



Andco Eagle Actuator


Installation Manual



	WARNING
	<p>PPE Approved Personnel Protective Equipment for the site must be worn.</p>

	AVERTISSEMENT
	<p>EPI Il convient de porter un équipement de protection individuelle sur le site.</p>

	WARNING
	<p>GROUNDING LUG Unit must be grounded with minimum size 10 AWG wire.</p>

	AVERTISSEMENT
	<p>PATTE DE MISE À LA TERRE L'unité doit être mise à la terre avec un fil de calibre 10 au moins.</p>

NOTICE
<p>The information contained in this manual is essential to safe, successful, long term operation of your Andco Eagle linear actuator. Read and follow the requirements concerning storage, installation and adjustments. Failure to do so could void the warranty covering your actuator.</p>

AVIS
<p>Les renseignements contenus dans ce manuel sont essentiels au fonctionnement sûr, efficace, durable de votre actionneur linéaire Andco Eagle. Lisez et respectez les exigences relatives au stockage, à l'installation et aux réglages. Le non-respect de ces exigences peut annuler la garantie couvrant votre actionneur.</p>

This manual gives instructions for storing, installing, operating and servicing the Model 3100 Eagle linear actuator.

Refer all questions not covered in this manual to:

**Industrial Products Group
Andco Actuators**
16240 Port Northwest Drive
Houston, TX 77041
T: 832-590-2306
Toll Free: 1-800-945-9898
F: 713-849-2879

Be sure to include the model and serial number located on the nameplate of your Eagle actuator in all communications and parts orders. The nameplate is located on the gear housing cover. Numbers in brackets refer to item number in figure 2 on page 8.

Intent of Usage/Application

Dresser Natural Gas Solutions (NGS) Andco electric linear actuators offer a superior choice when reliable, precise, controlled motion is required. Whether moving industrial doors, providing accurate positioning feedback for antennas, or modulating and controlling louver dampers, customers can rely on Andco actuator solutions.

The Andco Eagle actuators include weatherproof and dustproof units, offering customers durability and performance in severe industrial environments, including hot and cold temperature extremes. Andco Actuators are a superior solution for a range of functions including positioning, lifting/lowering, pushing/pulling, and opening/closing.

Andco actuator technology offers low maintenance packages with internal adjustable limit switches for on/off controls and light indication, optional internal position/process controls for positioning, and motor control. Our actuator solutions deliver ease of installation, maintain constant output force and velocity, and consume power only during movement.

These actuators feature:

- High-starting torque motor with thermal overload protection
- Non-rotating extension rod
- Non-back driving acme screw
- All metal gearing

1.0 Storage Requirements

1. Actuators should always be stored in a clean dry environment, in a location where mechanical damage to the actuator can't accidentally occur.
2. All covers must remain in place and securely fastened.
3. All pipe plugs must remain in place and be kept tight.
4. Actuators equipped with controllers can be damaged by excessive moisture. Units so equipped should be stored in a controlled environment prior to installation. If the units are equipped with compartment heaters, the heaters must be continuously energized while in storage.

2.0 Lifting Instructions

1. Do not lift Eagle actuator by limit switch compartment.
2. Follow applicable safety guidelines when lifting or moving actuator.

3.0 Installation Requirements

NOTICE


While it is possible to mount the actuator in any position, it is not recommended that the control compartment cover be positioned face down. In order to maximize seal integrity, the unit should be mounted with the extension rod pointed up (vertical installations) or with motor on top (horizontal installations).

AVIS


Bien qu'il soit possible d'installer l'actionneur, on ne recommande pas que le couvercle du compartiment de commande soit positionné face vers le bas. Afin de maximiser l'étanchéité du joint, l'unité doit être installée avec sa tige d'extension orientée vers le haut (installations verticales) ou avec le moteur sur le dessus (installations horizontales).


1. The body tube adapter (57) is used for face flange or trunnion-type mounting.
2. The actuator can be clevis-mounted utilizing the clevis (29) in the extension rod (6) and the rear clevis bracket, located on the gear compartment cover (21).


Refer to Figure 1 on page 7.

	WARNING
	PPE Approved Personnel Protective Equipment for the site must be worn.

	AVERTISSEMENT
	EPI Il convient de porter un équipement de protection individuelle sur le site.

	CAUTION
	BURN HAZARD Possible hot surface. Keep hands clear of surface. Allow surface to cool before performing any maintenance.

	ATTENTION
	RISQUE DE BRÛLURE La surface risque de devenir chaude. Éloignez vos mains de la surface. Laissez refroidir la surface avant les travaux de maintenance.

	WARNING
	MOVING PARTS Internal moving parts. Pinch point hazard. Keep hands clear during operation.

	AVERTISSEMENT
	PIÈCES MOBILES Pièces mobiles internes. Risque de point de pincement. Tenez vos mains éloignées pendant le fonctionnement.

CAUTION	
SERVICE PERSONEL	
Service operators must be licensed/trained and authorized before being allowed to perform maintenance on the actuator.	

ATTENTION	
PERSONNEL DE MAINTENANCE	
Les opérateurs de maintenance doivent être licenciés/formés et agréés avant de pouvoir effectuer des travaux de maintenance sur l'actionneur.	

CAUTION	
VOLTAGE SUPPLY	
Verify that the supply voltage to the actuator matches the voltage on the nameplate (33) on the gear compartment cover (21).	

ATTENTION	
SOURCE DE TENSION	
Vérifiez que la source de tension de l'actionneur correspond à la tension indiquée sur la plaque signalétique (33) du couvercle du compartiment pour l'engrenage (21).	

CAUTION**CONDUCTOR TEMPERATURE RATING**

All conductors used for field wiring connections to the actuator shall carry a rating for a minimum temperature of 90°C.

