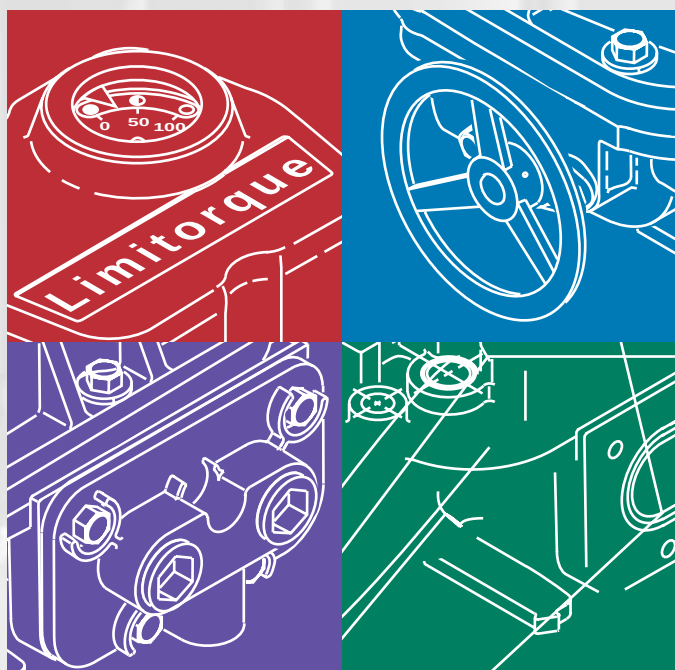




Limitorque Actuation Systems

LY Series
**Long-Term Reliability and
Innovative Design Features in
Quarter-Turn Valve Actuators**

**LY Series quarter-turn
valve actuators meet
an increasing need
for high-quality
valve control.**



LY actuators offer new economies and increased power and/or control options, plus all the innovative features that have made Limatorque the brand of choice all over the world. These quality actuators have all the basic design features of other units manufactured by Limatorque.

Count on the LY Series to meet the most demanding specifications and to

perform as expected for years to come.

Torque ratings range from 200 to 1200 ft.

lbs. (270 to 1625 Nm) for application

versatility that includes submersible, weatherproof, or

explosionproof enclosures. Compact components and space-efficient profiles provide durability and handling benefits. Modular design uses standardized components to reduce manufacturing costs and to simplify installation and service. Torque switches are interchangeable between LY 1001, LY 2001, and LY 3001, double acting and fully adjustable. Optional controls include printed circuit board and plug-in modules. Up to 16 adjustable limit switch contacts are available.



Specify LY Series with precise valve control

LY Series actuators suit applications requiring precise control. They can be reliable after day, year after year in demanding conditions. They are weatherproof, submersible environments and are compatible with three-phase power requirements.

These versatile actuators provide position control of a valve. This includes butterfly, as well as dampers.



The LY Series is especially useful for intelligent control system applications. Printed circuit boards, plug-in modules, and up to 16 effective switch contacts provide an abundance of possibilities for functions and networking.

When it is used with UEC-3 modulating control packages, precise control can be achieved.

A Distributed Digital Control network can control up to 250 actuators and devices using a single twisted-pair or duplex fiber optic cable. Cabling cost reductions, redundancy, and fault reporting enhance the economy and utility of this approach.

Limiterorque actuators can be controlled by a master station or directly via standard Modbus protocols using a third-party PLC or DCS.



RS-232

Station

I/O

Minimize maintenance and service requirements.

Superior engineering, the highest construction standards in the world, and innovative design features are responsible for the low-maintenance requirements and long-term reliability of the LY Series.

Design features like the pre-wired terminal blocks and separate drive nut adapters greatly simplify installation. Simple, modular design facilitates what little routine maintenance may be required.

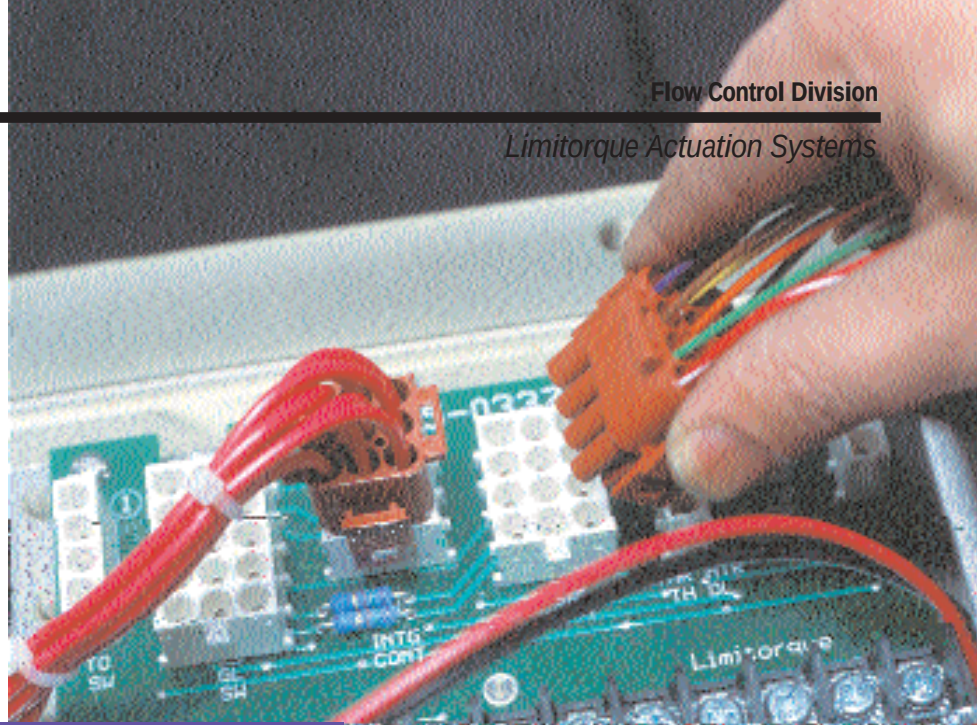
Control packages incorporate modular components and pre-wired terminal strips to facilitate field installation. Plug-in modules easily accommodate additional functions. The metal compartment is epoxy-coated* and O-ring-sealed. Mounting brackets and hardware are corrosion-resistant to provide years of service-free operation.

