

T PTU-I EN

Power Technology Upgrade series

Pneumatic rack and pinion actuators
PT045 U → PT1000 U models

Application

Rotary pneumatic actuators for automation (on/off or modulating duties) of industrial valves such as ball valves, butterfly valves and plug valves as used in process industries like chemical, petrolchemical, pharmaceutical, water treatment, oil & gas.

The Power Technology Upgrade series actuators are available in two configurations: double acting and single acting.

Mechanical Spring Return is for fail-safe applications and can be supplied for "Fail Close" or "Fail Open" safety function.

Double acting actuators can be used for a "Fail Last" Position safety function.

Special features

- Alodur hard anodized extruded aluminum body for corrosion protection, low friction and wearing resistance
- Dual piston rack and pinion design for compact construction and symmetric mounting.
- Fully machined teeth on piston racks and pinion shaft for accurate positioning, low backlash and maximum engagement.
- Two independent external travel stop adjustments.
- Universal and anti-blowout drive shaft with multiple valve connection options.
- Identical body and end caps for double acting and spring return configuration to allow field conversion.
- Stainless steel fasteners for high corrosion resistance.
- Multiple bearings and guides for high cycles and low friction
- Modular preloaded springs.
- Extended working temperature range as standard.

Versions

- Spring return:
 - 90°, 120°, 135° and 180° rotation.
- Double acting:
 - 90°, 120°, 135° and 180° rotation,

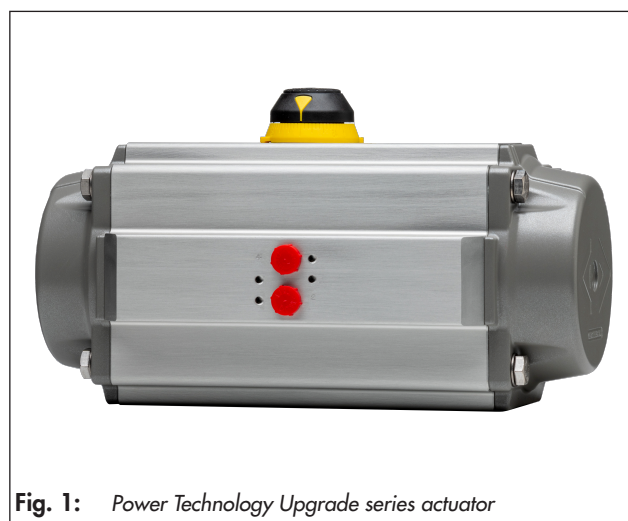


Fig. 1: Power Technology Upgrade series actuator

Further versions

- Actuator with extra travel stop limitations (R100; R50; RC100),
- Fast acting,
- Low working temperature LLT2,
- High working temperature HT,
- Special painting according to ISO 12944,
- Water operated actuator,
- Natural gas operated actuator.

Complementary parts

- Gearbox,
- Block and safety lock-out system,
- Lock out system on adjustment screws.

Principle of operation

1. DOUBLE ACTING

Refer to Fig. 2.

In case of the double acting configuration air pressure is necessary for both strokes (A and B).

2. SINGLE ACTING

Refer to Fig. 3.

When air pressure is supplied through port "2" (A') into the actuator body, the linear force applied on the piston surface generates the pinion rotation, driving the valve to a defined position. At the same time the actuator springs are compressed.

When air pressure is discharged (B'), the springs are automatically released, driving the rack and pistons back to the original position and thus the valve to the fail-safe position.

Direction of action and stroke adjustment

The standard rotating direction for the PTU Series actuators is clockwise to close.

Standard PTU Series actuators are designed for 90° rotating angle, with travel stop allowing adjustment for -5° up to +15° on the close position and for +5° up to -15° on the open position as per Fig. 4. For PT045 U stroke adjustment is only available on request.

For spring return actuator in case of pressure, power or signal failure the springs drive the actuator in the fail position that can be FAIL OPEN or FAIL CLOSE.

Power operating media

Use dry or lubricated air or inert gas.

- Make sure the operating media is compatible with the actuator internal parts and lubricant.
- In case of pressure medium different than Group 2 fluids according to the PED 2014/68/EU, contact AIR TORQUE.
- The operating media must have a dew point equal to 20°C (-4°F) or at least 10°C (18°F) below the ambient temperature.
- The maximum particle size contained into the operating media must not exceed 30 µm.

Further information

The actuators can be operated in different ways:

- direct mounting of control devices (for example a solenoid valve or a manifold) with NAMUR interface,
- threaded connections (to pressurize port "2" and "4") with air lines from separate electro-pneumatic control system.

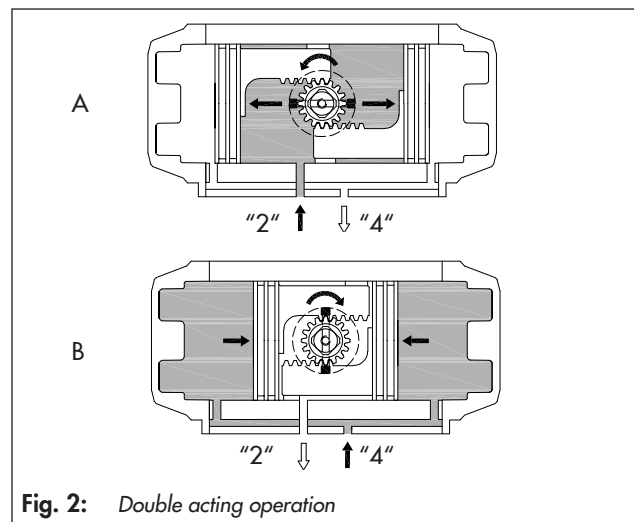


Fig. 2: Double acting operation

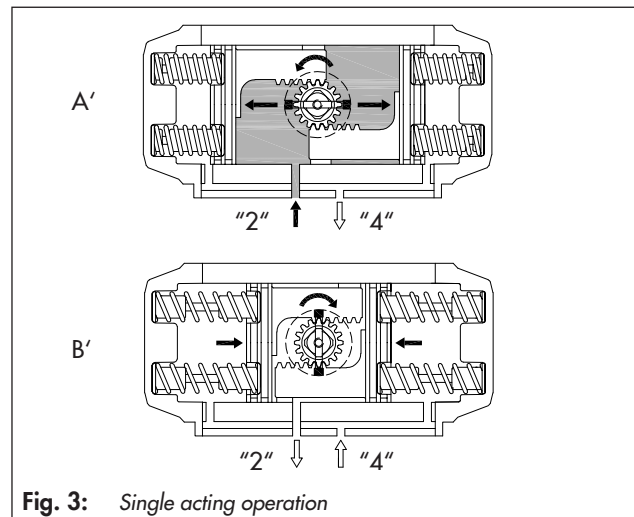


Fig. 3: Single acting operation

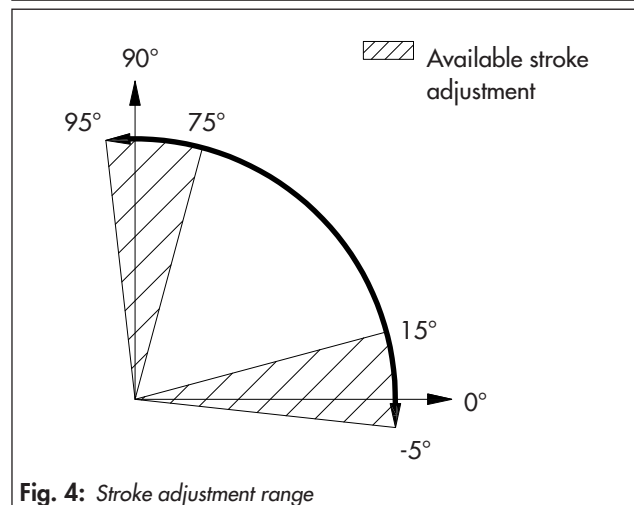


Fig. 4: Stroke adjustment range

Installation

Refer to the EB AT-RP-PTU mounting and operating instructions.

Ordering text

Refer to the Catalogue PTU-E-XX for actuators available options and ordering codes.

Further versions

- **Extra travel stop limitations (R100/R50/RC100)**

R50/R100

Actuator travel stop limitations are available in both opening or closing directions for standard assembly (clockwise to close) in order to provide maximum flexibility.

the R50 and R100 allows to limit the actuator stroke in opening direction (from 90° to 0°).

The R50 allow to limit the 45% of the stroke (from 90° to 45° stroke range).

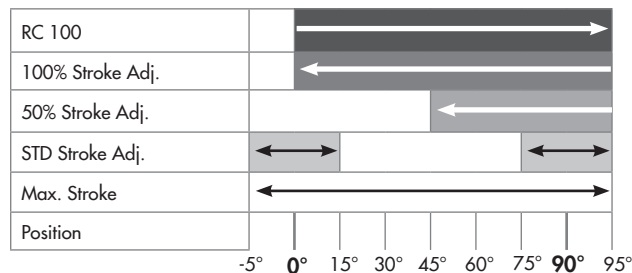
The R100 allow to limit the 100% of the stroke (from 90° to 0° stroke range).

both R50 and R100 extra travel stop adjustments are equipped with protective plugs at the two adjustment screws ends in order to protect the two ends and to avoid potential cut due to screws sharp edges.

The R50 and R100 can be directly supplied mounted on the actuators or supplied as kits to retrofit sold actuators.

RC100

The RC100 allows to limit the 100% of the stroke in closing direction (from 90° to 0° stroke range).



TYPICAL APPLICATION: any application where an extra travel stop opening or closing position is required.

- **Fast acting**

The Fast Acting (FA) actuators are special actuators able to stroke faster respect the standard actuators. They are available both in double acting and in spring return configurations.

This type of actuators has enlarged ports and internal canalization which allows an higher flow rate of the the actuator and so a quicker operation in closing and/or opening direction.

TYPICAL APPLICATION: any application where actuator quick action is required

- **Low and high working temperature configurations**

In case minimum working temperature up to -60°C or maximum working temperature up to +150°C are required, the following special product configuration are available:

- LLT2 version for extreme low operating temperature range:
-60° C (-76° F) → +80° C (+176° F);
LLT2 version actuators have stainless steel drive shaft.
Aluminium drive shaft actuator version (LLT2A) can be

supplied on request in order to achieve a more competitive price.

LLT2 and LLT2A version actuators have the same technical features except for the drive shaft material and extra bushings for LLT2A.

- HT version for high operating temperature range:
- 15° C (+5° F) → +150° C (+302° F).

TYPICAL APPLICATION: where the required working temperature exceeds the actuator standard working temperature range (-40°C / +80°C)

- **Special painting according to ISO 12944-2**

Different protection levels available in order to meet the field corrosion resistance requirements.

the protection levels are different combination of materials and painting cycles/types.

According to the ISO 12944-2 the standard available protection levels with single layer painting go approx. from the C3 level up to C5 level.

Special paint systems are available according to customer specification, including multilayer painting.

- **Water operated actuator**

Standard PTU actuators are operated with dry air or inert gas. Special actuator configurations are available to operate with water as supply media.

Contact Air Torque for further detailed information.

- **Natural gas operated actuator**

Standard PTU actuators are operated with dry aie or inert gas. Special actuator configurations are available to operate with natural gas (sweet and dry or sour) as supply media.

Contact Air Torque for further detailed information.

Complementary parts

- **Actuator with lock out system on adjustment screws**

In order to permanently lock the actuator in position, the actuator can be supplied with a special locking device by using a padlock and therefore preventing unwanted operation.

The lock out system on adjustment screws can be directly supplied mounted on the actuators or supplied as kits to retrofit sold actuators.



Fig. 24: Actuator with lock out system on adjustment screws

- **Actuator with block and safety lock-out system**

The block and safety lock-out system permits to lock the actuator and the valve in specific cases, despite the fail action of the actuator.

