

ABB MEASUREMENT & ANALYTICS | DATA SHEET

UP1/2/3/4/5/6/7

Universal pneumatic rotary actuators



Measurement made easy

High performance actuators for precision damper control

Wide range of torque ratings

- seven actuator sizes available in ratings from 122 to 7320 N·m (90 to 5400 lb·ft)
- 12745 N·m (9400 lbf·ft) with master-slave solution

Easy and flexible installation

- place in convenient locations and connect to driven device by standard linkage components

Control modes for safe operation

- options available for fail-safe or fail-in-place on loss of control input and air supply

Suitable for high temperature environments

- use in ambient temperatures up to 85 °C (185 °F), depending on control input

Adjustable relationship between control signal and output shaft position

- adjusts easily with use of standard positioner characteristics: linear, square and square root relationship or custom-characteristics

Conventional or digital positioner options

- complete range of control signal options including EDP300 and TZIDC digital positioner with HART® communications

Manual operation

- quick and smooth transfer shifts easily from automatic to manual control

Wide range of options available

- factory installed IP66 (NEMA 4X) enclosure, pneumatic or electric position transmitter, alarm/travel switches, air failure lock option and heated enclosures available

Universal rotary actuators UP pneumatic

UP pneumatic universal rotary actuators regulate dampers, fan inlet vanes, lever-operated valves, turbine governors, fluid drives and other final control elements (see Figure 1).

These actuators accept electric or pneumatic control signals. This provides modulating or on/off control power to position devices through mechanical linkage or by direct coupling.

UP1 and UP2 actuators include a double-acting rotary vane power unit. UP3, UP4, UP5, UP6 and UP7 actuators include a double-acting piston with a motion conversion mechanism to convert linear to rotary motion.

Order the actuator with a positioner, or a single or double acting on/off solenoid valve. Refer to **Ordering information** on pages 26 to 39.

Actuators with a positioner include a TZIDC/EDP300 digital or AV characterizable analog positioners. The AV positioner is a push-pull action, force balance type control instrument. It offers a variety of input ranges including 21 to 103 kPa (3 to 15 psig), 21 to 186 kPa (3 to 27 psig) or 4 to 20 mA.

With the AV positioner, there are standard cams for linear, square, or square root relationships between the control input and output position.

With the TZIDC or EDP300 Digital positioner, characterization is done electronically. The positioner acts as a pneumatic relay, through a separate air supply it produces the differential pressure that moves the actuator into position.

The TZIDC or EDP300 Digital positioner is available on all sizes of UP drives and offers the following advantages:

- Configurable smart digital positioner with diagnostics and digital communication capability via HART protocol
- Auto adjust function provides fast and easy setup and self-tuning.
- Modular: Options or replacement parts can be added easily in the field.
- As a digital device, it can be integrated as part of the ABB FDT asset management solutions with DTM technology.
- Integral analog or digital position feedback
- Fail-safe or fail-in-place on loss of mA input signal.
- High immunity to shock and vibration.
- Low flow cut-off for valve or damper applications.
- Configurable custom characterization to correct for non-linear flow characteristics of the damper or butterfly valve.
- The TZIDC-200 positioner option can be used in Class I, Div. 1, Gr C-G, Explosion Proof Environments. Refer to the **Ordering information** for option combinations. Also call factory for hazardous area application solutions.
- Other approvals (for example, ATEX/IEC) on request.

Actuators with a solenoid valve provide on/off control. In this case, positioning of the actuator is at either of the extreme ends of travel (0 or 100 %). The solenoid valve is suitable for 120 V AC, 115/125 V DC or 220 V AC service, single coil for fail open/close or dual coil for fail-in-place, on loss of coil voltage. Refer to **Ordering information** on pages 26 to 39.

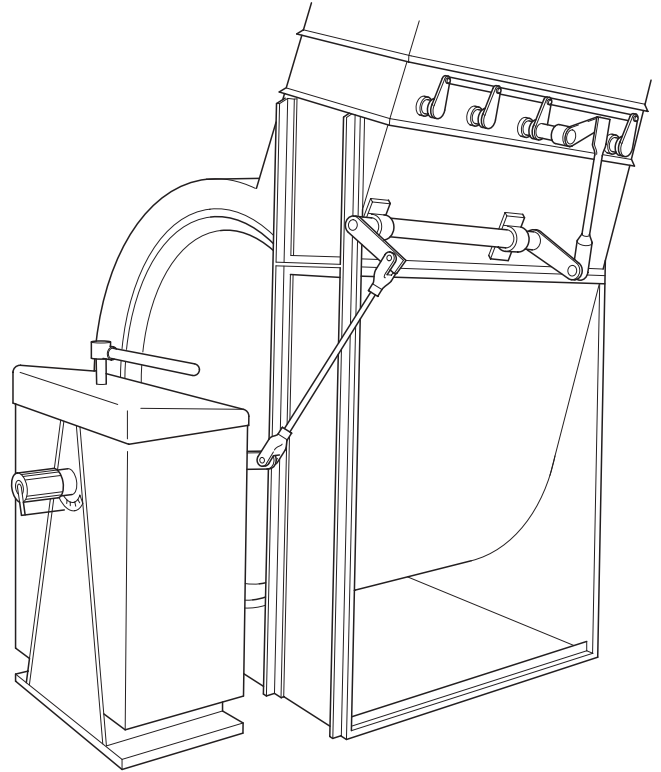


Figure 1 Typical fan damper control application

Specification

Supply pressure (minimum and maximum)

- 276 to 690 kPa (40 to 100 psig) with EDP300 and AV positioners
- 276 to 621 kPa (40 to 90 psig) with TZIDC positioners

Operating torque

See Table 1 and Figures 2 and 3 for operating torque versus air supply pressure

UP1				UP2				UP3			
supply, kPa	torque, N·m	supply, psig	torque, lbf·ft	supply, kPa	torque, N·m	supply, psig	torque, lbf·ft	supply, kPa	torque, N·m	supply, psig	torque, lbf·ft
276	54	40	40	276	224	40	165	276	441	40	325
310	59	45	44	310	256	45	188	310	494	45	364
345	65	50	48	345	288	50	212	345	548	50	404
379	71	55	52	379	320	55	236	379	602	55	443
414	76	60	56	414	352	60	260	414	655	60	483
448	82	65	60	448	384	65	283	448	709	65	522
483	88	70	65	483	417	70	307	483	763	70	562
517	93	75	69	517	449	75	331	517	816	75	602
552	99	80	73	552	481	80	355	552	870	80	641
586	105	85	77	586	513	85	378	586	924	85	681
621	110	90	81	621	545	90	402	621	977	90	720
655	116	95	85	655	577	95	426	655	1031	95	760
690	122	100	90	690	610	100	450	690	1085	100	800

UP4				UP5				UP6			
supply, kPa	torque, N·m	supply, psig	torque, lbf·ft	supply, kPa	torque, N·m	supply, psig	torque, lbf·ft	supply, kPa	torque, N·m	supply, psig	torque, lbf·ft
276	746	40	550	276	1437	40	1060	276	2576	40	1900
310	847	45	625	310	1633	45	1205	310	2892	45	2133
345	949	50	700	345	1830	50	1350	345	3208	50	2366
379	1051	55	775	379	2026	55	1495	379	3525	55	2600
414	1152	60	850	414	2223	60	1640	414	3841	60	2833
448	1254	65	925	448	2419	65	1785	448	4157	65	3066
483	1356	70	1000	483	2616	70	1930	483	4474	70	3300
517	1457	75	1075	517	2813	75	2075	517	4790	75	3533
552	1559	80	1150	552	3009	80	2220	552	5106	80	3766
586	1661	85	1225	586	3206	85	2365	586	5423	85	4000
621	1762	90	1300	621	3402	90	2510	621	5739	90	4233
655	1864	95	1375	655	3599	95	2655	655	6055	95	4466
690	1966	100	1450	690	3796	100	2800	690	6372	100	4700

UP7			
supply, kPa	torque, N·m	supply, psig	torque, lbf·ft
276	3663	40	2702
310	4120	45	3039
345	4579	50	3377
379	5037	55	3715
414	5495	60	4053
448	5952	65	4390
483	6410	70	4728
517	6869	75	5066
552	7326	80	5403

Table 1 Operating torque at minimum and maximum supply pressure ¹

¹ Maximum supply pressure for UP with TZIDC positioner option is 621kPa (90 psi)
Maximum supply pressure for UP with EDP300 or AV positioner option is 690 kPa (100 psi)
Maximum supply pressure for UP7 is 552 kPa (80 psi)

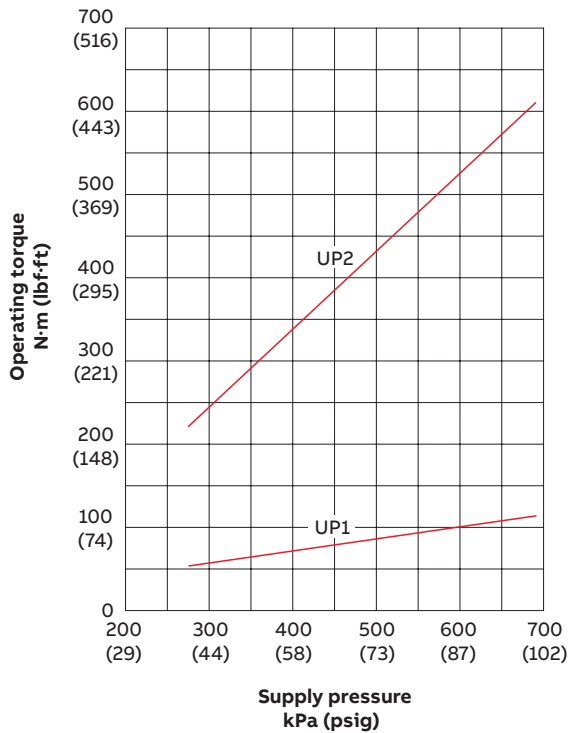


Figure 2 Operating torque versus supply pressure for UP1 and UP2 actuators

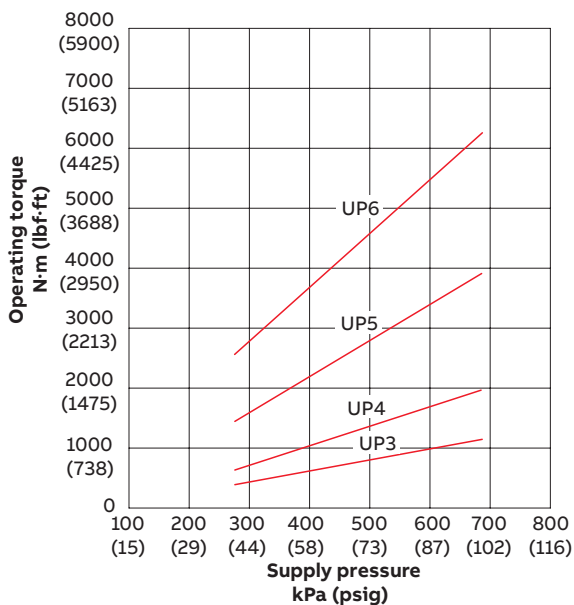


Figure 3 Operating torque versus supply pressure for UP3 to UP6 actuators

Volume displacement for 90° mechanical output rotation

- UP1: 655 cm³ (40 in³) rotary vane
- UP2: 1965 cm³ (120 in³) rotary vane
- UP3: 3685 cm³ (225 in³) cylinder [15 x 20 cm (6 x 8 in)]
- UP4: 6550 cm³ (400 in³) cylinder [20 x 20 cm (8 x 8 in)]
- UP5: 13,110 cm³ (800 in³) cylinder [20 x 41 cm (8 x 16 in)]
- UP6: 20,565 cm³ (1255 in³) cylinder [25 x 41 cm (10 x 16 in)].
- UP7: 29,653 cm³ (1809.5 in³) cylinder [30.5 x 41 cm (12 x 16 in)].

Temperature limits for positioner options

- -40 to 82 °C (-40 to 180 °F)¹ for UP with AV positioners
- -40 to 85 °C (-40 to 185 °F) for UP with TZIDC or EDP300 positioners

The low temperature operative limit can be extended below 0 °C (32 °F) without heaters if the dew point of the air supply is maintained at least 10 °C (18 °F) below the minimum expected ambient temperature.

Mechanical rotation

UP1/2

Rotary vane stroke is nominally set for 90° rotation, but can be adjusted over a range from 80 to 92° via adjustable mechanical stop.

UP3/4/5/6/7

Stroke of the cylinder provides a 90° rotation of the output lever.

Positioner input signal

AV1

- 21 to 103 kPa (3 to 15 psig)
- 21 to 186 kPa (3 to 27 psig); 50 % range suppression and/or zero elevation capability

AV2

4 to 20 mA goes to 0 % (direct acting) or 100 % (reverse acting) on loss of input signal

TZIDC/EDP300 (fail-safe)

4 to 20 mA goes to 0 % (direct acting) or 100 % (reverse acting) on loss of input signal.

Refer to **Ordering information** on pages 26 to 39.

TZIDC/EDP300 (fail-in-place)

4 to 20 mA holds position on loss of input signal.

Refer to **Ordering information** on pages 26 to 39.

¹ Some actuator/positioner combinations may have slightly higher minimum and slightly lower maximum operating temperatures. Refer to the appropriate positioner specification for temperature limitations.

...Specification

Air consumption (nominal) at balance with positioner

AV

Typical 188.8 cm³/s (0.4 scfm) @ 517.1 kPa (75.0 psig)
supply at null

TZIDC/EDP300

< 0.03 kg/h (0.015scfm) at null independent
of supply pressure

Air supply

UP with TZIDC positioner

621 kPa (90 psi) maximum

UP with EDP300 or AV positioner

690 kPa (100 psi) maximum

Travel direction of UP lever arm¹:

Direct action is standard.

With increasing signal, actuator lever rotates as follows:

UP1

Counterclockwise when facing lever¹

UP2

Clockwise when facing lever¹

UP3/4

Clockwise when facing lever^{1,2}

UP5/6/7

Counterclockwise when facing lever^{1,2}

Performance specification

Refer to the appropriate positioner specification for
hysteresis, resolution, deadband, repeatability, etc.

Solenoid type and coil specification

4-way, 2-position, 2-wire (UP_ _5 and UP_ _6).

4-way, 2-position, 4-wire (UP_ _8 and UP_ _9).

UP1/2

- IP66 (NEMA 4X) enclosure rating
- CSA certified 120 V AC or 240 V AC, 50/60 Hz, 10.1 W; or 125 V DC, 11.6 W

UP3/4/5/6/7

- IP (NEMA)³ enclosure rating
- CSA certified 120 V AC or 240 V AC, 50/60 Hz, 10.1 W; or 125 V DC, 11.6 W

External connections

Air supply:

UP1/2: ¼ – 18 NPT female

UP3/4: ¼ – 18 NPT female

UP5/6/7: ½ – 14 NPT female

Pneumatic signal:

¼ – 18 NPT female when using AV11 or AV12 positioners as
the control input.

Air failure reset:

¼ – 18 NPT female

Electrical conduit:

Cutouts for ½ and ¾ in NPT female when using AV2,
TZIDC and EDP300 positioners, or a solenoid valve for the
control input

Manual operator

UP1/2

Lever type with manual locking bolt

UP3/4

Split nut with locking ratchet

UP5/6/7

Gear type with self-locking ratchet

Materials of construction

Frame

Carbon steel

Output shaft

Carbon steel

Top covers

Sheet metal

End covers

Sheet metal

Actuators UP1/2

Die Cast aluminum rotary vane housing

Actuators UP3/4/5/6/7

High tensile aluminum allow hard coated to 60Rc cylinder
housing and high strength 6061-T6 aluminum alloy end
flanges

Seals on vane, vane shaft, piston and piston rod

Nitrile rubber

Coating on metal parts

Corrosion-resistant polyurethane

¹ Consult factory for custom travel directions

² UP3 to UP7 can have the lever mounted on either side of the
actuator. Factory delivery provides the lever on the left-hand side for
UP3 and UP4 and on the right-hand side for UP5/6/7 when facing
the positioner

³ The solenoid valve is mounted inside the actuator enclosure on these
models, so the environmental rating of the entire unit is a function of
the environmental rating of the actuator enclosure.
Refer to **Ordering information** on pages 26 to 39.