Installation, maintenance, and service are facilitated by LY Series design features like this removable torque drive nut that provides an easy interface between actuator and valve. Other standard components capitalize on the cost-efficiency of modularity and parts interchangeability.

These exceptional units can be counted on for many years of trouble-free operation because of quality features like o-ring seals, corrosion-resistant hardware, durable epoxy coating*, and anti-condensation heaters. Should a unit require service, there is ready availability of Limitorque parts and factory-authorized service from locations around the world.

Limitorque also offers a variety of training options for maintenance personnel either at Limitorque facilities or customers' sites.

*Other finishes available, contact Limitorque.



Designed and built for reliable, cost-effective valve control.

LY Series actuators are created following the highest of quality standards. Units meet all AWWA 504-87 and 540-87 requirements. Standard features such as steel-on-bronze worm gear sets, anti-friction bearings throughout, and a durable epoxy coating* meet high-performance criteria.

Other important features include mechanical adjustable stops for 90° rotation with $\pm 10^\circ$ adjustment. Declutch levers allow handwheel operation. Motors have class-F insulation and two thermal contacts rated at 125°C. Control compartment heaters prevent corrosion damage due to moisture caused by condensation. Dial position indicators provide local monitoring of valve position.

Integral controls with printed circuit board and plug-in modules provide flexibility and reduce installation and service costs. Mounting brackets and hardware are corrosion resistant.

Steel-on-bronze worm gear set maximizes power transmission efficiency of the self-locking gear train. Double-reduction, hardened steel worm and high-strength bronze gear represent the level of quality found in all Limitorque actuators.

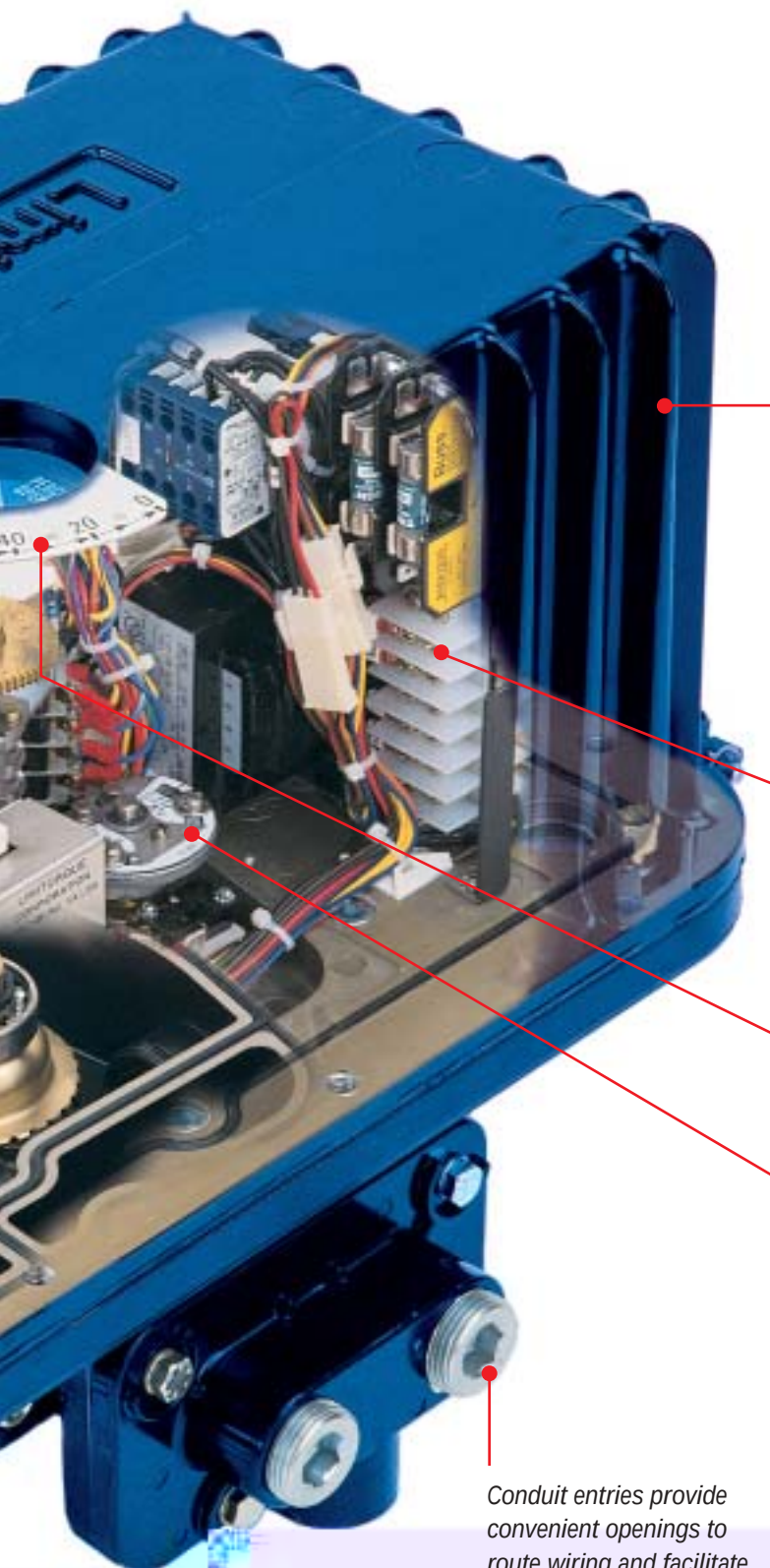
Torque drive nut is removeable. This separate nut simplifies machining, installation, and service. One size drive nut fits the LY-1001 unit; a second size nut fits both the LY-2001 and LY-3001 models.

LY-1001

with optional Modutronic 20 control package



*Other finishes available, contact Limitorque.