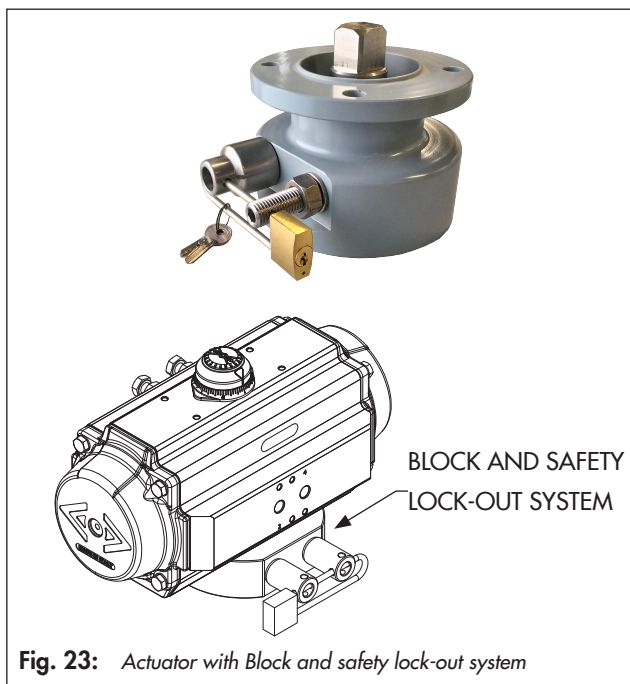


Fig. 23: Actuator with Block and safety lock-out system

- **Actuator with declutchable gearbox**

It is a manual override system designed to provide manual operation to stroke the actuator and the valve. The gearbox can have a vital role to stroke the actuator and the valve in the safe position when the supply pressure is not available in case of any emergency situation. The actuator and the valve are operated rotating a handwheel.

AIR TORQUE can provide the actuator packed with the declutchable gear box (buyout item).

The gearbox valve interface and connection (ISO flange and/or valve stem adaption) are defined in the purchase order.

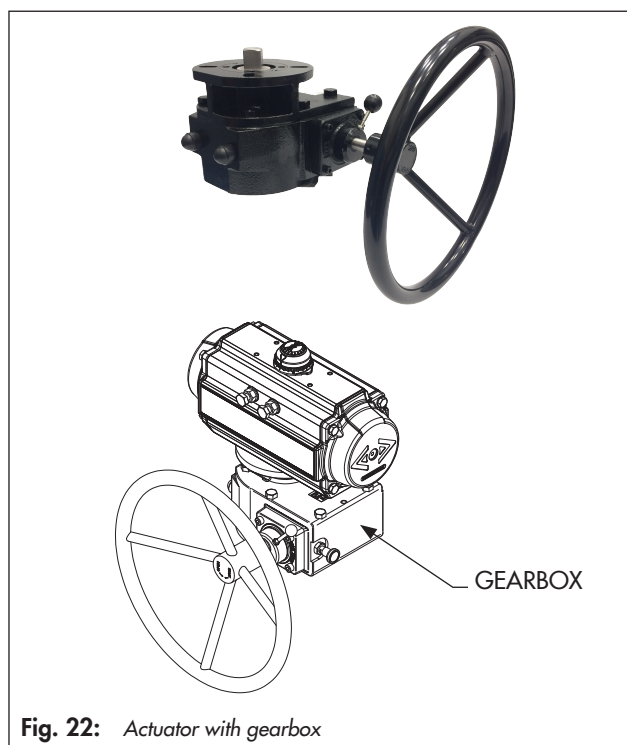


Fig. 22: Actuator with gearbox

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	3)	1,77	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				3,66	6,10	0,15	0,20	0,20	0,25	-40 to 176	-5 to +302	-76 to +176

1) The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

2) Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

3) Rotation for STANDARD actuator: 91.5°, +1 in open position (CCW for STANDARD) and -0.5° in close position (CW for STANDARD).
Rotation for actuator with EXTERNAL STROKE ADJUSTMENT: 94.5°, 90° +4° adjustable in open position (CCW for STANDARD) and -0.5° in close position (CW for STANDARD).

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
D	58,3		72,9		87,4		102		117		131		146		161		169		1,65

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
S 1-1	43,3	30,9	57,9	45,5	72,4	60,0	87,0	74,6	102	89,6	116	104	131	119					27,4	15,0	1,91
S 1-2	35,3	15,8	49,9	30,4	64,4	44,9	79,0	59,5	94,0	74,5	108	88,5	123	103	138	119			42,5	23,0	
S 2-2			41,9	16,2	56,5	30,8	71,0	45,4	85,6	59,9	100	74,5	115	89,1	130	104	138	112	56,6	31,0	1,96
S 2-3					50,3	16,6	68,4	31,2	79,4	45,8	94,0	60,3	109,0	74,9	124	90,2	132	98,2	70,8	37,2	
S 3-3							57,8	17,0	72,3	31,6	86,9	46,2	101,0	60,8	117	76,0	125	84,1	85,0	44,3	1,98

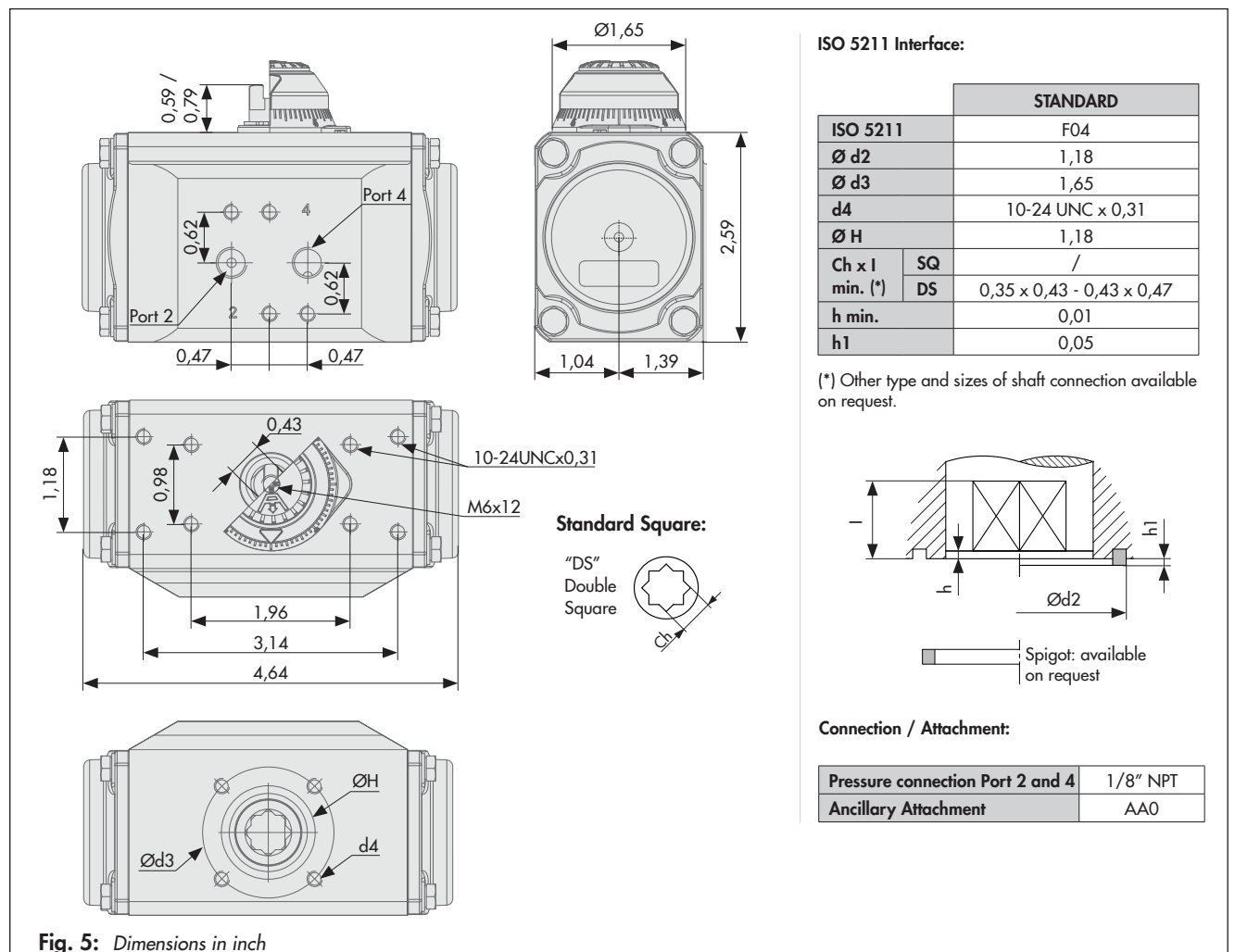


Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (inch)	Air volume (in ³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/6 Turn needed	1,97	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				5,5	9,2	0,20	0,25	0,25	0,30	-40 to +176	+5 to +302	-67 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
D	81,1		101		122		142		162		183		203		223		235		2,54

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
S 01	51,9	34	72,2	54,4	92,5	74,7	113	94,9	133	115	153	136	174	156					47,1	29,2	2,64
S 02	46,1	24,7	66,3	45,0	86,6	65	107	85,6	127	106	147	126	168	146	188	167			56,5	35,1	
S 03	40,2	15,2	60,5	35,5	81	55,8	101	76,1	121	96	142	117	162	137	182	157	194	169	65,9	40,9	2,68
S 04			54,7	26,1	75	46,3	95,2	67	116	87	136	107	156	127	176	148	189	160	75	46,8	
S 05			48,8	16,7	69	37,0	89,4	57,3	110	78	130	98	150	118	171	138	183	151	84,8	52,6	2,73
S 06					63,3	27,6	83,5	47,9	104	68	124	88,4	144	109	165	129	177	141	94,1	58,5	
S 07					57,4	18,1	77,7	38,4	98,0	58,7	118	79,0	139	99	159	120	171	132	104	64,3	2,77
S 08							71,9	29,0	92,1	49,2	112,4	69,5	133	90	153	110	165	122	113	70,2	

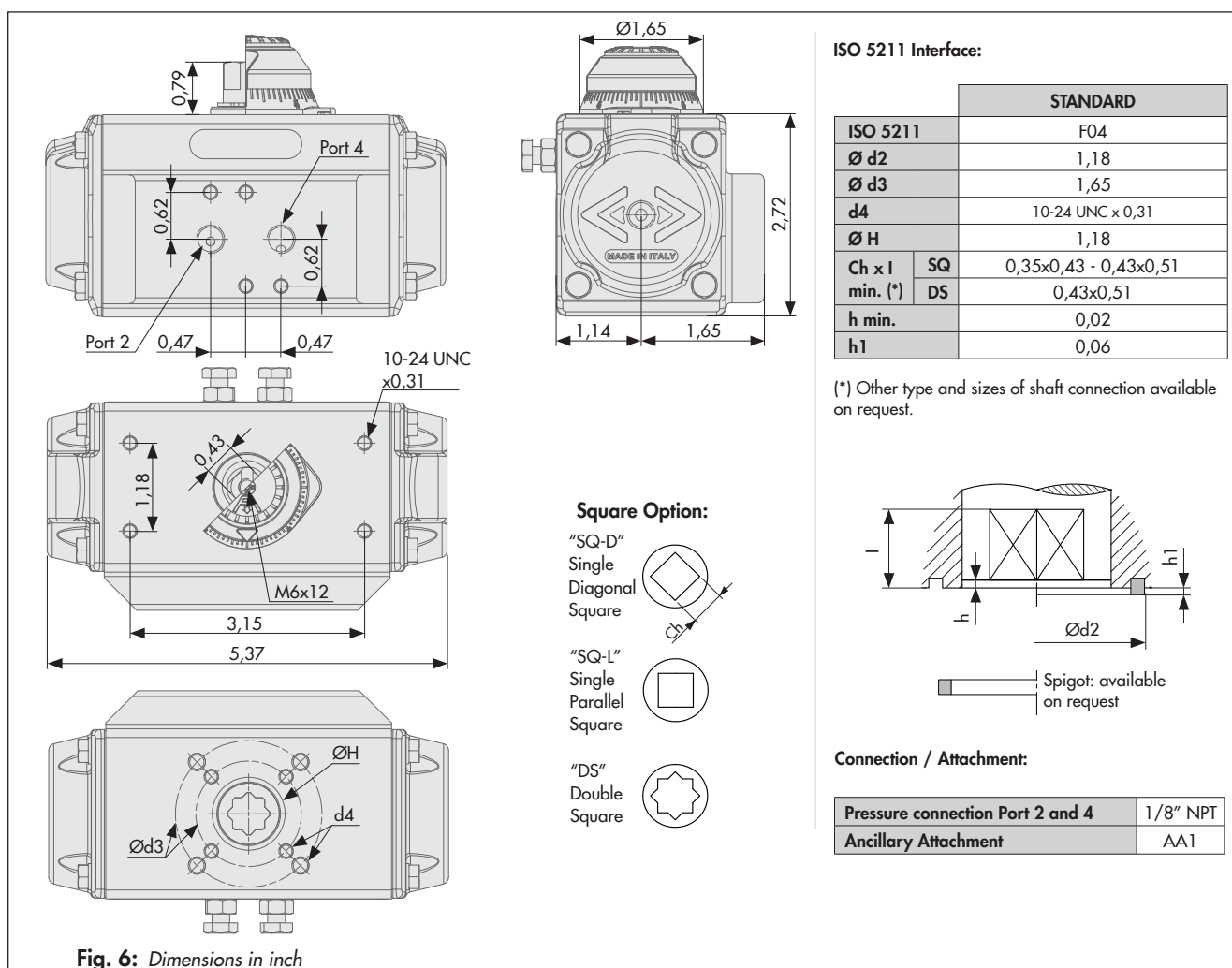


Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/6 Turn needed	2,48	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				9,76	15,86	0,25	0,30	0,30	0,35	-40 to +176	-5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi	Approx. weight (lb)
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
D	143	179	215	251	286	322	358	394	415	3,8

