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## KARANDIKAR LABORATORIES PVT. LTD. BOISAR

Format: F#07 b.1 Rev 10

### TYPE TEST REPORT


**IEC 60529:2013 & IS/IEC 60529:2001 (RA 2019)**  
**Degrees of Protection Provided by Enclosures (IP Code)**

Report No. .... : **KLPL/BTG/22/07-22**  
ULR No. .... : TC631122000000342F  
Discipline ..... : Electrical Discipline  
Group/Category ..... : Environmental Test Facility  
Sub-category ..... : Ingress protection test



Date of issue..... : **13.07.2022**  
No. of pages ..... : 06 PAGES + Annexure

Compiled by (+ signature)..... : Rohit Patil   
Designation: Testing Engineer

Approved by (+ signature)..... : Javed Shaikh   
Designation: Dy.Laboratory Manager

Item Received On ..... : 04.07.2022 in Good Condition

Test Completion Date ..... : 11.07.2022

#### Client

Name ..... : **M/s. Rotork Control (India) Pvt. Limited.**  
: 28B, Ambattur Industrial Estate (North), Ambattur,  
Chennai - 600 098, India.

#### Test Specification

Standard ..... : **IEC 60529:2013 & IS/IEC 60529:2001 (RA 2019)**  
Specified IP-Code ..... : **IP68**

#### Equipment Under Test

Type of Test Object ..... : **CKQ Range Of Actuator**  
Model No. .... : CKQ1000  
Sr. No..... : IN07960303  
Manufacturer ..... : **M/s. Rotork Control (India) Pvt. Limited .**

#### Annexure :

Drawing No..... : BR/MISC-11796, Rev No.00, Dated:11.07.2022(03 Pages)

**NOTE : 1) This refers only to the particular item(s) submitted for testing.**  
**2) If necessary, this report shall be reproduced ONLY in full.**



Head Office: B-101, Ansa Industrial Estate, Saki Vihar Road, Saki Naka, Andheri (E) Mumbai-400072 INDIA Ph: (022) 28471395  
Laboratory: Gat#142, Betegaon, Boisar Chilhar Road, Opp. Union Park, Boisar (E) Tal-Palghar, Dist-Palghar-401501, INDIA  
Phone (02525) 284881/931

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**Possible test case verdicts:**

Test case does not apply to the test object ..... : N ( Not Applicable)

Test object does meet the requirement..... : P ( Pass)

Test item does not meet the requirement ..... : F (Fail)

Test case has not been checked ..... : \_\_\_\_\_

**General remarks:**

"(See remark #)" refers to a remark appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

The test results presented in this report relate only to the object tested.

This test report shall not be reproduced except in full without the written approval of the testing Laboratory.

IP6X test conducted at Laboratory (Boisar).

IPX8 test conducted at Laboratory (Boisar).

**Note: - MAJOR EQUIPMENTS USED**

Tests	Required Instruments	Id. No.	Cal Due Date	Used Y/N
5X / 6X	Vacuum Meter	K&A 1108/1-17	04.02.2023	Y
	Rotameter	K&A 426	02.01.2023	Y
	Timer	K&A 581/1-12	08.08.2022	Y
	DTC with sensor	K&A 581/2-12	01.08.2022	Y
X7 /X8	Scale	K&A 107	29.09.2022	Y
	Stop watch	K&A 1128-18	15.01.2023	Y





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Date: 13.07.2022

**IEC 60529:2013 & IS/IEC 60529:2001 (RA 2019)**

Clause	Requirement - Test	Result- Remark	Verdict
10	<b>Marking.</b>	--	N
11	<b>General requirement for tests.</b>		
11.1	Tests should be carried out under the standard atmospheric conditions described in IEC 60068-1	--	P
11.2	Test samples shall be in a clean and new condition.	--	P
	The relevant product standard shall specify details such as: The number of samples to be tested;	--	N
	-conditions for mounting, assembling and positioning of the samples;	--	P
	-the pre-conditioning, if any, which is to be used;	--	N
	-whether to be tested energized or not;	--	N
11.5	<b>Empty enclosures</b>		
	If the enclosure is tested without equipment inside, the manufacturer shall ensure that after the electrical equipment is enclosed the enclosure meets the declared degree of Protection of the final product.	--	N