LY-2001



Coating is a combination of high-solids epoxy electrostatically applied and epoxy topcoat*. Finish meets Nema 4X to test method ASTM B117 requirements for salt spray exposure. Hexavalent chromate finishing is applied to interior sections. The combination coating serves as a primer if a different coating is required.

Terminal strips simplify field connections. All electrical components are pre-wired to the terminal strips to facilitate installation.

Limit switches are independently adjustable. The standard units include 8 SPDT limit switches.

Conduit entries provide convenient openings to route wiring and facilitate installation. Two one-inch NPT openings can accommodate a wide range of cable requirements.

Torque switches provide control of output torque and protect valve and actuator from mechanical overload in either direction. Switches are fully adjustable and interchangeable between all LY models.

LY-1001 with top-mounted integral cover for optional controls



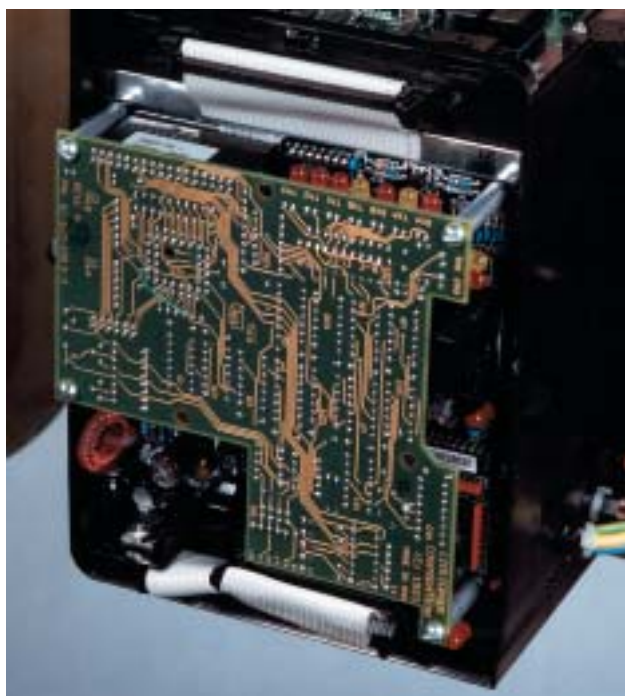
*Other finishes available, contact Limitorque.

A wide range of options are available.

Limatorque provides a full range of options and custom modifications, including torque ratings, operating times, and rotary motion. Single actuators can be equipped to respond within precise parameters for sophisticated process control. Cost-efficient network applications can include Limatorque components that are designed and manufactured especially for integration into a direct-to-host or optional master station system. Below are some of these options:



Modutronic™ position control packages allow more precise valve position control than is possible with basic integral control. These packages are useful as part of an integrated system requiring response by degrees for sophisticated process control. From simple positioning of a valve to sophisticated microprocessor control, Modutronic control packages offer a full range of options.



DDC-100 distributed digital control systems provide a fully integrated, microprocessor-based network to control and monitor valve actuators and other devices. Network intelligence is distributed over a shielded twisted-pair. An LY Series actuator is connected to a digital network by installing a plug-in printed circuit board in the integral control package. Control capabilities resident within the LY can be significantly expanded with the addition of the optional UEC-3 module.



Selector switches and LEDs provide local control. These are available with or without integral controls.



Potentiometers allow precise, continuous indication of valve position at a remote location. Coupled with an R/I converter (shown above), potentiometers provide an economical 4-20 milliamp position feedback signal for remote indication. Both single and dual feedback options include 50 or 1000 ohm ratings.



Optional double pole, double throw limit switch assembly provides a total of 16 effective limit switch contacts. The additional contacts allow external indication of limit switch travel and trip.

General Specifications

Operating time (sec.)			Open/Close Maximum output torque		Maximum bore keyway (width x depth)		Modulating torque 100 starts/hr		Modulating torque 600 starts/hr	
60 Hz.	50Hz.		Ft.-Lbs.	Nm	inches	mm	Ft.-Lbs.	Nm	Ft.-Lbs.	Nm
LY-1001	15	18	200	270	1 1/8 dia. 1/4 X 1/8	28 dia. 6 X 3	N/A	N/A	N/A	N/A
	30	36	200	270			150	204	100	135
	60	72	200	270			150	204	100	135
LY-2001	15	18	600	810	2 3/8 dia. 5/8 X 5/16	60 dia. 15 X 7.5	N/A	N/A	N/A	N/A
	30	36	600	810			450	611	300	407
	60	72	600	810			450	611	300	407
LY-3001	20	24	1200	1625	2 3/8 dia. 5/8 X 5/16	60 dia. 15 X 7.5	N/A	N/A	N/A	N/A
	30	36	1200	1625			900	1221	600	814
	60	72	1200	1625			900	1221	600	814

Operating time (sec.)		Handwheel diameter		Handwheel ratio	Handwheel efficiency	Rimpull required (lb.) to obtain full rated torque	
		Inches	mm			lb/kg 1:1	lb/kg 2.79:1 SGA
LY-1001	15	6	152	32:1	0.36	70/32	N/A
	30	6	152	32:1	0.36	70/32	N/A
	60	6	152	44:1	0.36	70/32	N/A
LY-2001	15	12	305	32:1	0.36	100/45	40/18
	30	12	305	32:1	0.36	100/45	40/18
	60	12	305	32:1	0.36	100/45	40/18
LY-3001	20	12	305	89.3:1	0.33	N/A	80/36
	30	12	305	89.3:1	0.33	N/A	80/36
	60	12	305	89.3:1	0.33	N/A	80/36

Weights

Unit type	Controls	lbs.	kg
LY-1001	NCU	40	20
	BIC	75	34
	UEC	90	41
LY-2001	NCU	100	45
	BIC	110	50
	UEC	144	65
LY-3001	NCU	105	48
	BIC	130	59
	UEC	149	68

Controls

NCU – No Controls Unit, for connection to motor control center, or PLC supplied by others.

BIC – Basic Integral Controls unit, includes integrated reversing contactor and hardwired torque and limit switch interlocks.