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
S 05	94	68,5	130	104	166	140	201	176	237	212	273	247	309	283					74,7	49,1	4
S 06	84,2	53,5	120	89,3	156	125	192	161	227	197	263	232	299	268	335	304			89,6	58,9	
S 07	74,4	38,6	110	74,4	146	110	182	146	218	182	253	218	289	253	325	289	346	311	105	68,8	4,08
S 08			100	59,5	136	95,2	172	131	208	167	243	203	279	238	315	274	337	296	119	78,6	
S 09					126	80,3	162	116	198	152	234	188	269	223	305	259	327	281	134	88,4	4,15
S 10							152	101	188	137	224	173	260	209	295	244	317	266	149	98,2	
S 11									178	122	214	158	250	194	286	229	307	251	164	108	4,22
S 12													240	179	276	214	297	236	179	118	

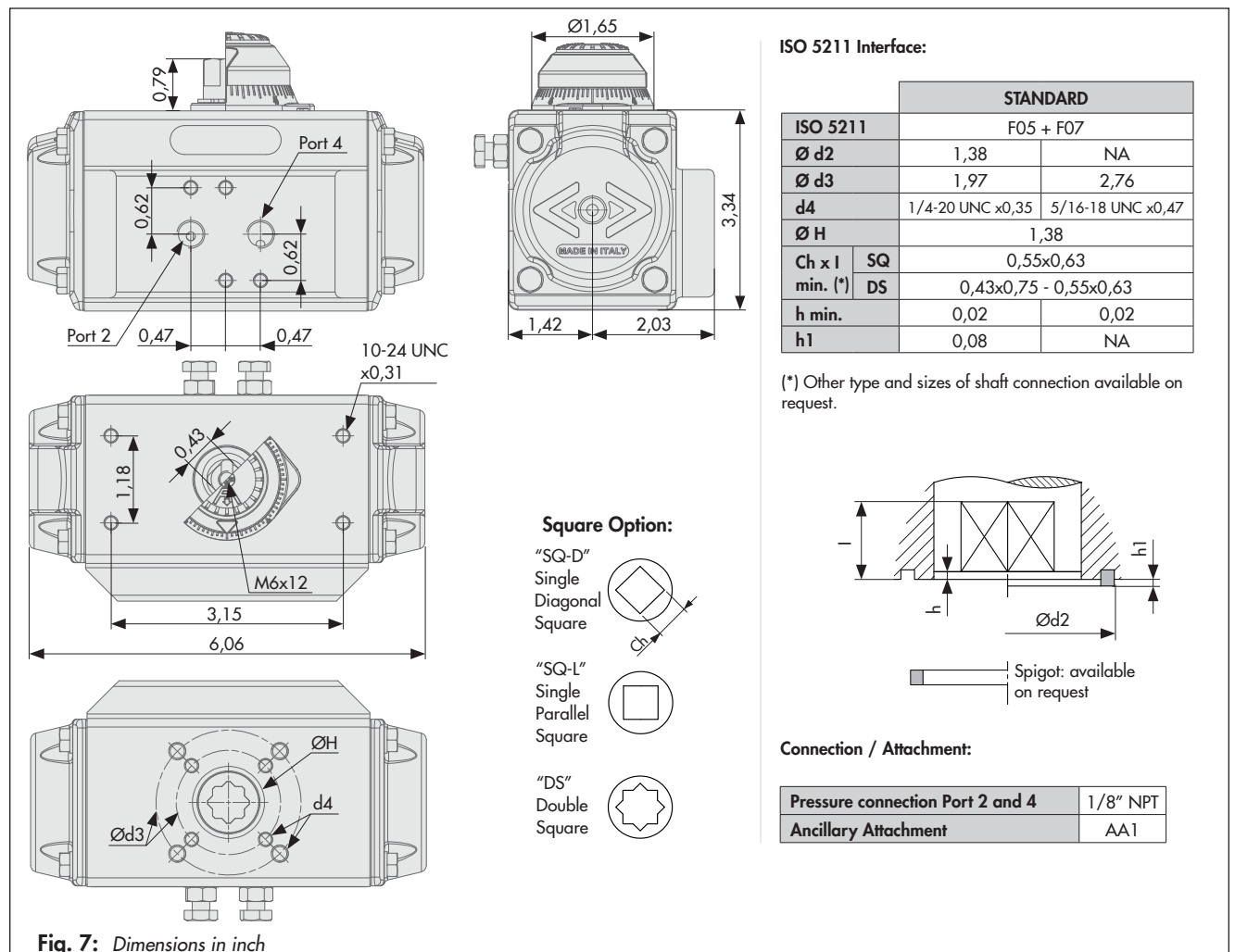


Fig. 7: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/6 Turn needed	2,95	opening 18.91	closing 29.90	opening 0.30	closing 0.35	opening 0.40	closing 0.50	ST -40 to +176	HT -5 to +150	LT2 -76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
D	284		355		426		497		568		639		710		781		824		6,53

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
S 05	186	131	257	202	328	273	399	344	470	415	541	486	612	557					153	97,8	6,94
S 06	167	100	238	171	309	242	380	313	451	384	522	455	593	526	664	597			184	117	
S 07	147	70	218	141	289	212	360	283	431	354	502	425	573	496	644	567	687	609	214	137	7,10
S 08			198	110	269	181	340	252	412	323	483	394	554	465	625	536	667	579	245	157	
S 09					250	150	321	221	392	292	463	363	534	434	605	505	648	548	276	176	7,24
S 10							301	191	372	262	443	333	514	404	585	475	628	517	306	196	
S 11									353	231	424	302	495	373	566	444	608	487	337	215	7,40
S 12													475	342	546	413	589	456	368	235	

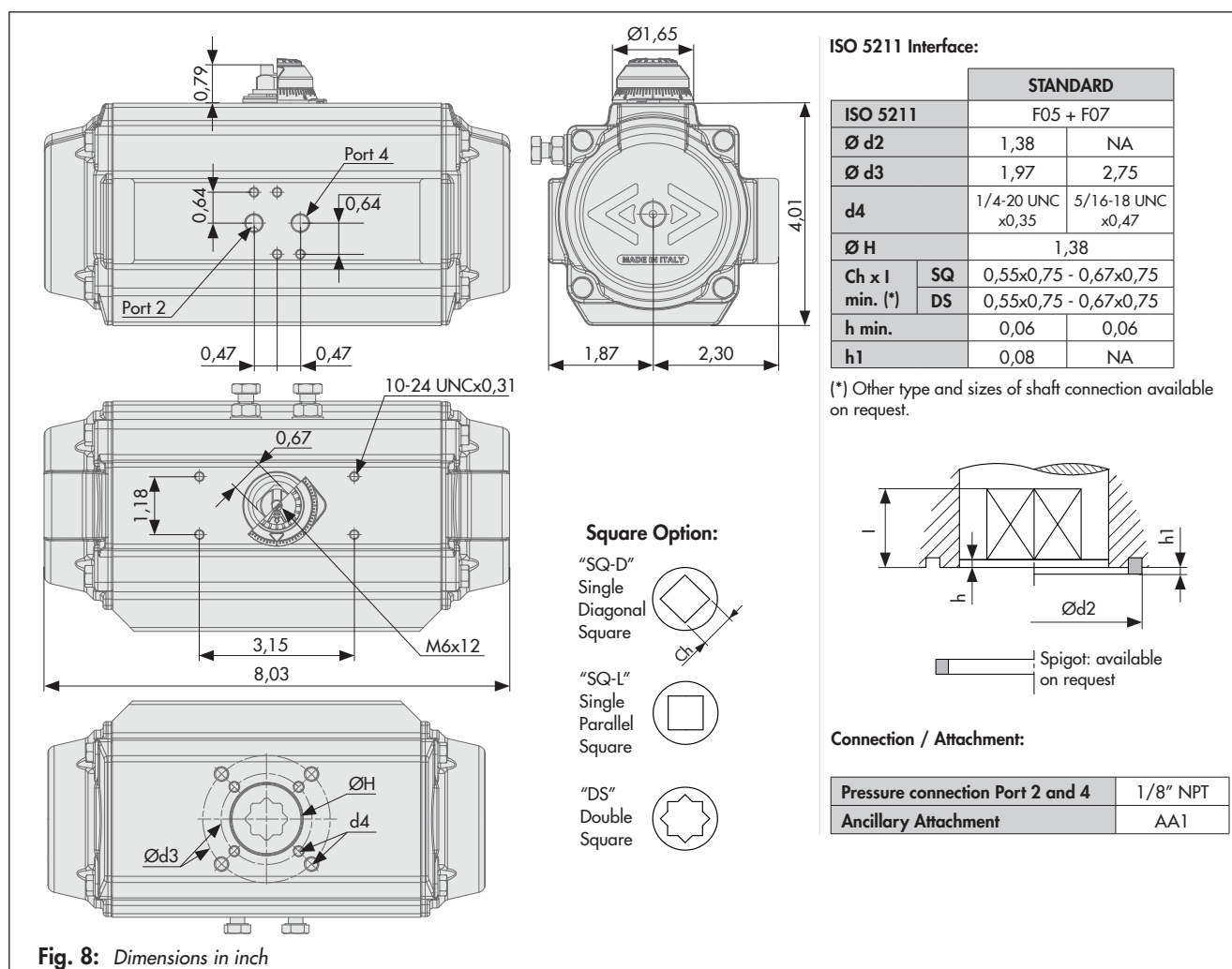


Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/5 Turn needed	3,46	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				31,12	47,59	0,40	0,50	0,50	0,60			

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi	Approx. weight (lb)
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
D	447	559	670	782	894	1005	1117	1229	1296	9,20

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi	Spring Stroke	Approx. weight (lb)
Spring Set	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
S 05	285 191	396 303	508 415	620 526	731 638	843 750	955 862			256 162	9,85
S 06	252 140	476 252	476 364	587 475	699 587	811 699	922 810	1034 922		307 195	
S 07	220 89	331 201	443 313	555 424	667 536	778 648	890 759	1002 871	1069 938	358 227	10,05
S 08		299 150	411 261	522 373	634 485	746 597	858 708	969 820	1036 887	409 260	
S 09			378 210	490 322	602 434	713 545	825 657	937 769	1004 836	460 292	10,30
S 10				457 271	569 383	681 494	793 606	904 718	971 785	511 325	
S 11					537 331	648 443	760 555	872 667	939 734	562 357	10,55
S 12							728 504	839 616	906 683	613 389	