Engineering specifications

Storage

Store in a dry, indoor location not subject to rapid temperature changes that would cause condensation to form inside the unit

Storage temperature limits

- –40 to 82 °C (–40 to 180 °F) with AV positioners
- –40 to 85 °C (–40 to 185 °F) with TZIDC/EDP300 positioners

Enclosure certification

- IP24 (NEMA 3R): Standard
- IP66 (NEMA 4X): Optional. Refer to **Ordering information** on pages 26 to 38

Agency approvals

cFMus certified for use in general purpose (non-hazardous) locations.

Consult factory for other options.

Weight

Refer to Tables 2 and 3 on page 9.

Options

Shaft position transmitter

Electric (external to positioner)	4 to 20 mA linear output relative to the actuator shaft position. Use AVPT position transmitter as a non-standard option. Only possible on UP2 to 7 if code UP___C___ is not selected. Consult factory for details.
Electric (internal to positioner)	Two-wire unit requiring a 12 to 24 V DC supply and producing a 4 to 20 mA linear output relative to the actuator shaft position.
Pneumatic	Produces a 21 to 103 kPa (3 to 15 psig) or 21 to 186 kPa (3 to 27 psig) linear output relative to the actuator shaft position. Minimum required air supply is 138 kPa (20 psig). The output may be characterized by the user (not available for UP1 actuators).
Potentiometric resistive	A potentiometer internal to the AV1 and AV2 positioners. Gears connect the potentiometer to the positioner output shaft. The position of the potentiometer shaft indicates the actuator shaft position. The relationship between the potentiometer and the output shaft results in one degree of rotation of the output shaft corresponding to approximately 9.9 Ω of resistive change at the potentiometer. Refer to the appropriate AV positioner instruction for more information.

Adjustable alarm/travel switches

Consists of four or two (see **Ordering information** on pages 26 to 39) linkage-driven, cam-operated SPDT microswitches, adjustable over the full stroke of the actuator. Used as alarm contacts or for external position indications.

Contact ratings:

- 15A @ 125/250 V AC @ 60 °C (140 °F)¹
- 0.5A @ 125 V DC @ 60 °C (140 °F)
- 0.25A @ 250 V DC @ 60 °C (140 °F)

Air failure lock

Locks the actuator in its last position when the air supply falls below a preset value. Refer to **Ordering information** on pages 26 to 39 for manual (with remote reset switch) or automatic reset options.

Note. If automatic reset only is selected, the remote reset switch is omitted.

UP1/2	Mechanical latch device with a three-way pneumatic trip valve as the air supply sensor. Trip valve factory preset at 35 psig. Trip valve can also be readjusted at site. Refer to Ordering information on page 28 for pressure switch option on UP2 used to signal an air failure alarm or for status indication. For UP1 the pressure switch is available as an accessory.
UP3/4/5/6/7	Uses a pneumatic trip valve as the air supply sensor that trips a four-way lock-up valve to lock the actuator in the last position. The trip valve is factory preset at 55 psig but can also be readjusted on site ²

¹ Switch contacts must be derated 1.5 A for every 10 °C (18 °F) rise above 60 °C (140 °F)

² Refer to **Ordering information** on pages 30 to 39 for pressure switch option on UP3 to UP7 used to signal an air failure alarm or for status indication. When this option is selected, the pressure switch is installed and set at 55 psig. The pressure switch can be readjusted on site.

...Options

Reserve air tank for air failure option

Available for all but UP1. Drives actuator into the full open or full closed position when the air supply falls below a preset value. Factory preset values are 35 psig for UP2 and 55 psig for UP3/4/5/6/7. Value can also be readjusted at site. Tank sizes are 20.8 L (5.5 gal) for UP2, 30.3 L (8.0 gal) for UP3/4/5 and 64.4 L (17.0 gal) for UP6/7¹.

Alarm pressure switch contact ratings²

- 13 A @ 115/230 V AC @ 60 °C (140 °F)
- 0.5 A @ 110/125 V DC @ 60 °C (140 °F)

Switch contacts must be derated 1.5 A for every 10 °C (18 °F) rise above 60 °C (140 °F)

Strip heaters (thermostatically controlled)

Available for all except UP1 actuators and UPs with explosion-proof TZIDC-200 positioner.

The low temperature operating limit can be extended below 0 °C (32 °F) without heaters if the dew point of the air supply is maintained at least 10 °C (18 °F) below the minimum expected ambient temperature.

UP2	1 heater element, 120 V AC, 500 W
UP3/4/5/6/7	2 heater elements, 120 V AC, 500 W (1000 W total)

Volume boosters and quick exhaust valves

- To decrease stroke time
- Option available on UP6 and UP7
- Refer to Figure 9 for UP6 stroke time. Consult factory for UP7 stroke time

Temperature limits for air failure lock and reserve air tank option

–20 to 70 °C (–4 to 158 °F) for pneumatic trip and lock valves³

Accessories

Coalescing filter/regulator for UP3/4/5/6/7:

- Part No. 1951439D1
- Parker No. 12E37E18AA and PS807P
- Auto float drain
- ½ in NPT connections
- 1132 l/m (40 scfm) capacity
- 17 barg (250 psig) maximum inlet
- 8.6 barg (125 psig) maximum outlet
- With mounting bracket

Coalescing filter for UP1/2

- Part No. 5328563D2
- Parker No. 11F18EC
- Auto float drain
- ¼ in NPT connections
- 1274 l/m (45 scfm) capacity
- 17 barg (250 psig) maximum inlet

Regulator with gage for UP1/2

- Part No. 1951029D5
- Parker No. 06R118AC
- ¼ in NPT connection
- 1500 l/m (53 scfm) capacity
- 17 barg (250 psig) maximum inlet
- 8.6 barg (125 psig) maximum outlet

Pressure switch

Part No. 1941099A2

Pressure gages

- Instrument signal (3 to 15 psi) for AV1 positioner
- Output pressure for AV, TZIDC and EDP300
- Part No. 5326605A4 (instrument one required)
- Part No. 5326605A6 (output, two required)

Speed control

- Regulates time constant of positioner and final control element. Orifices installed directly into the positioner output ports (only for AV positioners)
- Part No. 5327327A1: 1 mm (0.04 in)
- Part No. 5327327A2: Blank (drill to suit)
- For TZIDC and EDP300 positioners the speed control is electronically adjustable (Refer to TZIDC and EDP300 configuration)

¹ Refer to **Ordering information** on pages 28 to 38 for pressure switch option on UP2 to UP7 used to signal an air failure alarm or a status indication.

² Not available in combination with TZIDC-200 explosion-proof positioner. Consult factory for details.

³ For applications at temperatures below –20 °C (–4 °F) add option for strip heater. Refer to UP2 to UP7 **Ordering information** for heater option. For applications at temperatures above 70 °C (158 °F) consult factory.

Shipping weights

Actuator type	Shipping weight in kg (lb)
UP1 with positioner	25 (55)
UP1 with solenoid	23 (50)
UP2 with positioner	45 (100)
UP2 with solenoid	43 (95)
UP3 with positioner	145 (320)
UP3 with solenoid	143 (315)
UP4 with positioner	163 (360)
UP4 with solenoid	162 (355)
UP5 with positioner	336 (741)
UP5 with solenoid	334 (736)
UP6 with positioner	369 (814)
UP6 with solenoid	367 (809)
UP7 with positioner	379 (836)
UP7 with solenoid	377 (831)

Table 2 UP actuator shipping weights

Option	Shipping weight in kg (lb)
Electric shaft position transmitter	0 (0)
Pneumatic shaft position transmitter	5.0 (11.0)
Alarm/Travel switches	1.1 (2.5)
Strip heaters	1.1 (2.5) for UP2 actuator 2.0 (4.5) for all others
Air failure lock	3.6 (8.0) for UP1 actuator 5.0 (11.0) for UP2 actuator 5.9 (13.0) for UP3 and UP4 actuator 6.8 (15.0) for UP5 to UP7 actuator

Table 3 Option shipping weights¹

¹ Add these values to those listed in Table 2 where applicable.

Stroke times

See Figures 4 to 14 for stroke times for UP with AV positioner and solenoid valve control input options.

Stroke time with load for UP with TZIDC positioner

UP1*		
Stroke	81 N·m (60 lbf·ft) @ 414 kPa (60 psi)	102 N·m (75 lbf·ft) @ 552 kPa (80 psi)
5 to 95 %	3 s	4 s

UP2*		
Stroke	347 N·m (256 lbf·ft) @ 414 kPa (60 psi)	479 N·m (353 lbf·ft) @ 552 kPa (80 psi)
5 to 95 %	10 s	12 s

UP3*		
Stroke	637 N·m (470 lbf·ft) @ 414 kPa (60 psi)	854 N·m (630 lbf·ft) @ 552 kPa (80 psi)
5 to 95 %	17 s	19 s

UP4*		
Stroke	1152 N·m (850 lbf·ft) @ 414 kPa (60 psi)	1159 N·m (1150 lbf·ft) @ 552 kPa (80 psi)
5 to 95 %	20 s	23 s

UP5*		
Stroke	2196 N·m (1620 lbf·ft) @ 414 kPa (60 psi)	2956 N·m (2180 lbf·ft) @ 552 kPa (80 psi)
5 to 95 %	16 s	18 s

UP6**		
Stroke	3864 N·m (2850 lbf·ft) @ 414 kPa (60 psi)	5152 N·m (3800 lbf·ft) @ 552 kPa (80 psi)
5 to 95 %	22 s	24 s

UP7**		
Stroke	5495 N·m (4053 lbf·ft) @ 414 kPa (60 psi)	7325 N·m (5403 lbf·ft) @ 552 kPa (80 psi)
5 to 95 %	28 s	30 s

* For faster stroke times select EDP300 positioner option (refer to **Control Input** option in the **Ordering information** on pages 26 to 34)

** Refer to **Ordering information** on pages 36 and 38 for volume booster options for faster stroke times

Notes.

- 1 Supply pressure must be maintained at positioner.
- 2 Diameter of the tubing must be as specified in the installation section of the instruction manual.
- 3 Delivery capacity of the pressure regulator must be as specified in the installation section of the instruction manual.

Stroke times for UP with AV2 positioner

Notes.

- The stroke time curves shown in Figures 4 to 9 were generated from actual tests using an AV232100 positioner. The stroke times are for actuator rotations of 90 % of full stroke (81° of rotation) beginning at 5 % of full stroke (4.5° of rotation) with the actuator at idle (supporting the load) and ending at 95 % of full stroke (85.5° of rotation). To obtain the stroke times shown in the curves:
 - the supply pressure must be maintained not only at the source, but also at the positioner
 - the tubing diameter must be as specified in the installation section of the instruction manual
 - the delivery capacity of the pressure regulator must be as specified in the installation section of the instruction manual
- The values in parentheses are the maximum recommended operating loads at the supply pressures shown.

