

BIFFI MORIN EHP SERIES

FAIL-SAFE SPRING RETURN ACTUATOR

EHP series - Electrically powered spring return actuator for quarter-turn valves and dampers.
Spring ending torques from 1,200 to 52,800 lb.in.



FEATURES

- Electrically powered, 115 or 230 V AC, single phase, 60 Hz.
- Spring return, fail to safe position on loss of main power supply
- Thermally protected motor
- Standard Beacon position indicator
- 2 SPDT switches for end of travel indication, dry contacts
- Ductile iron housing provides long product life with durable, cost effective operation.
- Bi-directional travel stops provide accurate valve rotation adjustment.
- Tectyl-coated springs need no special tools to be disarmed safely and easily, reducing down time.
- Easily removable housing cover provides easy access for yoke mechanism inspection.
- High strength alloy steel or 17-4PH stainless steel output shaft transmits torque without fatigue.
- Sintered bronze or PTFE composite output shaft bearings eliminate side loading of valve stem to maximize stem packing performance.
- Strong, corrosion-resistant chrome-plated steel piston rod for enduring high-cycle applications.
- Sintered bronze piston rod bushings provide low-friction support and precise alignment to increase efficiency, reduce maintenance and extend actuator life.
- Heat-treated stainless steel thrust pin and rollers transfer piston force to yoke to reduce friction, for longer life and more efficient torque transmission.
- PTFE guide bands ensure low-friction piston guidance protecting cylinder walls from potential scoring and extending seal performance with a continuous cylinder wiping action.

GENERAL APPLICATION

Designed specifically for automating any quarter-turn ball, plug or butterfly valve where Emergency shutdown (ESD) on loss of electrical power is required.

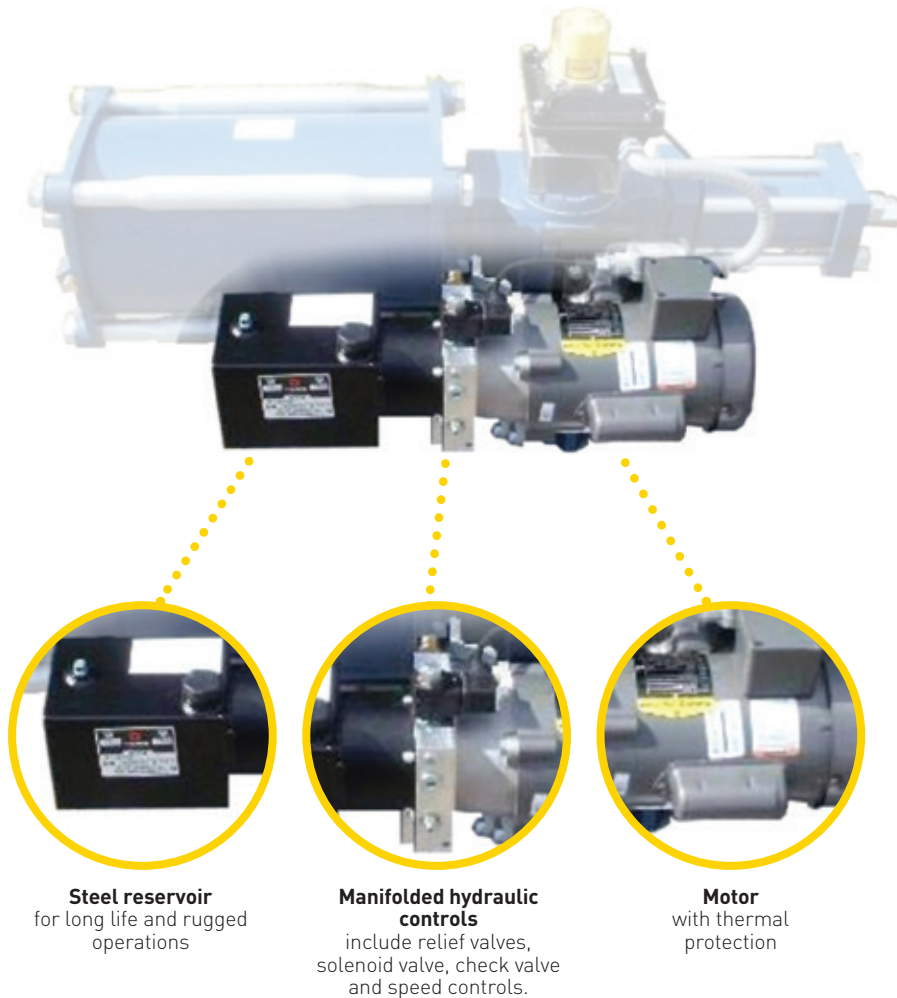
TECHNICAL DATA

Supply Voltage:	115 V AC, 1Ph, 60 Hz (Optional 230 V AC / 1Ph / 60 Hz and 24 V DC)
Enclosure:	
Motor	- TEFC (Standard)
Controls	- NEMA 4 (Standard) - Class I Div. 2 (Optional)
Temperature rating	
Standard:	-20°F to +130°F (-29°C to 54°C)
Optional:	-40°F to +130°F (-40°C to 54°C)
Service:	Open/Close
Mounting:	
	Standard - Actuator output shaft vertical
	Standard - Actuator output shaft horizontal
	Mounting pattern: ISO 5211

BIFFI MORIN EHP SERIES ACTUATOR

HPU MODULE

HPU (HYDRAULIC POWER UNIT) MODULE



The HP electro-hydraulic actuator is a self-contained unit consisting of a hydraulic power unit with oil reservoir, electric control limit switches, terminal block, open/closed position beacon and a hydraulic actuator.