UEC – Universal Electronic Controller, includes BIC functionality plus advanced diagnostics and function configurability, supports optional Modulating Position Control (MPC), and optional Distributed Digital Control (DDC) for field networks.

Enclosures

WP units – suitable for NEMA 4, NEMA 4X.

XP units (NCU) – suitable for Class I, Groups B, C, & D, Div. 1 & 2 service and Class II, Groups E, F, & G.

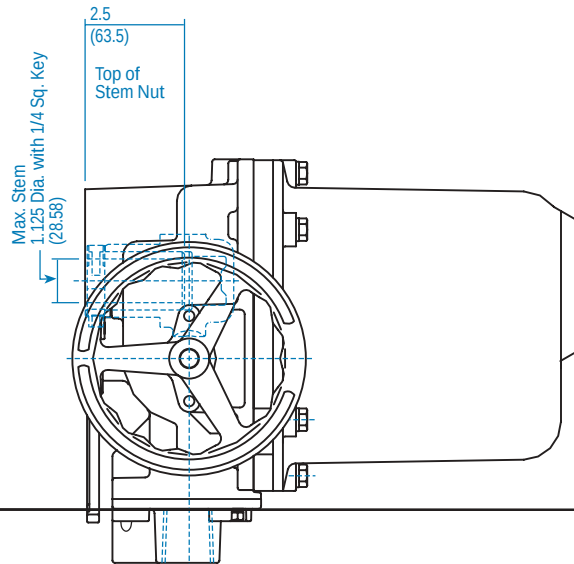
XP units (LY-1 BIC & LY-1, 2, & 3 UEC, MPC, DDC) – suitable for Class I, Group C and D, Div. 1 & 2 service and Class II, Groups E, F, & G.

Standard Temperature Range

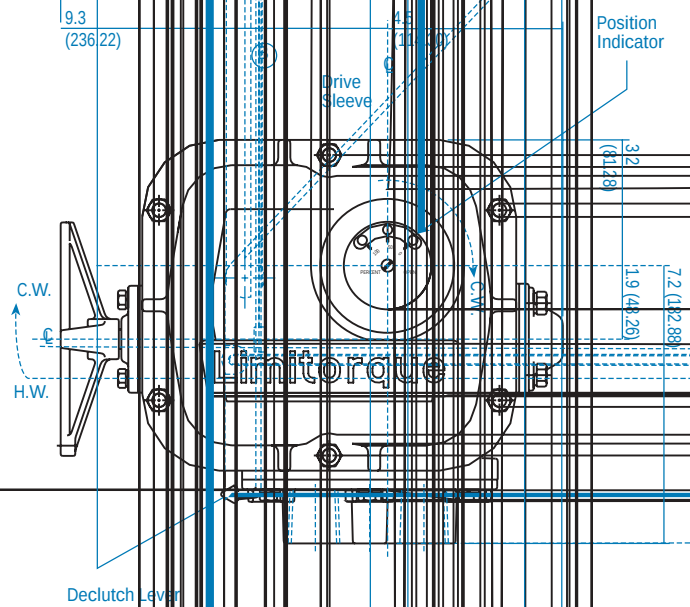
-20°F to +150°F (-29°C to +65°C)

