

11280A HercuLine[®] Series Actuator

Specification

Non-Contact Position Sensing and Variable Speed Motor Control

Overview

To operate with maximum efficiency and improve process uptime, state-of-the-art control systems require accurate, responsive, and repeatable actuation of final control devices. Actuators are often overlooked when considering maintenance and ancillary support costs, yet they play an important role in system performance and can directly impact your company's bottom line.

Honeywell's 11280A high torque industrially rated rotary actuator is engineered for exceptional reliability, accurate positioning, and low maintenance. Designed for very precise positioning of dampers, vanes, and quarter turn valves, the 11280A performs especially well in extremely demanding environments requiring continuous-duty, high reliability, and low maintenance. The 11280A uniquely provides high torque, fast full travel speeds, and continuous duty. Typical applications include induced and forced draft fan dampers, burner tilts, fluid couplings, and quarter turn valves.

Actuator Operation

A double reduction worm gear set combine with a variable speed motor controller (inverter) and continuous duty rated for accurate and repeatable positioning of final control elements. The worm gear set combination also functions as a brake, capable of holding greater than two times the output torque in a back-driving condition.

Control options are available to interface with a modulating 4-20 mA input signal or position proportional (3 wire/PAT) and 4-20 mA customer feedback. Internal balance, customer feedback, and patented slidewire emulation is provided by a non-contacting position sensor.

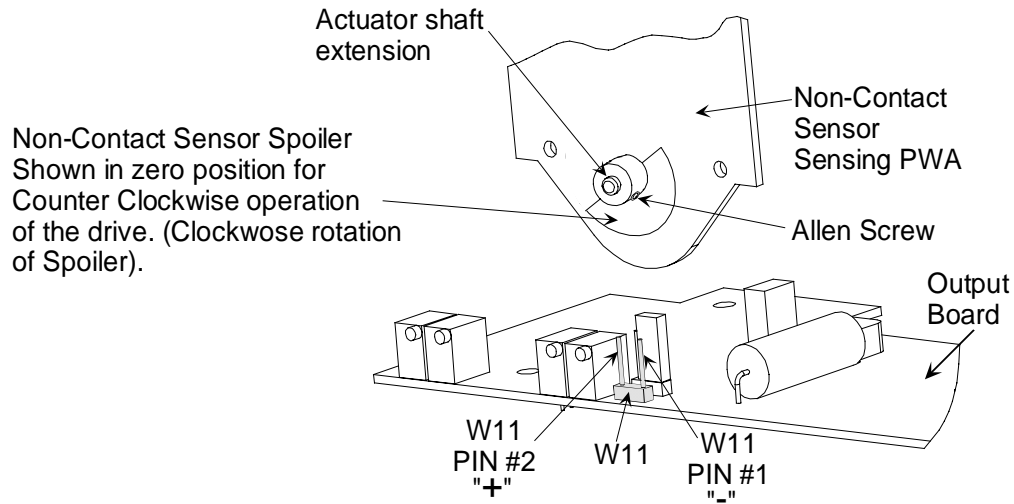


Features

- **Accurate Positioning**
Motor/gear train provides accurate positioning with instantaneous start/stop characteristics.
- **Non-Contact Position Sensing**
Non-contacting position sensing lowers maintenance costs and improves performance.
- **Low Maintenance Design**
Simple-proven design means high reliability/low maintenance.
- **Duty Cycle**
Continuous duty rated motor.
- **Fast Stroke Time**
Full stroke speeds as fast as 10 seconds.
- **Torque**
High torque capability in small package (425 to 5,500 lb-ft of torque)
- **Input Control Signals**
4-20 mA, 1-5 Vdc, Position proportional (PAT), Open/close (contact closure)
- **Output Signals**
0/4-20 mA, 0/1-5 Vdc (0-16 Vdc), slidewire emulation.
- **Power Requirements**
Single phase 120/240 Vac up to 1500 lb-ft.
200/200-240/380-480 Vac
3 Phase 50/60 Hz, 575 Vac
3 Phase 60 Hz
- **Manual Operation**
A manual handwheel to operate the actuator when power is not available is standard.