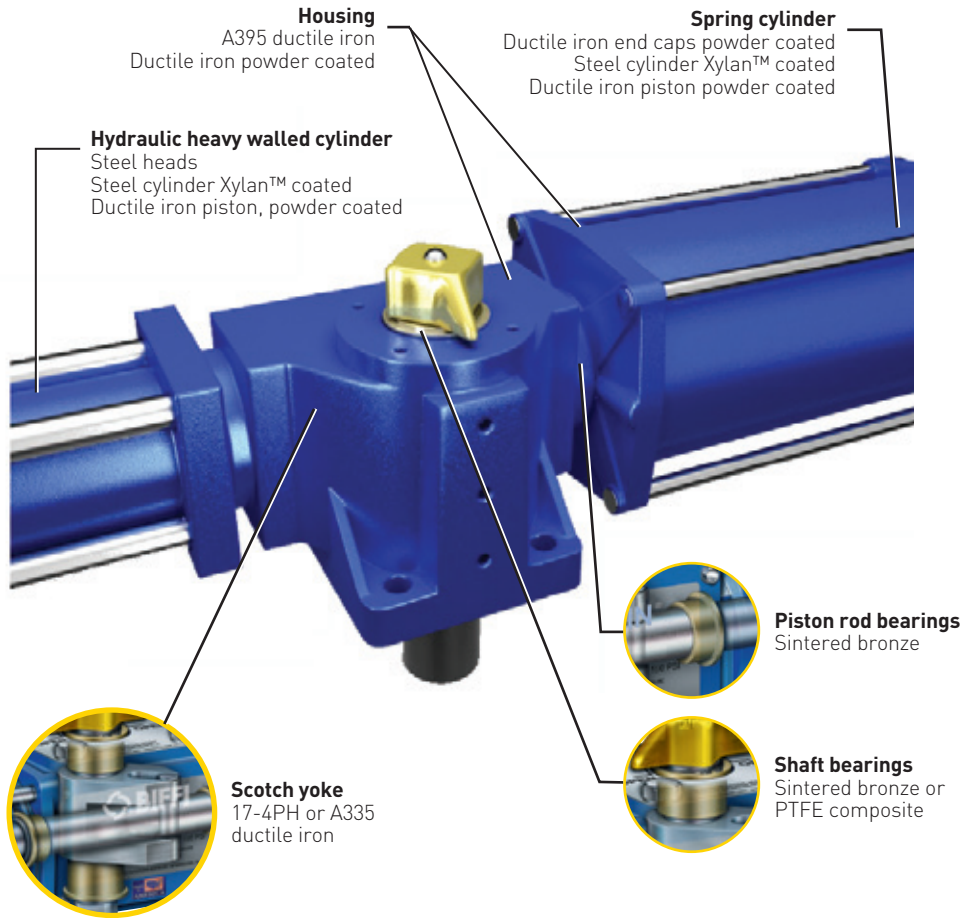
The HPU module operates on single phase 115 V AC (or optional 230 V AC). Power is applied to the actuator closing the solenoid valve included in the HPU manifold, and starting the HPU motor. The actuator opens and the motor shuts off when a limit switch in the control box opens. The solenoid valve remains energized.

The electric spring return actuator closes on loss of power to the unit either by remote control or by power failure. Spring stroke speed of ≤ 5 seconds standard (adjustable to slower speeds).

BIFFI MORIN EHP SERIES ACTUATOR

MATERIALS OF CONSTRUCTION

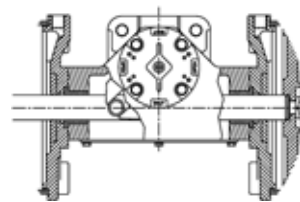
Superior materials of construction offer long life and mean less downtime



DESIGN FEATURES

- High strength alloy steel or 17-4PH stainless steel output shaft transmits torque without fatigue.
- Sintered bronze or PTFE composite output shaft bearings eliminate side loading of valve stem to maximize stem packing performance.
- Strong, corrosion-resistant chrome-plated steel piston rod for enduring high-cycle applications.
- Sintered bronze piston rod bushings provide low-friction support and precise alignment to increase efficiency, reduce maintenance and extend actuator life.
- Heat-treated stainless steel thrust pin and rollers transfer piston force to yoke to reduce friction, for longer life and more efficient torque transmission.
- PTFE guide bands ensure low-friction piston guidance protecting cylinder walls from potential scoring and extending seal performance with a continuous cylinder wiping action.
- Model HP15 is standard with 17-4PH shaft

STANDARD SCOTCH YOKE DESIGN



EXPERTS IN ACTUATOR DESIGN

We understand that the most efficient design for one torque range is not the most efficient for another, so the EHP fail-safe actuator uses our proven standard actuator design.

BIFFI MORIN EHP SERIES ACTUATOR

SCOTCH YOKE DESIGN

DESIGNED WITH A RUGGED HEART

Scotch yoke design

The heart of any scotch yoke actuator is the yoke. The EHP actuator uses either 17-4PH or ductile iron for this critical area as standard.

The yoke is the mechanism used to convert linear force to torque. The yoke is critical to actuator performance. It must be rugged, yet precisely machined to give long life at high efficiency - all our yoke designs meet this test.

Principles of construction

Using high quality materials of construction and modern rugged design concepts provides the standard for high quality, low cost valve actuation. The actuator housings are all machined from ductile iron castings. This produces a rugged, low cost product through reduced machining time and by eliminating wasteful excess material. Housings are then epoxy electro-coated inside and out for corrosion resistance. Any components that rotate or slide during operation, such as the high strength output shaft, chrome-plated piston rod, stainless steel thrust pin or the ductile iron piston, are all supported by replaceable friction reducing bearings.