ATTENTION**TEMPÉRATURE NOMINALE DES CONDUCTEURS**

Tous les conducteurs utilisés pour les raccordements du câblage sur site de l'actionneur doivent présenter une température nominale minimum de 90 °C.

CAUTION**LIFTING HAZARD**

Single person lift could cause injury.
Use assistance when moving or lifting.

ATTENTION**RISQUE LIÉ AU LEVAGE**

Le levage de l'unité par une seule personne est dangereux.
Demandez de l'aide lors du déplacement ou du levage de l'unité.

3. To prevent premature wear of the drive nut (7) or extension rod seal/wiper (2), verify that the alignment between the actuator mounting support and the driven equipment places no side loading on the extension rod (6) at any point throughout the full stroke length. Refer to Figure 2 on page 7.
4. Do not hammer or gouge the outside surface of the extension rod (6). This may damage the plating integrity or cause surface irregularities which can damage rod seals.
5. Face flange or trunnion mounted:
 - a. Position the body tube adapter (57) to the desired orientation.
 - b. Verify that the pins of the trunnion mounting configuration are parallel with the clevis pin.
 - c. Tighten the nut and bolt arrangement of the body tube adapter to 50-55 ft-lbs. of torque.
6. For Clevis mounting: Verify the pins of the Clevis bracket and for Clevis (29) are parallel.
7. Apply a light film of lubricant to all pinned connections.

NOTICE

In all mounting situations, the final trimming adjustment of the actuator installation is $\pm 1/8$ inch.

AVIS

Dans toutes les situations de montage, le réglage final de coupe de l'installation de l'actionneur est de $\pm 1/8$ pouce (3,175 mm).

8. After Installation the actuator length can be adjusted $\pm 1/8$ inch
 - a. Loosen the jam nut (28).
 - b. Turn the Clevis (29) clockwise to decrease or counter clockwise to increase the actuators installed length.

CAUTION

Because the thread grip is limited, make sure the clevis (29) is engaged by a minimum of four threads and that it does not contact the drive screw (4) when the extension rod (6) is fully retracted.

PRUDENCE

Étant donné que le filetage de la poignée est limité, assurez-vous que la chape (29) est engagée d'un minimum de quatre filets et qu'elle ne touche pas la vis d'entraînement (4) lorsque la tige d'extension (6) est complètement rétractée.

9. Upon completion of all mounting operations verify that the jam nut (28) is tight, and that all cotter pins have been secured.
10. The actuator must be installed and wired in accordance with all local electrical codes and the most current edition of the National Electrical Code.
11. Grounding connection must be wired to a TN-S, IT (with insulation monitoring device), or TT (with residual current device) type grounding system with a minimum of #10 AWG wire. (see below for picture).
12. Route the electrical conduit up into the actuator to prevent internal condensation from running into the limit switch compartment.

CAUTION**VOLTAGE SUPPLY**

Verify that the supply voltage to the actuator matches the voltage on the nameplate (33) on the gear compartment cover (21).

PRUDENCE**TENSION D'ALIMENTATION**

Vérifier que la tension d'alimentation vers l'actionneur correspond sur la plaque signalétique (33) du couvercle du compartiment de l'engrenage (21).

13. Keep limit switch compartment dry and clean.
To minimize the possibility of condensation damage, it is suggested that moisture/gas tight conduit seals be installed at the conduit connections.
14. Dust Ignition Proof Enclosure, Class II, Division 1, Groups E, F & G.

Indoor and Outdoor Locations.

All actuators provided with dust-ignition proof enclosures must have properly installed electrical access covers to exclude ignitable amounts of dust. When reinstalling these covers make sure the mating seating surfaces and gaskets are clean and the attachment bolts are securely tightened. If the motor end bell pipe plug has been removed to adjust the actuator, the pipe plug must be reinstalled tightly. The actuators must be able to operate at full rating without developing surface temperatures high enough to cause excessive dehydration or gradual carbonization of any organic dust deposits on the actuator enclosure.

The grounding lug on the actuator enclosure exterior must be wired to a suitable grounding system with a minimum of #10 AWG wire as noted in the electric wiring diagram provided with the actuator.

4.0 Geared Position Limit Switch Adjustment

The geared position limit switches have been preset at the factory to trip and interrupt the electric control for the extend and retract positions according to specified stroke. Final limit switch adjustment must be done at installation. Set the extended and retract limit switches to the positions required per the application, the setting is to be done in accordance with the following procedure.

CAUTION

BURN HAZARD

Possible hot surfaces. Keep hands clear of surface. Allow surface to cool before performing any maintenance.

ATTENTION

RISQUE DE BRÛLURE

La surface risque de devenir chaude. Éloignez vos mains de la surface. Laissez refroidir la surface avant les travaux de maintenance.

WARNING

Disconnect all electrical power to the actuator prior to removing the limit switch compartment cover and performing any setting adjustments. Unit may have more than one live circuit. Refer to wiring diagram supplied with unit.

AVERTISSEMENT

Débranchez tous les câbles électriques de l'actionneur avant de retirer le couvercle du compartiment de l'interrupteur de fin de course et de procéder aux réglages. L'unité peut avoir plus d'un circuit sous tension. Reportez-vous au schéma de câblage fourni avec l'appareil.

1. Remove the limit switch compartment cover (38) to gain access to the position switch assembly.
2. Remove the motor pipe plug (46) for access to slot "A" located in the end of motor shaft.
3. With a manual or power screw driver rotate the motor shaft in a clockwise direction to extend or counterclockwise direction to retract the extension rod.
4. To set the extend limit switch, turn the motor shaft in a clockwise direction. Note the direction the slotted shaft (48) is turning while extending extension rod to its desired position.
5. Depress the position switch plunger (47) and turn the slotted shaft (48) in the same direction it was turning as in step 4 and continue to turn in this direction until the cam (50) flat comes in contact with the limit switch (52) lever.
6. Repeat steps 4 and 5 to set the retract limit switch utilizing the slotted shaft (49), limit switch (53) and cam (51). Turn the motor shaft in a counterclockwise direction.
7. Replace the motor pipe plug (46).
8. Replace the limit switch compartment cover (38).
9. Re-energize electrical power to the actuator.