Features (continued)

- **Auto-Manual** electric handswitch with auxiliary contacts indicating an "Out-of-Auto" position for local electric control is standard.
- **Output Shaft Hardware**
11280A series actuators are available with an adjustable radius (8"-14)/ position crank arm and linkage kits
- **Limit Switches**
All 11280 series actuators are supplied with two end of travel limit switches and two auxiliary switches (SPDT).
- **Enclosure**
Rugged, weatherproof, industrial grade.
- **Full Travel Speed**
Full stroke travel speeds 10, 30 or 60 seconds/90° travel, 120° travel speed is longer.
- **Warranty**
Exceptional warranty – 30 months from shipment or 24 months from date of installation.



NCS Assembly

Specification - General

Physical							
Weight	56 kg to 224 kg (150-600 lb.) (see table below for specifics for each model)						
Enclosure	Precision machined ductile iron with corrosion resistant paint						
Gear train	Precision machined, double reduction worm gear						
Mechanical stops	To prevent over-travel						
Operating Temperature	-30 °C to +65 °C (-20 °F to +150 °F) except Model 11287A which has a range of: -20 °C to +65 °C (-4 °F to +150 °F)						
Storage Temperature	-40 °C to +93 °C (-40 °F to +200 °F)						
Relative Humidity	Fully operable over the range of 0-99 % R.H. non-condensing						
Crank Arm	Adjustable radii (8" to 14") crank arm is standard.						
Rotation	90-120 degrees. Factory set at 90 degrees.						
Direction of Rotation	Field selectable via switch and jumper. Default = CCW (determined looking into the shaft)						
Manual Handwheel	Provides a means of positioning the actuator in the event of a power failure or on set-up.						
Lubrication	Mobil Synthetic bearing and gear lubricant SHC 634 (ISO 460) or equivalent						
Fuses	Bussmann GDB1.6: 1.6 Amp Fast Littlefuse 312001: 1.0 Amp Fast 25 Am Fast						
Catalog #	Torque lb-ft (N-M)	Output Shaft Size	Shaft Key Size	Output Shaft Length	Maximum Overhang Load	Handwheel Diameter	Net Weight
11284A	425 (575)	2" (51 mm)	1/2" (13 mm)	5" (127 mm)	3700 lb. (1380 kg)	10" (254 mm)	150 lb. (56 kg)
11285A	850 (1150)	2" (51 mm)	1/2" (13 mm)	5" (127 mm)	3700 lb. (1380 kg)	10" (254 mm)	225 lb. (84 kg)
11286A	1500 (2025)	2" (51 mm)	1/2" (13 mm)	5" (127 mm)	3700 lb. (1380 kg)	18" (457 mm)	300 lb. (112 kg)
11288A	2500 (3400)	2-1/2" (64 mm)	5/8" (16 mm)	6" (152 mm)	7500 lb. (2798 kg)	18" (457 mm)	550 lb. (205 kg)
11289A	4000 (5425)	2-1/2" (64 mm)	5/8" (16 mm)	6" (152 mm)	7500 lb. (23798 kg)	18" (457 mm)	600 lb. (224 kg)
11287A	5500 (7450)	2-1/2" (64 mm)	5/8" (16 mm)	6" (152 mm)	7500 lb. (23798 kg)	18" (457 mm)	600 lb. (224 kg)
Electrical							
Power Input	115/220 Vac, single phase 50/60 Hz up to 1500 lb-ft 208/200 – 240/380 – 480/575, 30, 50/60 Hz						
Motor	Inverter rated, 3 phase, continuous duty, C face mounting						
Loss of Power	Stays in Place						
Local Auto/Manual Switch	Optional – Provides local electrical operation with "Out of Auto" contact for annunciation						
Limit Switches	Standard – Two SPDT end of travel limits rated (10 A at 125 Vac, 5 A at 250 Vac).						
Auxiliary Switches	Two additional SPDT switches are optional (10 A at 125 Vac, 5 A at 250 Vac)						
Torque Settings of Crank Arm Bolts							
Clamp Bolts	220 lb.-ft						
Rod End Bolt	30-35 lb./ft						
Slider Bolt	220 lb.-ft						
Jam Nuts	100 lb.-ft						