Bi-directional travel stops

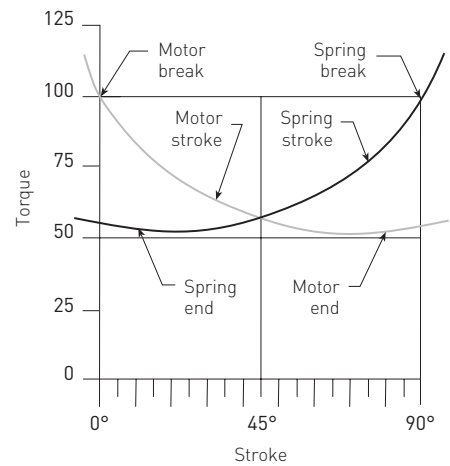
Adjustable stops on each end cap provide the flexibility of accurate valve rotation positioning at the end of the "open" and "close" stroke. Both stops are located on the cylinder centerline, the optimal position to maximize travel adjustment and eliminate any detrimental side loading on the travel stops. Adjustable from 82° to 98°.

Spring designed for safety

All spring return models incorporate a "man safe" spring design that allows the actuator to be safely assembled and disassembled in the field without the need for special tools. The integral tie rods are bored and tapped to provide a means of loading and unloading the spring in a safe and convenient manner.



SCOTCH YOKE TORQUE CHARACTERISTICS
(SYMMETRICAL YOKE)

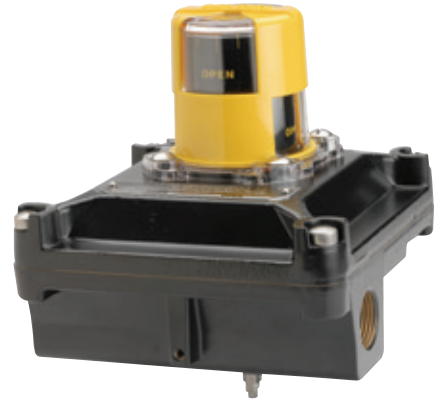


BIFFI MORIN EHP SERIES ACTUATOR

MORIN CONTROL MODULE

FULLY INTEGRATED ROTARY CONTROL AND POSITION MONITOR

- Aluminum enclosure with ultra-low copper content (0.2% maximum) and power coat finish ensures robust performance in corrosive environments.
- Shaft and hardware are stainless steel.
- Beacon is manufactured from a high impact strength and corrosion resistant co-polyester that offers 360° instant visual recognition of valve position from up to 150 feet away.
- 2 SPDT switches available for customer use. The 15 amps at 115 V AC offer flexibility of use for the customer as a standard.
- Touch set cams are hand adjustable spring loaded and self-locking providing quick calibration of position sensors.
- 24 point terminal strip for ease of wiring.
- Captive screws on cover prevent lost screws during installation setup and maintenance.
- Conduit entries one 3/4" NPT for customer connections. Aluminum enclosure with ultra-low copper content (0.2% maximum) and power coat finish ensures robust performance in corrosive environments.



SPDT MECHANICAL SWITCH V3

Contains V3 SPDT (single pole double throw) mechanical switch (Form C).

TECHNICAL DATA

Operating force	150 gram max.
Release force	15 gram max.
Differential travel	0.05 - 0.25 mm
Overtravel	0.039 in (1 mm)
Electrical rating	
Contact arrangement	SPDT, Form C (Normally Open) 15 amps / 125 / 250 V AC 6 amps / 24 V DC 0.5 amps / 125 V DC 0.25 amps / 250 V DC



BIFFI MORIN EHP SERIES ACTUATOR

WEATHERPROOF CONSTRUCTION, SPRING RETURN, 115 OR 230 V AC

OPERATING DATA

Model	MST/SST (lb.in.)	Min (lb.in.)	MET/SET (lb.in.)	HPU Module	Reservoir volume (cu.in.)	Opening time (seconds)	Closing time (seconds)
EHP15U-2-1-046S060	2250	1080	1200	type 1 WP	25	15	3
EHP15U-2-1-046S070	2615	1410	1410	type 1 WP	25	15	3
EHP15U-2-1-046S080	3000	1440	1600	type 1 WP	25	15	3
EHP15U-2-1-072S060	3510	1701	1890	type 1 WP	25	15	3
EHP15U-2-1-072S070	4095	1985	2205	type 1 WP	25	15	3
EHP15U-2-1-100S060	4880	2358	2620	type 1 WP	25	15	3
EHP15U-2-1-100S070	5690	2754	3060	type 1 WP	25	15	3
EHP15U-2-1-100S080	6500	3150	3500	type 1 WP	25	15	3
EHP25U-3-1-210S040	6825	3640	4040	type 1 WP	100	30	4
EHP25U-3-1-210S050	8530	4545	5050	type 1 WP	100	30	4
EHP25U-3-1-210S060	10240	5455	6060	type 1 WP	100	30	4
EHP25U-3-1-210S070	11945	6365	7070	type 1 WP	100	30	4
EHP25U-3-1-210S080	13650	7275	8085	type 1 WP	100	30	4
EHP25U-3-1-210S090	15350	8185	9095	type 1 WP	100	30	4
EHP25U-3-1-420S050	17060	8685	9650	type 1 WP	100	30	4
EHP25U-3-1-420S060	20475	10420	11575	type 1 WP	100	30	4
EHP25U-3-1-420S070	23090	12155	13500	type 1 WP	100	30	4
EHP25U-3-1-420S090	27055	15080	16755	type 2 WP	400	60	5
EHP30U-4-1-740S050	30060	16755	18620	type 2 WP	400	60	5
EHP30U-4-1-740S060	36075	20105	22340	type 2 WP	400	60	5
EHP30U-4-1-740S070	42090	23455	26060	type 2 WP	400	60	5
EHP30U-4-1-740S080	48100	26805	29785	type 2 WP	400	60	5
EHP30U-6-1-1150S060	56060	28530	31700	type 2 WP	800	90	5
EHP30U-6-1-1150S070	65400	33280	36980	type 2 WP	800	90	5
EHP30U-6-1-1150S080	74750	38035	42260	type 2 WP	800	90	5
EHP30U-6-1-1150S090	84090	42790	47545	type 2 WP	800	90	5
EHP30U-6-1-1150S100	93340	47535	52815	type 2 WP	800	90	5