12	Tests for protection against access to hazardous parts indicated by the first characteristic numeral.				
First, characteristic Numeral.	Test means (Access probes)	Test force	Test Conditions Refer IEC 60529: 2013 & IS/IEC 60529:2001 (RA 2019)	--	
0	No test required	-	-	--	N
1	The access probe, sphere of 50 mm $\emptyset$ shall not fully penetrate and adequate clearance shall be kept.	50N $\pm$ 10%	Cl.12.2	--	N
2	The jointed test finger may penetrate up to 80 mm length but adequate clearance shall be kept.	30N $\pm$ 10%	Cl.12.2	--	N
3	The access probe, sphere of 2.5 mm $\emptyset$ shall not penetrate and adequate clearance shall be kept.	3N $\pm$ 10%	Cl.12.2	--	N
4	The access probe of 1,0 mm $\emptyset$ shall not penetrate and adequate clearance shall be kept.	1N $\pm$ 10%	Cl.12.2	--	N
5	Test conditions for IP 5X: Same As Above	1N $\pm$ 10%	Cl.12.2	--	N
6	Test conditions for IP 6X: Same As Above	1N $\pm$ 10%	Cl.12.2	--	N



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Report No.: KLPL/BTG/22/07-22

Date: 13.07.2022

IEC 60529:2013 & IS/IEC 60529:2001 (RA 2019)					
Clause	Requirement – Test			Result-Remark	Verdict
<b>13</b>	<b>Tests for protection against solid foreign objects indicated by the First characteristic numeral.</b>				
First, characteristic Numeral.	Test means (object probes and dust chamber)	Test force	Test Conditions Refer IEC 60529: 2013 & IS/IEC 60529:2001 (RA 2019)	--	
0	No test required	-	-	--	N
1	Rigid sphere without handle or guard 50 mm diameter.	50N ±10%	Cl.13.2	--	N
2	Rigid sphere without or guard 12, 5 mm diameter.	30N ±10%	Cl.13.2	--	N
3	Rigid steel rod 2,5mm diameter with edges free from burrs	3N± 10%	Cl.13.2	--	N
4	Rigid steel wire 1, mm diameter with edges free from burrs.	1N± 10%	Cl.13.2	--	N
5	Dust chamber, with under pressure	NA	Cl.13.4+13.5	--	N
6	Dust chamber, The enclosure is maintained below the Surrounding atmospheric pressure by a vacuum pump.	NA	Cl.13.4+13.6	For 8 hrs. As extraction rate is less than 40 Volumes per hour and max depression of 20mbar.	P
13.6.2	<b>Acceptance conditions for the first characteristic numeral 6X.</b> The protection is satisfactory if no hazardous deposit of dust is observable inside the UUT at the end of test.			No ingress of powder found inside the UUT.	P



IEC 60529:2013 & IS/IEC 60529:2001 (RA 2019)				
Clause	Requirement – Test		Result-Remark	Verdict
<b>14</b>	<b>Tests for protection against water indicated by the second characteristic numeral.</b>			
Second, characteristic Numeral.	Test means	Test Conditions Refer IEC 60529: 2013 & IS/IEC 60529:2001 (RA 2019)	--	
0	No test required	Cl.14.2.0	--	N
1	Drip box, Enclosure on turntable	Cl.14.2.1	--	N
2	Drip box, Enclosure in 4 fixed positions of 15 ° tilt	Cl.14.2.2	--	N
3	oscillating tube or spray nozzle, 60° from vertical	Cl.14.2.3	--	N
4	oscillating tube or spray nozzle, 180° from vertical	Cl.14.2.4	--	N
5	6.3-mm nozzle, tested with a spraying nozzle, distance 2.5 m to 3 m, water flow rate 12.5 l/min	Cl.14.2.5	--	N
6	12.5-mm nozzle, tested with a spraying nozzle, distance 2.5 m to 3 m, water flow rate 100 l/min	Cl.14.2.6	--	N
7	Immersion tank,	Cl.14.2.7	--	N
8	Immersion tank, Continuous immersion subject to agreement. Water temperature does not differ from that of equipment by more than 5K. <b>Test Duration:</b> 96 Hrs	Cl.14.2.8	The lowest point of UUT is located 8 meter below surface of water.	<b>P</b>
-	<b>Acceptance conditions for IPX8:</b> The protection is satisfactory if no water has accumulated near the insulation, cable end or entered cables or interferes with the correct operation of the equipment.	Cl.14.3	No ingress of water observed inside the UUT.	<b>P</b>
-	Tests for protection against access to hazardous parts indicated by the additional letter.	Cl.15	--	N