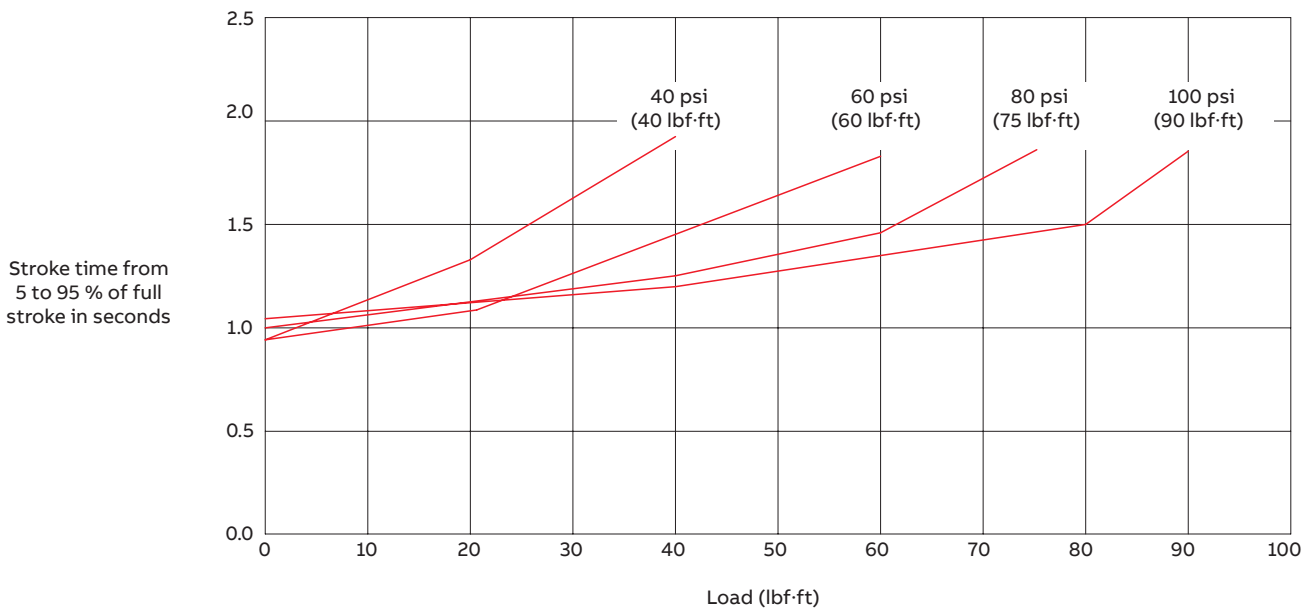


Figure 4 Stroke times for UP1 actuator with AV2 positioner

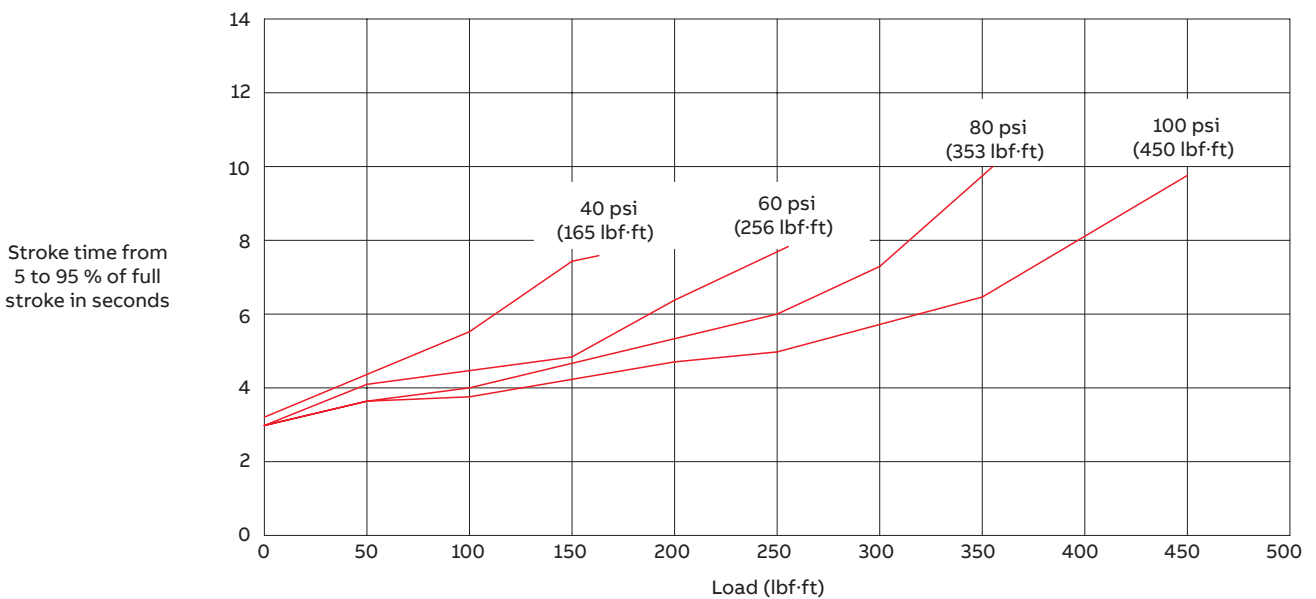


Figure 5 Stroke times for UP2 actuator with AV2 positioner

...Stroke times

...Stroke times for UP with AV2 positioner

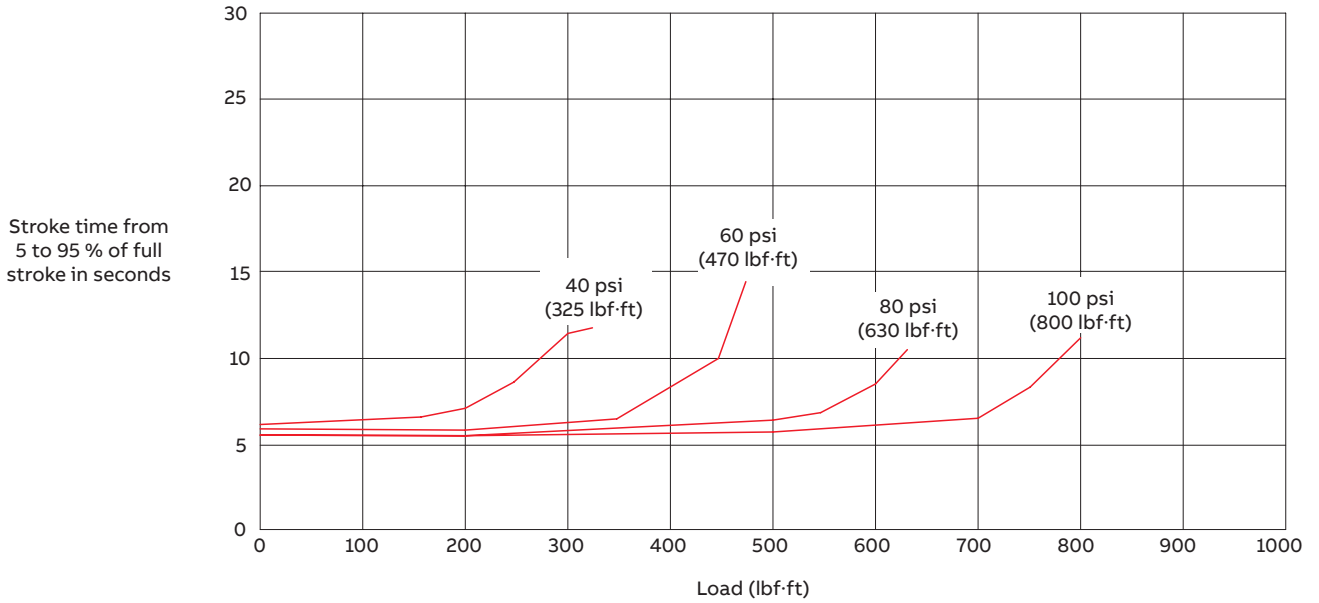


Figure 6 Stroke times for UP3 actuator with AV2 positioner

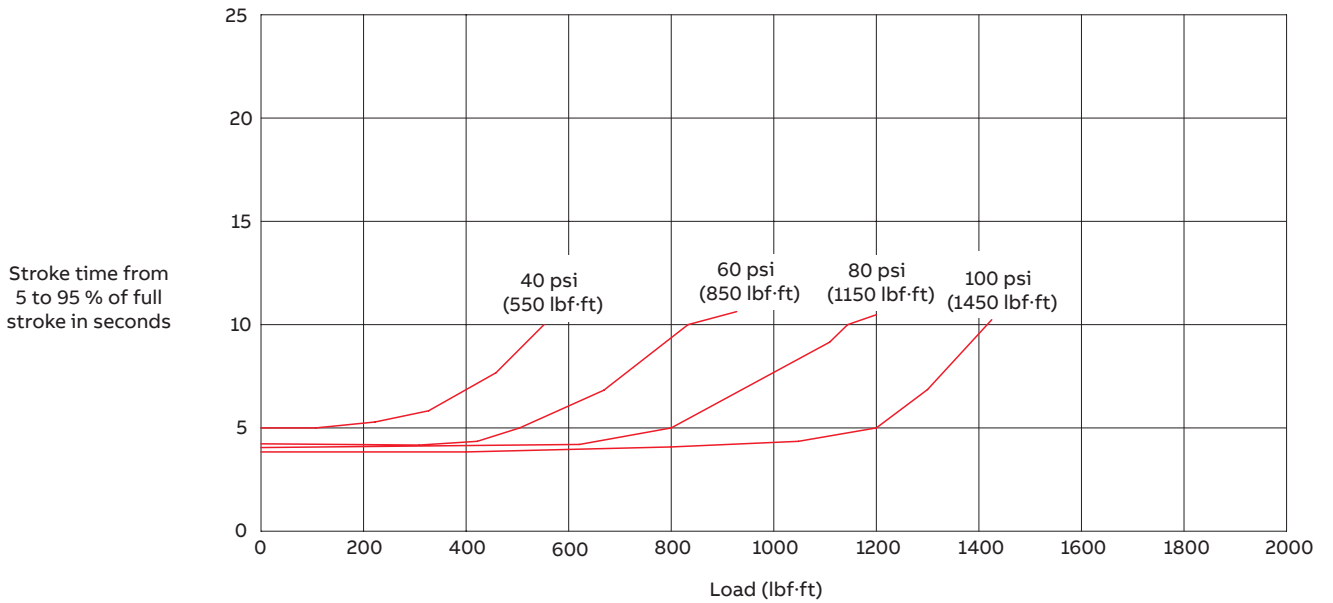


Figure 7 Stroke times for UP4 actuator with AV2 positioner

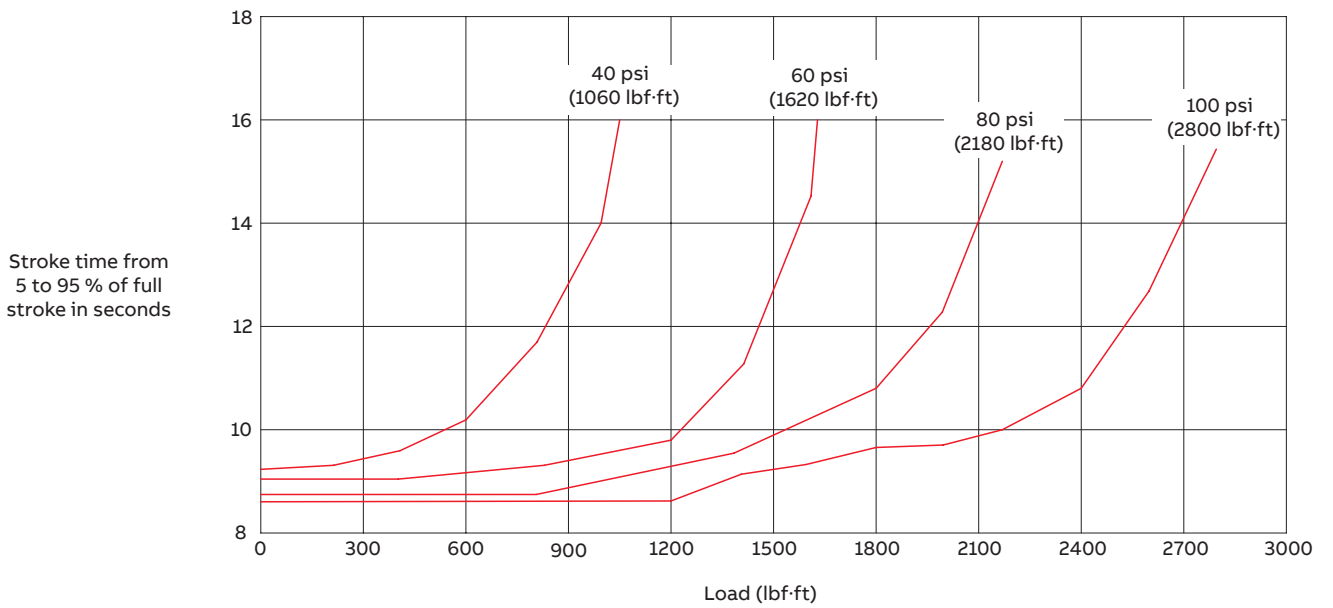


Figure 8 Stroke times for UP5 actuator with AV2 positioner

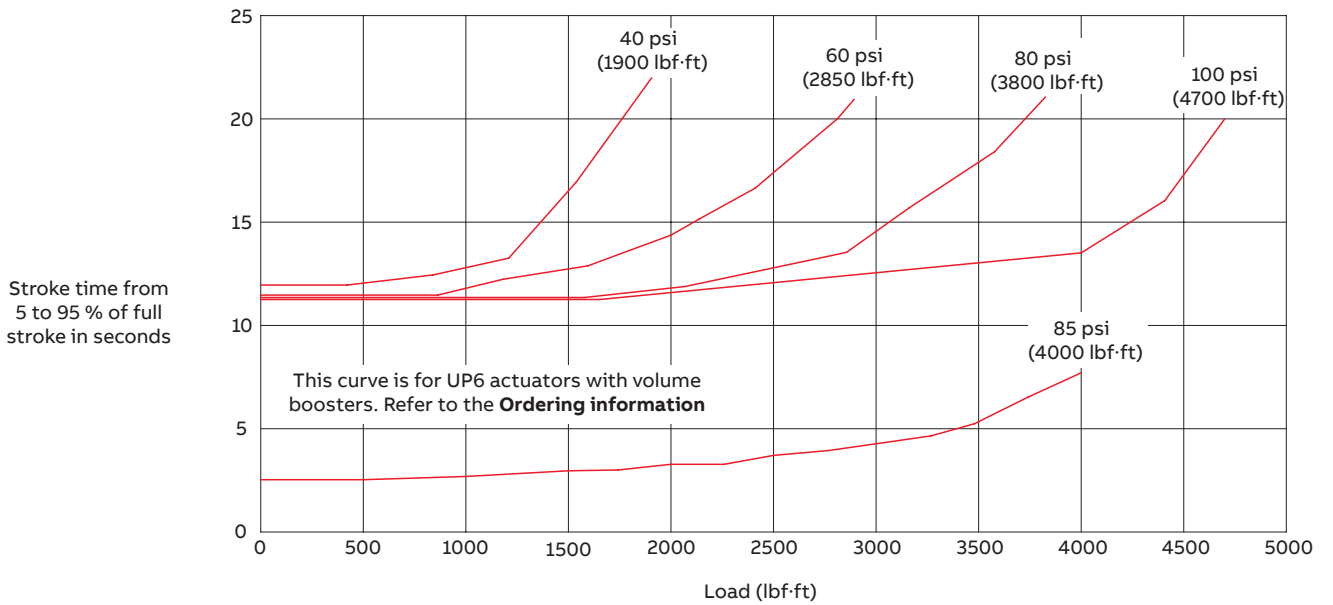


Figure 9 Stroke times for UP6 actuator with AV2 positioner

...Stroke times

Stroke times for UP with solenoid valve

Notes.

- The stroke time curves shown in Figures 10 to 14 were generated from actual tests. The stroke times are for actuator rotations from 0 to 100 % of full stroke (0 to 90° of rotation). To obtain the stroke times shown in the curves:
 - the supply pressure must be maintained not only at the source, but also at the solenoid valve
 - the tubing diameter must be as specified in the installation section of the instruction manual
 - the delivery capacity of the pressure regulator must be as specified in the installation section of the instruction manual
- The values in parentheses are the maximum recommended operating loads at the supply pressures shown.