MST - Motor Start Torque
 SST - Spring Start Torque
 MET - Motor End Torque
 SET - Spring End Torque
 Min - Minimum Torque Output

HPU MODULE MOTOR DATA

	Voltage / Max Amp	Phase	Hz	HP	Motor housing rating
Type 1 WP	115 V / 7.4 A - 230 V / 3.4 A	1	60	0.5	Weather resistant IP54
Type 2 WP	115 V / 15 A - 230 V / 7.5 A	1	60	1.0	Weather resistant IP54
Holding Amps:	115 V - 0.2 A				
	230 V - 0.2 A				

BIFFI MORIN EHP SERIES ACTUATOR

EXPLOSIONPROOF CONSTRUCTION, SPRING RETURN, 115 OR 230 V AC

OPERATING DATA

Model	MST/SST (lb.in.)	Min (lb.in.)	MET/SET (lb.in.)	HPU Module	Reservoir volume (cu.in.)	Opening time (seconds)	Closing time (seconds)
EHPX15U-2-1-046S060	2250	1080	1200	type 1 XP	25	15	3
EHPX15U-2-1-046S070	2615	1410	1410	type 1 XP	25	15	3
EHPX15U-2-1-046S080	3000	1440	1600	type 1 XP	25	15	3
EHPX15U-2-1-072S060	3510	1701	1890	type 1 XP	25	15	3
EHPX15U-2-1-072S070	4095	1985	2205	type 1 XP	25	15	3
EHPX15U-2-1-100S060	4880	2358	2620	type 1 XP	25	15	3
EHPX15U-2-1-100S070	5690	2754	3060	type 1 XP	25	15	3
EHPX15U-2-1-100S080	6500	3150	3500	type 1 XP	25	15	3
EHPX25U-3-1-210S040	6825	3640	4040	type 1 XP	100	30	4
EHPX25U-3-1-210S050	8530	4545	5050	type 1 XP	100	30	4
EHPX25U-3-1-210S060	10240	5455	6060	type 1 XP	100	30	4
EHPX25U-3-1-210S070	11945	6365	7070	type 1 XP	100	30	4
EHPX25U-3-1-210S080	13650	7275	8085	type 1 XP	100	30	4
EHPX25U-3-1-210S090	15350	8185	9095	type 1 XP	100	30	4
EHPX25U-3-1-420S050	17060	8685	9650	type 1 XP	100	30	4
EHPX25U-3-1-420S060	20475	10420	11575	type 1 XP	100	30	4
EHPX25U-3-1-420S070	23090	12155	13500	type 1 XP	100	30	4
EHPX30U-4-1-370S090	27055	15080	16755	type 2 XP	400	60	5
EHPX30U-4-1-740S050	30060	16755	18620	type 2 XP	400	60	5
EHPX30U-4-1-740S060	36075	20105	22340	type 2 XP	400	60	5
EHPX30U-4-1-740S070	42090	23455	26060	type 2 XP	400	60	5
EHPX30U-4-1-740S080	48100	26805	29785	type 2 XP	400	60	5
EHPX30U-6-1-1150S060	56060	28530	31700	type 2 XP	800	90	5
EHPX30U-6-1-1150S070	65400	33280	36980	type 2 XP	800	90	5
EHPX30U-6-1-1150S080	74750	38035	42260	type 2 XP	800	90	5
EHPX30U-6-1-1150S090	84090	42790	47545	type 2 XP	800	90	5
EHPX30U-6-1-1150S100	93340	47535	52815	type 2 XP	800	90	5