Dimensions for LY-1001 for NCU 1PH and 3PH

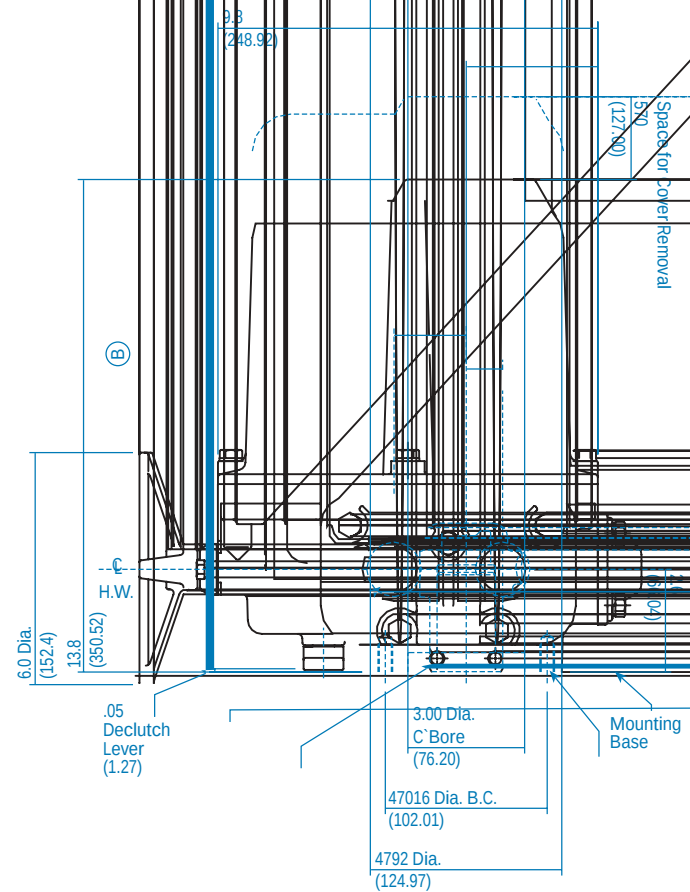
Front View



Top View

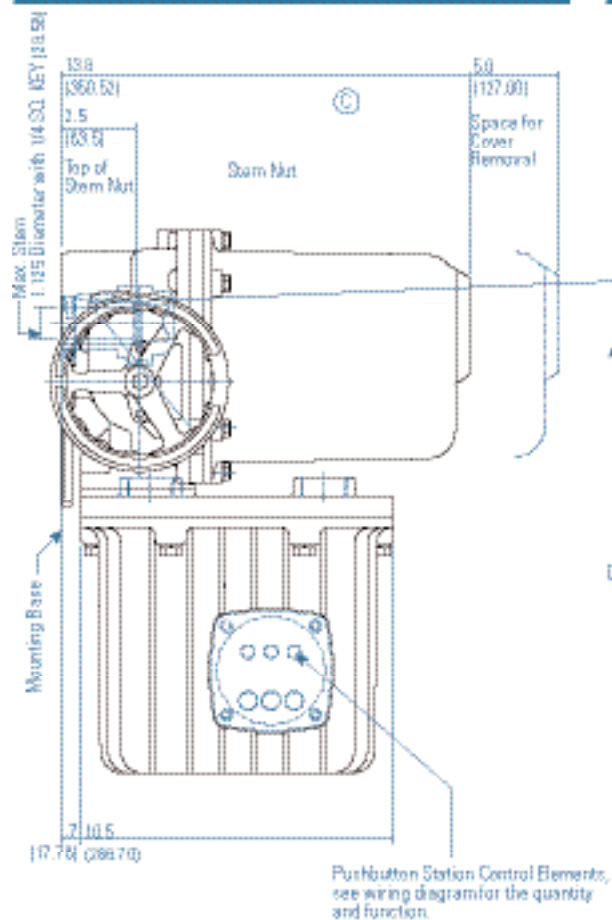


Side View

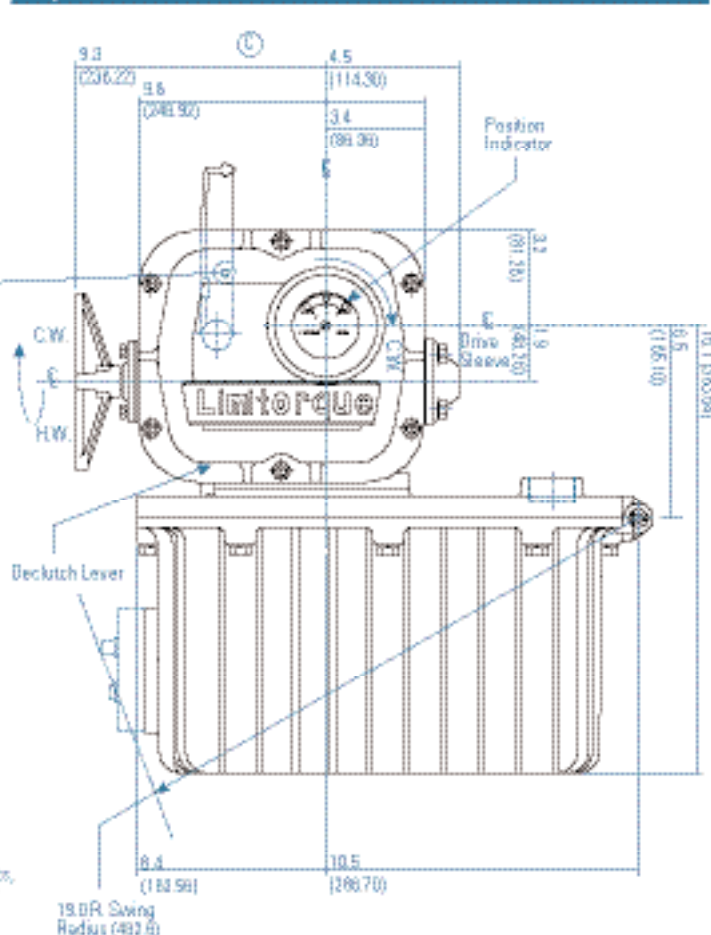


Dimensions for LY-1001 unit with control compartment for UEC-3, MPC, DDC, 1PH and 3PH