**SUMMARY OF INGRESS PROTECTION TESTS ACCORDING TO IEC 60529:2013 & IS/IEC 60529:2001 (RA 2019)**

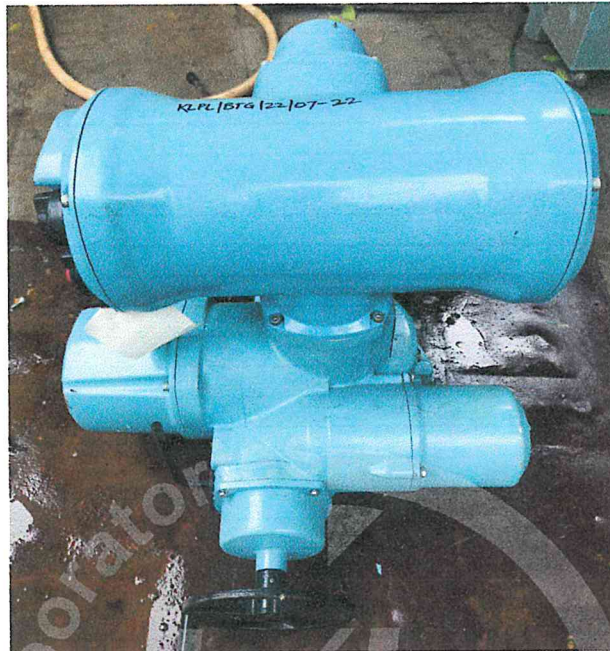
**Conclusion of the IP68 test: PASS.**

The results of the tests were in compliance with the requirements in the standard

IEC 60529:2013 & IS/IEC 60529:2001 (RA 2019)

UUT=Unit Under Test





**Picture1: CKQ Range of Actuator**



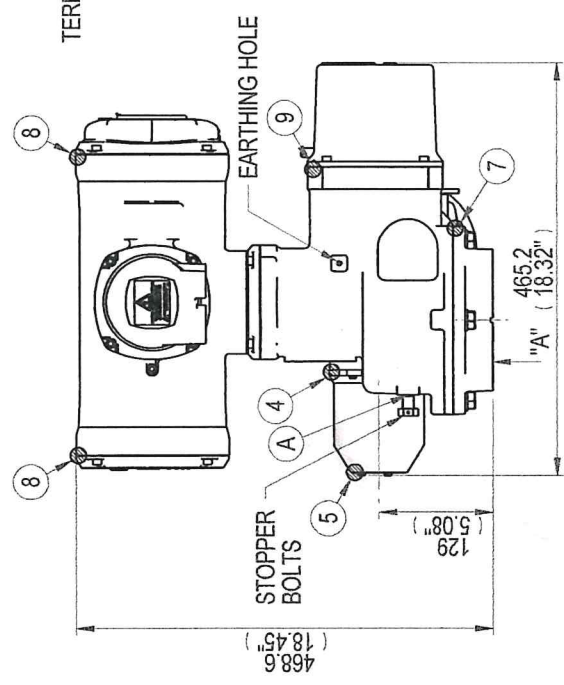
**Pictute2: No ingress of powder & water observed**