MST - Motor Start Torque

SST - Spring Start Torque

MET - Motor End Torque

SET - Spring End Torque

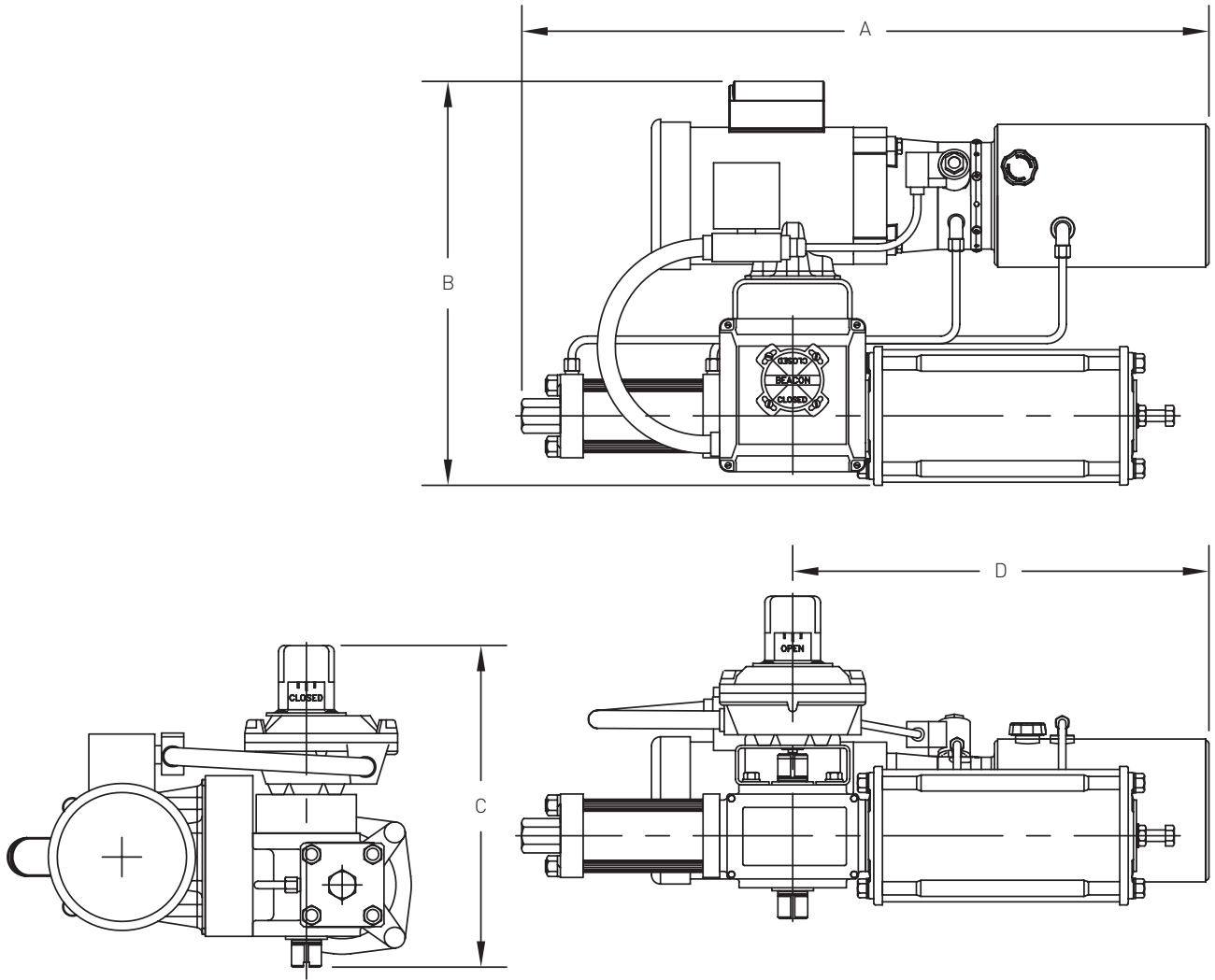
Min - Minimum Torque Output

HPU MODULE MOTOR DATA

	Voltage / Max Amp	Phase	Hz	HP	Motor housing rating
Type 1 XP	115 V / 7.4 A - 230 V / 3.4 A	1	60	0.5	TENV Motor - IP54 NEC Explosionproof Class 1 Division 2 Group D
Type 2 XP	115 V / 15 A - 230 V / 7.5 A	1	60	1	TENV Motor - IP54 NEC Explosionproof Class 1 Division 2 Group D
Holding Amps:	115 V - 0.2 A				
	230 V - 0.2 A				

BIFFI MORIN EHP SERIES ACTUATOR

DIMENSIONS



DIMENSIONS (inches)

Model	A	B	C	D	HP	Weight lbs.	Max Volts / Amps	Phase	Notes*
HP15U-2-1-XXXX	28.88	17.00	15.00	17.00	0.50	135	120 V 7 A / 240 V / 3.5 A	1	WP
EHP25U-3-1-XXXX	36.44	21.75	20.38	17.00	0.50	320	120 V 7 A / 240 V / 3.5 A	1	WP
EHP30U-4-1-XXXX	45.75	24.50	23.38	21.25	1.00	680	120 V 15 A / 240 V / 7.5 A	1	WP
EHP30U-6-1-XXXX	47.38	24.50	23.38	21.25	1.00	990	120 V 15 A / 240 V / 7.5 A	1	WP
EHPX15U-2-1-XXXX	31.00	17.00	15.00	19.00	0.50	145	120 V 7 A / 240 V / 3.5 A	1	XP
EHPX25U-3-1-XXXX	38.44	21.75	20.38	19.00	0.50	330	120 V 7 A / 240 V / 3.5 A	1	XP
EHPX30U-4-1-XXXX	46.50	24.50	23.38	22.00	1.00	690	120 V 15 A / 240 V / 7.5 A	1	XP
EHPX30U-6-1-XXXX	48.12	24.50	23.38	22.00	1.00	1000	120 V 15 A / 240 V / 7.5 A	1	XP

*NOTES

WP = Weather resistant, IP54 rating

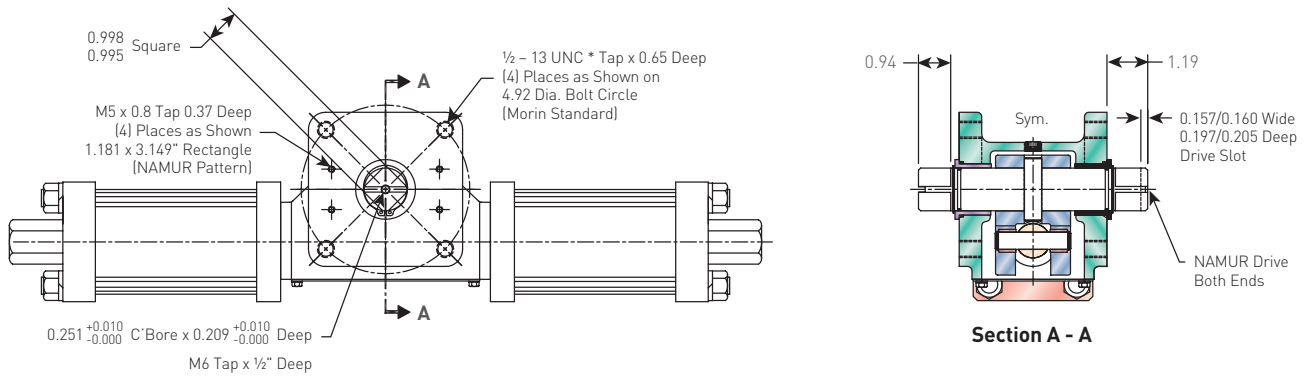
XP = NEC Explosionproof Class 1 Division 2 Group D