NOTICE

If damaged, replace the complete geared position limit switch assembly rather than attempting field repair.

AVIS

En cas de dommage, remplacer l'assemblage complet de l'interrupteur de fin de course du train d'engrenages plutôt que de tenter une réparation sur place.

5.0 Electrical and Functional tests



WARNING

MOVING PARTS

Internal moving parts. Pinch point hazard. Keep hands clear during operation.



AVERTISSEMENT

PIÈCES MOBILES

Pièces mobiles internes. Risque de point de pincement. Tenez vos mains éloignées pendant le fonctionnement.

WARNING

HAZARDOUS VOLTAGE

Disconnect all electrical power to the actuator prior to performing any service or maintenance. Unit may have more than one live circuit. Refer to wiring diagram supplied with unit.

AVERTISSEMENT

TENSION DANGEREUSE

Débranchez l'alimentation électrique de l'actionneur avant d'effectuer une réparation ou un entretien. L'unité peut avoir plus d'un circuit sous tension. Reportez-vous au schéma de câblage fourni avec l'appareil.

CAUTION

BURN HAZARD

Possible hot surfaces. Keep hands clear of surface. Allow surface to cool before performing any maintenance.

ATTENTION

RISQUE DE BRÛLURE

La surface risque de devenir chaude. Éloignez vos mains de la surface. Laissez refroidir la surface avant les travaux de maintenance.

Functional Test:

1. Unit ratings (voltage, speed, stroke, options, etc) are to be confirmed with the Sales Order.
2. Wiring is to be confirmed through continuity tests referenced from the assigned wiring diagram. Electrical connections and components are to be secure.
3. Unit is to be run in both directions through the full rated stroke. Unit should operate smoothly without unusual noise or vibration.
4. Unit housing is to be visually inspected for mechanical soundness and esthetics.

5. Markings shall be visually inspected to be sure all warnings and data plates are installed correctly.
6. Unit ratings (voltage, speed, stroke, options, etc) are to be confirmed with the Sales Order.
7. Wiring is to be confirmed through continuity tests referenced from the assigned wiring diagram. Electrical connections and components are to be secure.
8. Unit is to be run in both directions through the full rated stroke. Unit should operate smoothly without unusual noise or vibration.
9. Unit housing is to be visually inspected for mechanical soundness and esthetics.
10. Markings shall be visually inspected to be sure all warnings and data plates are installed correctly.

Grounding Test:

Using a continuity tester, verify continuity between grounding lugs and housing (bare metal).

Pressure Test:

1. Unit shall be pressurized to 3psi (.02 bar)
2. All surfaces and joints, including all gasket and o-ring sealed surfaces shall be checked for leaks by applying a soap and water solution and checking for signs of bubbles.
3. No bubbles should be observed.
4. Unit is to be dried after leak test is completed.

Electrical Withstand Test (Hi-Pot):

1. Test Voltage: 1200V
2. Withstand time: 1 second

The test equipment shall incorporate a transformer with an essentially sinusoidal output, a means to indicate the applied test potential, and an audible and/or visual indicator of dielectric breakdown.

Method:

1. The test shall be conducted on products which are fully assembled.
2. Refer to the assigned wiring diagram for specific test points.
3. The test voltage shall be applied between primary circuits and accessible dead-metal parts. The test voltage may be gradually increased to the specified value but must be maintained at the specified value for one second.
4. If the rated output of the test equipment is 500VA or more, the applied test potential may be indicated by either:
 - 1 - A voltmeter in the primary circuit;
 - 2 - A selector switch marked to indicate the test potential; or
 - 3 - A marking in a readily visible location to indicate the test potential for test equipment having a single test potential output.

In cases 2 and 3, the test equipment shall include a lamp or other visual means to indicate that the test potential is present at the test equipment output.

5. All test equipment shall be maintained in current calibration.

6. The test equipment shall incorporate a voltmeter in the output circuit to indicate directly the applied test potential if the rated output of the test equipment is less than 500VA.

5.1 High Potential Test

1. Do not apply this test to units equipped with motor control cards. Tests which involve putting electrical power to units equipped with motor control cards are covered by a separate procedure.
2. Select the voltage setting for the appropriate motor voltage as indicated on nameplate. Set the selected test equipment to the selected volts.
3. With the test equipment ground wire contacting the gear case plate, contact each test point shown on wiring diagram. The actuator shall be capable of withstanding for one second per test point, without breakdown, the applied voltage from Table 1.

Table 1 - HIPOT Testing Specifications

Circuit Voltage	Test Duration/ Test Point	Test Voltage (AC) setting	Max Acceptable Leakage
12 VDC	One Second	1000 Volts	10.33 mA
24 VDC	One Second	1000 Volts	10.33 mA
120 VAC 1PH	One Second	1200 Volts	10.33 mA
220 VAC 1PH	One Second	1200 Volts	10.33 mA
220 VAC 3PH	One Second	1200 Volts	10.33 mA
460 VAC 3PH	One Second	1200 Volts	10.33 mA
575 VAC 3PH	One Second	1200 Volts	10.33 mA

Note: Motor power circuits are to be tested based on the motor voltage (AC). Dielectric strength tests may be made by applying a direct current (DC) voltage instead of an alternative current (AC) voltage, provided that the voltage used is 1.414 times the values specified above. See wiring diagram for test points.