Specification - Actuator Motor Positioner Board

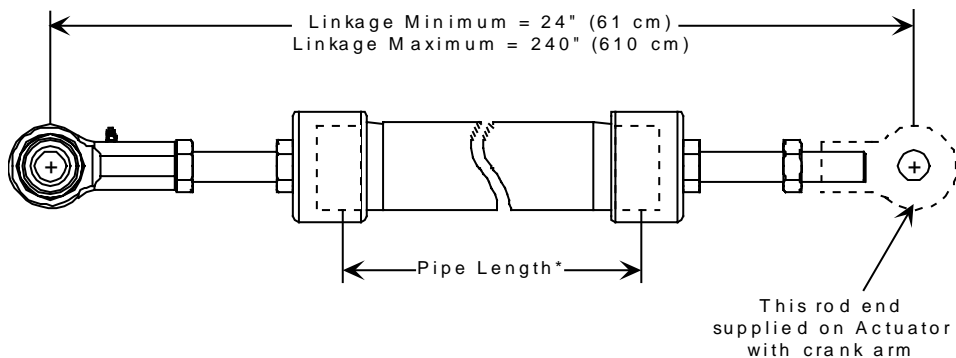
Electrical									
Input Signals	Input: 4-20 mA 1 Vdc to 5 Vdc with appropriate shunt resistor for current range (Resistor: 250 ohms \pm 0.1 % Part No.: 070756)								
Input Impedance	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Input</th> <th style="width: 50%;">Input Impedance</th> </tr> </thead> <tbody> <tr> <td>4-20 mA</td> <td>250 ohms</td> </tr> <tr> <td>1-5 V with fail-safe Jumper W2</td> <td>10 K ohms</td> </tr> <tr> <td>1-5 V without fail-safe Jumper W2</td> <td>10 M ohms</td> </tr> </tbody> </table>	Input	Input Impedance	4-20 mA	250 ohms	1-5 V with fail-safe Jumper W2	10 K ohms	1-5 V without fail-safe Jumper W2	10 M ohms
Input	Input Impedance								
4-20 mA	250 ohms								
1-5 V with fail-safe Jumper W2	10 K ohms								
1-5 V without fail-safe Jumper W2	10 M ohms								
Sensitivity	0.20 % to 5 % span adjustable. Shipped at 0.75 % span.								
Hysteresis	Less than 0.4 % of full scale								
Linearity	\pm 0.25 % of span (typical)								
Repeatability	0.20 % span								
Voltage/ Supply Stability	0.25 % of span with +10/-15 % voltage change								
Temperature Coefficient	0.030 % of span per degree C for 0 to 50 °C 0.05 % of span per degree C for -30 to 65 °C								
Zero Suppression	100 % of span								
Input Filter	Adjustable to smooth input signal								
Maximum Input Voltage	5 Vdc								
Output	Two opto-couplers for raise-or lower motor operation								
Fail-safe operation	If input signal falls below 2% of span, there are four choices selected by a movable jumper; stop, go full upscale, go full downscale, or go to a selected (adjustable) position.								
Isolation	Input is isolated from power.								

Specification - Actuator with Outputs

Electrical	
Output Signals	0-20 mA 4-20 mA 1-5 Vdc with 250 ohm resistor 0-16 Vdc with 800 ohm resistor
Slidewire Emulation	Provides output voltage ratiometric to shaft position and potentiometric to supply voltage (1-20 Vdc) without a slidewire. Emulates a 100 to 1000 ohm slidewire.
Isolation	Output is isolated from power and input signal by 240 Vac
Load Requirement	Current Out — 0-1000 ohms

Pipe Linkage Kits (Table V, Option E)

This kit is used for linkage lengths from 24 inches to 240 inches (61 cm to 610 cm). Pipe linkage kit includes the mechanical pipe couplings, load rod end (left-hand thread), connecting rods and locking nuts. The Customer must supply a length of schedule 40 pipe 2-1/2 * (both ends with right-hand NP threads) and a nut and bolt to connect the rod end to the load. The actuator rod end (right-hand thread), nut and bolt are supplied with the actuator. This kit can be ordered with the Actuator, or separately using Honeywell kit part number 51204875-001. Kit includes: (1) Rod end, (2) threaded rods, (4) nuts, (2) pipe adaptors.



