4TH GENERATION LINE UPGRADE SERIES

Rack and pinion actuators “manufactured in Italy”

AIR TORQUE®

DESIGN AND INNOVATION

The 4th Generation Upgrade Series pneumatic actuators, is the result of the Air Torque mission to offer always innovative products by combining the long field experience as market leader, the innovational spirit, the well-known reliability in actuators designing and the high quality manufacturing level. The Air Torque experience has produced the following main key features included in this Series. The 4th Generation Upgrade Series is designed for on/off and modulating duties.

ROBUST DESIGN

The 4th Generation Upgrade Series is designed and fully tested in the Air Torque facilities according to the latest and most severe international standards. Unique technical features are integrated in this product line to withstand to heavy working conditions and permit to keep the performance level of the actuator stable for long time after the installation. The 4th Generation Upgrade Series is covered by several international patents.

RELIABLE AND FLEXIBLE SOLUTIONS

By combining high quality products, field and design experience, Air Torque is able to satisfy all the customers and market expectations by offering reliable, flexible and customized solutions together with a qualified service.

INNOVATIVE PATENTED DESIGN

The unique technical features developed and incorporated in the 4th Generation Upgrade Series, permits to have the best product versatility for an easier and easier valve automation. The Upgrade Series is covered by several International patents.

TECHNOLOGY AND MATERIAL

The 4th Generation Upgrade Series is manufactured with the highest materials quality, the most accurate materials selections and the latest production technologies.

RANGE AND OPTIONS

The 4th Generation Upgrade Series pneumatic actuators is available in:

- Seventeen models;
- Spring return and double acting versions;
- Torque up to 10.000 Nm / 88.500 Lb-In;
- 6+2 different protection levels;
- Low and high temperature constructions;
- Large availability of many ISO flanges and drive shaft connections for direct valve automation;
- 120° - 135° - 180° rotation both in double acting and spring return
- 180° spring return Fail-Mid;
- 3 position actuators, 90° and 180° rotation, both double acting and spring return;
- Fast acting actuators;
- Hydraulic damper actuators.

Further Options available on request:

- Lock-Out capability in fully open or fully close position;
- Full travel stop adjustment.

PRODUCT QUALITY AND TECHNOLOGY

HIGH QUALITY LEVEL PRODUCTION

The 4th Generation Upgrade Series has been designed and tested to obtain the highest cycling life and the most reliable performance with very reduced maintenance and service.

INTERNATIONAL STANDARD

The 4th Generation Upgrade Series has been designed, manufactured and tested in full compliance with the latest applicable International standards.

FIELD OF APPLICATION

Since many years recognized by global end users as a partner of excellence in several fields such as:

chemical

petrochemical

pharmaceutical

power generation

pulp and paper

water treatment

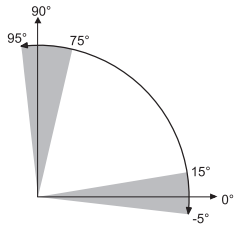
food and beverage

oil and gas

TECHNICAL FEATURES

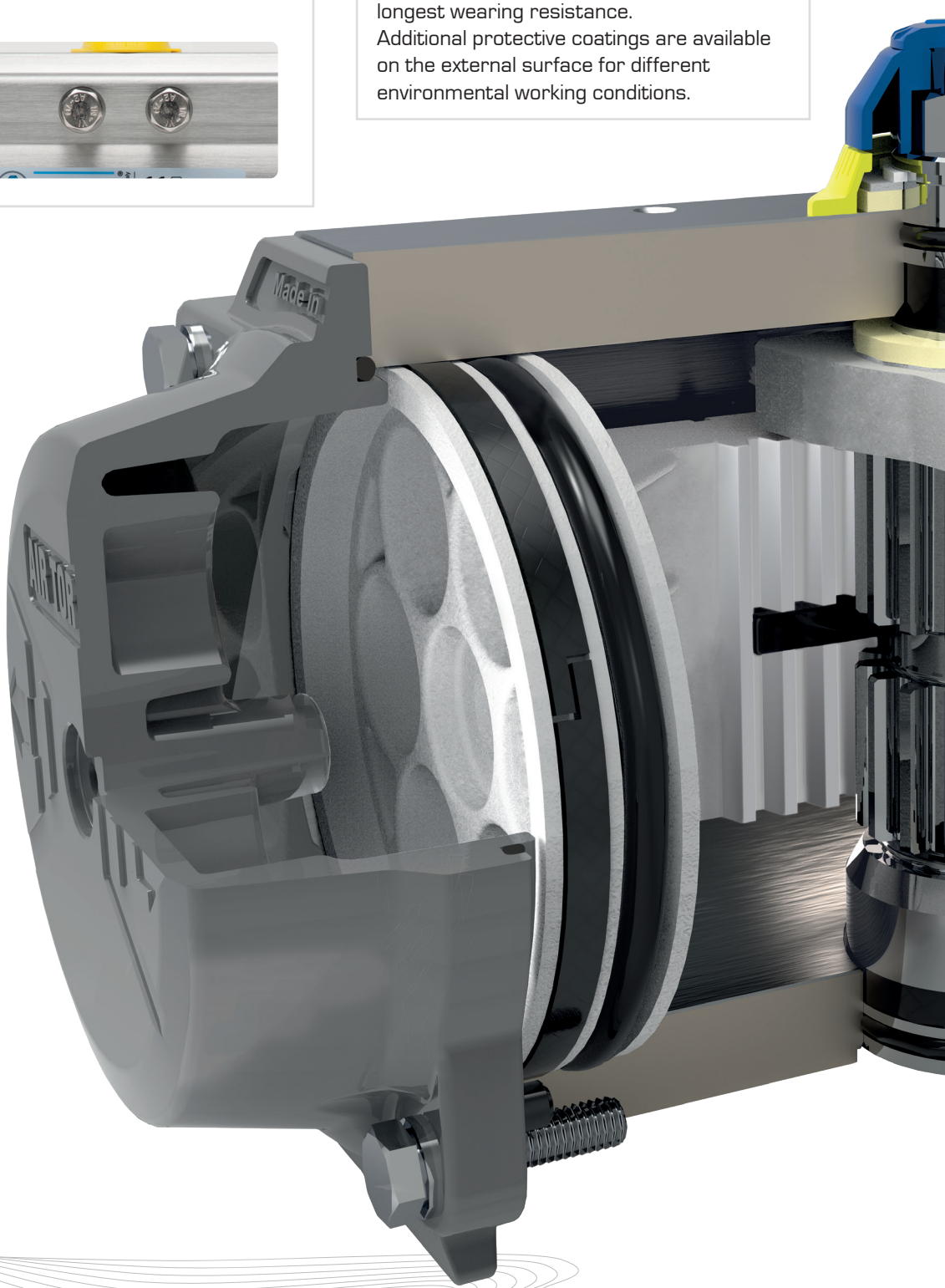
1. TWO INDIPENDENT EXTERNAL TRAVEL STOP ADJUSTMENTS

As a standard, travel stops allowing adjustment from -5° up to +15° in closed position, and from +5° up to -15° in opened position. This allows accurate valve alignment, stroke limitation and provides a large travel adjustment range on actuators.



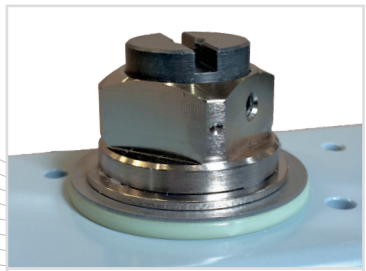
2. ALODUR HARD ANODIZED BODY

Extruded aluminum body with Alodur special hard anodization applied internally and externally for a complete corrosion protection, a lower friction coefficient and an increased surface hardness for the longest wearing resistance.
Additional protective coatings are available on the external surface for different environmental working conditions.



12. PRODUCT IDENTITY

Plastic insert with Air Torque logo and unique patented design.



11. DRIVE SHAFT TOP ADAPTOR

The aluminum top adaptor for ancillary driving/ attachment gives a more flexible and stable coupling with ancillary stem.