For detailed actuator dimensions contact your local sales representative

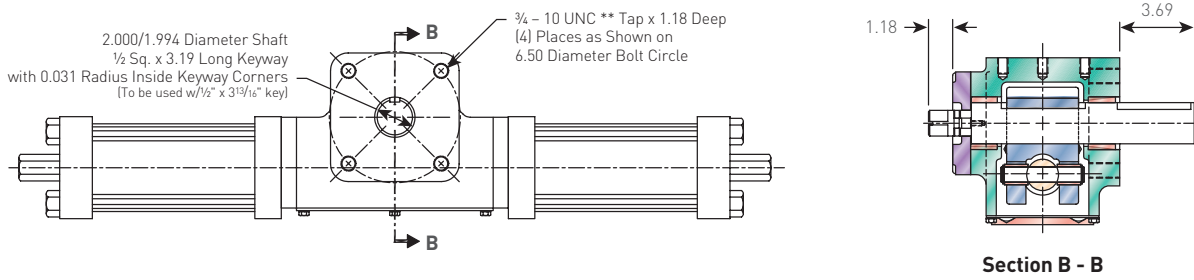
BIFFI MORIN EHP SERIES ACTUATOR

MOUNTING DETAILS

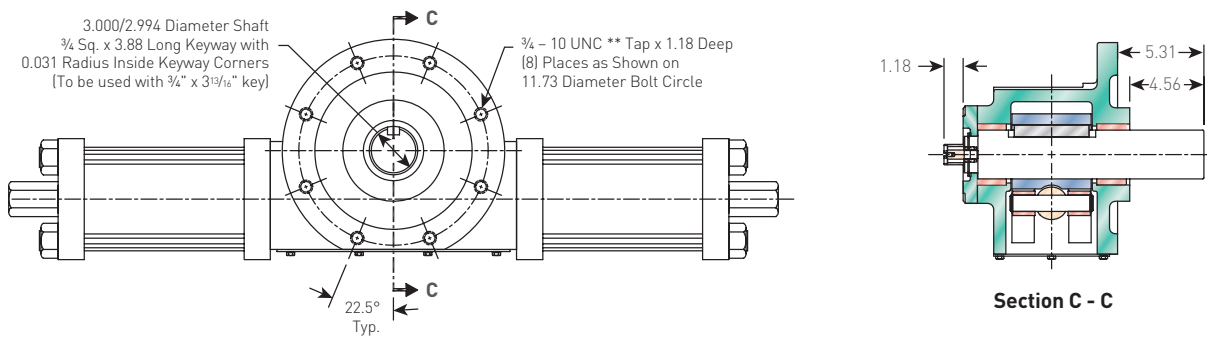
MODEL EHP15 – TOP AND BOTTOM OF HOUSING (SYMMETRICAL) – ISO 5211_F12



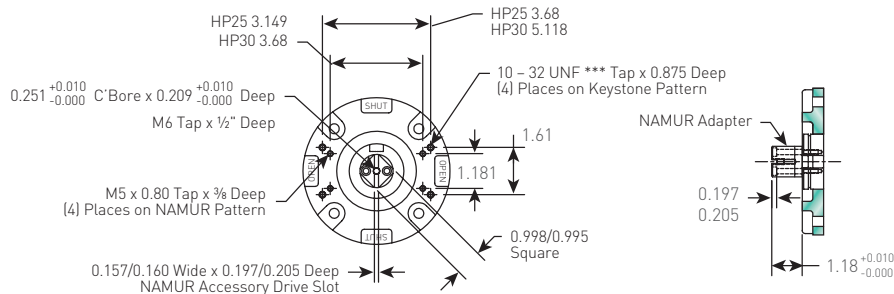
MODEL EHP25 – BOTTOM OF HOUSING – ISO 5211_F16