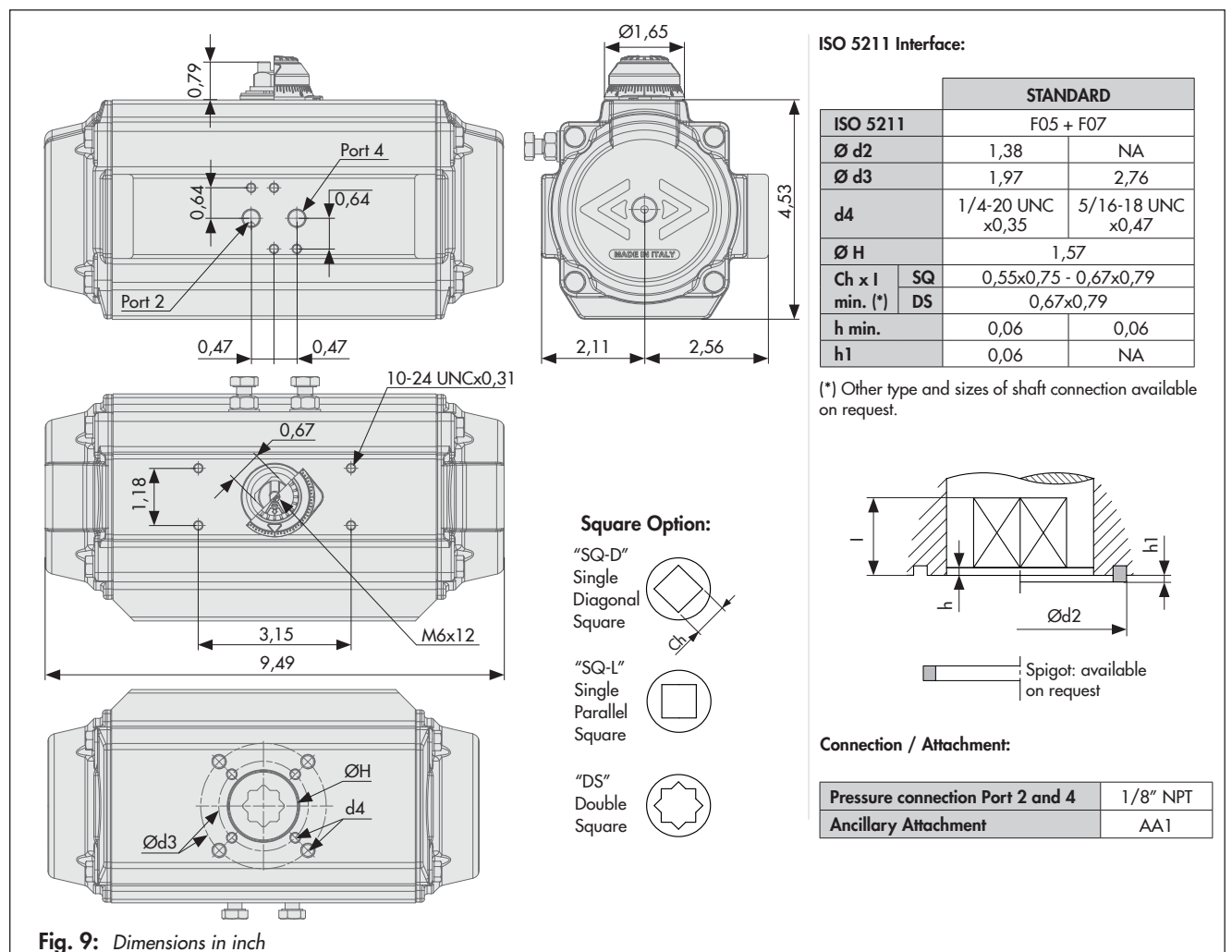


Fig. 9: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/5 Turn needed	3,94	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				43.3	67.7	0.50	0.60	0.70	0.90	-40 to +176	+5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
D	649		811		974		1136		1298		1461		1623		1785		1883		12,50

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°	
S 05	425	301	587	463	750	625	912	787	1074	950	1236	1112	1399	1274					349	224	13,40
S 06	380	231	542	393	705	555	867	718	1029	880	1192	1042	1354	1205	1516	1367			418	269	
S 07	335	161	498	323	660	486	822	648	984	810	1147	973	1309	1135	1471	1297	1569	1395	488	314	13,75
S 08			453	254	615	416	777	578	940	741	1102	903	1264	1065	1426	1227	1524	1325	558	359	
S 09					570	346	732	509	895	671	1057	833	1219	995	1382	1158	1479	1255	627	404	14,05
S 10							688	439	850	601	1012	763	1174	926	1337	1088	1434	1185	697	449	
S 11									805	531	967	694	1130	856	1292	1018	1389	1116	767	493	14,40
S 12													1085	786	1247	949	1344	1046	837	538	

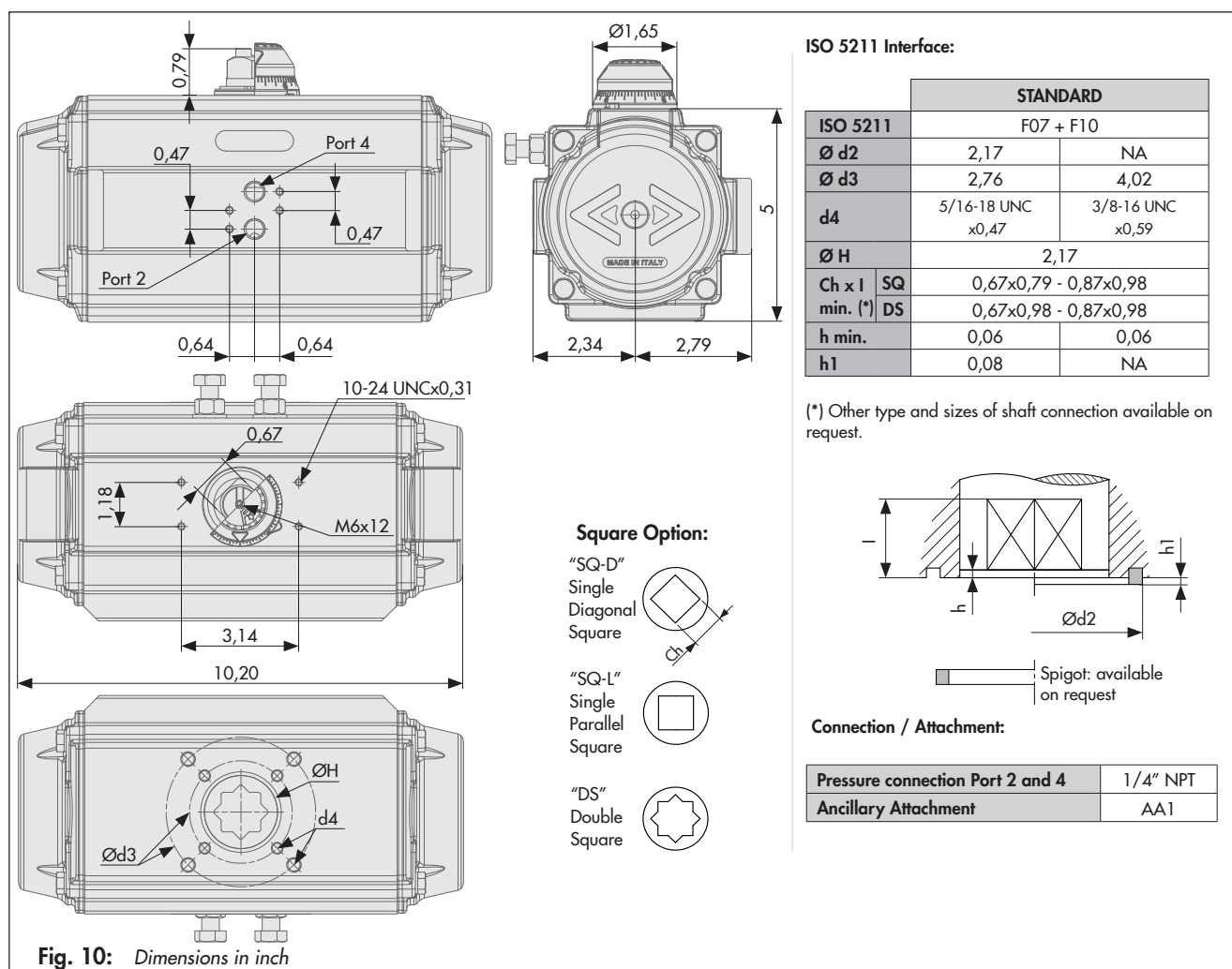


Fig. 10: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°f) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/5 Turn needed	4,53	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				72,6	109,8	0,70	0,80	0,90	1,10			

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
D	1049		1312		1574		1836		2099		2361		2623		2886		3043		19,50

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke 90° 0°	Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
S 05	687	470	949	732	1211	994	1474	1257	1736	1519	1998	1781	2260	2044					580 363	20,90
S 06	614	354	876	616	1139	878	1401	1141	1663	1403	1926	1665	2188	1928	2450	2190			696 435	
S 07	541	238	804	500	1066	762	1328	1025	1591	1287	1853	1549	2115	1812	2378	2074	2535	2231	812 508	21,40
S 08			731	384	993	646	1256	909	1518	1171	1780	1433	2043	1696	2305	1958	2463	2115	928 581	
S 09					921	530	1183	793	1446	1055	1708	1317	1970	1580	2233	1842	2390	1999	1044 653	21,90
S 10							1111	677	1373	939	1635	1201	1898	1464	2160	1726	2317	1883	1160 726	
S 11									1300	823	1563	1085	1825	1348	2087	1610	2245	1767	1276 798	22,40
S 12													1753	1232	2015	1494	2172	1652	1392 871	

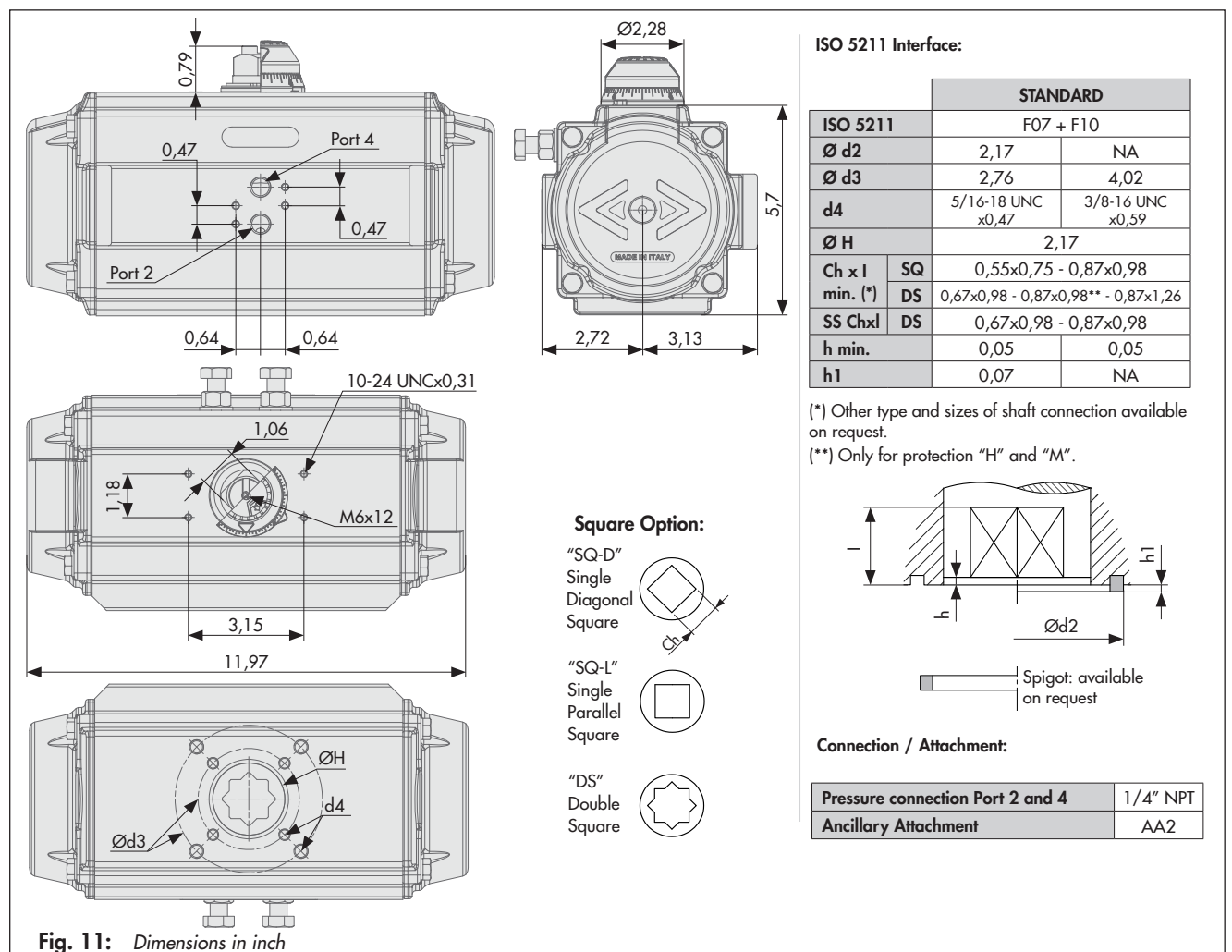


Fig. 11: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	4,92	opening	closing	opening	closing	opening	closing	ST -40 to +176	HT +5 to +302	LLT2 -76 to +176
				94	143	0.90	1.10	1.20	1.40			