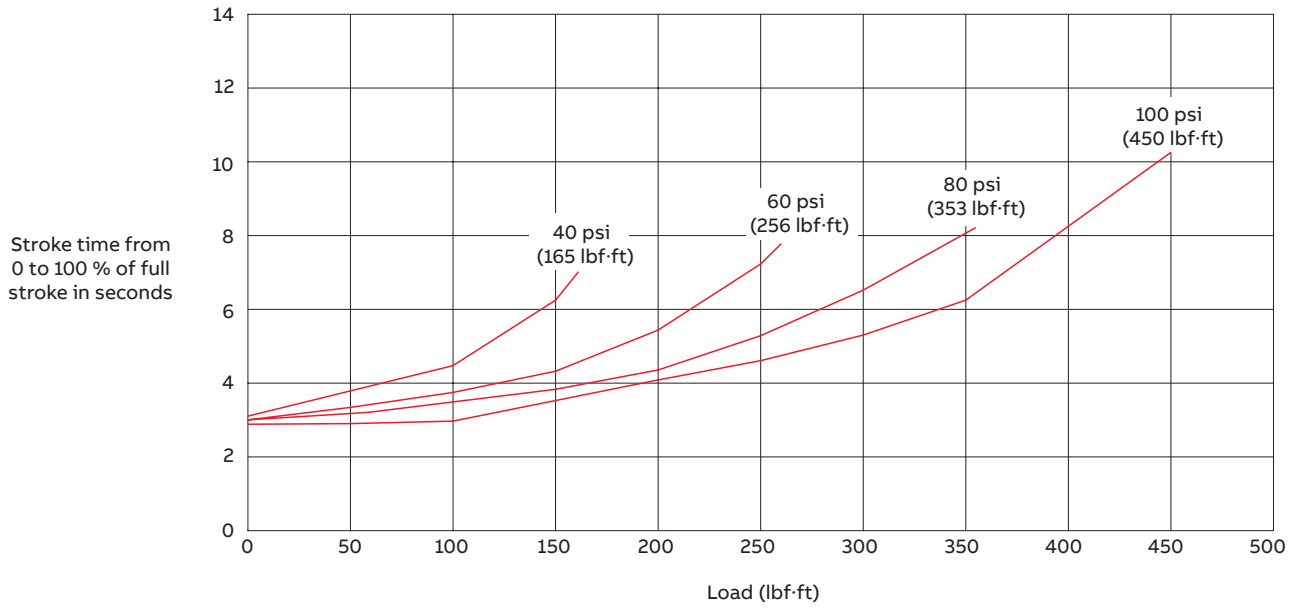


Figure 10 Stroke times for UP2 actuator with solenoid valve

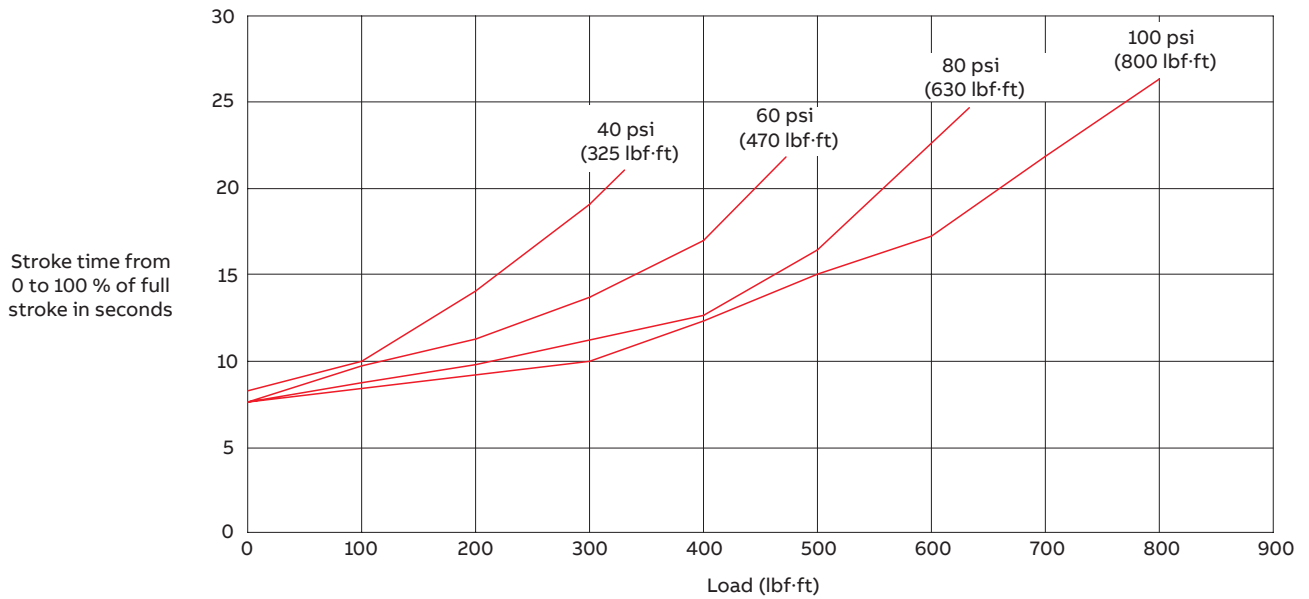


Figure 11 Stroke times for UP3 actuator with solenoid valve

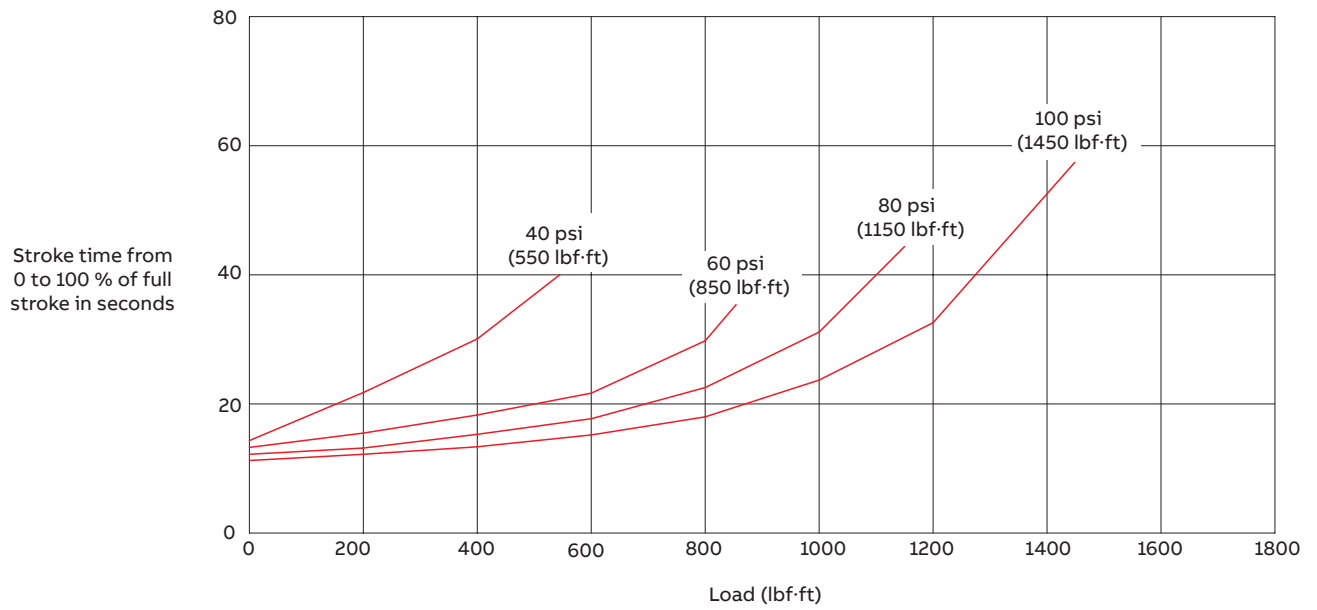


Figure 12 Stroke times for UP4 actuator with solenoid valve

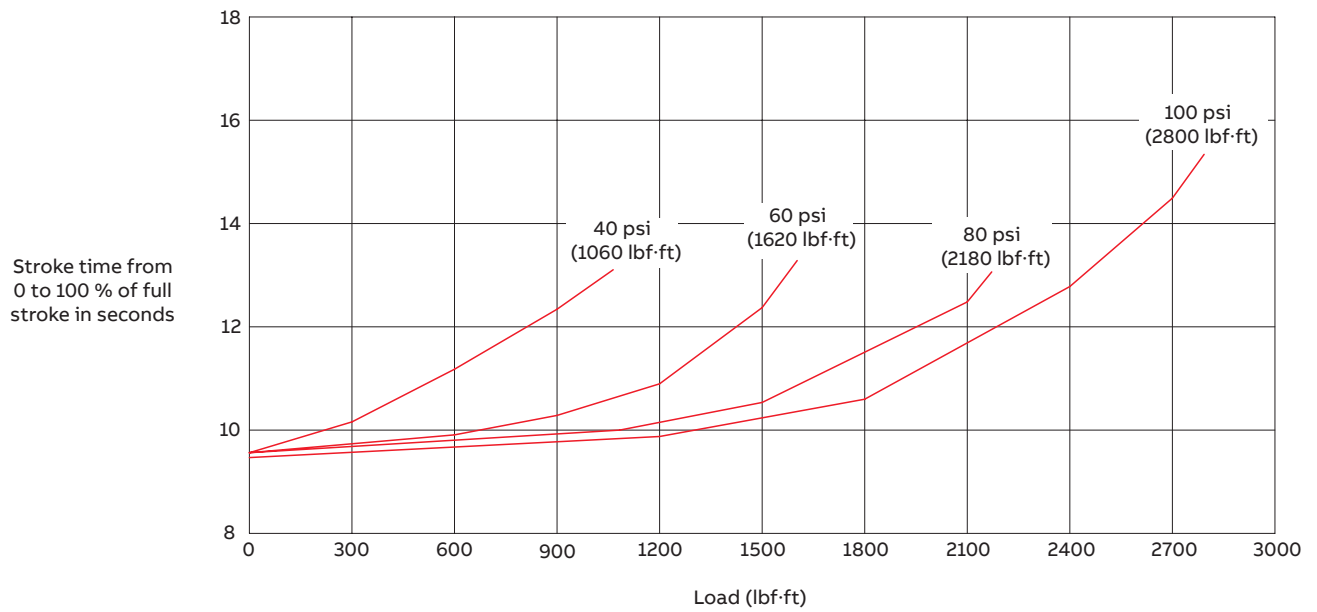


Figure 13 Stroke times for UP5 actuator with solenoid valve

...Stroke times

...Stroke times for UP with solenoid valve

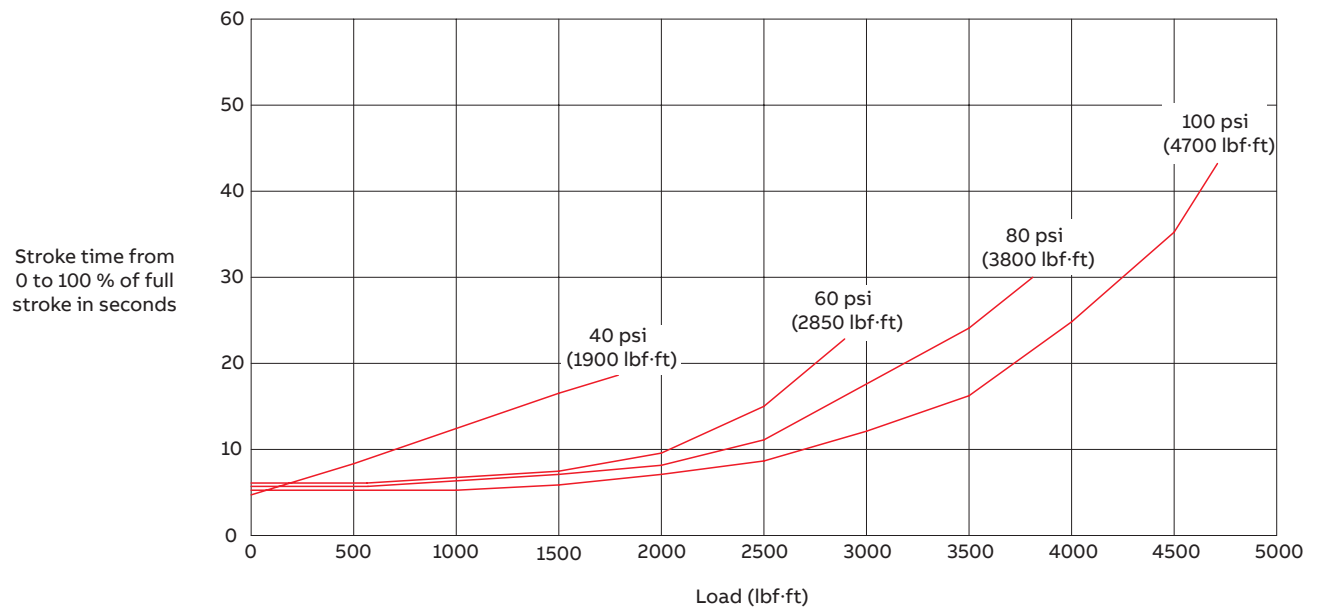
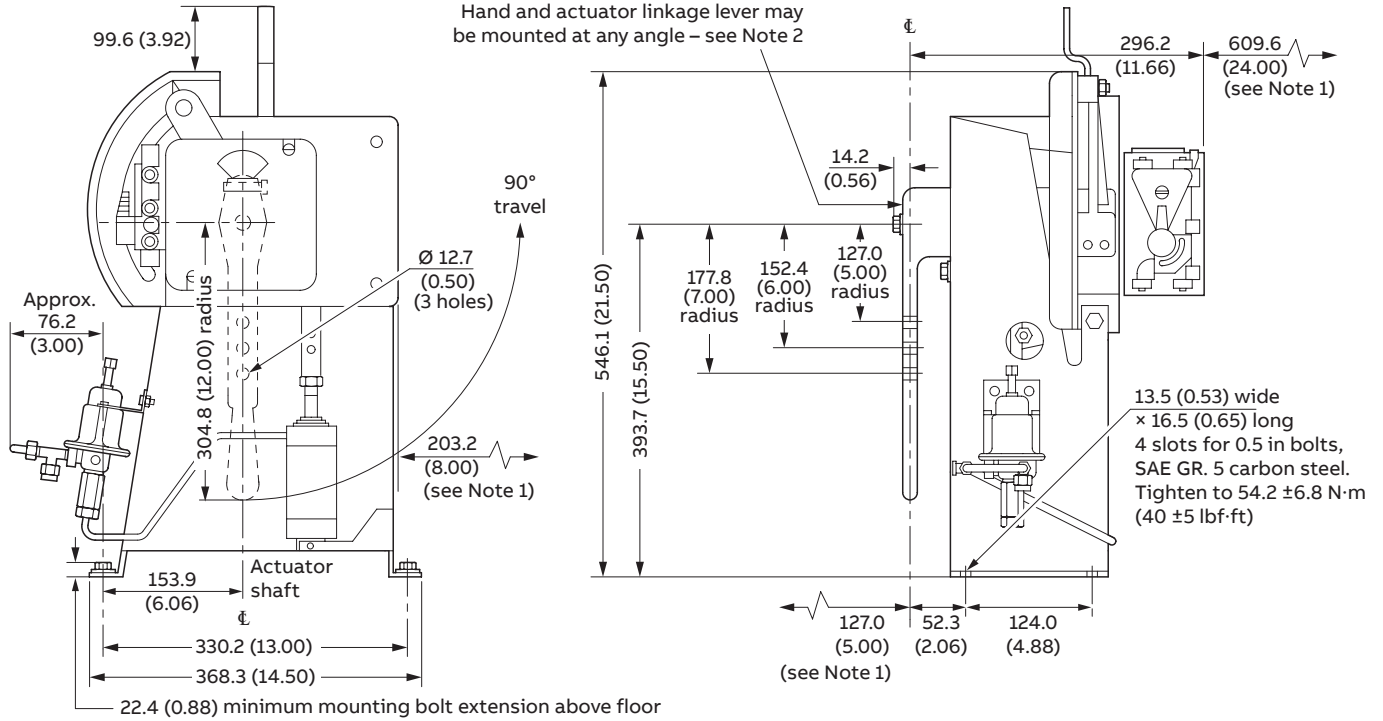


Figure 14 Stroke times for UP6 actuator with solenoid valve

Dimensions

UP1 actuator with positioner and air failure lock

All dimensions in mm (in)



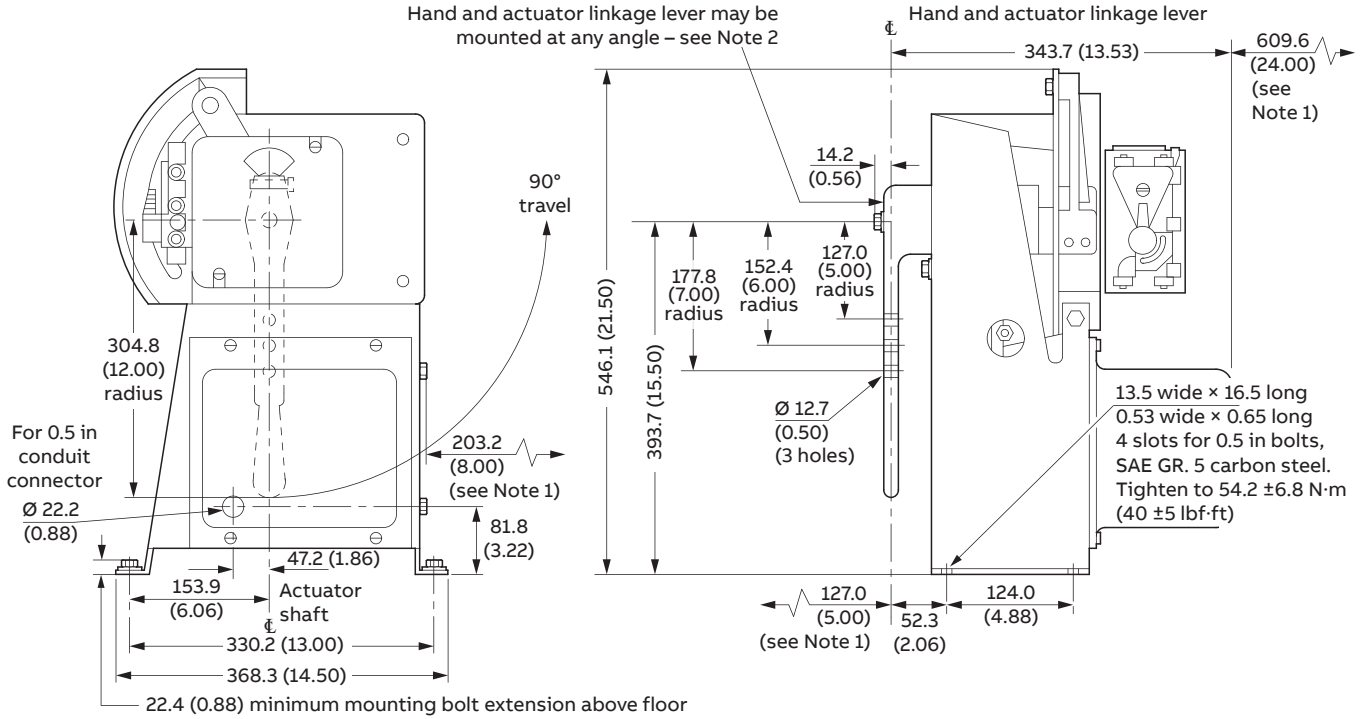
Notes.

- 1 Minimum clearance required for adjustment, inspection, maintenance and operation.
- 2 After positioning actuator lever, tighten the 2 × 0.375 in socket head cap screws to 74.6 ±2.7 N·m (55 ±2 lbf·ft).
- 3 Maximum ambient temperature limit = 82 °C (180 °F). Some actuator/positioner combinations may have a slightly lower maximum ambient temperature limit. Refer to the relevant positioner specification.