**END OF REPORT**

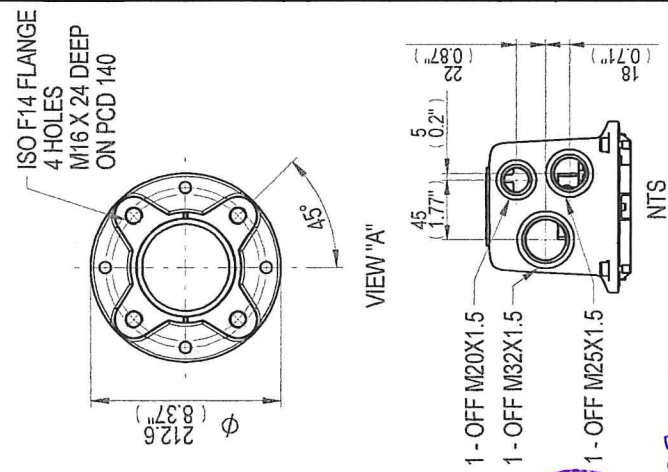
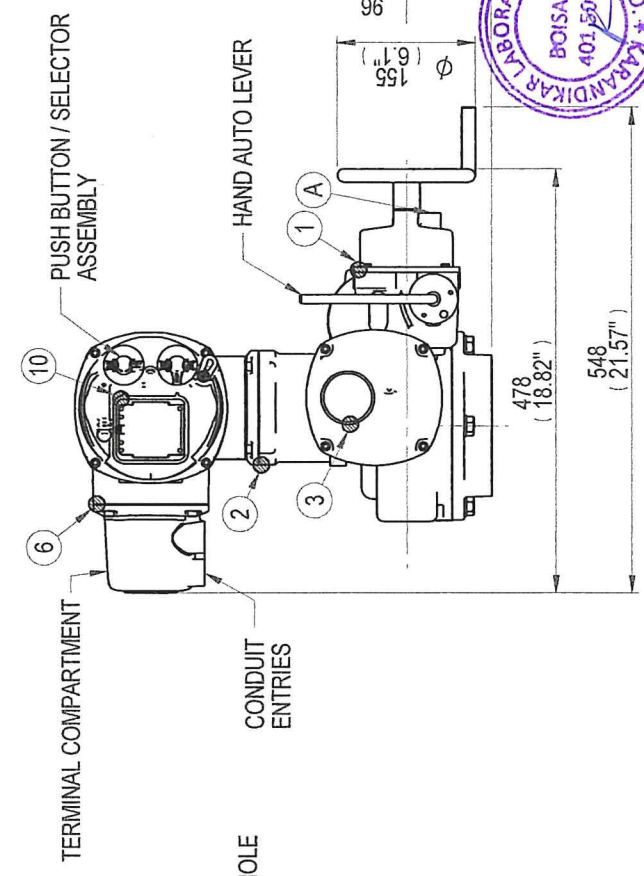
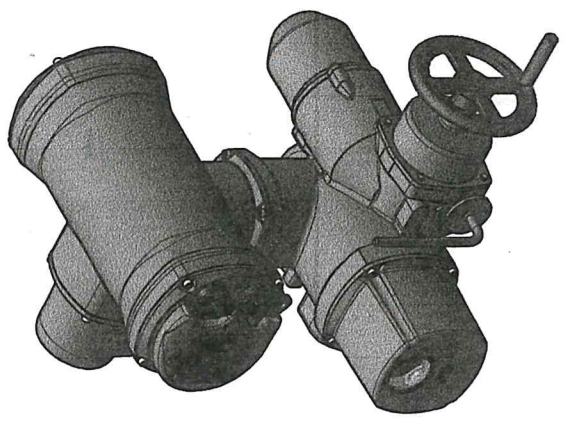
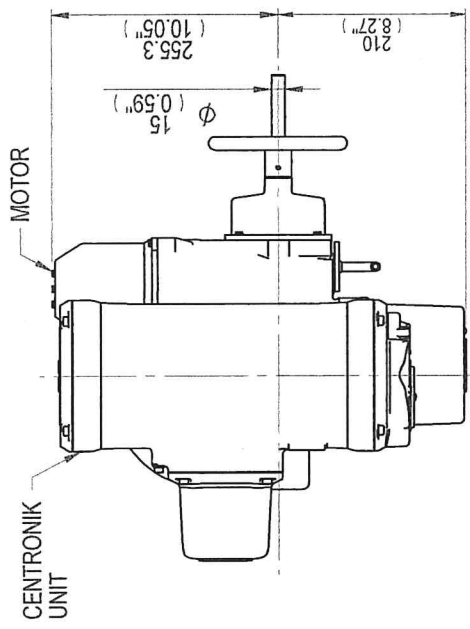