Pipe Linkage Kit

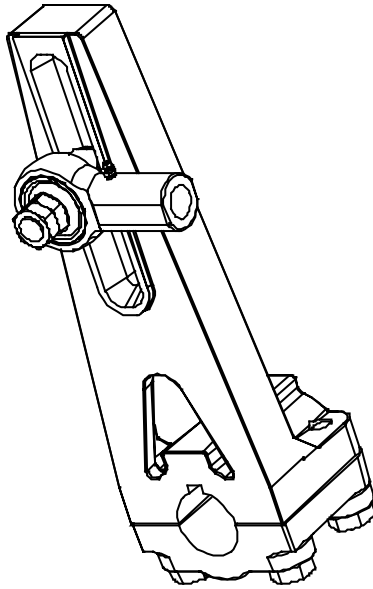
*Pipe length = Overall linkage length minus (-) 20 inches (51 cm).

Actuator Crank Arms

The 11280A Series Actuator comes standard with an 8 to 14" adjustable radius crank arm.

The 11280A Series Actuator crank arm uses a standard right-hand thread 1" rod end to compliment the pipe linkage kit.

The crank arm for the 11284A, 11285A and 11286A has a 2" shaft hole, while the crank arm from the 11287A, 11288A and 11289A has a 2-1/2" shaft hole.



11280A Crank Arm

Recommended Bolt Torque

The following table lists the type of bolts to be used and the recommended torque for each bolt.

Bolt Type	Torque
Clamp bolts	220 lb.-ft
Slider bolt	220 lb.-ft
Jam nuts	100 lb.-ft