5.2 Ground Continuity

1. Verify continuity between actuator ground lug and ground.

5.3 Functional Test

1. Electrically energize the actuator.
2. Drive the actuator over the full range of motion.

6.0 Lubrication Instructions

Every Eagle linear actuator has been lubricated for life at the factory and should not require further lubrication if operated at published duty cycle, rated thrust and in appropriate environmental conditions. However, if the unit is disassembled, it should be cleaned and lubricated as given in step 4 of Section 6.0. The amount of lubricant in each actuator depends on the stroke of the actuator as shown in Table 2.

Table 2 - Actuator lubricant amount per stroke length

Stroke (Inches)	Actuator Lubricant Amount (Body Tube) (Pounds)
6	.22
12	.36
18	.51
24	.66
30	.81
36	.96

6.1 Acceptable Lubricants

Standard lubricants and acceptable substitutions for use in the actuator in Table 3.

Table 3 - Standard and Substitute Lubricants

Recommended	Manufacturer
AeroShell Grease 6	Shell Oil Products
Substitute	Manufacturer
Lubriplate MAG-1	Fiske
Mobilgrease 28	Mobil
Litholene HEP1	ARCO
Mobilux EP1	Mobil
Gulfcrown EP1	Gulf

7.0 Troubleshooting Guide

In the event of a problem with your Andco actuator, make the following preliminary checks before calling the factory for assistance.

- The actuator's rod will not extend or retract.
 - Check for a blown fuse or circuit breaker in the wiring.
 - Check for loose wiring.
 - Check if the motor has overheated and activated the thermal switch.
 - Check that the limit switches are set correctly.
 - Check the binding in the load being actuated.
 - Check if a capacitor lead is open.
 - Check if the drive nut is damaged or worn, by disconnecting the actuator from the load and pulling or pushing on the extension rod.

- The actuator only actuates in one direction.
 - Check that all wiring connections are secure.
 - Check that the position limit switches are set correctly.
 - Check for an excessive external load on the actuator in one direction.
- The actuator is excessively noisy.
 - Check for a damaged bearing.
 - Check for a damaged gear (chipped tooth, missing teeth, etc.)
 - Check for a damaged screw.
- Actuator exhibits high motor current.
 - Check for low line voltage.
 - Check for external binding related to the load being actuated.
 - Check for excessive external load being actuated.
 - Check for loss of lubricant.
 - Check the extension rod for excessive contaminants.

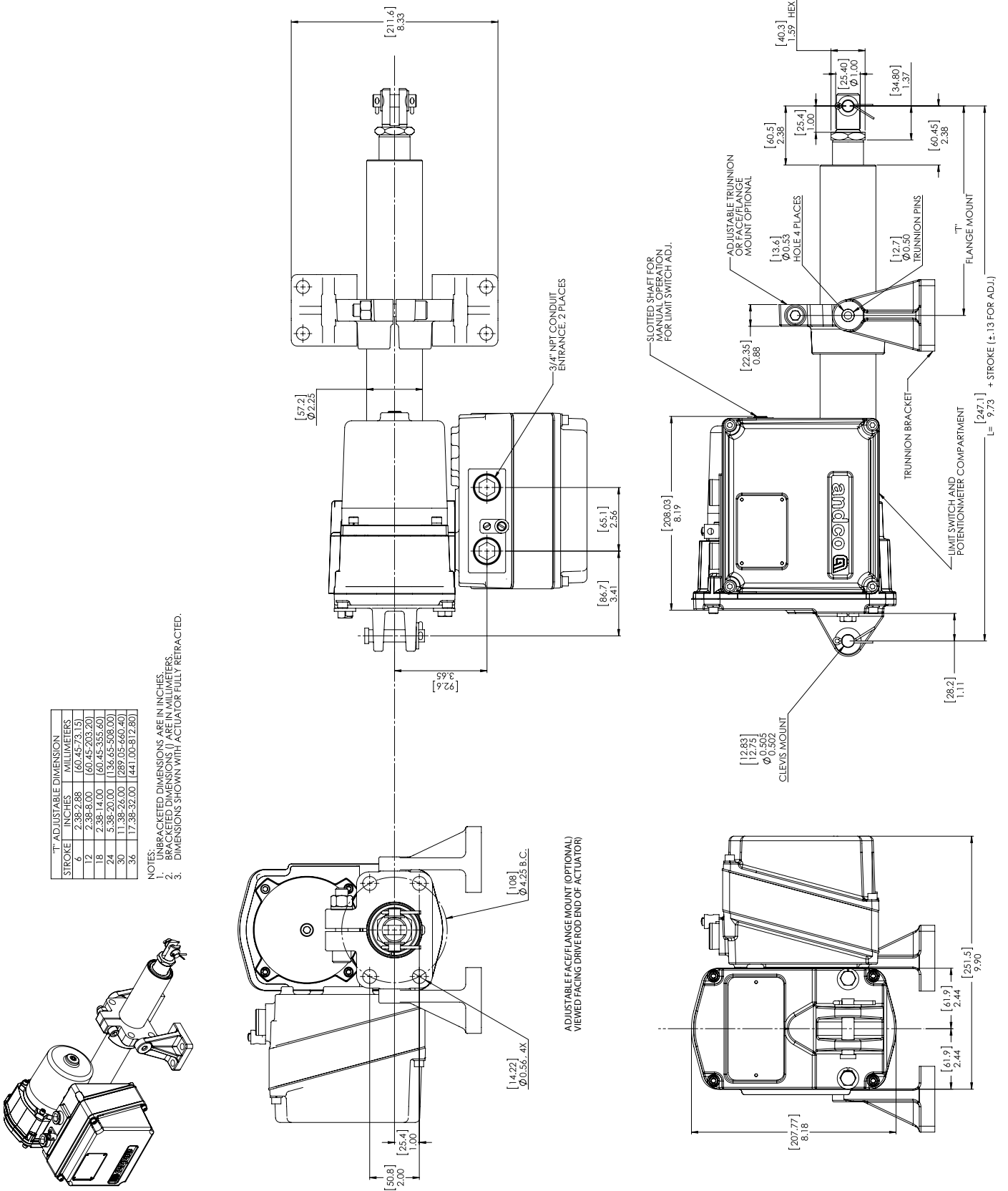
If you still have a specific problem with your Andco Eagle Actuator after making all of the above checks, contact Dresser NGS for further assistance.