...Dimensions

UP1 actuator with electric shaft position transmitter and travel switches

All dimensions in mm (in)

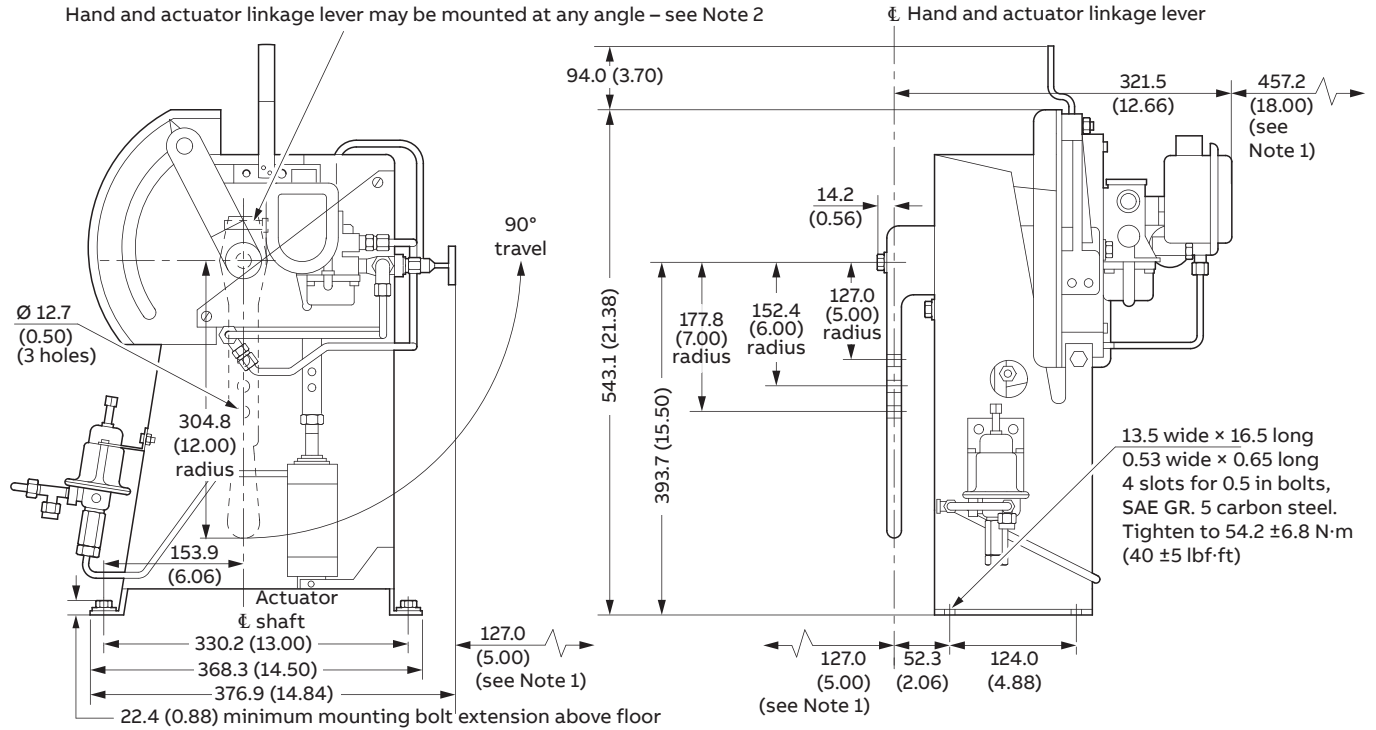


Notes.

- 1 Minimum clearance required for adjustment, inspection, maintenance and operation.
- 2 After positioning actuator lever, tighten the 2 x 0.375 in socket head cap screws to 67.8 \pm 6.8 N·m (50 \pm 5 lbf·ft).
- 3 Maximum ambient temperature limit = 82 °C (180 °F). Some actuator/positioner combinations may have a slightly lower maximum ambient temperature limit. Refer to the relevant positioner specification.

UP1 actuator with solenoid valve and air failure lock

All dimensions in mm (in)



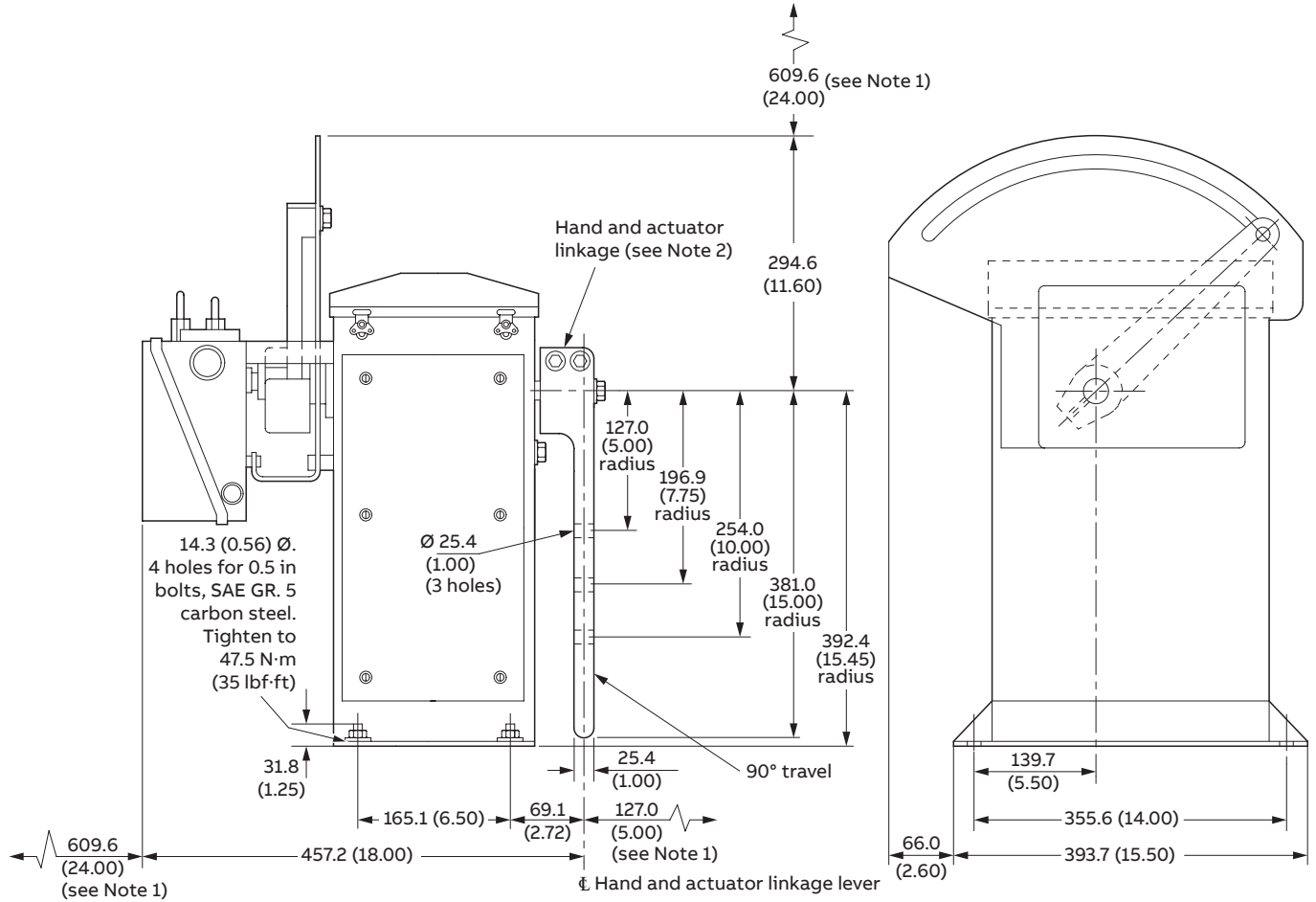
Notes.

- 1 Minimum clearance required for adjustment, inspection, maintenance and operation.
- 2 After positioning actuator lever, tighten the 2 x 0.375 in socket head cap screws to 74.5 ±2.7 N·m (55 ±2 lbf·ft).
- 3 Maximum ambient temperature limit = 82 °C (180 °F).

...Dimensions

UP2 actuator with positioner

All dimensions in mm (in)

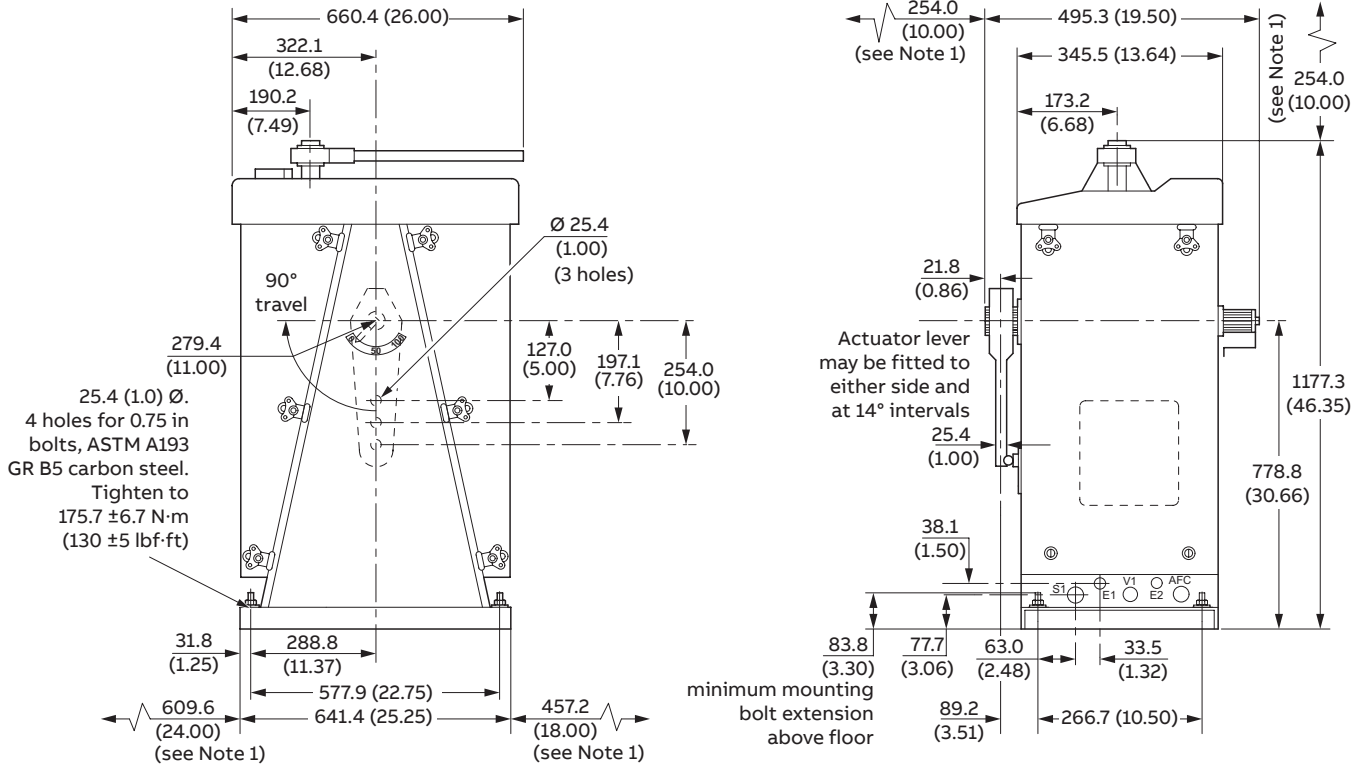


Notes.

- 1 Minimum clearance required for adjustment, inspection, maintenance and operation.
- 2 After positioning actuator lever, tighten the 2 × 0.5 in socket head cap screws to 88.13 N·m (65 lbf·ft).
- 3 Maximum ambient temperature limit = 82 °C (180 °F). Some actuator/positioner combinations may have a slightly lower maximum ambient temperature limit. Refer to the relevant positioner specification.

UP3 and UP4 actuators

All dimensions in mm (in)



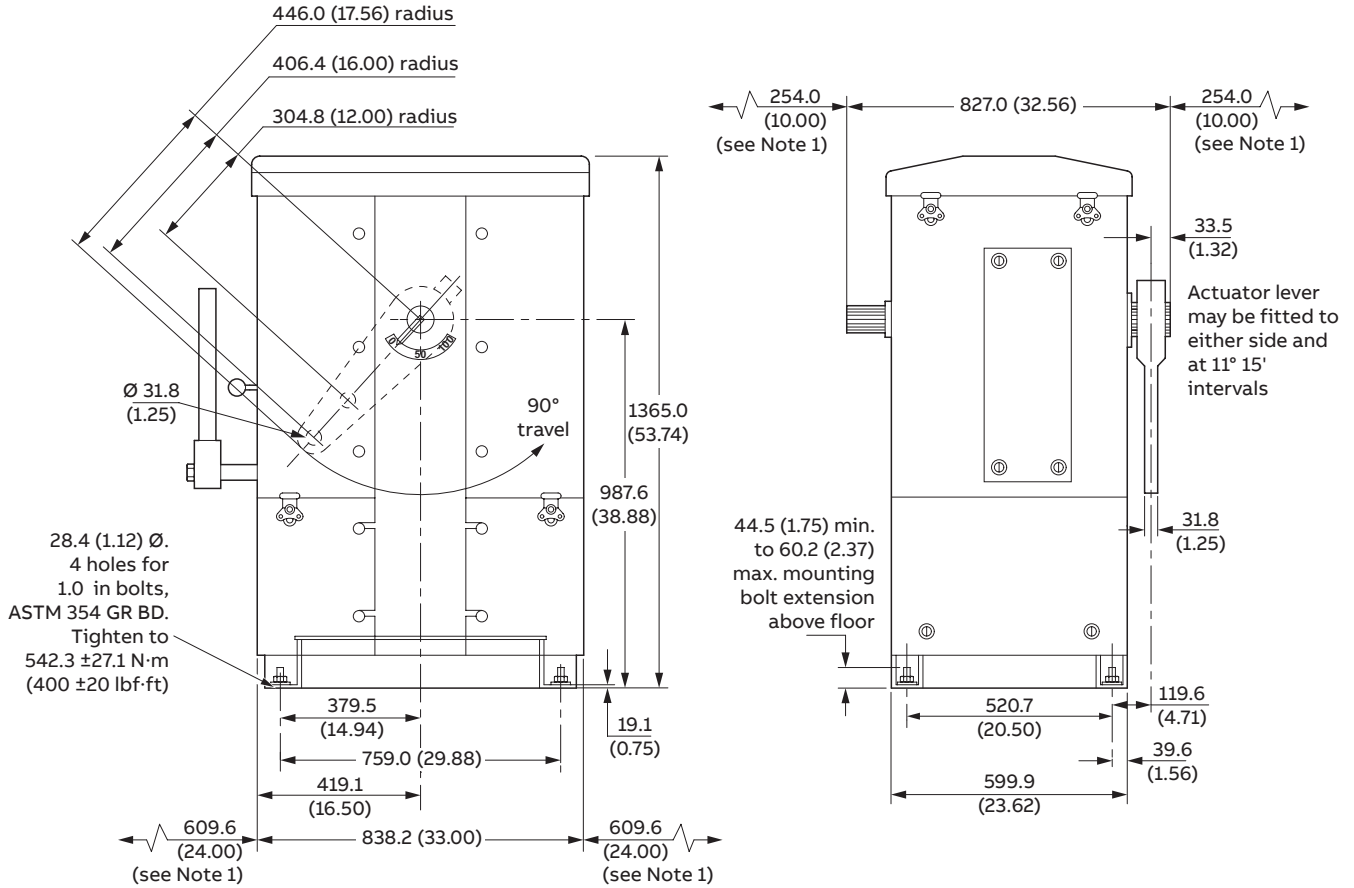
Notes.

- Minimum clearance required for adjustment, inspection, maintenance and operation.
- Maximum ambient temperature limit = 82 °C (180 °F). Some actuator/positioner combinations may have a slightly lower maximum ambient temperature limit. Refer to the relevant positioner specification.
- Do not use other wires in conduit used for UP3/4 with **Control input** mA signal options C, R, T, U, W, Y and Z – see **Ordering information** on pages 30 and 32.
- If shielded cable is used, shield grounding must conform to system requirements.
- After mounting the actuator in place but before tightening the mounting bolts, ensure that the frame will not warp when the bolts are tightened by inserting shims under the frame as necessary. To test for warping, remove the piston rod clevis pin to disconnect the piston and check that the actuator lever shaft is free to move when the frame mounting bolts are tightened.