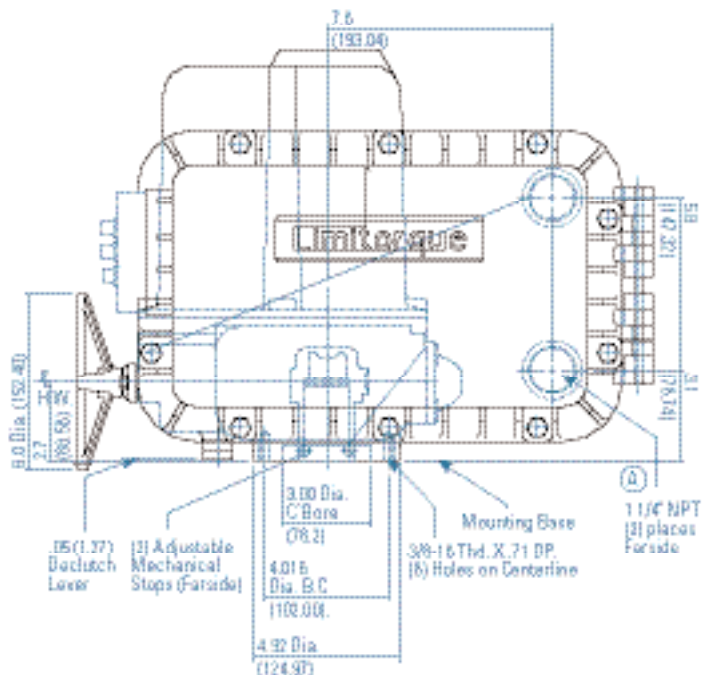
Front View



Top View

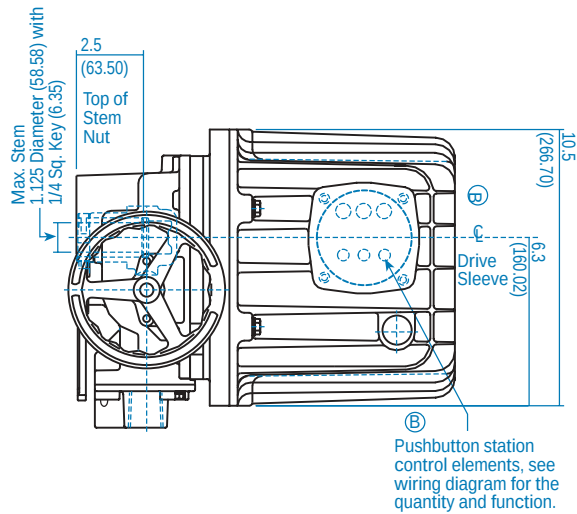


Side View

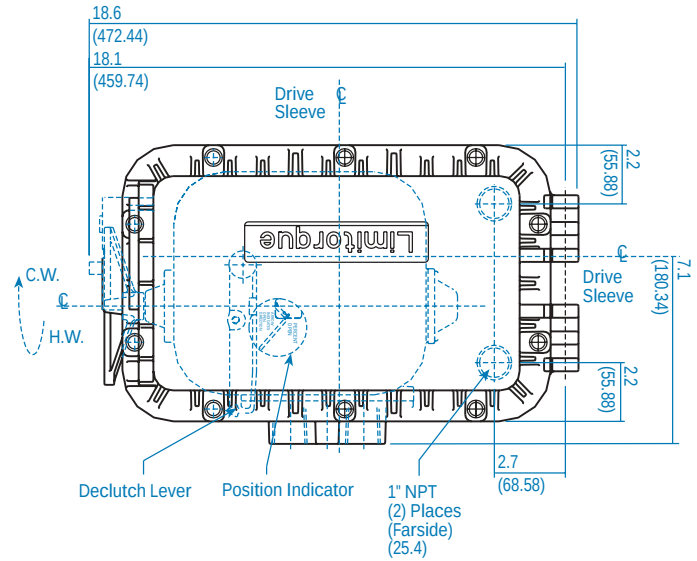


**Dimensions for LY-1001 unit with top-mounted control compartment
for BIC 1PH and 3PH, and Modutronic 20 II**

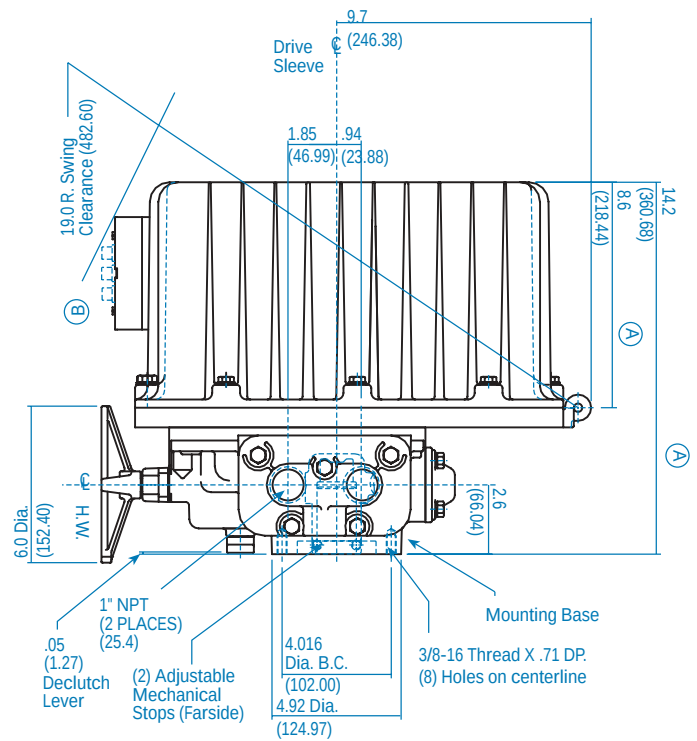
Front View



Top View

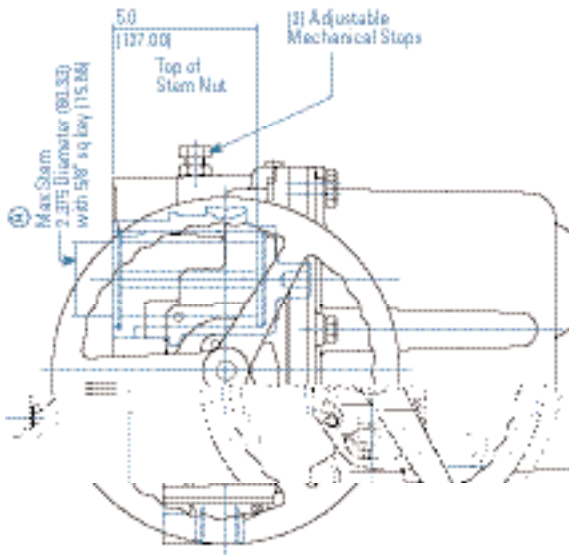


