHKD	DATE	APPD	DATE
0	FIRST ISSUE			PPK	SVT
				31.12.22	BBK
NO	DISCRIPTION			SIGN	CHKD
				DATE	APPD
REVISION					

POS NO.	DESCRIPTION	ART/CODE NO.	SIZE/MODEL	MATL/SPEC	QTY
1		-	-	----	1

M-torQ Controls India	M-torQ CONTROLS INDIA BHOSARI, PUNE-411026	
	1) ALL DIMENSIONS ARE IN mm. 2) GENERAL TOLERANCE ±0.2 mm UNLESS OTHERWISE STATED.	WEIGHT (Kg) 40.000
SIZE:-A1	TITLE:- PNEUMATIC ACTUATOR GENERAL ASSEMBLY DRAWING (MTSR/MTDA SERIES)	
SCALE NTS	SHEET 1 OF 1 / PART NO. ----	DRG NO. MT-SR-DA-K-F10/F14-S36-00-01-GA