MODEL EHP25 – BOTTOM OF HOUSING – ISO 5211_F16



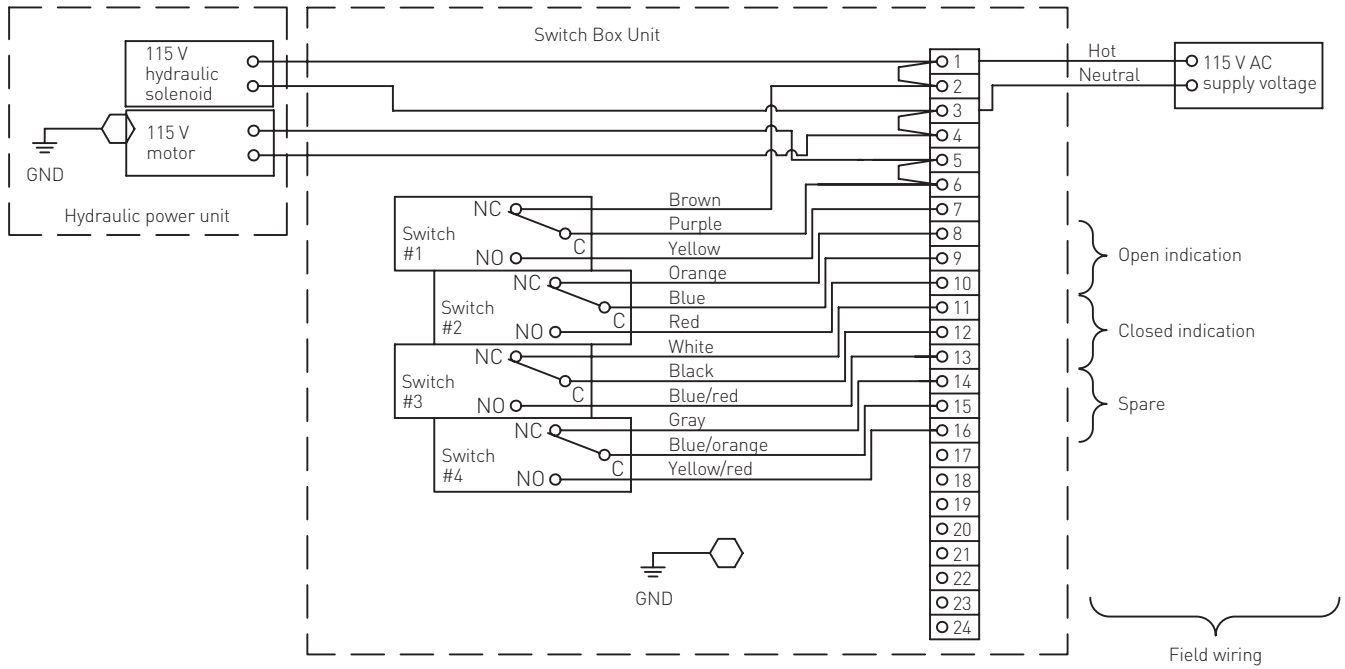
MODEL EHP25 AND EHP30 – TOP OF HOUSING – MOUNTING DETAILS