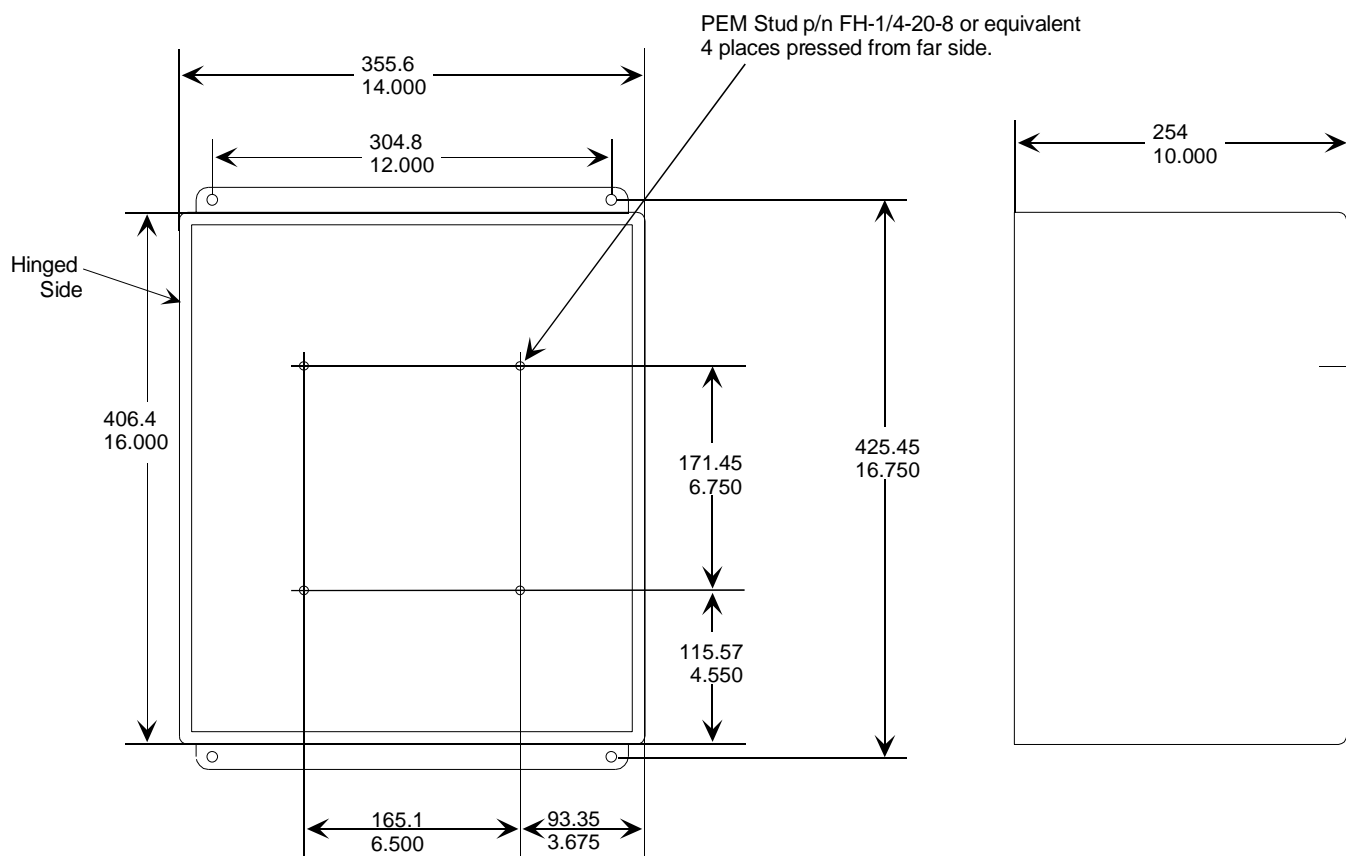
External Transformers

120 Vac (Single Phase)

For the customer applications requiring 120/240 Vac single phase operation, a step-up transformer is mounted in a separate box (Model Selection Guide Table I, option 1). The figure below is the dimension drawing for the transformer box.

575 Vac (3 Phase)

For the customer applications requiring 575/460 Vac 3 phase operation, a step-down transformer is mounted in a separate box (Model Selection Guide Table I, option 6). The figure below is the dimension drawing for the transformer box.



Notes: 1. Enclosure is shown without door.

Dimension Drawing for External Transformer Box

Model Selection Guide

Reference 62-86-16-18

Instructions

- Select the desired key number. The arrow to the right marks the selection available.
- Make the desired selections from Tables I thru VII using the column below the arrow.
A dot (•) denotes unrestricted availability.

Key Number I II III IV V VI VII VIII
 [] - [] - [] - [] - [] - [] - [] - [] - []

KEY NUMBER - Electronics

Output Torque lb. - ft. (N - M)		Selection	Availability	
425 (575)	(Note 1)	011284A	↓	
850 (1150)		011285A	↓	
1500 (2025)		011286A	↓	
2500 (3400)		011288A	↓	
4000 (5425)		011289A	↓	
5500 (7450)		011287A		↓

TABLE I - POWER SUPPLY

Single Phase	100 - 120 Vac; 50/60Hz 200 - 240 Vac; 50/60Hz	1 2	a a	
Three Phase	200 - 240 Vac; 50/60Hz 380 - 480 Vac; 50/60Hz 575 Vac, 60 Hz	4 5 6	• • •	• • •

TABLE II - STROKE SPEED

Stroke Speed @ 60 Hz	10 sec/90 degrees 30 sec/90 degrees 60 sec/90 degrees	1 2 3	• • •	• • •
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TABLE III - MOTOR ORIENTATION (See specification 62-86-03-09 for diagrams)

Motor Orientation	Right-hand floor configuration, H.W. Shaft Horizontal (121F) Left-hand floor configuration, H.W. Shaft Horizontal (124F)	01 03	• •	• •
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TABLE IV - CONTROL SIGNAL INPUTS

Up/Dn	Drive Up/Dn 3-wire input	0	•	•
4-20mA/dc/1-5Vdc	4-20mA/dc or 1-5Vdc (w/resistor change)	1	•	•

TABLE V - CUSTOMER POSITION OUTPUTS

None	No position outputs provided	00	•	•
SEC (Note 2)	One slidewire emulation output	01	•	•
Analog Output	4-20mA/dc, 0-20mA/dc, 0-5Vdc, 1-5Vdc or 0-1.25Vdc	03	•	•