...Dimensions

UP5, UP6 and UP7 actuators

All dimensions in mm (in)

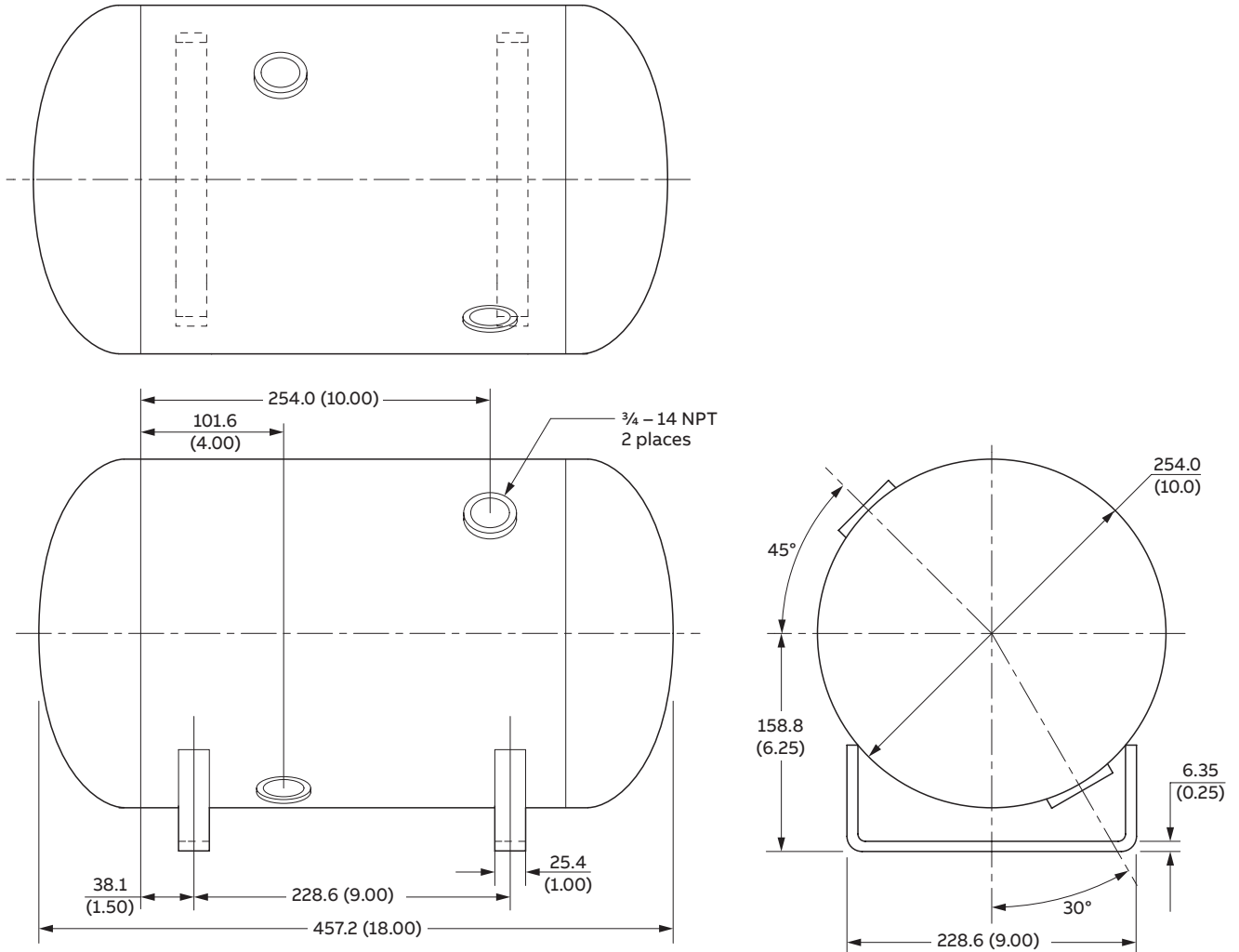


Notes.

- 1 Minimum clearance required for adjustment, inspection, maintenance and operation.
- 2 Maximum ambient temperature limit = 82 °C (180 °F). Some actuator/positioner combinations may have a slightly lower maximum ambient temperature limit. Refer to the relevant positioner specification.
- 3 Do not use other wires in conduit used for UP/5/6/7 with **Control input** mA signal options C, R, T, U, W, Y and Z – see **Ordering information** on pages 34, 36 and 38.
- 4 If shielded cable is used, shield grounding must conform to system requirements.
- 5 After mounting the actuator in place but before tightening the mounting bolts, ensure that the frame will not warp when the bolts are tightened by inserting shims under the frame as necessary. To test for warping, remove the piston rod clevis pin to disconnect the piston and check that the actuator lever shaft is free to move when the frame mounting bolts are tightened.

20.8 liter (5.5 gallon) air tank for UP2 actuators

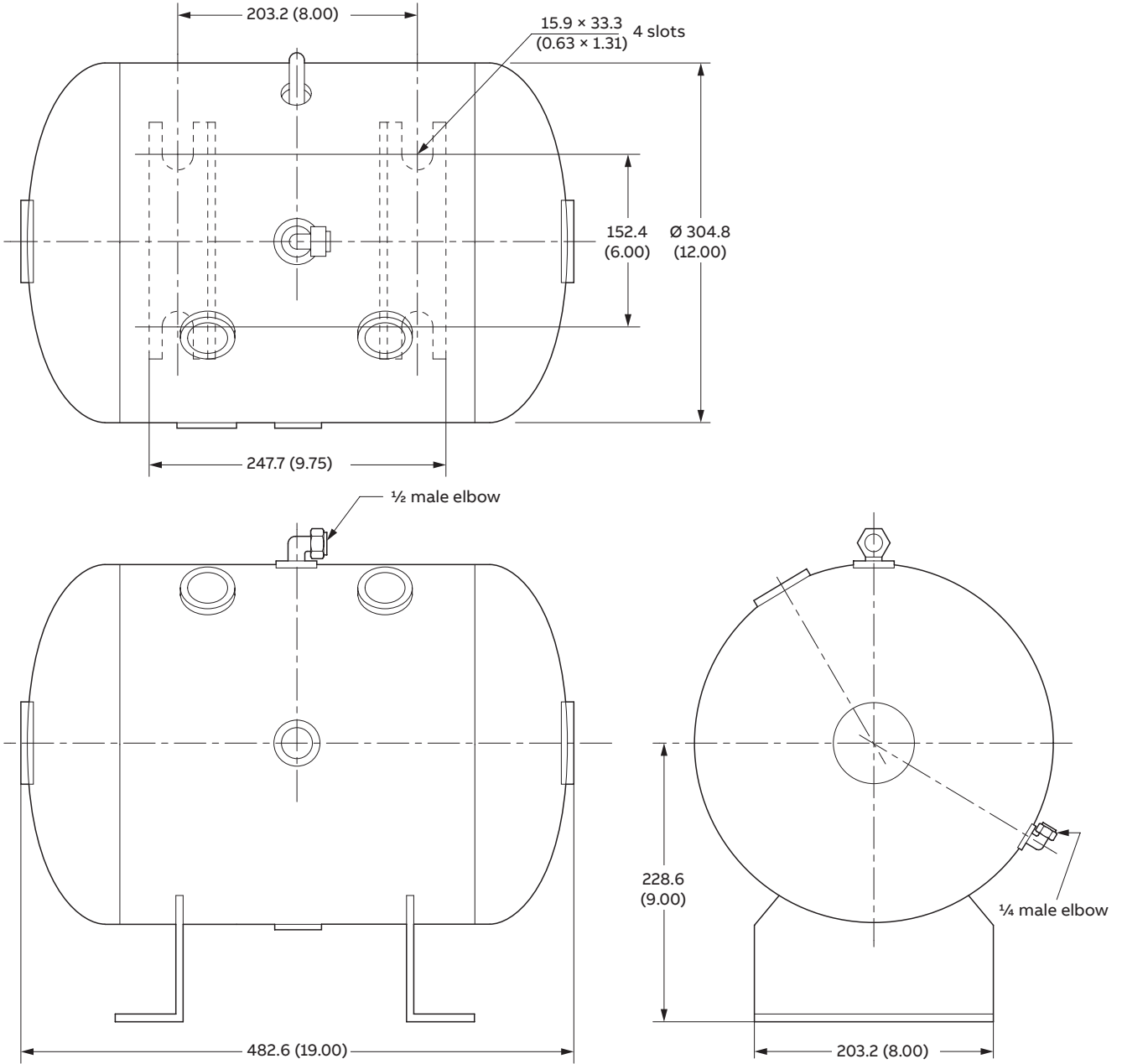
All dimensions in mm (in)



...Dimensions

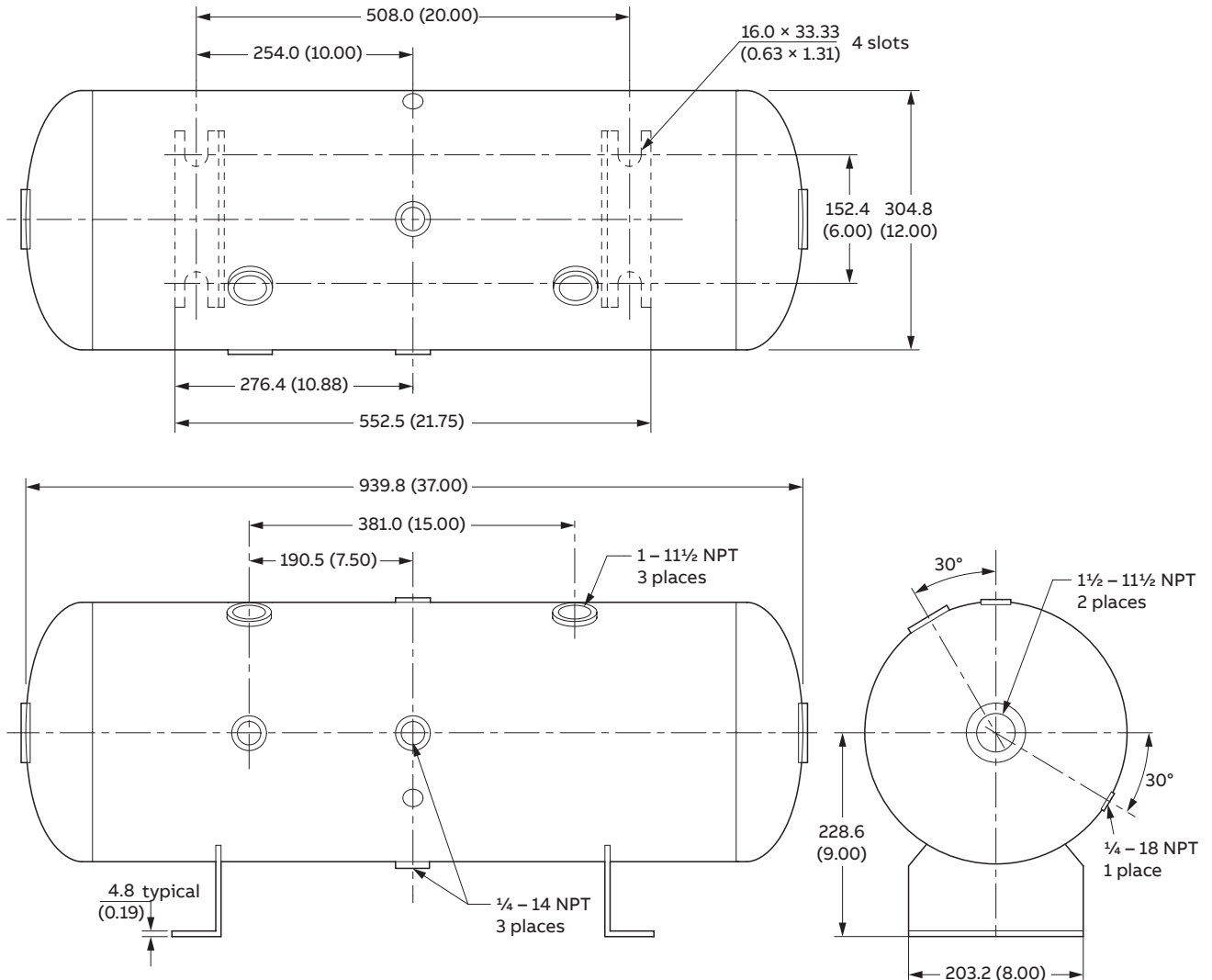
30.3 liter (8.0 gallon) air tank for UP3, UP4 and UP5 actuators

All dimensions in mm (in)



64.4 liter (17.0 gallon) air tank for UP6 and UP7 actuators

All dimensions in mm (in)



Additional ordering information

Pneumatic rotary actuator, 122 N-m (90 lbf-ft) rated torque at 690 kPa (100 psig) supply (Note: 1)	UP1	X	X	X	X	X	X	X	X	XX	XX	XX	XX	XX
Tagging option														
Mylar, adhesive backed aluminum finish										1				
Stainless steel, wire attached (must specify tag text in parameter data)										2				
Stainless steel, permanently attached (must specify tag text in parameter data)										3				
Manual for service and parts list														
English											M5			
Communication option														
Without HART communication (only for EDP300 or TZIDC control input option)													C1	
Mechanical indicator on positioner cover														
Beacon for position indication (option for EDP300 or TZIDC positioners)														B1
Certification														
Certificate of conformance														F2
Air supply filter														
Air supply filter with pressure regulator for field installation														A1

Note 1 Max. supply pressure for UP with TZIDC positioner – 621 kPa (90 psig)
 Note 2 kPa = psi x 6.895
 Note 3 Explosion-proof application Cl 1 Div 1 Gr C-G (refer to TZIDC-200 data sheet)
 Note 4 Not available with **Control input** code R, T, U, W, Y, Z, 5, 6, 8, 9, F, G

Note 5 Not available with **Control input** code 5, 6, 8, 9, F, G
 Note 6 24 V supply required (not included)
 Note 7 Not available with **Control input** code Y, Z
 Note 8 Only in combination with **Control input** code R, T, U, W, Y, Z

UP1 accessories and codes

Installation manual (one copy supplied, at no cost, with order)															IM/UP-EN
Linkage accessories															
Light duty driven lever, for interconnecting between linkage and the final control element															
For shaft diameter 12.7 to 22.2 mm (0.500 to 0.875 in), 4.77 mm (0.188 in) groove pin diameter															5328690A1
For shaft diameter 23.8 to 26.9 mm (0.938 to 1.062 in), 7.97 mm (0.312 in) groove pin diameter															5328690A2
For shaft diameter 28.6 to 38.1 mm (1.125 to 1.500 in), 7.97 mm (0.312 in) groove pin diameter															5328690A3
Light duty linkage components															
Clevis															5313902A1
Clevis pin assembly															5313974A1
Ball and socket															5323123A1
Pipe connector, 2.13 m (7 ft) long															5313940A1
Pipe connector, 3.2 m (10 ft 6 in) long															call factory
Adapter assembly															5314282A1
Reinforcing sleeve															5328639A1
Rod connector, 1.09 m (3 ft 7 in) long															5313932A16
Note. For complete connecting linkage dimensions, specifications and application examples, see References below*															
Accessories															
Supply air filter, coalescing, with bracket – maximum inlet pressure 1725 kPa (250 psi), ¼ – 18 NPT															5328563D2
Supply air regulator with bracket and gage – maximum inlet pressure 1725 kPa (250 psi), ¼ – 18 NPT, secondary pressure 14 to 860 kPa (2 to 125 psi)															1951029D5
Pressure gages – for actuators with positioners															
Instrument 0 to 200 kPa (0 to 30 psig) range (AV only)															5326605A4
Supply 0 to 1100 kPa (0 to 160 psig) range															5326605A5
Output 0 to 1100 kPa (0 to 160 psig) range (2x required)															5326605A6
Speed control orifices – regulates time constant of final control element with AV positioners (installs directly into positioner port)															
1 mm (0.040 in) hole															5327327A1
No hole (drill to suit)															5327327A2
Spare parts															
Rotary vane rebuild kit															258244A1
Vane actuator															5328575F1

References

- Customer information
- Production specification for AV – [DS/AV12-EN](#)
 - Product instruction for UP – [OI/UP](#) (operating instructions) + [IM/UP-EN](#) (installation manual)
 - Production specification for TZIDC – [42/18-84-EN](#) + [CI/TZIDC/110/120-EN](#)
 - Product specification for EDP300 – [OI/EDP300-EN](#) + [CI/EDP300-EN](#)
 - *Connecting linkage technical information – TI-A-UP-rotary actuator connecting linkage (G81-5-1)