Side View

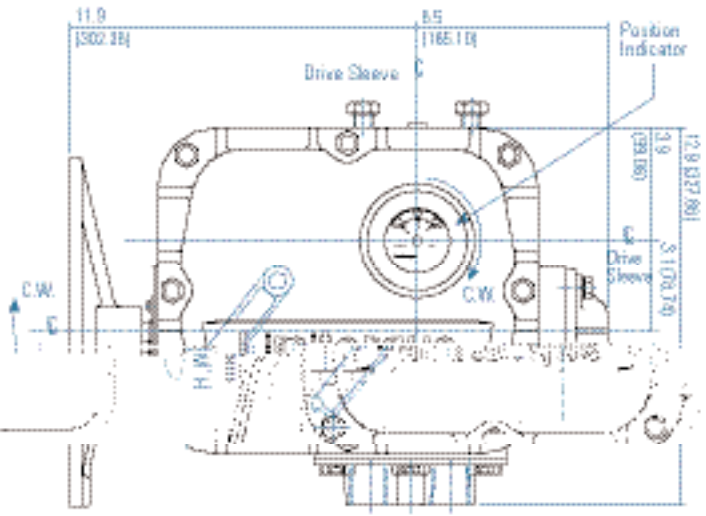


Dimensions for LY-2001 unit for BIC 3PH and BIC 1PH up to 2" motor

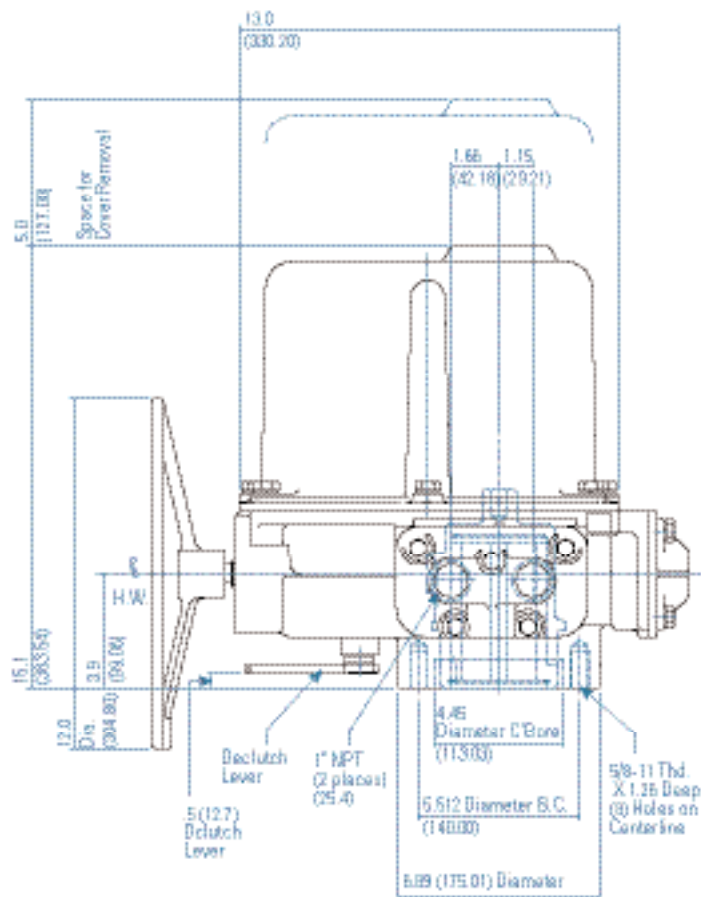
Front View



Top View

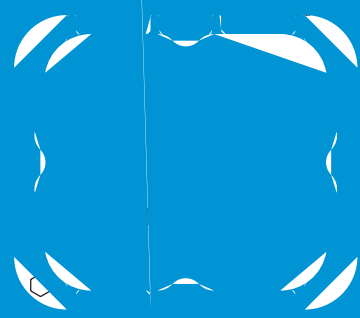
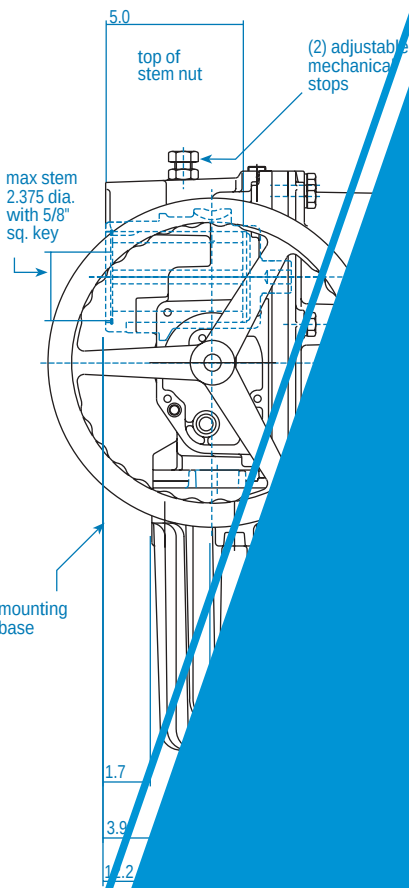


Side View



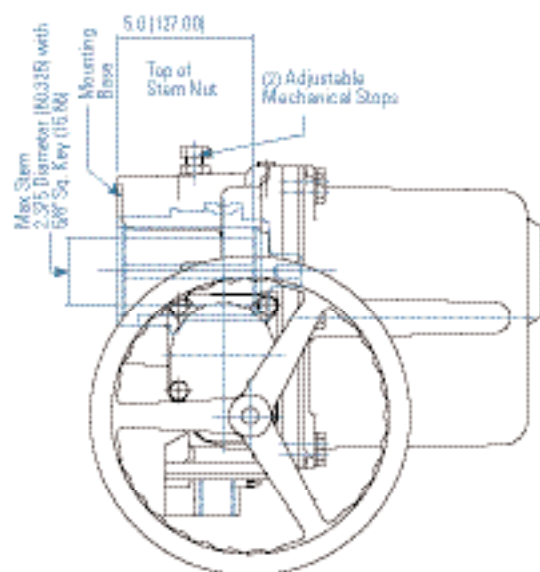
Dimensions for LY-2001 unit for BIC 1PH, 3"