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi	Approx. weight (lb)
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
D	1352	1691	2029	2367	2705	3043	3381	3719	3922	23,70

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°	
S 05	888	623	1226	961	1564	1299	1902	1637	2240	1976	2578	2314	2916	2652					729	465	25,60
S 06	795	477	1133	815	1471	1154	1809	1492	2147	1830	2485	2168	2823	2506	3161	2844			875	558	
S 07	702	331	1040	670	1378	1008	1716	1346	2054	1684	2392	2022	2730	2360	3069	2698	3271	2901	1021	651	26,30
S 08			947	524	1285	862	1623	1200	1961	1538	2299	1876	2637	2214	2976	2552	3178	2755	1167	744	
S 09					1192	716	1530	1054	1868	1392	2206	1730	2544	2068	2883	2407	3085	2609	1313	837	27,00
S 10							1437	908	1775	1246	2113	1584	2452	1923	2790	2261	2993	2464	1459	930	
S 11									1682	1100	2020	1439	2359	1777	2697	2115	2900	2318	1604	1023	27,70
S 12													2266	1631	2604	1969	2807	2172	1750	1116	

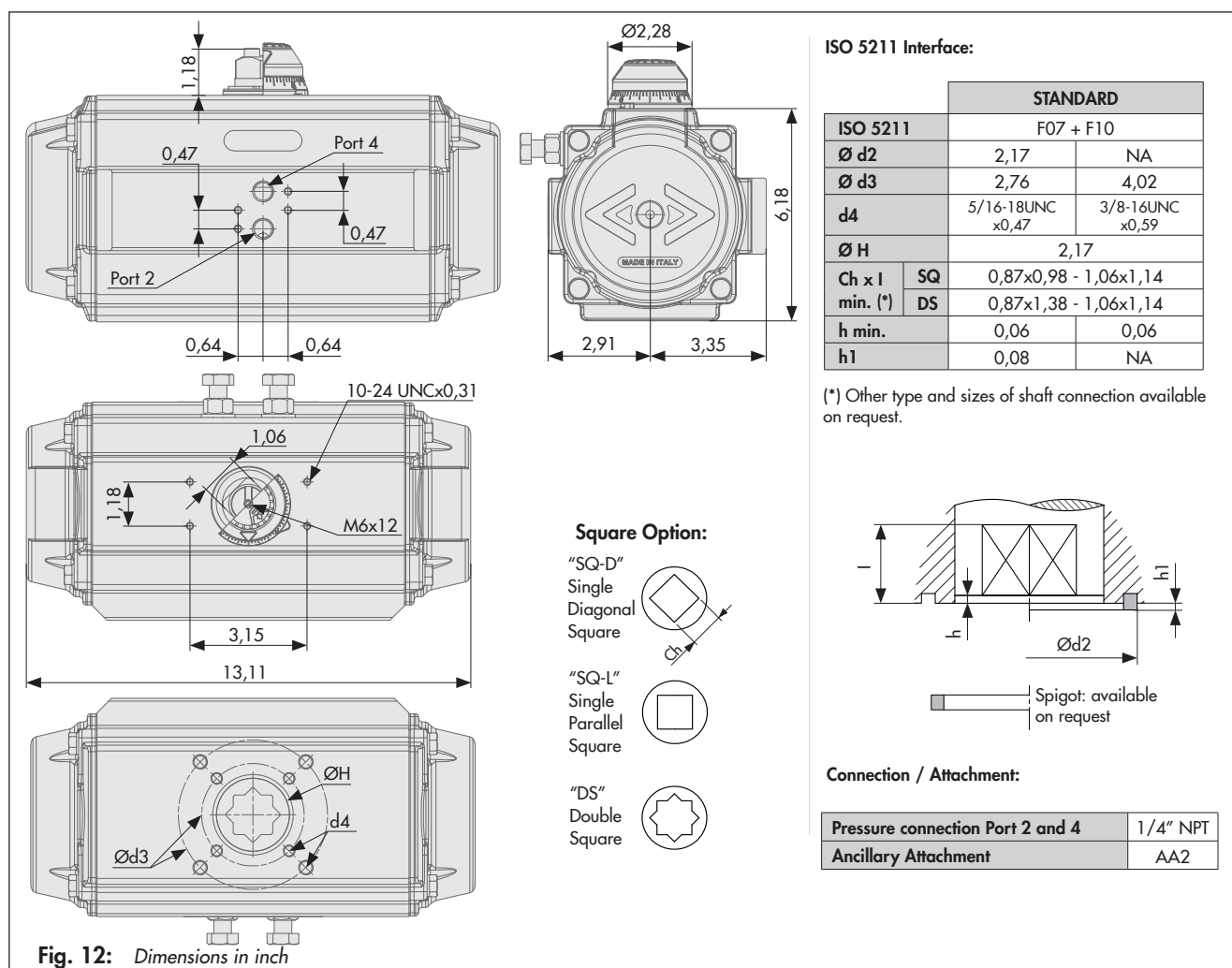


Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in ³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	5,71	opening	closing	opening	closing	opening	closing	ST -40 to +176	HT +5 to +302	LLT2 -76 to +176
				147	231	1,2	1,4	1,5	1,8			

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 psi	100 Psi	110 Psi	116 Psi	Approx. weight (lb)
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
D	2123	2654	3185	3716	4246	4777	5308	5839	6157	34,20

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°	
S 05	1394	983	1925	1514	2456	2044	2987	2575	3517	3106	4048	3637	4579	4167					1140	729	37,50
S 06	1248	755	1779	1285	2310	1816	2841	2347	3372	2878	3902	3409	4433	3939	4964	4470			1369	875	
S 07	1103	527	1633	1057	2164	1588	2695	2119	3226	2650	3757	3181	4287	3711	4818	4242	5137	4561	1597	1021	38,60
S 08			1488	829	2018	1360	2549	1891	3080	2422	3611	2952	4142	3483	4672	4014	4991	4333	1825	1166	
S 09					1873	1132	2403	1663	2934	2194	3465	2724	3996	3255	4527	3786	4845	4104	2053	1312	39,80
S 10							2258	1435	2788	1965	3319	2496	3850	3027	4381	3558	4699	3876	2281	1458	
S 11									2643	1737	3173	2268	3704	2799	4235	3330	4553	3648	2509	1604	41,00
S 12													3558	2571	4089	3102	4408	3420	2737	1750	

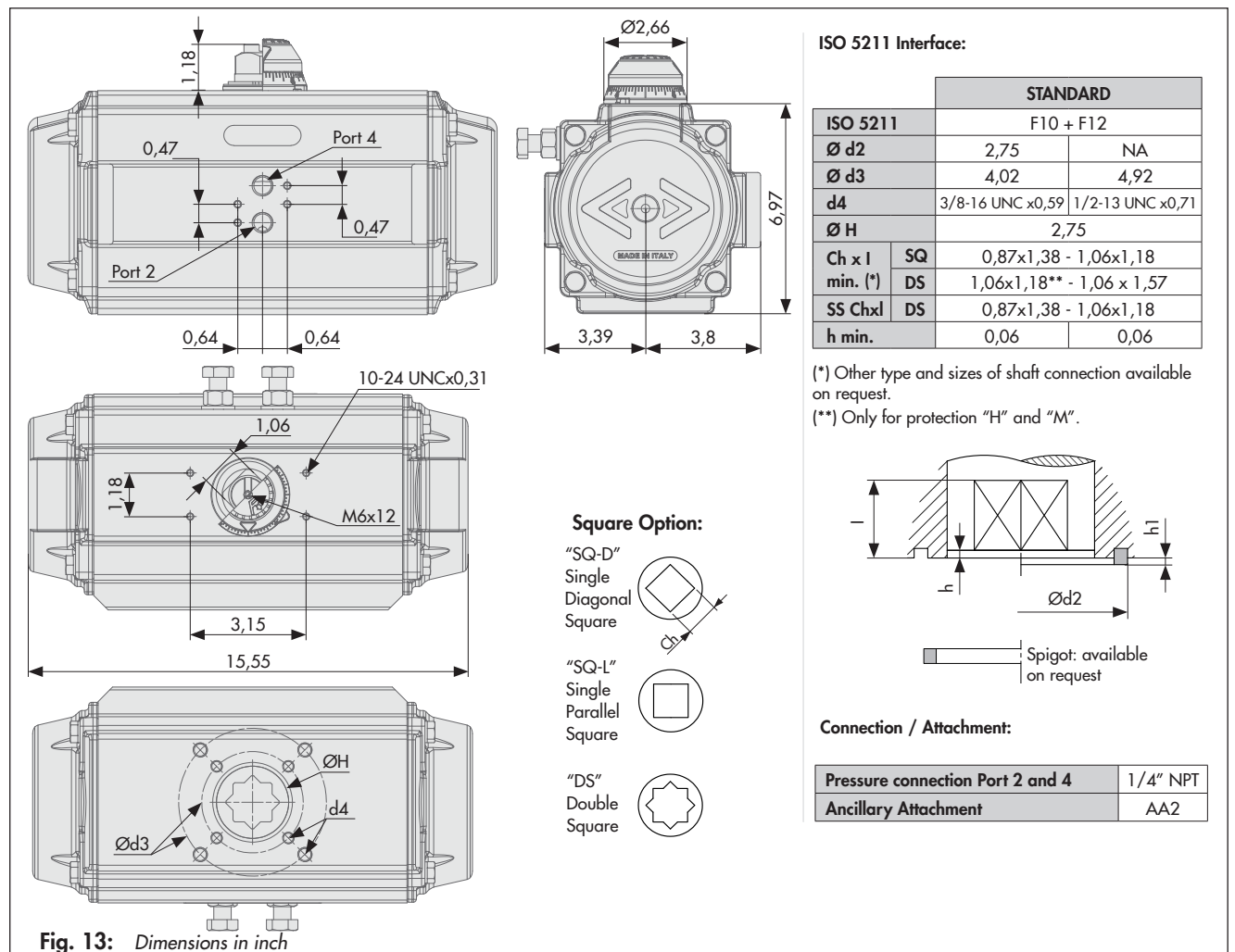


Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	6,3	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				192	300	1,5	1,7	1,8	2,1	-40 to +176	+5 to +302	-76 to +176

1) The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

2) Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi	Approx. weight (lb)
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
D	2770	3462	4155	4847	5540	6232	6925	7617	8032	43,20

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°	
S 05	1777	1300	2469	1992	3162	2685	3854	3377	4547	4070	5239	4762	5931	5455					1470	993	47,40
S 06	1578	1006	2271	1698	2963	2391	3655	3083	4348	3776	5040	4468	5733	5161	6425	5853			1764	1192	
S 07	1380	712	2072	1404	2764	2097	3457	2789	4149	3482	4842	4174	5534	4867	6227	5559	6642	5975	2058	1390	49,00
S 08			1873	1110	2566	1803	3258	2495	3951	3188	4643	3880	5336	4573	6028	5265	6444	5681	2352	1589	
S 09					2367	1509	3060	2201	3752	2894	4445	3586	5137	4279	5829	4971	6245	5387	2646	1788	50,50
S 10							2861	1907	3553	2600	4246	3292	4938	3985	5631	4677	6046	5093	2940	1986	
S 11									3355	2306	4047	2998	4740	3691	5432	4383	5848	4799	3234	2185	52,00
S 12													4541	3397	5234	4089	5649	4505	3528	2383	