Additional ordering information

Pneumatic rotary actuator, 610 N-m (450 lbf-ft) rated torque at 690 kPa (100 psig) supply (Note: 1)	UP2	X	X	X	X	X	X	X	X	XX	XX	XX	XX	XX
Tagging option														
Mylar, adhesive backed aluminum finish										1				
Stainless steel, wire attached (must specify tag text in parameter data)										2				
Stainless steel, permanently attached (must specify tag text in parameter data)										3				
Manual for service and parts list														
English											M5			
Communication option														
Without HART communication (only for EDP300 or TZIDC control input option)													C1	
Mechanical indicator on positioner cover														
Beacon for position indication (option for EDP300 or TZIDC positioners)														B1
Certification														
Certificate of conformance														F2
Air supply filter														
Air supply filter with pressure regulator for field installation														A1

- Note 1 Max. supply pressure for UP with TZIDC positioner – 621 kPa (90 psig)
- Note 2 kPa = psi x 6.895
- Note 3 Explosion-proof application Cl 1 Div 1 Gr C-G (refer to TZIDC-200 data sheet)
- Note 4 Not available with **Control input** code R, T, U, W, Y, Z, 5, 6, 8, 9, F, G
- Note 5 Not available with **Control input** code 5, 6, 8, 9, F, G

- Note 6 24 V supply required (not included)
- Note 7 Not available with **Enclosure rating** code 1 and **Control input** code B, C, R, T, U, W, Y, Z, 5, 6, 8, 9, F, G
- Note 8 Not available with **Control input** code Y, Z
- Note 9 Not suitable for use in hazardous process applications that require FM/CSA approval
- Note 10 Only in combination with **Control input** code R, T, U, W, Y, Z

UP2 accessories and codes

Installation manual (one copy supplied, at no cost, with order)														IM/UP-EN
Linkage accessories														
Medium duty driven lever, for interconnecting between linkage and the final control element														
For shaft diameter 22.2 to 26.9 mm (0.875 to 1.062 in), 7.92 mm (0.312 in) groove pin diameter														5328976A1
For shaft diameter 28.6 to 34.9 mm (1.125 to 1.375 in), 9.52 mm (0.376 in) groove pin diameter														5328976A2
For shaft diameter 36.5 mm (1.438 in), 9.52 mm (0.372 in) groove pin diameter														5328976A3
Medium duty linkage components														
Clevis														197758A1
Clevis pin assembly														197757A1
Ball and socket, self-lubricating														5328986A1
1¼ in pipe connector, 3.08 m (10 ft 6 in) long														5313945A2
1¼ in pipe connector, 6.4 m (21 ft) long														call factory
Adapter														53683A1
Reinforcing sleeve 3.66 m (12 ft) long														call factory
Rod connector, 1.22 m (4 ft) long														5313935A2
Note. For complete connecting linkage dimensions, specifications and application examples, see References below*														
Accessories														
Supply air filter, coalescing, with bracket – maximum inlet pressure 1725 kPa (250 psi), ¼ – 18 NPT														5328563D2
Supply air regulator with bracket and gage – maximum inlet pressure 1725 kPa (250 psi), ¼ – 18 NPT, secondary pressure 14 to 860 kPa (2 to 125 psi)														1951029D5
Pressure gages – for actuators with positioners														
Instrument 0 to 200 kPa (0 to 30 psig) range (AV only)														5326605A4
Supply 0 to 1100 kPa (0 to 160 psig) range														5326605A5
Output 0 to 1100 kPa (0 to 160 psig) range (2x required)														5326605A6
Speed control orifices – regulates time constant of final control element with AV positioners (installs directly into positioner port)														
1 mm (0.040 in) hole														5327327A1
No hole (drill to suit)														5327327A2
Spare parts														
Rotary vane rebuild kit														258244A2
Vane actuator														5328838A1
Spare parts for UP20 with actuator heaters (UP20_ _ _ _ 1_)														
Thermoswitch														662460A1
Solderless terminal														1941401A1

References

- Customer information
 - Production specification for AV – [DS/AV12-EN](#)
 - Product instruction for UP – [OI/UP](#) (operating instructions) + [IM/UP-EN](#) (installation manual)
 - Production specification for TZIDC – [42/18-84-EN](#) + [CI/TZIDC/110/120-EN](#)
 - Product specification for EDP300 – [OI/EDP300-EN](#) + [CI/EDP300-EN](#)
- *Connecting linkage technical information – TI-A-UP-rotary actuator connecting linkage (G81-5-1)

Additional ordering information

Pneumatic rotary actuator, 1085 N-m (800 lbf-ft) rated torque at 690 kPa (100 psig) supply (Note: 1)	UP3	X	X	X	X	X	X	X	X	XX	XX	XX	XX	XX
Tagging option														
Mylar, adhesive backed aluminum finish										1				
Stainless steel, wire attached (must specify tag text in parameter data)										2				
Stainless steel, permanently attached (must specify tag text in parameter data)										3				
Manual for service and parts list														
English											M5			
Communication option														
Without HART communication (only for EDP300 or TZIDC control input option)													C1	
Mechanical indicator on positioner cover														
Beacon for position indication (option for EDP300 or TZIDC positioners)														B1
Certification														
Certificate of conformance														F2
Air supply filter														
Air supply filter with pressure regulator for field installation														A1

- Note 1 Max. supply pressure for UP with TZIDC positioner – 621 kPa (90 psig)
- Note 2 kPa = psi x 6.895
- Note 3 Explosion-proof application Cl 1 Div 1 Gr C-G (refer to TZIDC-200 data sheet)
- Note 4 Not available with **Control input** code R, T, U, W, Y, Z, 5, 6, 8, 9, F, G
- Note 5 Not available with **Control input** code 5, 6, 8, 9, F, G

- Note 6 24 V supply required (not included)
- Note 7 Not available with **Control input** code B, C, R, T, U, W, Y, Z, 5, 6, 8, 9, F, G
- Note 8 Not available with **Control input** code Y, Z
- Note 9 Not suitable for use in hazardous process applications that require FM/CSA approval
- Note 10 Only in combination with **Control input** code R, T, U, W, Y, Z

UP3 accessories and codes

Installation manual (one copy supplied, at no cost, with order)	IM/UP-EN
Linkage accessories	
Medium duty driven lever, for interconnecting between linkage and the final control element	
For shaft diameter 36.5 to 47.6 mm (1.438 to 1.875 in), 12.7 mm (0.500 in) groove pin diameter	5328977A1
For shaft diameter 49.2 to 60.3 mm (1.938 to 2.375 in), 12.7 mm (0.500 in) groove pin diameter	5328977A2
For shaft diameter 61.9 to 73.0 mm (2.439 to 2.875 in), 12.7 mm (0.500 in) groove pin diameter	5328977A3
For shaft diameter 74.6 mm (2.938 in), 12.7 mm (0.500 in) groove pin diameter	5328977A4
Medium duty linkage components	
Clevis	197758A1
Clevis pin assembly	197757A1
Ball and socket, self-lubricating	5328986A1
1¼ in pipe connector, 3.08 m (10 ft 6 in) long	5313945A2
1¼ in pipe connector, 6.4 m (21 ft) long	call factory
Adapter	53683A1
Reinforcing sleeve 3.66 m (12 ft) long	call factory
Rod connector, 1.22 m (4 ft) long	5313935A2
Note. For complete connecting linkage dimensions, specifications and application examples, see References below*	
Accessories	
Supply air regulator/filter (coalescing) with gage – maximum inlet pressure 1725 kPa (250 psi), maximum outlet pressure 860 kPa (125 psi), ½ NPT (high capacity), 40 scfm	1951439D1
Pressure gages – for actuators with positioners	
Instrument 0 to 200 kPa (0 to 30 psig) range (AV only)	5326605A4
Supply 0 to 1100 kPa (0 to 160 psig) range	5326605A5
Output 0 to 1100 kPa (0 to 160 psig) range (2x required)	5326605A6
Speed control orifices – regulates time constant of final control element with AV positioners (installs directly into positioner port)	
1 mm (0.040 in) hole	5327327A1
No hole (drill to suit)	5327327A2
Spare parts	
Cylinder rebuild kit for ABB/Bailey cylinder part #5328775A1 (see Note 1 below)	258240A1
Replacement cylinder	614B069U33
Rebuild kit for replacement cylinder (see Note 2 below)	614B069U26
Spare parts for UP30 with actuator heaters (UP30_1_1_1)	
Thermoswitch	662460A1
Heater	1943002A1
Solderless terminal	1941401A1

References

- Customer information
 - Production specification for AV – [DS/AV12-EN](#)
 - Product instruction for UP – [OI/UP](#) (operating instructions) + [IM/UP-EN](#) (installation manual)
 - Production specification for TZIDC – [42/18-84-EN](#) + [CI/TZIDC/110/120-EN](#)
 - Product specification for EDP300 – [OI/EDP300-EN](#) + [CI/EDP300-EN](#)
- *Connecting linkage technical information – TI-A-UP-rotary actuator connecting linkage (G81-5-1)

Note 1 Suitable for UP3 with ABB/Bailey cylinders prior to serial #08W006221 (April 2008)

Note 2 Suitable for UP3 with new cylinder design; cylinder can be identified by silver color of tube and square end flanges

...Ordering information

UP4

Pneumatic rotary actuator, 1966 N·m (1450 lbf·ft) rated torque at 690 kPa (100 psig) supply (Note: 1) UP4		X	X	X	X	X	X	X	XX	XX	XX	XX	XX	XX
Enclosure rating														
Standard, IP24 (NEMA 3R)		0												
IP66 (NEMA 4X) including CE conformity		1												
Non-standard option		X												
Control input														
0.2 to 1.03 bar (3 to 15 psig) with AV1121__0 pneumatic positioner	(Note: 2)	A												
0.2 to 1.86 bar (3 to 27 psig) with AV1221__0 pneumatic positioner	(Note: 2)	B												
4 to 20 mA with AV2321__0 positioner, fail safe (open/close) on loss of mA signal		C												
4 to 20 mA with EDP300 positioner, fail safe (open/close) on loss of mA signal		R												
4 to 20 mA with EDP300 positioner, fail-in-place on loss of mA signal		T												
4 to 20 mA with TZIDC positioner, fail safe (open/close) on loss of mA signal		U												
4 to 20 mA with TZIDC positioner, fail-in-place on loss of mA signal	(Note: 1)	W												
4 to 20 mA with TZIDC-200 (EXP), fail safe (open/close) on loss of mA input	(Note: 1)	Y												
4 to 20 mA with TZIDC-200 (EXP), fail-in-place on loss of mA input	(Notes: 1, 3)	Z												
On/Off solenoid, 120 V AC, single coil, fail safe (open/close) on loss of coil voltage	(Notes: 1, 3)	5												
On/Off solenoid, 115/125 V DC, single coil fail safe (open/close) on loss of coil voltage		6												
On/Off solenoid, 120 V AC, dual coil fail-in-place on loss of coil voltage		8												
On/Off solenoid, 115/125 V DC, dual coil fail-in-place on loss of coil voltage		9												
On/Off solenoid, 220 V AC 50 Hz/240 V AC 60 Hz single coil, fail safe (open/close) on loss of coil voltage		F												
On/Off solenoid, 220 V AC 50 Hz/240 V AC 60 Hz dual coil, fail-in-place on loss of coil voltage		G												
Non-standard option		X												
Shaft position transmitter														
None		0												
Potentiometric resistive output, built into positioner (for UP4_A/B/C only)	(Note: 4)	A												
4 to 20 mA output, built into AV/TZIDC/EPD300 positioners (for UP4_A/B/C/R/T/U/W/Y/Z only)	(Notes: 5, 6)	B												
0.2 to 1 bar (3 to 15 psig) pneumatic position transmitter (AV112000 positioner) (for UP4_A___ only)	(Note: 7)	C												
Non-standard option		X												
Adjustable travel switches														
None		0												
Include, 4-SPDT	(Note: 8)	1												
Include, 2-SPDT	(Note: 8)	2												
Non-standard option		X												
Air failure control														
None		0												
Air failure lock-up (hold last position) with manual or automatic reset function after air recovery (includes remote reset switch and pressure switch)	(Note: 8)	1												
Air failure lock-up (hold last position) with automatic reset function after air recovery (without pressure switch for air failure alarm)		A												
Reserve air tank, actuator goes to 0 or 100 % (field selectable) upon loss of air supply (with pressure switch for air failure alarm)	(Note: 8)	4												
Reserve air tank, actuator goes to 0 or 100 % (field selectable) upon loss of air supply (without pressure switch for air failure alarm)		C												
Non-standard option		X												
Actuator heaters (Note: 9)														
None		0												
120 V AC	(Note: 8)	1												
240 V AC	(Note: 8)	2												
Non-standard option		X												
Tubing material														
Standard tubing		0												
Stainless steel tubing and fittings (304SS)	(Note: 5)	S												
Non-standard option		X												

Additional ordering information

Pneumatic rotary actuator, 1966 N·m (1450 lbf·ft) rated torque at 690 kPa (100 psig) supply (Note: 1) UP4		X	X	X	X	X	X	X	X	XX	XX	XX	XX	XX	XX
Tagging option															
Mylar, adhesive backed aluminum finish										1					
Stainless steel, wire attached (must specify tag text in parameter data)										2					
Stainless steel, permanently attached (must specify tag text in parameter data)										3					
Manual for service and parts list															
English											M5				
Communication option															
Without HART communication (only for EDP300 or TZIDC control input option)	(Note: 10)											C1			
Mechanical indicator on positioner cover															
Beacon for position indication (option for EDP300 or TZIDC positioners)	(Note: 10)												B1		

...Additional ordering information

Pneumatic rotary actuator, 1966 N-m (1450 lbf-ft) rated torque at 690 kPa (100 psig) supply (Note: 1)														UP4	X	X	X	X	X	X	X	XX	XX	XX	XX	XX
Certification																										
Certificate of conformance																									F2	
Air supply filter																										
Air supply filter with pressure regulator for field installation																									A1	
UP4 high torque																										
High torque option – 2440 N-m (1800 lbf-ft) rated torque at 552 kPa (80 psi) max.																									HT	

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| <p>Note 1 Max. supply pressure for UP with TZIDC positioner – 621 kPa (90 psig)</p> <p>Note 2 kPa = psi x 6.895</p> <p>Note 3 Explosion-proof application Cl 1 Div 1 Gr C-G (refer to TZIDC-200 data sheet)</p> <p>Note 4 Not available with Control input code R, T, U, W, Y, Z, 5, 6, 8, 9, F, G</p> <p>Note 5 Not available with Control input code 5, 6, 8, 9, F, G</p> <p>Note 6 24 V supply required (not included)</p> | <p>Note 7 Not available with Control input code B, C, R, T, U, W, Y, Z, 5, 6, 8, 9, F, G</p> <p>Note 8 Not available with Control input code Y, Z</p> <p>Note 9 Not suitable for use in hazardous process applications that require FM/CSA approval</p> <p>Note 10 Only in combination with Control input code R, T, U, W, Y, Z</p> <p>Note 11 HT option custom built UP4 with 10 × 8 in cylinder. Consult factory for stroke times.
Not in combination with the following options:
Control input code 5, 6, 8, 9, F, G
Adjustable travel switches code 1, 2
Actuator heaters code 1, 2
Tubing material code S</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