"O" RING LOCATION	DMENSIONS	MATERIAL
HAND WHEEL COVER (1)	112 x 3	NITRILE
CENTRONIK UNIT COVER (2)	115 x 3	NITRILE
INDICATOR WINDOW (3)	54 x 1.50	NITRILE
MOTOR HOUSING (4)	94.97 X 1.78	NITRILE
MOTOR END CAP (5)	26.7 x 1.78	NITRILE
TERMINAL BUNG (6)	115 x 3	NITRILE
BASE (7)	125 x 3	NITRILE
CENTRONIK UNIT END CAPS (8)	115 x 3	NITRILE
MSM UNIT COVER (9)	136 x 3	NITRILE
CENTRONIK UNIT DISPLAY (10)	RECT 77 x 86 x 3	NITRILE

THE CLEARANCE BETWEEN THE SPIGOT AND BORE IS  
 MIN. - 0.05 mm  
 MAX. - 0.30 mm



- NOTES:
1. APPROXIMATE WEIGHT OF THE ACTUATOR IS 34 KG
  2. ALL CONDUIT ENTRIES ARE PLUGGED WITH WEATHER PROOF PLUGS.
  3. ALL "O" RINGS ARE ASSEMBLED AFTER APPLYING GREASE
  4. OIL FILTERS AND DRAIN PLUGS



**rotork**  
 Chennai - India  
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Created: ALLEN MARSH, B  
 Checked: ALLEN MARSH, B  
 Approved: ANAND BABU, D

Dimensions in mm  
 Scale: 1:6

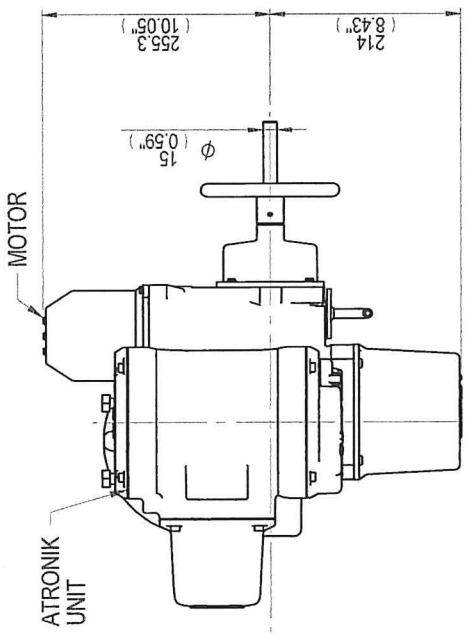
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Drawing Number: 2022-07-11  
 BR/MISC-11796