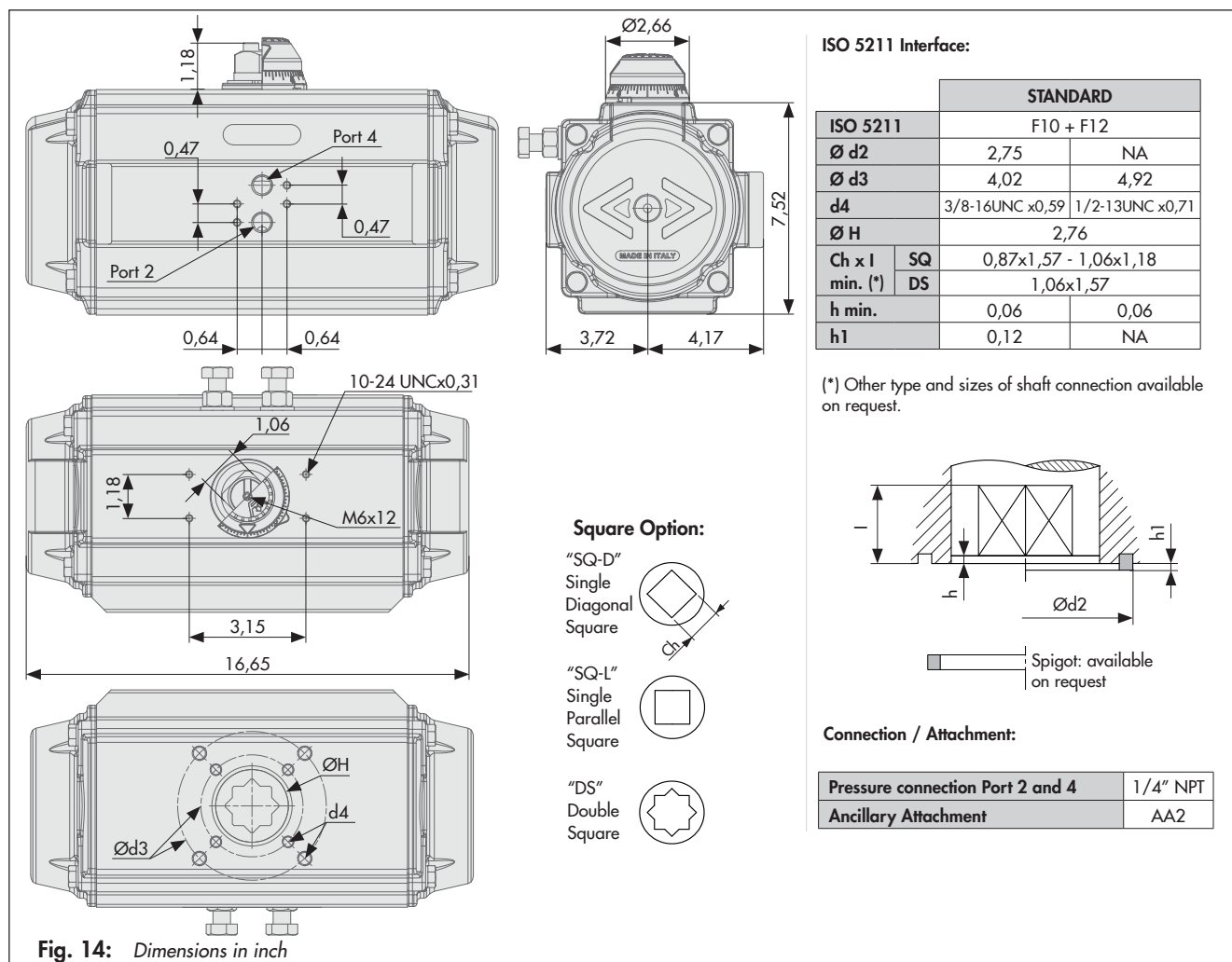


Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	7,09	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				260	420	2,0	2,2	2,4	2,8	-40 to +176	+5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
D	3739		4674		5609		6544		7479		8413		9348		10283		10844		55,0

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke 90° 0°	Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
S 05	2340	1644	3275	2578	4210	3513	5145	4448	6079	5383	7014	6318	7949	7253					2096 1399	63,5
S 06	2060	1225	2995	2159	3930	3094	4865	4029	5800	4964	6734	5899	7669	6833	8604	7768			2515 1679	
S 07	1780	805	2715	1740	3650	2675	4585	3610	5520	4545	6454	5480	7389	6414	8324	7349	8885	7910	2934 1959	66,5
S 08			2435	1321	3370	2256	4305	3191	5240	4126	6175	5060	7109	5995	8044	6930	8605	7491	3353 2239	
S 09					3090	1837	4025	2772	4960	3706	5895	4641	6830	5576	7764	6511	8325	7072	3772 2519	70,5
S 10							3745	2353	4680	3287	5615	4222	6550	5157	7485	6092	8045	6653	4191 2798	
S 11									4400	2868	5335	3803	6270	4738	7205	5673	7766	6234	4610 3078	72,5
S 12													5990	4319	6925	5254	7486	5814	5029 3358	

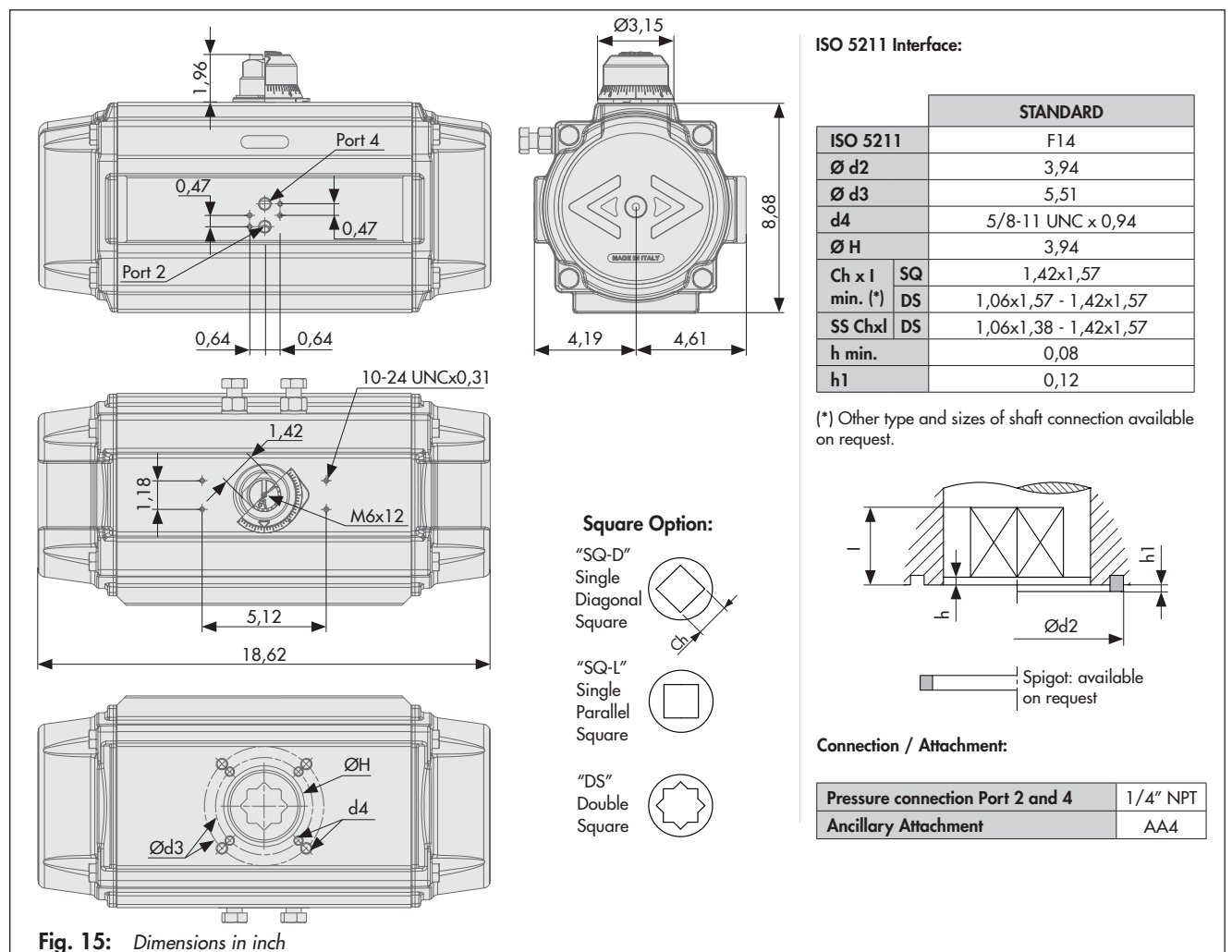


Fig. 15: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	7,87	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				362	577	2,7	3,2	3,5	4,0	-40 to +176	+5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi	Approx. weight (lb)
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
D	5193	6492	7790	9088	10387	11685	12984	14282	15061	82,1

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
S 05	3312	2406	4610	3704	5908	5003	7207	6301	8505	7599	9803	8898	11102	10196					2787	1882	90,5
S 06	2935	1849	4234	3147	5532	4445	6830	5744	8129	7042	9427	8340	10725	9639	12024	10937			3345	2258	
S 07	2559	1291	3857	2589	5156	3888	6454	5186	7752	6485	9051	7783	10349	9081	11648	10380	12427	11159	3902	2634	93,5
S 08			3481	2032	4779	3330	6078	4629	7376	5927	8674	7225	9973	8524	11271	9822	12050	10601	4460	3011	
S 09					4403	2773	5701	4071	7000	5370	8298	6668	9596	7966	10895	9265	11674	10044	5017	3387	96,5
S 10							5325	3514	6623	4812	7922	6110	9220	7409	10518	8707	11297	9486	5575	3763	
S 11									6247	4255	7545	5553	8844	6851	10142	8150	10921	8929	6132	4140	99,5
S 12													8467	6294	9766	7592	10545	8371	6690	4516	