Front View

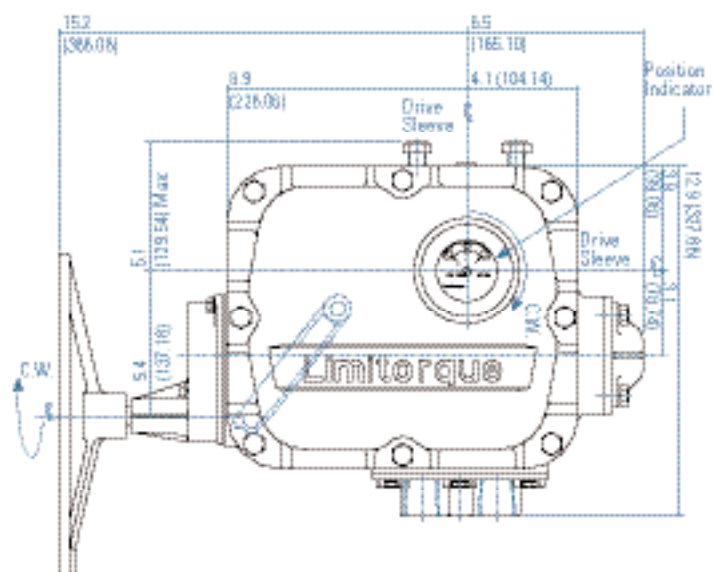


Dimensions for LY-3001 unit for BIC 3PH

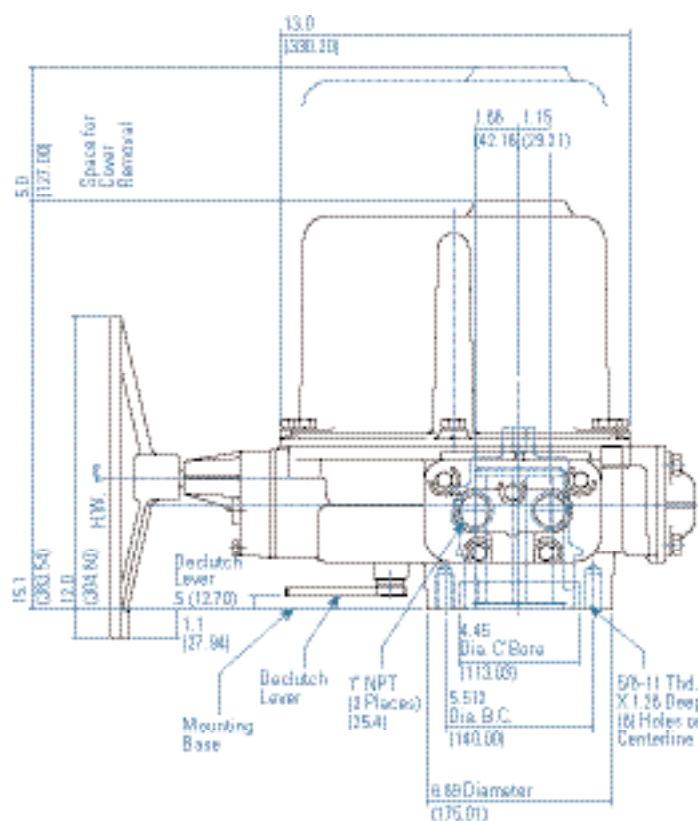
Front View



Top View



Side view



Dimensions for LY-3001 unit for UEC-3, MPC, DDC 1PH and 3PH, BIC (Clamshell) 1PH and Modutronic options



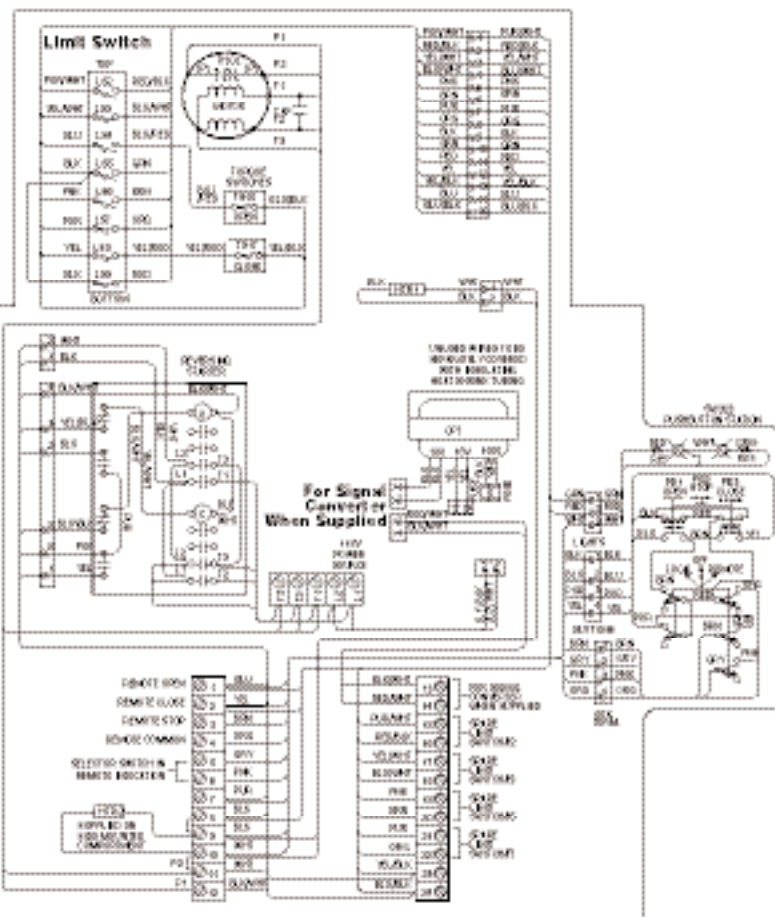


Wiring Diagram for LY NCU (Non-Control Unit), Three-Phase motor

Schematic	Physical Arrangement
-----------	----------------------



Schematic			Physical Arrangement
11	12	13	Electrical Compartment



LIMIT SWITCH CONTACT	LIMIT SWITCH CONTACT SIGNALS FROM		FUNCTION
	RAIL CLOSE	RAIL CLOSE	
1			STOP
2			STOP
3			STOP
4			STOP
5			STOP
6			STOP
7			STOP
8			STOP
9			STOP
10			STOP
11			STOP
12			STOP
13			STOP
14			STOP
15			STOP
16			STOP
17			STOP
18			STOP
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86			STOP
87			STOP
88			STOP
89			STOP
90			STOP
91			STOP
92			STOP
93			STOP
94			STOP
95			STOP
96			STOP
97			STOP
98			STOP
99			STOP
100			STOP

TS11-	CLOSING TORQUE SWITCH INTERLOCKING CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING CLOSING CYCLE
TS12-	OPENING TORQUE SWITCH INTERLOCKING CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING OPENING CYCLE

1. OPEN CONTACT
2. 20-30 SECONDS
3. ALL TESTS/SENSE TRIP POINTS ARE READY
4. ALL RIGHTS

[illegible][illegible]

Valve Shown In Full CCW Position

12 C50 TO 500V SWITCHES SUPPLY CABLES TO 0.69KV/11KV
BUSHINGS AND OVERHEAD CABLES TO 800V CUBICLE

[illegible][illegible][illegible]

Diagram of a multi-story building with labels: MICROPHONE CLOSURE, NO. 1 MICROPHONE, and CLOSURE.

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