8.0 Optional Equipment

8.1 Gear Driven Potentiometer

This optional assembly is directly driven by the operation of the actuator and gives the capability of providing a continuous, linear output signal directly proportional to the actuator's stroke. The signal can be interfaced with automatic control equipment to position or sense the actuator at any desired stroke between fully extended and fully retracted. The potentiometer assembly is mounted directly to and driven by the geared position limit switch assembly. Characteristics of the potentiometer are 1000 ohm total resistance $\pm 2.0\%$ linearity, 1 watt at 40°C power rating. Input gearing to the potentiometer is factory selected to accommodate the full range of the actuator's strokes and the acme screw pitches. The potentiometer has been factory adjusted so the 0 and 1000 ohm resistance points correspond, respectively, to the fully extended and fully retracted rod positions. Field adjustments may be made by loosening the jam nut holding the potentiometer (64) to the mounting bracket (65). Rotate potentiometer to the desired position and tighten the jam nut. Potentiometer only to be connected to a class II power source.

For units that utilize the last portion of the actuator stroke only; the potentiometer gearing must be disconnected if the unit is to be retracted beyond the "zero" point.



T" ADJUSTABLE DIMENSION		
STROKE	INCHES	MILLIMETERS
6	2.38-2.88	(60.45-73.15)
12	2.38-8.00	(60.45-203.20)
18	2.38-14.00	(60.45-355.60)
24	5.38-20.00	(136.65-508.00)
30	11.38-26.00	(289.05-660.40)
36	17.38-32.00	(441.00-812.80)

- NOTES:
 1. UNBRACKETED DIMENSIONS ARE IN INCHES.
 2. BRACKETED DIMENSIONS () ARE IN MILLIMETERS.
 3. DIMENSIONS SHOWN WITH ACTUATOR FULLY RETRACTED.