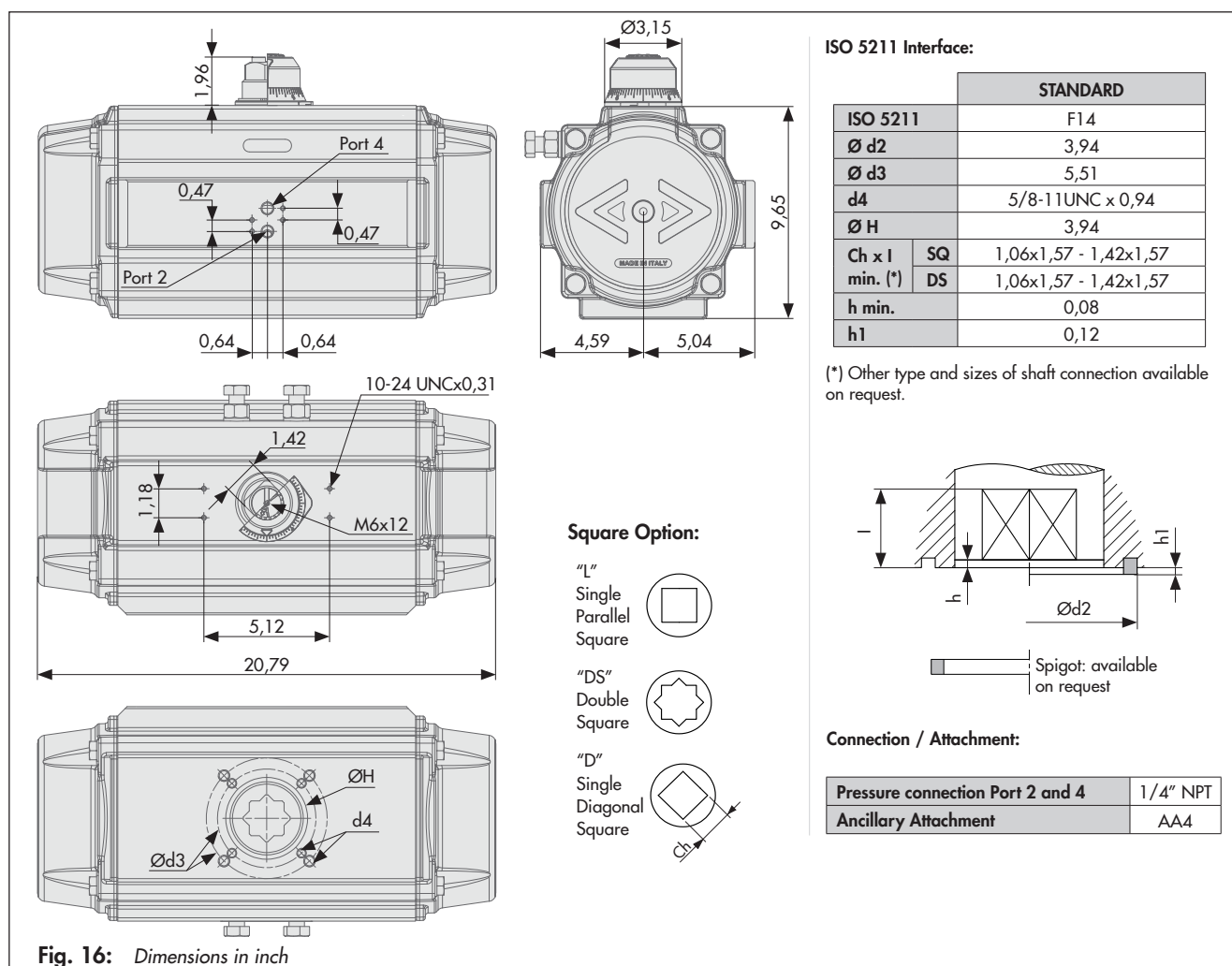


Fig. 16: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in ³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	9,45	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				610	928	3,5	4,0	4,1	4,6	-40 to +176	+5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi	Approx. weight (lb)
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
D	8725	10906	13087	5269	17450	19631	21812	23994	25302	124

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°	
S 05	5535	4113	7716	6294	9898	8475	12079	10657	14260	12838	16441	15019	18623	17200					4612	3190	139
S 06	4897	3190	7078	5372	9260	7553	11441	9734	13622	11915	15803	14097	17985	16278	20166	18459			5534	3828	
S 07	4259	2268	6440	4449	8622	6631	10803	8812	12984	10993	15165	13174	17347	15356	19528	17537	20837	18845	6457	4466	145
S 08			5802	3527	7984	5708	10165	7889	12346	10071	14527	12252	16709	14433	18890	16614	20199	17923	7379	5104	
S 09					7346	4786	9527	6967	11708	9148	13889	11329	16071	13511	18252	15692	19561	17001	8302	5742	150
S 10							8889	6045	11070	8226	13251	10407	15433	12588	17614	14770	18923	16078	9224	6380	
S 11									10432	7303	12613	9485	14795	11666	16976	13847	18285	15156	10147	7018	155
S 12													14157	10743	16338	12925	17647	14233	11069	7656	

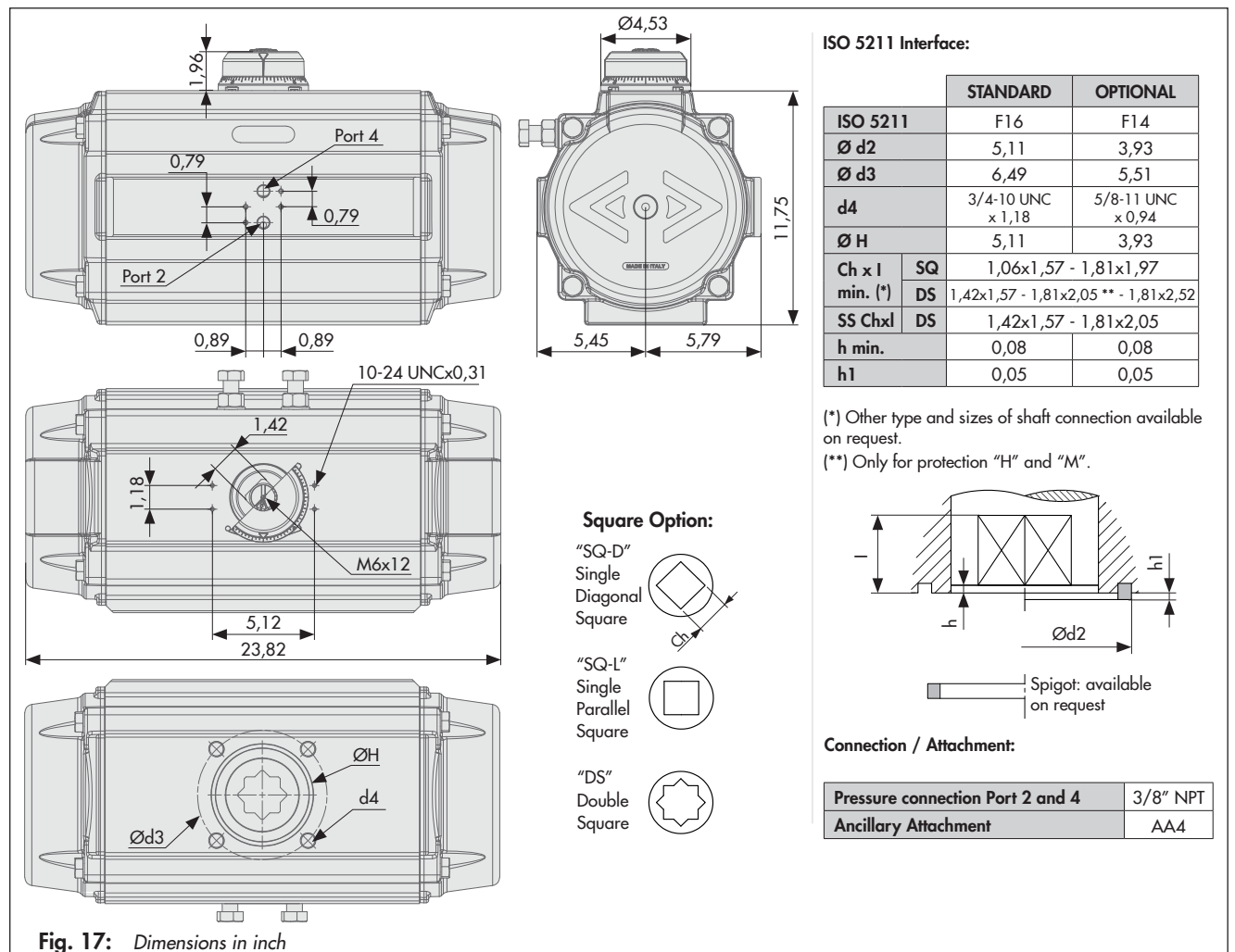


Fig. 17: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	10,43	opening	closing	opening	closing	opening	closing	ST	HT	LT2
				885	1305	4,0	4,5	4,5	5,0	-40 to +176	+5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
D	12663		15829		18995		22161		25327		28493		31659		34825		36724		170

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
S 05	7836	5576	11002	8742	14168	11907	17333	15073	20499	18239	23665	21405	26831	24571					7088	4828	190
S 06	6870	4158	10036	7324	13202	10490	16368	13656	19534	16822	22700	19987	25865	23153	29031	26319			8505	5793	
S 07	5905	2741	9071	5906	12236	9072	15402	12238	18568	15404	21734	18570	24900	21736	28066	24902	29965	26801	9923	6759	1976
S 08			8105	4489	11271	7655	14437	10821	17603	13986	20769	17152	23934	20318	27100	23484	29000	25384	11340	7724	
S 09					10305	6237	13471	9403	16637	12569	19803	15735	22969	18901	26135	22067	28034	23966	12758	8690	204
S 10							12506	7986	15672	11151	18837	14317	22003	17483	25169	20649	27069	22549	14176	9655	
S 11									14706	9734	17872	12900	21038	16066	24204	19231	26103	21131	15593	10621	211
S 12													20072	14648	23238	17814	25138	19713	17011	11586	

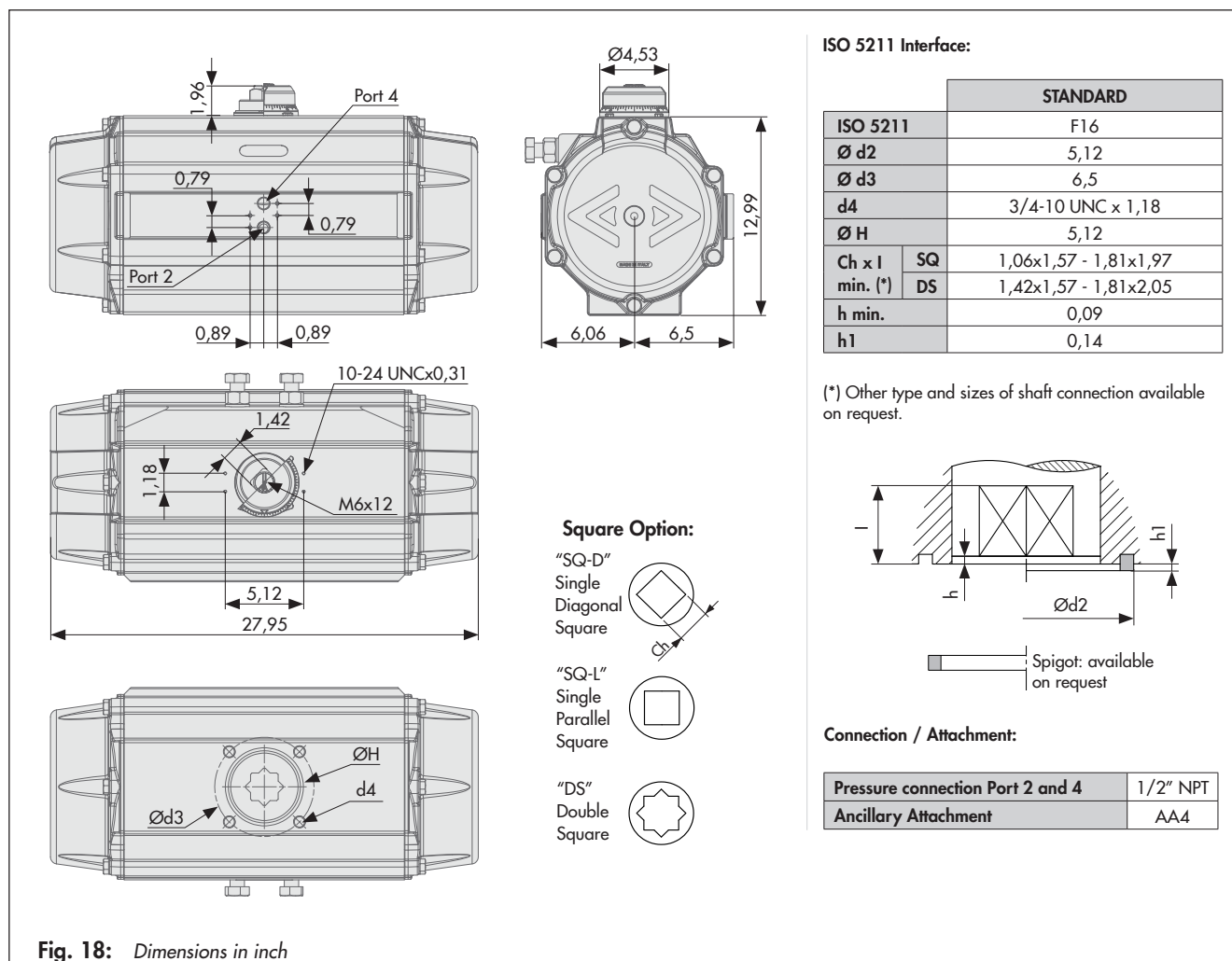


Fig. 18: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	11,81	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				1220	2014	5,0	6,0	6,0	7,0	-40 to +176	+5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi	Approx. weight (lb)
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	
D	17528	21910	26292	30674	35056	39438	43820	48202	50831	271