01128_ _

↓ ↓
4A
5A
6A
8A
9A 7A

TABLE VI - CONTACT OUTPUTS

		Selection	4A	5A	6A	8A	9A	7A
Limit Switches	1 CW & 1 CCW Limit Switch	0	•	•				
Limit/Auxiliary Switches	1 CW, 1CCW, & 2 Auxiliary SPDT Switches	2	•	•				
Limit/Auto-Manual	1 CW, 1CCW, Auto/Man Switch	5	•	•				
Limit/Auto/Auxiliary	1 CW, 1CCW, Auto/Man Switch & 2 Aux	7	•	•				

TABLE VII - OPTIONS

A	Crank Arm	Adjustable 8" to 14" Radii - Standard	0XXXXX	•	•
		None	1XXXXX	•	•
B	Linkage Kit	None	X0XXXX	•	•
		Up to 20 ft. length - customer supplies schedule 40 pipe	X1XXXX	•	•
C	Future Option		XX0XXX	•	•
D	Future Option		XXX0XX	•	•
E	Tagging	None	XXXX0X	•	•
		Linen (Note 3)	XXXX1X	•	•
		Stainless Steel (Note 3)	XXXX2X	•	•
F	Future Option	Consult Product Manager	XXXXX0	•	•

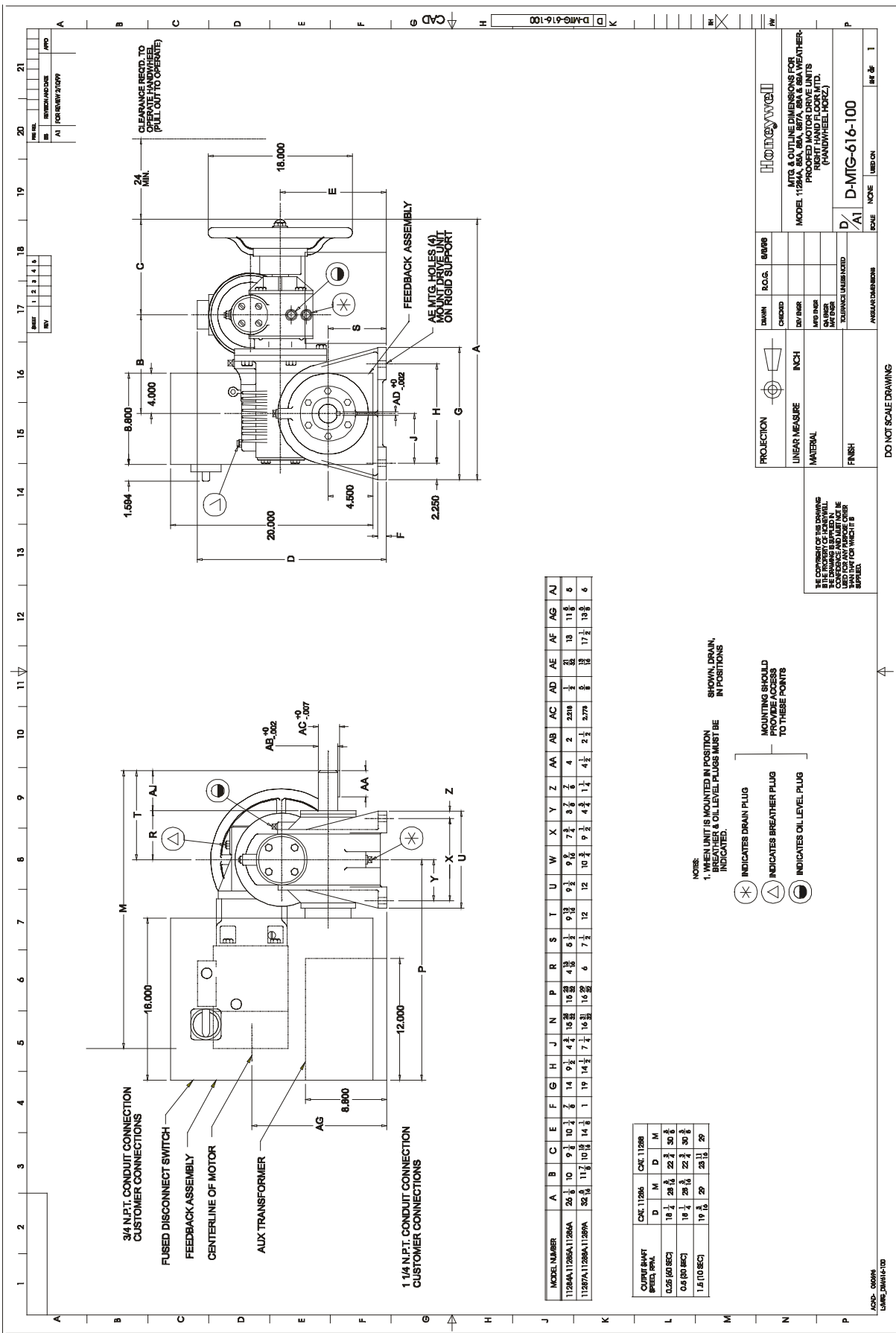
TABLE VIII - FACTORY OPTIONS

None (Note 4)		00	•	•
Motor Orientation (Note 4)	Other motor mounting orientations available upon request - reference figure in product specification	XX	•	•