Figure 1 - Eagle Outline Dimension Drawing

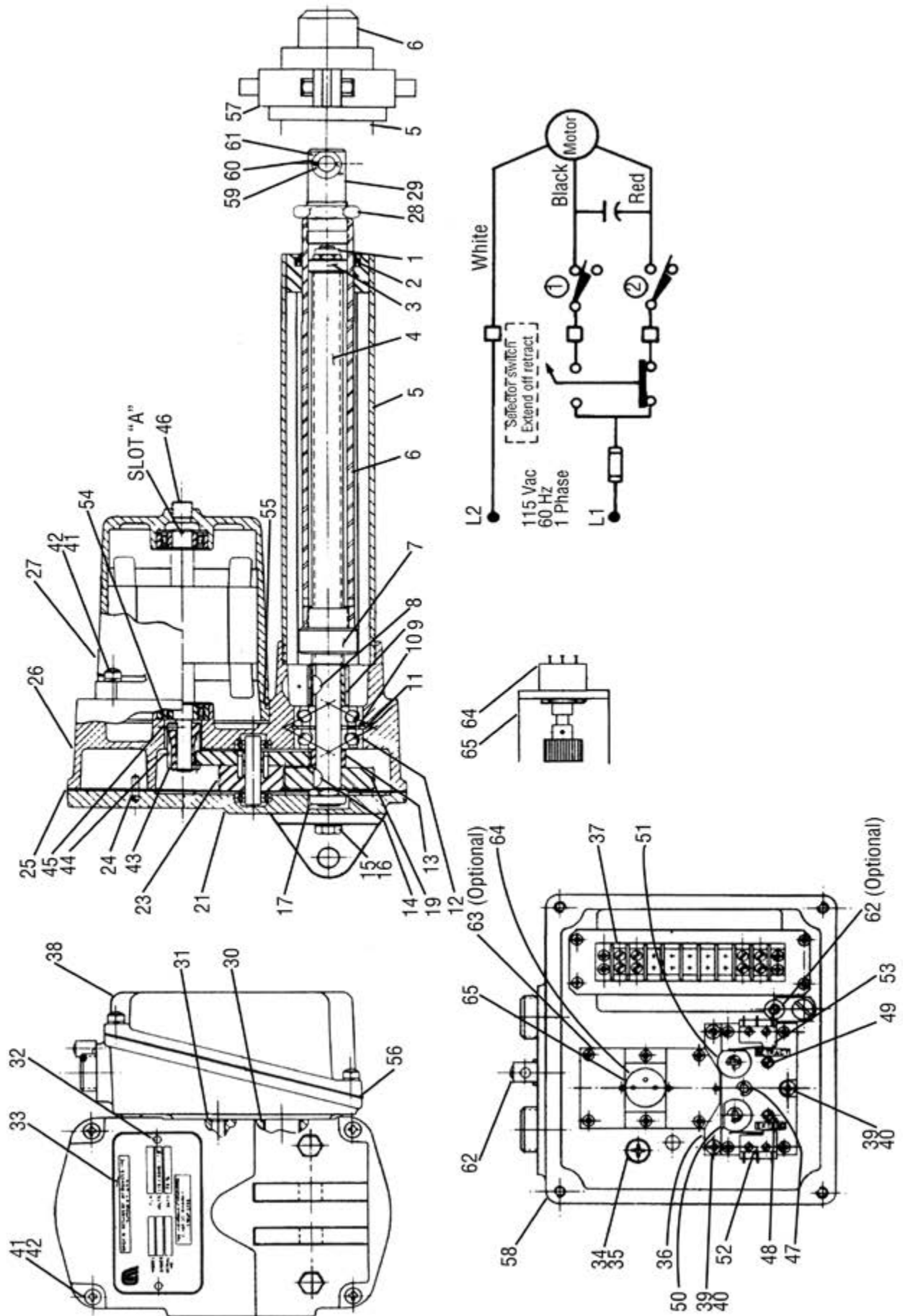


Figure 2 - Eagle Actuator Parts Drawing

Parts List

1. Flex nut	25. Motor gasket	47. Position switch plunger
2. Wiper seal	26. Actuator body housing	48. Slotted shaft
3. Support washer	27. Motor	49. Slotted shaft
4. Drive screw	28. Jam nut	50. Cam
5. Body tube/End Cap	29. Clevis	51. Cam
6. Extension rod	30. O-ring	52. Limit switch
7. Drive nut	31. O-ring	53. Limit switch
8. Key	32. Fastener	54. Bearing
9. Helical gear	33. Nameplate	55. O-Ring
10. Spacer	34. Screw	56. Limit switch cover gasket
11. Retaining ring	35. Seal washer	57. Body tube adapter
12. Bearing	36. Position limit switch assembly	58. Limit switch housing
13. Gear Spacer	37. Capacitor/terminal strip sub-assembly	59. Clevis pin
14. Woodruff key	38. Limit switch compartment cover	60. Cotter pin
15. Hex bolt	39. Machine screw	61. Flat washer
16. Lock washer	40. Lock washer	62. Grounding lug
17. Flex nut	41. Socket head screw	63. Gear driven potentiometer (optional)
19. Main drive gear	42. Lock washer	64. Potentiometer (optional)
20. Unassigned	43. Motor pinion retaining ring	65. Potentiometer mounting bracket (optional)
21. Gear compartment cover	44. Motor drive pinion	
22. Unassigned	45. Motor pinion set screw	
23. Intermediate gear	46. Motor pipe plug	
24. Pin		

Table 4 - Suggested Spare Parts List

Description	Item
1. Drive nut	(7)
2. Limit switch	(52) + (53)
3. Body tube/End cap	(5)
4. Motor	(27)
5. Gasket and Seal kit to include:	
Wiper rod seal	(2)
O-Rings	(30), (31), and (55)
Sealing washer	(35)
Gaskets	(25), (56)

Recommended Spare Parts

Part #	Description	Qty (Std. Unit)	Qty. (w/ Ext. Lim. Sw. Compt.)
190470322	Limit switch gasket	1	2
P03-025100-3900	Screw	4	-
P03-025250-3900	Screw	-	4
924036X2963	Lock Washer	4	4

SWITCH NO	LIMIT SWITCH CONTACT DEVELOPMENT			FUNCTION
	CONTACT	ACTUATOR POSITION	FULL EXTEND	
①	A	FULL RETRACT POSITION	FULL EXTEND POSITION	FULL EXTEND POSITION
②	B	INTERMEDIATE POSITION	FULL EXTEND POSITION	FULL RETRACT POSITION
③	A	FULL RETRACT POSITION	AUX. OPTIONAL	AUX. OPTIONAL
④	B	FULL RETRACT POSITION	AUX. OPTIONAL	AUX. OPTIONAL

SWITCH POSITION SHOWN WITH ACTUATOR IN FULLY EXTEND POSITION
 ———— CLOSED SWITCH CONTACT
 OPEN SWITCH CONTACT

NOTES:

1. LIMIT SWITCH DATA:
 QUICK CONNECT TERMINALS MICROSWITCH V31-3005-08 OR EQUIVALENT.
 RATING: 13 AMP AND 1/2 HP, 125 OR 250 VAC, 1/2 AMP, 125 VDC, 1/4 AMP, 250 VDC, 5 AMP, 120 VAC "L" (LAMP LOAD).
2. OPTIONAL (OPT.) COMPONENTS SHOWN ARE HEATER, POTENTIOMETER AND SERIES WIRE RESISTOR, AND DRY CONTACTS.
3. WARNING: PROTECTIVE EARTH GROUNDING, GROUNDING LUG MUST BE WIRED TO SUITABLE GROUNDING SYSTEMS WITH MIN. #10 AWG WIRE.
4. IF OPTIONAL HEATER IS INSTALLED, IT MUST BE WIRE TO CONTINUOUS POWER.
5. IMPORT/EXPORT HARMONIZATION CODE: HARD COPY, 4906000000
6. HI-POT TEST:
 PERFORM HI-POT TEST PER UL61010 F.3. REFER TO ROW J TEST AT SWITCH CONTACTS 1A & 2A AND TERMINAL BLOCK LOCATIONS L1, L2/N, E, R, 5, & 6 PER RATED MOTOR VOLTAGE. PERFORM HI-POT TEST ON SWITCH CONTACTS 7 THROUGH 9. DO NOT PERFORM HI-POT TEST ON TERMINAL BLOCK LOCATIONS 10, 11, & 12.
7. REFER TO UNIT NAME PLATE.