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
S 05	11059	7868	15441	12250	19823	16632	24205	21014	28587	25395	32969	29777	37351	34159					9660	6469	303
S 06	9765	5936	14147	10318	18529	14700	22911	19081	27293	23463	31675	27845	36057	32227	40439	36610			11592	7763	
S 07	8471	4004	12853	8386	17235	12767	21617	17149	25999	21531	30381	25913	34763	30295	39146	34678	41774	37306	13524	9056	315
S 08			11560	6454	15942	10835	20323	15217	24705	19599	29087	23981	33469	28363	37852	32746	40480	35374	15456	10350	
S 09					14648	8903	19030	13285	23412	17667	27794	22049	32176	26431	36558	30814	39187	33442	17388	11644	326
S 10							17736	11353	22118	15735	26500	20117	30882	24499	35264	28882	37893	31510	19320	12938	
S 11									20824	13803	25206	18185	29588	22567	33971	26950	36599	29578	21252	14231	338
S 12													28294	20635	32677	25018	35305	27646	23184	15525	

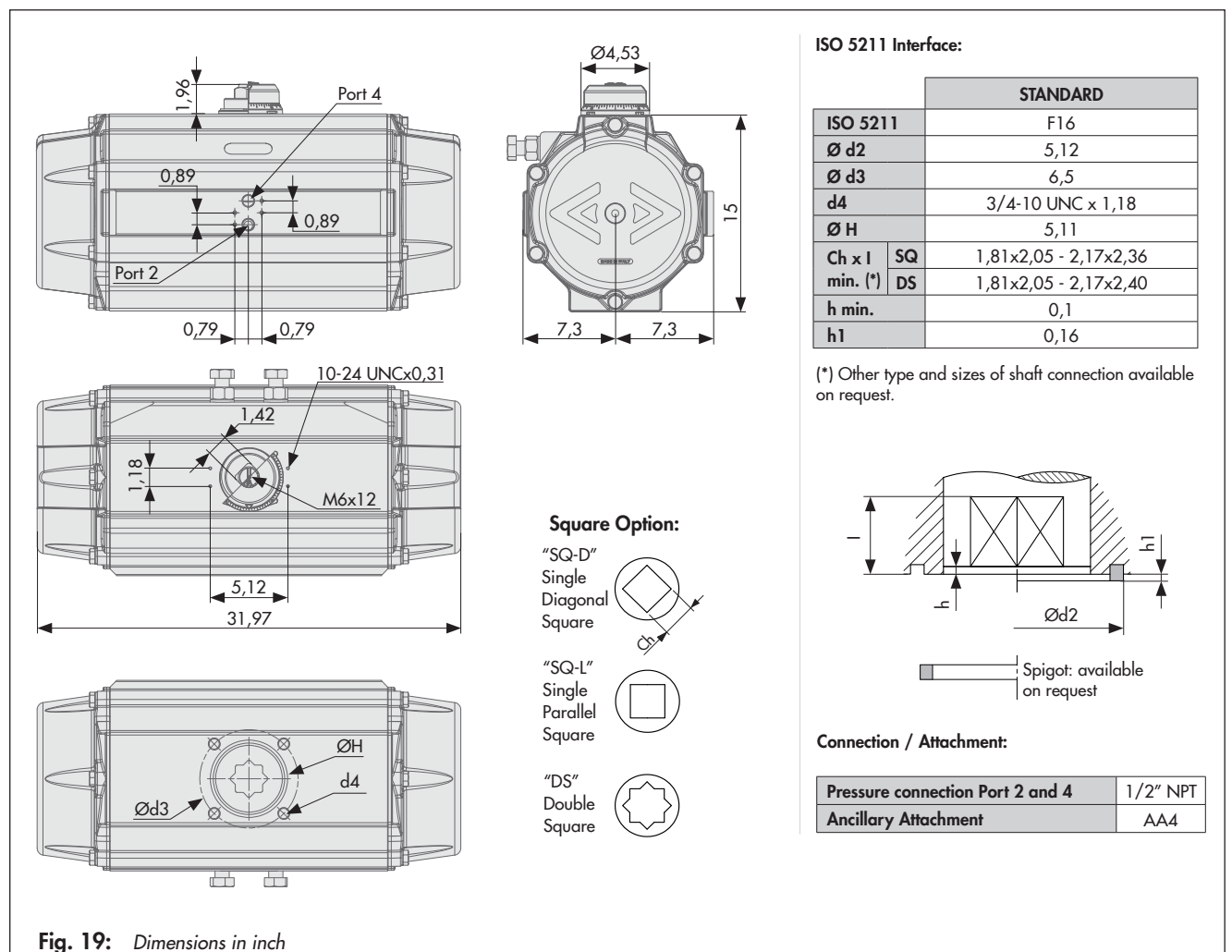


Fig. 19: Dimensions in inch

Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
116 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	12,99	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
				1526	2441	6,0	7,0	7,5	8,5	-40 to +176	+5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant; please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Approx. weight (lb)
	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
D	21994		27493		32991		38490		43988		49487		54985		6084		63783		280

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	
S 05	13855	11037	19353	16536	24852	22034	30350	27533	35849	33031	41347	38530	46846	44028					10957	8140	322
S 06	12227	8846	17725	14344	23224	19843	28722	25341	34221	30840	39719	36338	45218	41837	50717	47335			13149	9767	
S 07	10599	6654	16097	12153	21596	17651	27094	23150	32593	28648	38091	34147	43590	39645	49089	45144	52388	48443	15340	11395	338
S 08			14469	9961	19968	15460	25466	20958	30965	26457	36464	31955	41962	37454	47461	42953	50760	46252	17531	13023	
S 09					18340	13268	23839	18767	29337	24265	34836	29764	40334	35263	45833	40761	49132	44060	19723	14651	352
S 10							22211	16576	27709	22074	33208	27573	38706	33071	44205	38570	47504	41869	21914	16279	
S 11									26081	19883	31580	25381	37078	30880	42577	36378	45876	39677	24106	17907	368
S 12													35450	28688	40949	34187	44248	37486	26297	19535	

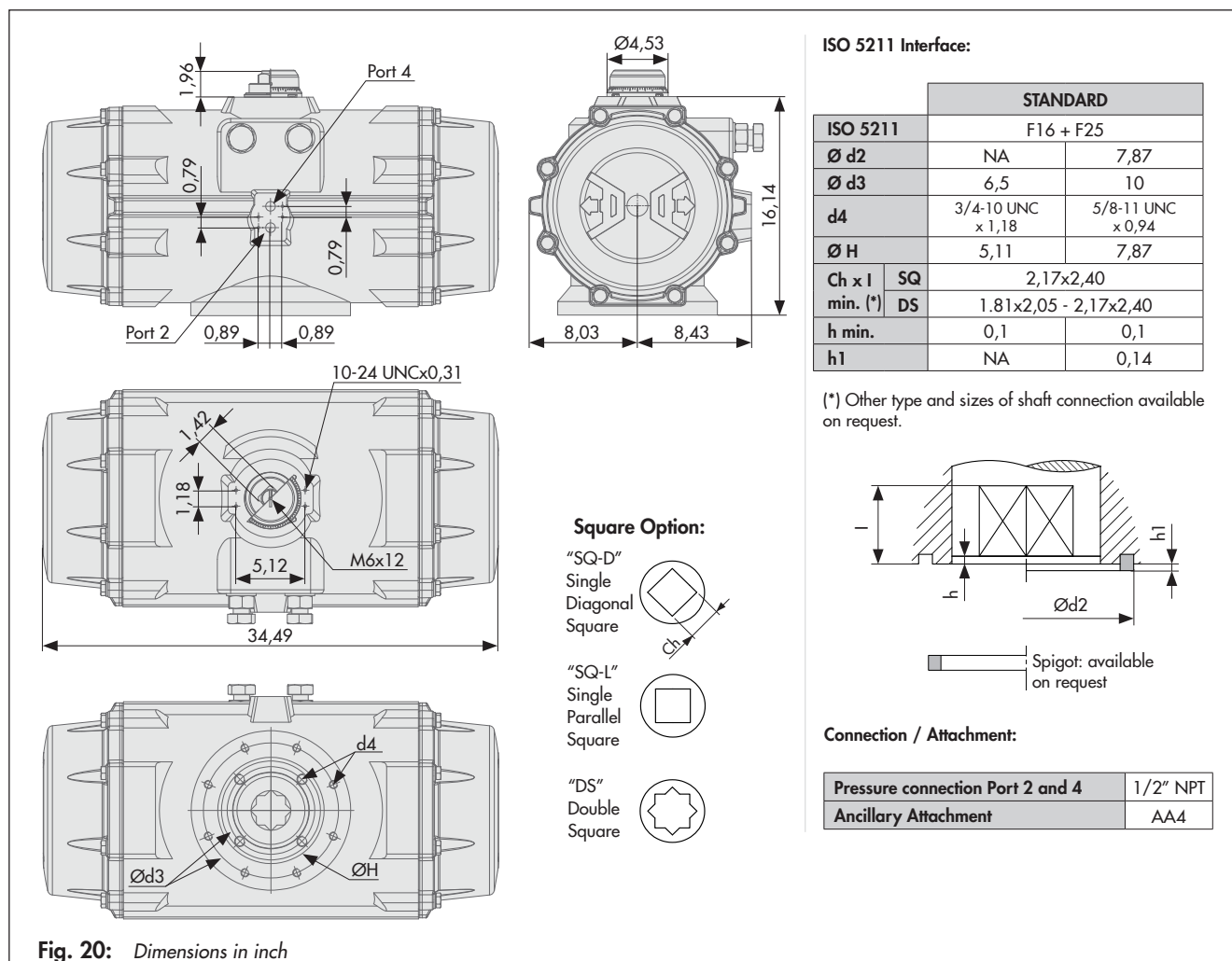


Table 1: Technical data

Max. Pressure	Standard Rotation	Stroke Adjustment Screw	Ø Chamber (in)	Air volume (in ³)		Approx. Stroking time (sec.) ¹⁾				Operating temperature range (°F) ²⁾		
						Double acting		Spring return				
D 110 Psi	0° - 90°	For 1° adj. 1/4 Turn needed	16,53	opening	closing	opening	closing	opening	closing	ST	HT	LLT2
S 116 Psi				2990	5126	8	9	10	11	-40 to +176	+5 to +302	-76 to +176

¹⁾ The values refer to specific test conditions; please contact AIR TORQUE for detailed information.

²⁾ Every temperature range option requires proper components and lubricant. please contact AIR TORQUE for detailed information.

Table 2: Nominal output torque for Double acting actuators (Lb-In)

Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	Approx. weight (lb)	
	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°	0° 90°		
D	40716	50895	61074	71253	81432	91611	101790	111969	375	

Table 3: Nominal output torque for Single acting actuators (Lb-In)

Pressure	40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring Stroke		Approx. weight (lb)
Spring Set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°	
S 05	25715	18812	35894	28991	46073	39170	56252	49349	66431	59528	76610	69707	86790	79887					21904	15001	448
S 06	22715	14432	32894	24611	43073	34790	53252	44969	63431	55148	73610	65327	83789	75506	93968	85658			26285	18001	
S 07	19715	10051	29894	20230	40073	30409	50252	40588	60431	50767	70610	60946	80789	71125	90968	81304	97076	87411	30665	21001	470
S 08			26894	15849	37073	26028	47252	36207	57431	46386	67610	56565	77789	66744	87968	76923	94076	83031	35046	24001	
S 09					34073	21647	44252	31826	54431	42005	64610	52184	74789	62364	84968	72543	91075	78650	39427	27001	494
S 10							41252	27455	51431	37634	61610	47813	71789	57992	81968	68171	88075	74278	43799	30002	
S 11									48431	33253	58610	43432	68789	53611	78968	63790	85075	69897	48179	33002	520
S 12											55609	39051	65788	49230	75967	59409	82075	65517	52560	36002	