Rev: 00  
 Sheet: 1 of 3

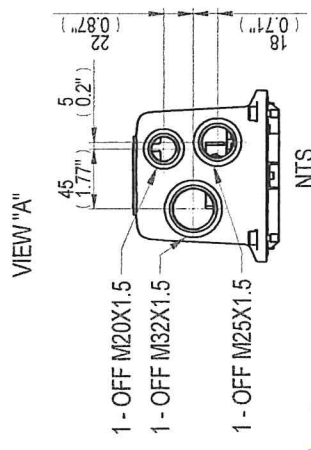
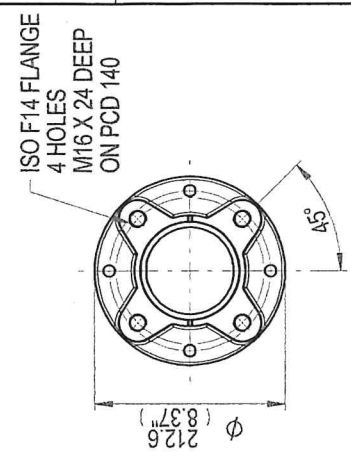
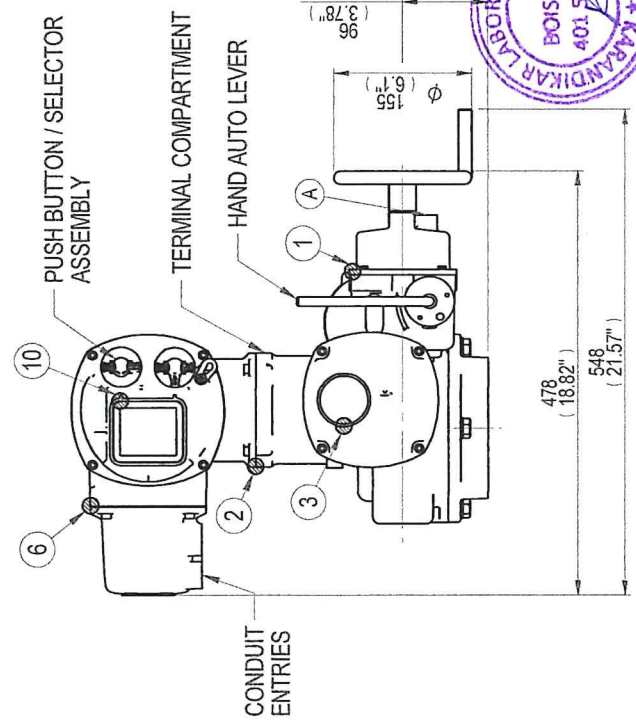
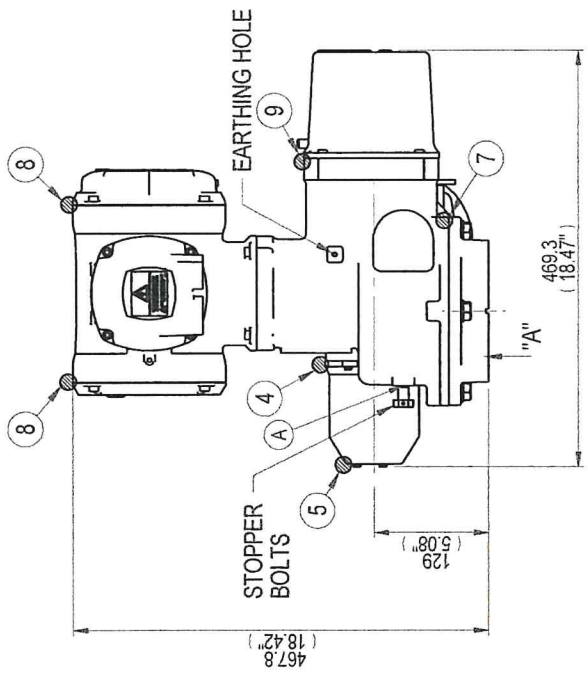
Report No: HIPL187022107-22





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HAND WHEEL COVER (1)	112 x 3	NITRILE
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MSM UNIT COVER (9)	136 x 3	NITRILE
ATRONIK UNIT DISPLAY (10)	RECT 77 x 86 x 3	NITRILE

THE CLEARANCE BETWEEN THE SPIGOT AND BORE IS  
 MIN. - 0.05 mm  
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NOTES:

- APPROXIMATE WEIGHT OF THE ACTUATOR IS 32 KG
- ALL CONDUIT ENTRIES ARE PLUGGED WITH WEATHER PROOF PLUGS.
- ALL "O" RINGS ARE ASSEMBLED AFTER APPLYING GREASE
- Ⓐ OIL FILTERS AND DRAIN PLUGS