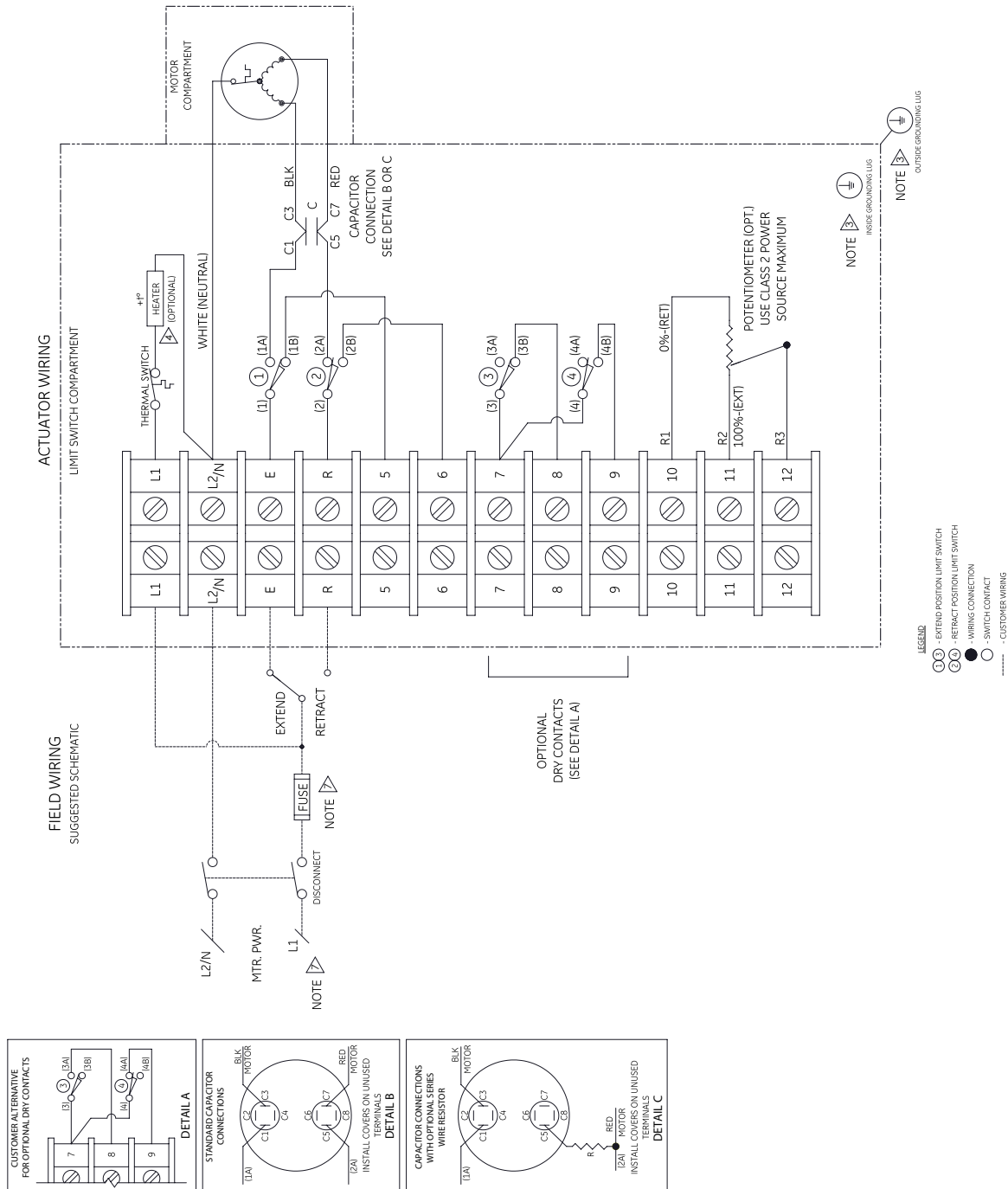
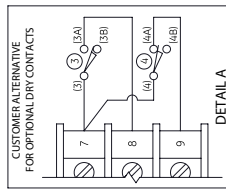


Figure 3 - Typical Wiring Diagram for Single Phase, Please refer to the wiring diagram came with your units before you work on the actuators.

LIMIT SWITCH CONTACT DEVELOPMENT		LIMIT SWITCH CONTACT DEVELOPMENT	
SWITCH NO.	CONTACT	ACTUATOR POSITION	FUNCTION
		FULL RETRACT	FULL EXTEND
1	A		FULL EXTEND POSITION
2	B		FULL RETRACT POSITION
3	A		AUX. (OPTIONAL)
4	B		AUX. (OPTIONAL)

SWITCH POSITION SHOWN WITH ACTUATOR IN FULLY EXTEND POSITION
 ——— CLOSED SWITCH CONTACT
 - - - - - OPEN SWITCH CONTACT



- NOTES:
- LIMIT SWITCH DATA:
 QUICK CONNECT TERMINALS MICROSWITCH V81-3005-D8 OR EQUIVALENT.
 RATING: 15 AMP AND 1/2 HP, 125 OR 250 VAC, 1/2 AMP, 125 VDC, 1/4 AMP, 250 VDC; 5 AMP, 120 VAC * (LAMP LOAD).
 - OPTIONAL OPT. COMPONENTS SHOWN ARE HEATER, POTENTIOMETER, AND AUX. DRY CONTACTS.
 - WARNING: PROTECTIVE EARTH GROUNDING. GROUNDING LUG MUST BE WIRED TO SUITABLE GROUNDING SYSTEMS WITH MIN. #10 AWG WIRE.
 - IF OPTIONAL HEATER IS INSTALLED, IT MUST BE WIRED TO CONTINUOUS POWER.
 - IMPORT/EXPORT HARMONIZATION CODE HARD COPY, 4969600000
 - HI-POT TEST:
 PERFORM HI-POT TEST PER UL61010 E.3. (REFER TO IOM) TEST AT TERMINALS T1, T2, & T3 PER MOTOR VOLTAGE. TEST PER 250VAC AT TERMINAL BLOCK LOCATIONS L1, L2/N, E, R, AND 5 THROUGH 9. DO NOT PERFORM HI-POT TEST ON TERMINAL BLOCK LOCATIONS T0, T1, & T2.
 - REFER TO UNIT NAME PLATE