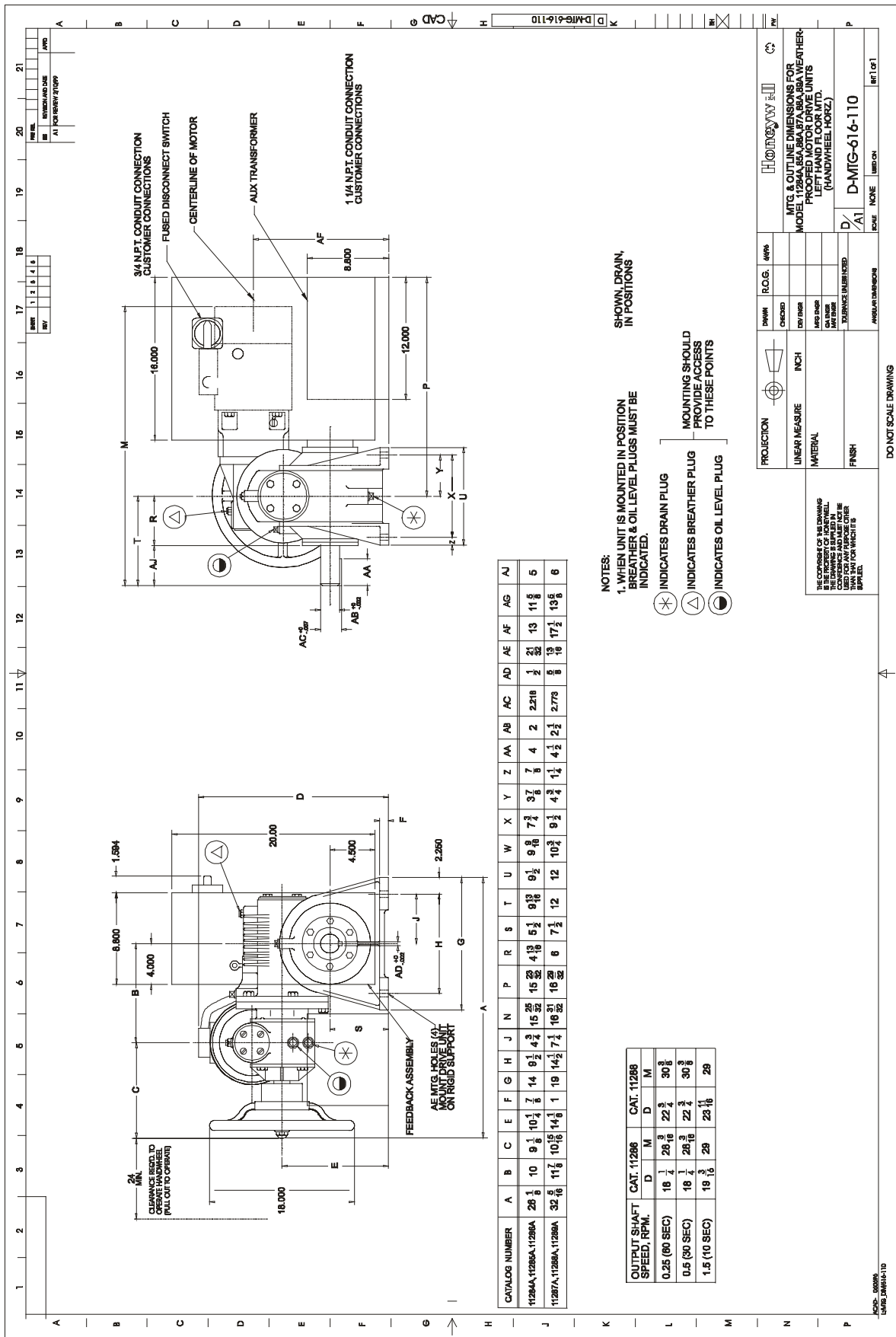
RESTRICTIONS

Restriction Letter	Available Only With		Not Available With	
	Table	Selection	Table	Selection
a	I	11284A, 11285A, 11286A	I	11287A, 11288A, 11289A

- Note 1:** Requires (2) adapters PN 51204694-501 for retrofit of existing Leeds & Northrup 011284 and 011285 actuators.
- Note 2:** Slidewire emulation is a solid state circuit providing a ratiometric voltage output proportional to shaft position.
- Note 3:** Customer must supply tagging information: Up to 3 lines (22 characters for each line)
- Note 4:** Consult Marketing Manager regarding factory specials.



Mounting and Outline Dimensions for 11284A, 11285A, 11286A, 11288A, and 11289A Weather-Proofed Motor Actuators - Right Hand Floor Mounting, Handwheel Shaft Horizontal (D-MTG-616-100)



REV	DATE	BY	CHKD	APPR
1				
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21				

CATALOG NUMBER	A	B	C	E	F	G	H	J	K	L	M	N	P	R	S	T	U	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AJ
11284A, 11285A, 11286A	28 1/8	10	9 1/8	10 1/4	7	14	9 1/2	4 3/8	15 22/32	15 22/32	15 22/32	4 13/16	5 1/2	9 13/16	9 1/2	9 1/8	7 1/2	3 7/8	7	4	2	2 21/8	1 21/32	2 1/8	13	11 5/8	5		
11287A, 11288A, 11289A	32 5/8	11 7/8	10 15/16	14 1/4	1	19	14 1/2	7 1/4	16 21/32	16 21/32	16 21/32	4 1/2	4 1/4	8 1/2	8 1/2	10 3/4	9 1/2	4 3/4	4 1/4	4 1/2	2 1/4	2 1/4	2 7/8	8 1/8	13 1/8	17 1/2	13 5/8	6	