Report No: KIP/137a) 22/07-22

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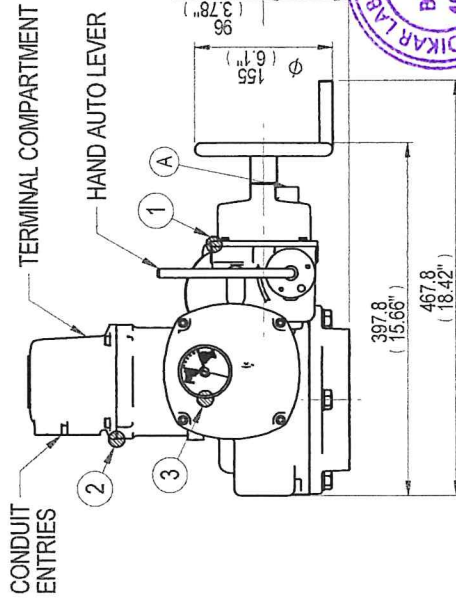
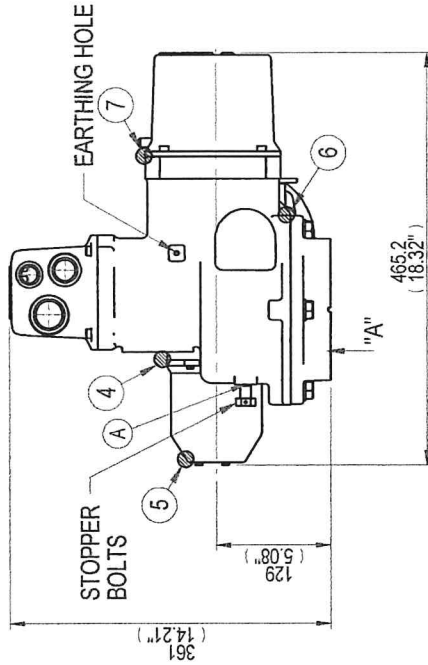
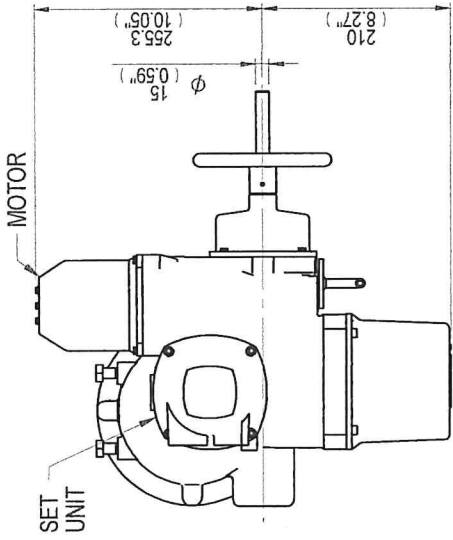
Title		Dimensions in mm		Scale	
CKQ1000 - ATRONIK IP68 APPROVAL DRAWING		1:1		1:1	
Created	ALLEN MARSH, B	2022-07-11	2022-07-11	Drawing Number	BR/MISC-11796
Checked	ALLEN MARSH, B	2022-07-11	2022-07-11	Rev	00
Approved	AHAND BABU, D	2022-07-11	2022-07-11	Nominal Mass	-
				Size	A3
				Sheet	2 of 3

Change Description

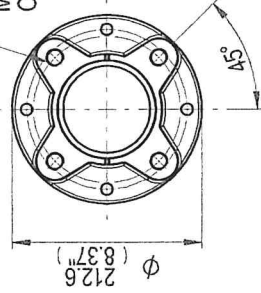


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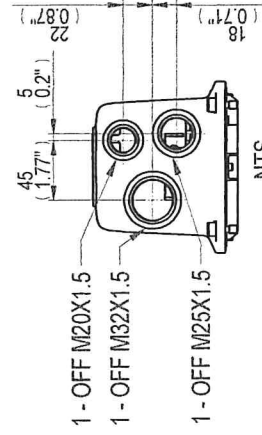
THE CLEARANCE BETWEEN THE SPIGOT AND BORE IS  
 MIN. - 0.05 mm  
 MAX. - 0.30 mm



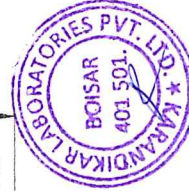
ISO F14 FLANGE  
 4 HOLES  
 M16 X 24 DEEP  
 ON PCD 140



VIEW "A"



NTS



Report No' KLP/1 BTG/ 22/07-22

NOTES:

1. APPROXIMATE WEIGHT OF THE ACTUATOR IS 26 KG
2. ALL CONDUIT ENTRIES ARE PLUGGED WITH WEATHER PROOF PLUGS.
3. ALL "O" RINGS ARE ASSEMBLED AFTER APPLYING GREASE
4. OIL FILTERS AND DRAIN PLUGS

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Change Description

1	2	3	4	5	6	7	8
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