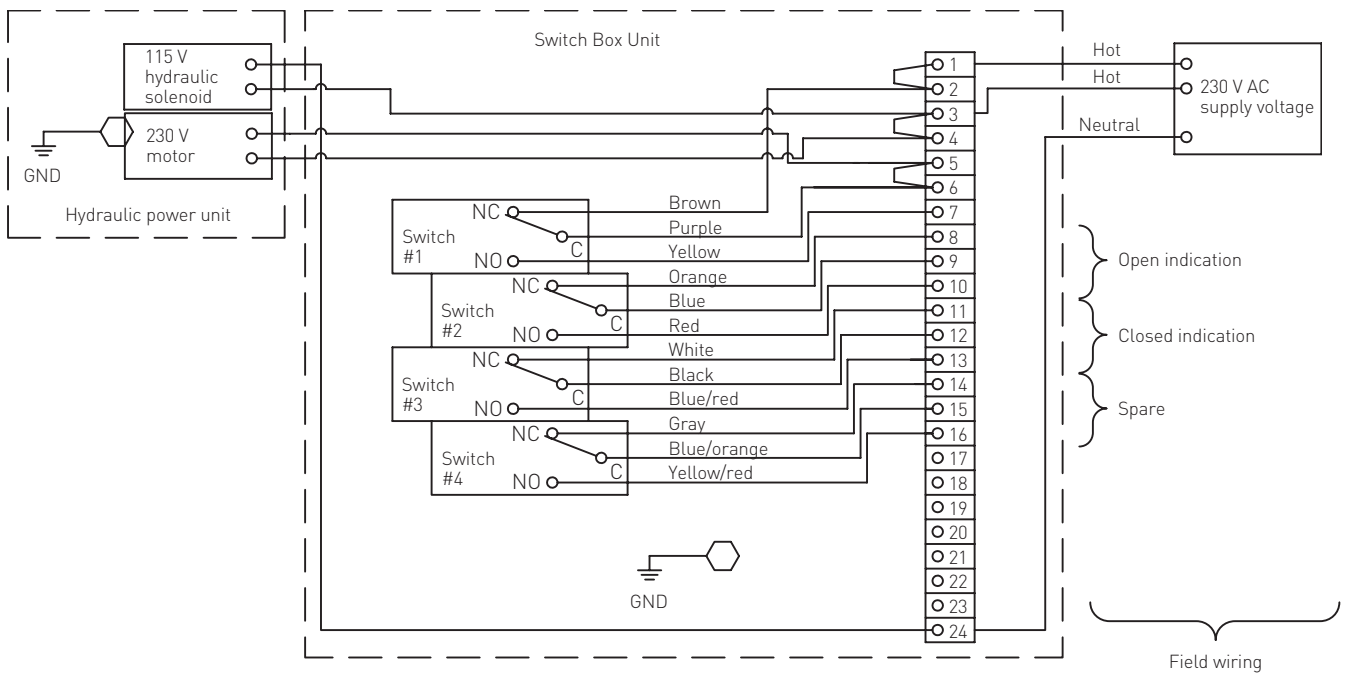
BIFFI MORIN EHP SERIES ACTUATOR

WIRING DIAGRAMS

WIRING DIAGRAM 115 V SINGLE PHASE

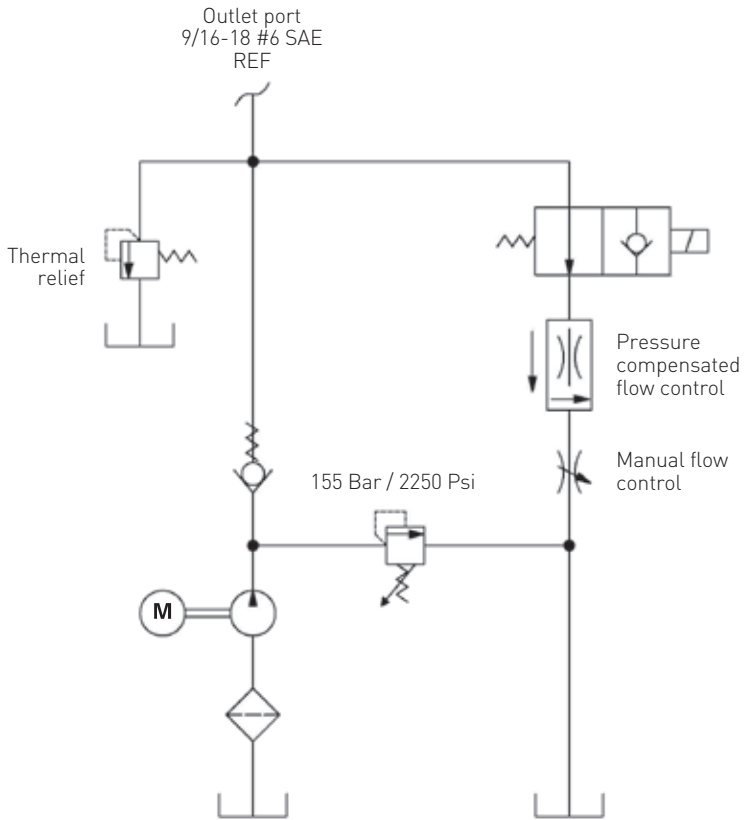


WIRING DIAGRAM 230 V SINGLE PHASE



BIFFI MORIN EHP SERIES ACTUATOR

HYDRAULIC SCHEMATIC



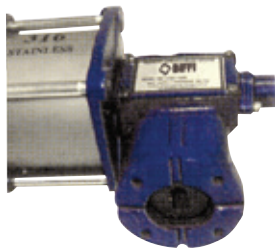
AVAILABLE OPTIONS

Hydraulic Override (MHP)

Manual operation when power is lost. Includes speed controls.

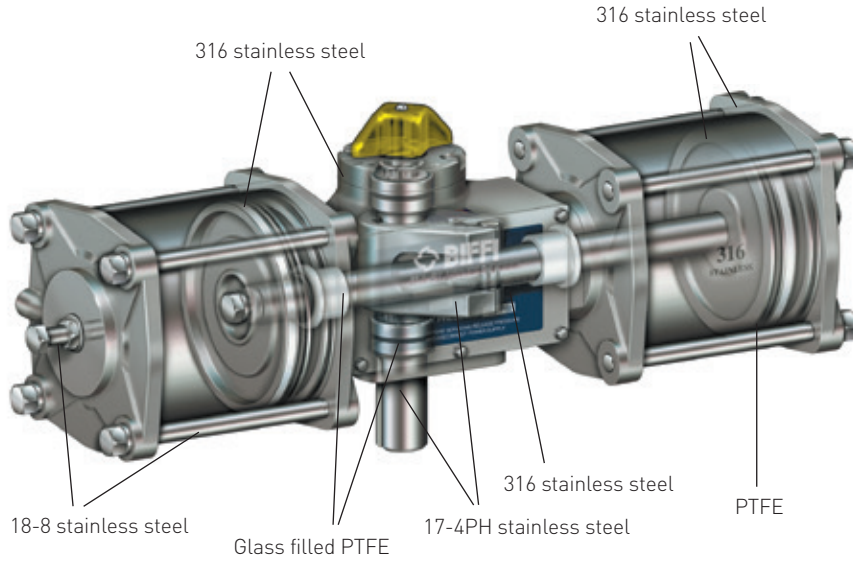
Direct Mounting Cast Adapters

Many valve top works covered, including some ISO mounting. Assures economic but correct mounting alignment.



BIFFI MORIN EHP SERIES ACTUATOR
ELECTRICALLY POWERED SPRING RETURN ACTUATOR

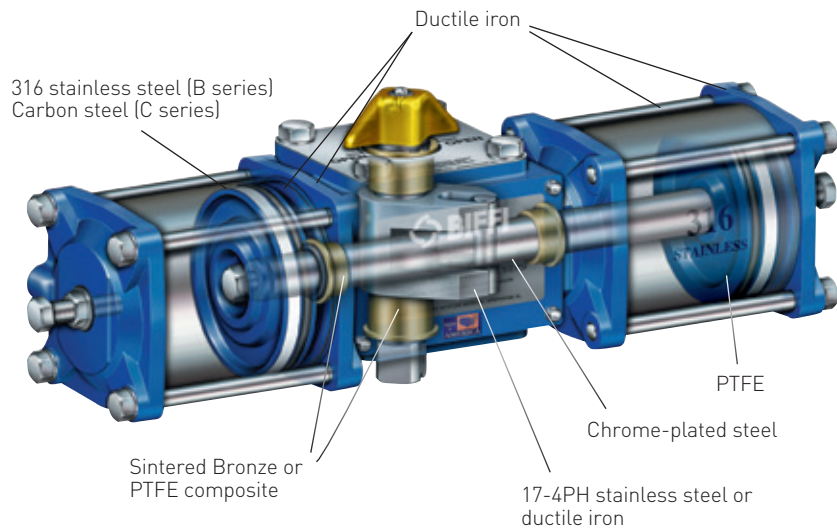
OTHER MORIN ACTUATORS



The S Series actuator (stainless steel)

Setting an unrivalled standard in actuation at a price unexpectedly low for stainless steel.

- Up to 160 psi g max operating pressure
- Double acting break torques to 240,000 lb.in.
- Spring end torques to 104,125 lb.in.
- For additional information, contact your local sales representative.



The B and C series actuators

Setting a new standard in actuation at a price you'd expect from a commodity product.

- Up to 160 psi g max operating pressure
- Double acting break torques to 1,400,000 lb.in.
- Spring end torques to 583,288 lb.in.
- For additional information, contact your local sales representative.