OUTPUT SHAFT SPEED, RPM.	CAT. 11286			CAT. 11288		
	D	M	M	D	M	M
0.25 (60 SEC)	18 1/4	26 3/8	22 3/4	30 3/8		
0.5 (90 SEC)	18 1/4	26 3/8	22 3/4	30 3/8		
1.5 (10 SEC)	19 3/8	29	23 1/8	29		

- NOTES:
- WHEN UNIT IS MOUNTED IN POSITION BREATHER & OIL LEVEL PLUGS MUST BE INDICATED.
- INDICATES DRAIN PLUG
 - INDICATES BREATHER PLUG
 - INDICATES OIL LEVEL PLUG
- MOUNTING SHOULD PROVIDE ACCESS TO THESE POINTS
- SHOWN, DRAIN, IN POSITIONS

PROJECTION	1st ANGLE	2nd ANGLE	3rd ANGLE	4th ANGLE
CHECKED				
DESIGNED				
DRAWN				
TOLERANCE UNITS				
ASSEMBLY				
FINISH				
MATERIAL				
LINEAR MEASURE				
SCALE				
DATE				
PROJECT				
DESCRIPTION				
MODEL				
REV				
DATE				
BY				
CHKD				
APPR				

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Mounting and Outline Dimensions for 11284A, 11285A, 11286A, 11288A, and 11289A Weather-Proofed Motor Actuators - Left Hand Floor Mounting, Handwheel Shaft Horizontal (D-MTG-616-110)

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is **in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.** Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

For more information, contact Honeywell sales at (800) 343-0228.

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