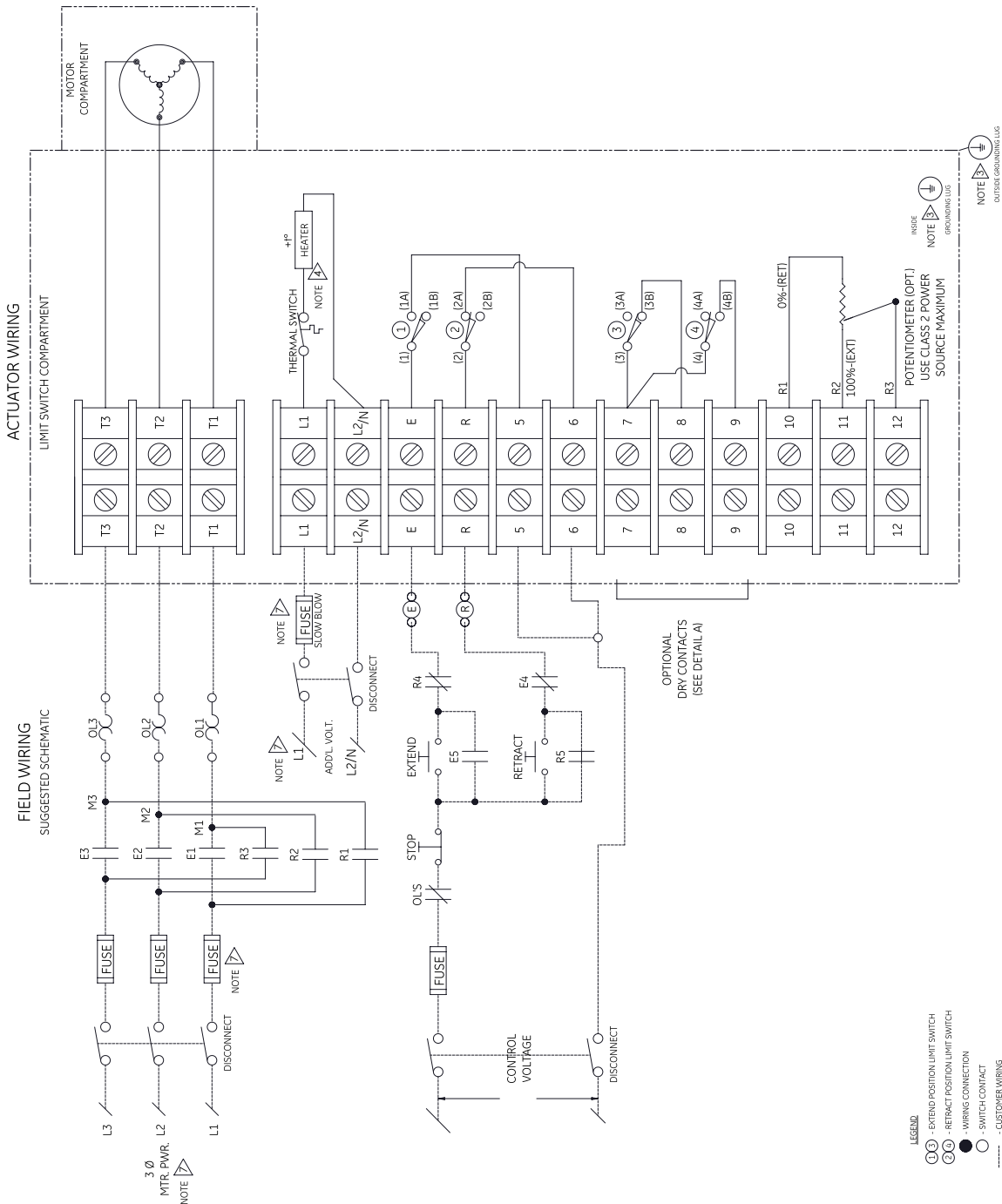


Figure 4 - Typical Wiring Diagram for three Phase, Please refer to the wiring diagram came with your units before you work on the actuators.

Table 5 - Andco Eagle Technical Specifications

Temperature Rating	-40 to 150°F						
	-40 to 65°C						
	90% Relative Humidity						
Electrical Ratings	Canadian Applications			US Applications			
	Voltage	Current (FL)	Frequency	Voltage	Current (FL) (50 60HZ)		Frequency
	115 V 1Ph	2.6 A	60 HZ	110-120 1Ph	2.6 A	3.0 A	50/60 HZ
	230 V 3Ph	0.52 A	60 HZ	208-240 1Ph	1.7 A	1.7 A	50/60 HZ
	460 V 3Ph	0.26 A	60 HZ	208-240 3Ph	0.6 A	0.6 A	50/60 HZ
	575 V 3Ph	0.2 A	60 HZ	380-480 3Ph	0.4 A	0.4 A	50/60 HZ
Motor	Class B Insulation						
	Internal Thermal Switch						
	NEMA D Design						
Stroke Lengths	6, 12, 18, 24, 30, and 36 inches						
Speed and Force	Velocity (in/sec)	Force (lbs)					
		Breakaway	Running				
	0.2	2000	1000				
	0.4	1500	750				
	0.8	750	340				
2.0	500	200					
Duty Cycle	25%						
Certifications - North America	C2D1 Groups E, F, and G Dust Ignition Proof, T5						
	Type 4 Watertight						
	CSA Certificate			US Certificate			
	CSA C22.2 No. 0			ANSI/UL 61010-1			
	CSA C22.2 No. 25			UL50 and UL50E			
	CSA C22.2 No. 94			FM 3600 and FM3616			
Mounting Types	CSA C22.2 No. 142						
	Clevis and pin on drive rod end						
	Clevis mount on motor end						
Control and Position Cards	Trunnion (adjustable)						
	Face/Flange (Adjustable)						
	Positran V051 (4-20 ma)						
	SCC05 Modbus (US only)						
Weight	SCC10 (US only)						
	ACT-100 w/Modbus						
	35 – 75 lbs depending on length of extension rod and options						
Options	Oversize Clevis						
	Manual Override						

Industrial Products Group
Andco Actuators
16240 Port Northwest Drive
Houston, TX 77041
T: 832-590-2306
Toll Free: 1-800-945-9898
F: 713-849-2879

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