UP4 accessories and codes

Installation manual (one copy supplied, at no cost, with order)	IM/UP-EN
Linkage accessories	
Medium duty driven lever, for interconnecting between linkage and the final control element	
For shaft diameter 36.5 to 47.6 mm (1.438 to 1.875 in), 12.7 mm (0.500 in) groove pin diameter	5328977A1
For shaft diameter 49.2 to 60.3 mm (1.938 to 2.375 in), 12.7 mm (0.500 in) groove pin diameter	5328977A2
For shaft diameter 61.9 to 73.0 mm (2.439 to 2.875 in), 12.7 mm (0.500 in) groove pin diameter	5328977A3
For shaft diameter 74.6 mm (2.938 in), 12.7 mm (0.500 in) groove pin diameter	5328977A4
Medium duty linkage components	
Clevis	197758A1
Clevis pin assembly	197757A1
Ball and socket, self-lubricating	5328986A1
1¼ in pipe connector, 3.08 m (10 ft 6 in) long	5313945A2
1¼ in pipe connector, 6.4 m (21 ft) long	call factory
Adapter	53683A1
Reinforcing sleeve 3.66 m (12 ft) long	call factory
Rod connector, 1.22 m (4 ft) long	5313935A2
Note. For complete connecting linkage dimensions, specifications and application examples, see References below*	
Accessories	
Supply air regulator/filter (coalescing) with gage – maximum inlet pressure 1725 kPa (250 psi), maximum outlet pressure 860 kPa (125 psi), ½ NPT (high capacity), 40 scfm	1951439D1
Pressure gages – for actuators with positioners	
Instrument 0 to 200 kPa (0 to 30 psig) range (AV only)	5326605A4
Supply 0 to 1100 kPa (0 to 160 psig) range	5326605A5
Output 0 to 1100 kPa (0 to 160 psig) range (2x required)	5326605A6
Speed control orifices – regulates time constant of final control element with AV positioners (installs directly into positioner port)	
1 mm (0.040 in) hole	5327327A1
No hole (drill to suit)	5327327A2
Spare parts	
Cylinder rebuild kit for ABB/Bailey cylinder part #5328769A1 (see Note 1 below)	258241A1
Replacement cylinder	614B069U34
Rebuild kit for replacement cylinder (see Note 2 below)	614B069U28
Spare parts for UP40 with actuator heaters (UP40_1_1)	
Thermoswitch	662460A1
Heater	1943002A1
Solderless terminal	1941401A1

References

- Customer information
- Production specification for AV – [DS/AV12-EN](#)
 - Product instruction for UP – [OI/UP](#) (operating instructions)) + [IM/UP-EN](#) (installation manual)
 - Production specification for TZIDC – [42/18-84-EN](#) + [CI/TZIDC/110/120-EN](#)
 - Product specification for EDP300 – [OI/EDP300-EN](#) + [CI/EDP300-EN](#)
- *Connecting linkage technical information – TI-A-UP-rotary actuator connecting linkage (G81-5-1)
- Note 1 Suitable for UP4 with ABB/Bailey cylinders prior to serial #08W000704 (February 2008). Not suitable for UP4 with HT option – consult factory
- Note 2 Suitable for UP4 with new cylinder design; cylinder can be identified by silver color of tube and square end flanges.
Not suitable for UP4 with HT option – consult factory

Additional ordering information

Pneumatic rotary actuator, 3796 N-m (2800 lbf-ft) rated torque at 690 kPa (100 psig) supply (Note: 1)		UP5	X	X	X	X	X	X	X	X	XX	XX	XX	XX	XX
Tagging option															
Mylar, adhesive backed aluminum finish											1				
Stainless steel, wire attached (must specify tag text in parameter data)											2				
Stainless steel, permanently attached (must specify tag text in parameter data)											3				
Manual for service and parts list															
English												M5			
Communication option															
Without HART communication (only for EDP300 or TZIDC control input option)	(Note: 10)												C1		
Mechanical indicator on positioner cover															
Beacon for position indication (option for EDP300 or TZIDC positioners)	(Note: 10)													B1	
Certification															
Certificate of conformance															F2
Air supply filter															
Air supply filter with pressure regulator for field installation	(Note: 5)														A1

Note 1 Max. supply pressure for UP with TZIDC positioner – 621 kPa (90 psig)
 Note 2 kPa = psi x 6.895
 Note 3 Explosion-proof application Cl 1 Div 1 Gr C-G (refer to TZIDC-200 data sheet)
 Note 4 Not available with **Control input** code R, T, U, W, Y, Z, 5, 6, 8, 9, F, G
 Note 5 Not available with **Control input** code 5, 6, 8, 9, F, G

Note 6 24 V supply required (not included)
 Note 7 Not available with **Control input** code B, C, R, T, U, W, Y, Z, 5, 6, 8, 9, F, G
 Note 8 Not available with **Control input** code Y, Z
 Note 9 Not suitable for use in hazardous process applications that require FM/CSA approval
 Note 10 Only in combination with **Control input** code R, T, U, W, Y, Z

UP5 accessories and codes

Installation manual (one copy supplied, at no cost, with order)		IM/UP-EN
Linkage accessories		
Heavy duty driven lever, for interconnecting between linkage and the final control element For shaft diameter 49.2 to 101.6 mm (1.938 to 4.000 in)		6628241A1
Heavy duty linkage components		
Clevis		6614440A1
Clevis pin assembly		6634507A1
Ball and socket, self-lubricating		5328987A1
2½ in – 8 NPT pipe connector, 4.06 m (13 ft 4 in) long		6615890A4
2½ in – 8 NPT adapter		6614437A1
Reinforcing sleeve 3.66 m (12 ft) long		call factory
2½ in – 8 NPT pipe connector, 6.10 m (20 ft) long		call factory
Retaining ring		197164A125
Note. For complete connecting linkage dimensions, specifications and application examples, see References below*		
Accessories		
Supply air regulator/filter (coalescing) with gage – maximum inlet pressure 1725 kPa (250 psi), maximum outlet pressure 860 kPa (125 psi), ½ NPT (high capacity), 40 scfm		1951439D1
Pressure gages – for actuators with positioners		
Instrument 0 to 200 kPa (0 to 30 psig) range (AV only)		5326605A4
Supply 0 to 1100 kPa (0 to 160 psig) range		5326605A5
Output 0 to 1100 kPa (0 to 160 psig) range (2x required)		5326605A6
Speed control orifices – regulates time constant of final control element with AV positioners (installs directly into positioner port)		
1 mm (0.040 in) hole		5327327A1
No hole (drill to suit)		5327327A2
Spare parts		
Cylinder rebuild kit for ABB/Bailey cylinder part #5328952A1 (see Note 1 below)		258241A1
Replacement cylinder		614B069U35
Rebuild kit for replacement cylinder (see Note 2 below)		614B069U29
Spare parts for UP50 with actuator heaters (UP50_ _ _ _1_)		
Thermoswitch		662460A1
Heater		1943002A1
Solderless terminal		1941401A1

References

- Customer information
- Production specification for AV – [DS/AV12-EN](#)
 - Product instruction for UP – [OI/UP](#) (operating instructions) + [IM/UP-EN](#) (installation manual)
 - Production specification for TZIDC – [42/18-84-EN](#) + [CI/TZIDC/110/120-EN](#)
 - Product specification for EDP300 – [OI/EDP300-EN](#) + [CI/EDP300-EN](#)
 - *Connecting linkage technical information – TI-A-UP-rotary actuator connecting linkage (G81-5-1)
- Note 1 Suitable for UP5 with ABB/Bailey cylinders prior to serial #08W006423 (June 2008)
 Note 2 Suitable for UP5 with new cylinder design; cylinder can be identified by silver color of tube and square end flanges

Additional ordering information

Pneumatic rotary actuator, 6372 N-m (4700 lbf-ft) rated torque at 690 kPa (100 psig) supply (Note: 1)										UP6	X	X	X	X	X	X	X	XX	XX	XX	XX	XX
Tagging option (each tag may have 4 lines each comprising 25 characters)																						
Mylar, adhesive backed aluminum finish																		1				
Stainless steel, wire attached (must specify tag text in parameter data)																		2				
Stainless steel, permanently attached (must specify tag text in parameter data)																		3				
Manual for service and parts list																						
English																		M5				
Communication option																						
Without HART communication (only for EDP300 or TZIDC control input option)																		(Note: 16)			C1	
Mechanical indicator on positioner cover																						
Beacon for position indication (option for EDP300 or TZIDC positioners)																		(Note: 16)			B1	
Certification																						
Certificate of conformance																					F2	
Air supply filter																						
Air supply filter with pressure regulator for field installation																		(Note: 6)			A1	

- Note 1 Max. supply pressure for UP with TZIDC positioner – 621 kPa (90 psig)
- Note 2 Includes master/slave installation kit, pt no. 258458_1
- Note 3 kPa = psi x 6.895
- Note 4 Explosion-proof application Cl 1 Div 1 Gr C-G (refer to TZIDC-200 data sheet)
- Note 5 Not available with **Control input** code 0, R, T, U, W, Y, Z, 5, 6, 8, 9, F, G
- Note 6 Not available with **Control input** code 0, 5, 6, 8, 9, F, G
- Note 7 24 V supply required (not included)
- Note 8 Not available with **Control input** code 0, B, C, R, T, U, W, Y, Z, 5, 6, 8, 9, F, G

- Note 9 Not available with **Control input** code Y, Z
- Note 10 Not available with **Control input** code 0, Y, Z
- Note 11 Not available on UP6_0_ _ _ _ _
- Note 12 Not available with **Control input** code 0, 5, 6, 8, 9, F, G, Y, Z
- Note 13 Not available on UP6_0_ _ _ _ _ , volume boosters available on UP6_A, B, C, U, W, Y, Z only
- Note 14 Not suitable for use in hazardous process applications that require FM/CSA approval
- Note 15 Not available with **Control input** code 5, 6, 8, 9, F, G
- Note 16 Only in combination with **Control input** code R, T, U, W, Y, Z

UP6 accessories and codes

Installation manual (one copy supplied, at no cost, with order)																		IM/UP-EN			
Linkage accessories																					
Heavy duty driven lever, for interconnecting between linkage and the final control element For shaft diameter 49.2 to 101.6 mm (1.938 to 4.000 in)																		6628241A1			
Heavy duty linkage components																					
Clevis																		6614440A1			
Clevis pin assembly																		6634507A1			
Ball and socket, self-lubricating																		5328987A1			
2½ in – 8 NPT pipe connector, 4.06 m (13 ft 4 in) long																		call factory			
2½ in – 8 NPT adapter																		6614437A1			
Reinforcing sleeve 3.66 m (12 ft) long																		call factory			
2½ in – 8 NPT pipe connector, 6.10 m (20 ft) long																		call factory			
Retaining ring																		197164A125			
Note. For complete connecting linkage dimensions, specifications and application examples, see References below*																					
Accessories																					
Supply air regulator/filter (coalescing) with gage – maximum inlet pressure 1725 kPa (250 psi), maximum outlet pressure 860 kPa (125 psi), ½ NPT (high capacity), 40 scfm																		1951439D1			
Pressure gages – for actuators with positioners																					
Instrument 0 to 200 kPa (0 to 30 psig) range (AV only)																		5326605A4			
Supply 0 to 1100 kPa (0 to 160 psig) range																		5326605A5			
Output 0 to 1100 kPa (0 to 160 psig) range (2x required)																		5326605A6			
Speed control orifices – regulates time constant of final control element with AV positioners (installs directly into positioner port)																					
1 mm (0.040 in) hole																		5327327A1			
No hole (drill to suit)																		5327327A2			
Spare parts																					
Cylinder rebuild kit for ABB/Bailey cylinder part #5328945A1 (see Note 1 below)																		258242A1			
Replacement cylinder																		614B069U36			
Rebuild kit for replacement cylinder (see Note 2 below)																		614B069U30			
Spare parts for UP60 with actuator heaters (UP60_ _ _ _ 1_)																					
Thermoswitch																		662460A1			
Heater																		1943002A1			
Solderless terminal																		1941401A1			

References

- Customer information
 - Production specification for AV – [DS/AV12-EN](#)
 - Product instruction for UP – [OI/UP](#) (operating instructions) + [IM/UP-EN](#) (installation manual)
 - Production specification for TZIDC – [42/18-84-EN](#) + [CI/TZIDC/110/120-EN](#)
 - Product specification for EDP300 – [OI/EDP300-EN](#) + [CI/EDP300-EN](#)

*Connecting linkage technical information– TI-A-UP-rotary actuator connecting linkage (G81-5-1)

- Note 1 Suitable for UP6 with ABB/Bailey cylinders prior to serial #08W000564 (March 2008)
- Note 2 Suitable for UP6 with new cylinder design; cylinder can be identified by silver color of tube and square end flanges

Additional ordering information

Pneumatic rotary actuator, 7326 N-m (5400 lbf-ft) rated torque at 552 kPa (80 psig) supply (Note: 1)	UP7	X	X	X	X	X	X	X	X	XX	XX	XX	XX	XX
Tagging option (each tag may have 4 lines each comprising 25 characters)														
Mylar, adhesive backed aluminum finish										1				
Stainless steel, wire attached (must specify tag text in parameter data)										2				
Stainless steel, permanently attached (must specify tag text in parameter data)										3				
Manual for service and parts list														
English											M5			
Communication option														
Without HART communication (only for EDP300 or TZIDC control input option)														C1
Mechanical indicator on positioner cover														
Beacon for position indication (option for EDP300 or TZIDC positioners)														B1
Certification														
Certificate of conformance														F2
Air supply filter														
Air supply filter with pressure regulator for field installation														A1

- Note 1 Max. supply pressure for UP7 – 552 kPa (80 psig)
- Note 2 kPa = psi x 6.895
- Note 3 Explosion-proof application Cl 1 Div 1 Gr C-G (refer to TZIDC-200 data sheet)
- Note 4 Not available with **Control input** code R, T, U, W, Y, Z, 5, 6, 8, 9, F, G
- Note 5 Not available with **Control input** code 5, 6, 8, 9, F, G
- Note 6 24 V supply required (not included)
- Note 7 Not available with **Control input** code B, C, R, T, U, W, Y, Z, 5, 6, 8, 9, F, G

- Note 8 Not available with **Control input** code Y, Z
- Note 9 Not available with **Control input** code 5, 6, 8, 9, F, G, Y, Z
- Note 10 Volume boosters recommended on UP7_A, B, C, R, T, U, W, Y, Z only
- Note 11 Not suitable for use in hazardous process applications that require FM/CSA approval
- Note 12 Only in combination with **Control input** code R, T, U, W, Y, Z

UP7 accessories and codes

Installation manual (one copy supplied, at no cost, with order)	IM/UP-EN
Linkage accessories	
Heavy duty driven lever, for interconnecting between linkage and the final control element For shaft diameter 49.2 to 101.6 mm (1.938 to 4.000 in)	6628241A1
Heavy duty linkage components	
Clevis	6614440A1
Clevis pin assembly	6634507A1
Ball and socket, self-lubricating	5328987A1
Retaining ring	197164A125
Note. For complete connecting linkage dimensions, specifications and application examples, see References below*	
Accessories	
Supply air regulator/filter (coalescing) with gage – maximum inlet pressure 1725 kPa (250 psi), maximum outlet pressure 860 kPa (125 psi), ½ NPT (high capacity), 40 scfm	1951439D1
Pressure gages – for actuators with positioners	
Instrument 0 to 200 kPa (0 to 30 psig) range (AV only)	5326605A4
Supply 0 to 1100 kPa (0 to 160 psig) range	5326605A5
Output 0 to 1100 kPa (0 to 160 psig) range (2x required)	5326605A6
Speed control orifices – regulates time constant of final control element with AV positioners (installs directly into positioner port)	
1 mm (0.040 in) hole	5327327A1
No hole (drill to suit)	5327327A2
Spare parts	
Replacement cylinder	call factory
Rebuild kit for replacement cylinder (square caps and silver color)	call factory
Spare parts for UP70 with actuator heaters (UP70_1_)	
Thermoswitch	662460A1
Heater	1943002A1
Solderless terminal	1941401A1

References

- Customer information
- Production specification for AV – [DS/AV12-EN](#)
 - Product instruction for UP – [OI/UP](#) (operating instructions) + [IM/UP-EN](#) (installation manual)
 - Production specification for TZIDC – [42/18-84-EN](#) + [CI/TZIDC/110/120-EN](#)
 - Product specification for EDP300 – [OI/EDP300-EN](#) + [CI/EDP300-EN](#)
 - *Connecting linkage technical information – TI-A-UP-rotary actuator connecting linkage (G81-5-1)

Acknowledgments

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