10. FASTNERS

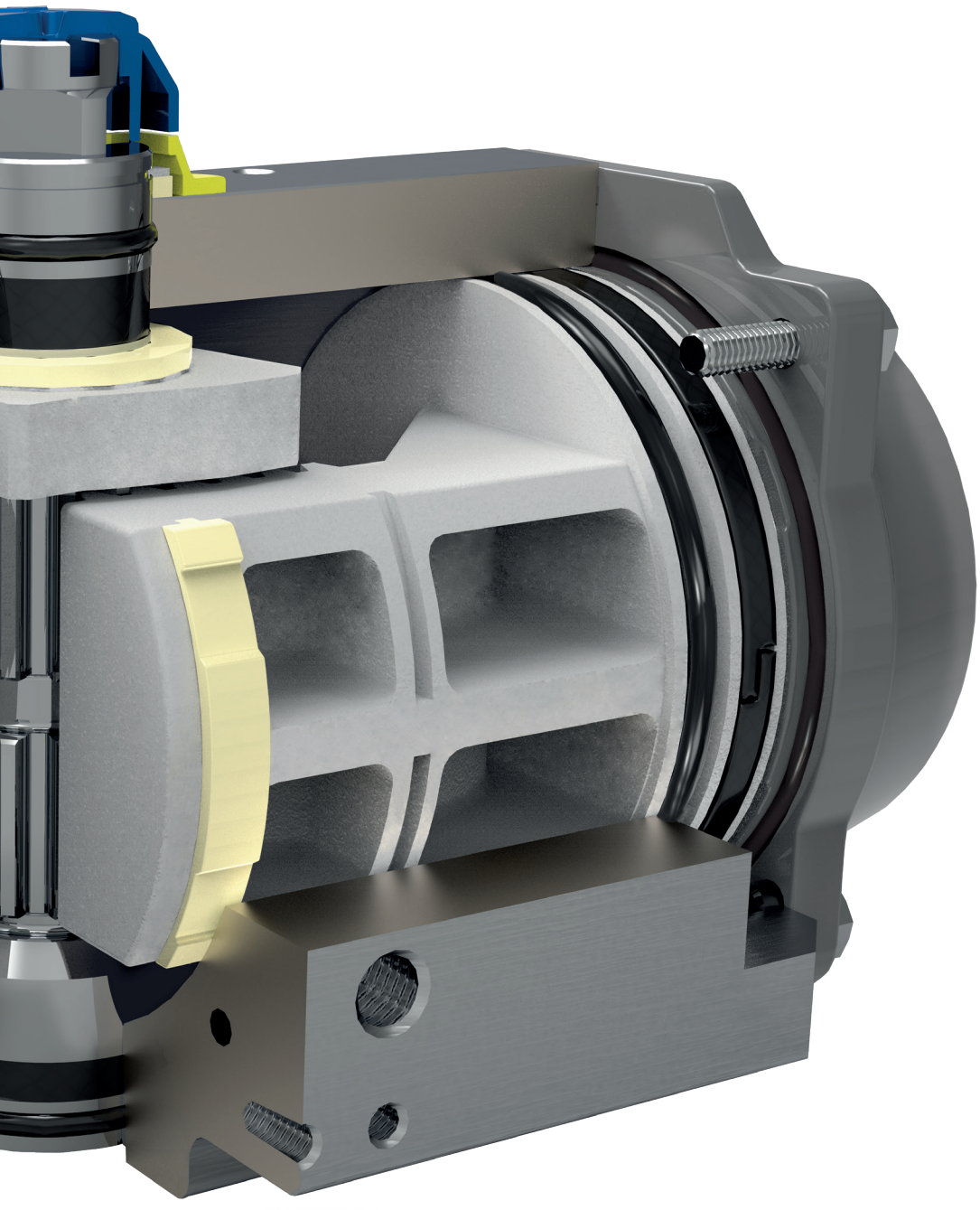
Stainless steel fasteners for long term corrosion resistance.

3. POSITION INDICATION

The unique position indicators with graduated ring allows to achieve easily the correct actuator/valve position.

4. FULLY MACHINED TEETH

Piston rack and pinion shaft with fully machined teeth for accurate positioning, low backlash and maximum engagement resulting in overall efficient operation.



5. FULL COMPLIANCE

Full compliance with ISO 5211, EN 15714-3 and VDI/VDE 3845 specifications, providing the product changeability, easiest valve automation and the easiest valve automation and accessories installation.

6. MODULAR PRELOADED SPRING CARTRIDGES

High grade coated spring steel design for simple range versatility, greater safety and corrosion resistance.

7. EASY FIELD CONVERSION

With identical body and end caps for double acting and spring return model to reduce inventory, allows field conversion, by adding or removing modular spring cartridge.

8. SELECTED AND HIGH QUALITY BEARINGS AND SEALS

A wide operating temperature range provided with low friction and high cycle life for efficient operation.

Multiple bearings on pistons and rack for precise operation, low friction, high cycle life and piston guides preventing shaft blow-out.

9. UNIVERSAL AND ANTI BLOW-OUT DRIVE SHAFT

Blow-out proof drive shaft is available with double square as standard to permit versatility, lower and more flexible inventory.

ACTUATOR OPERATING CONDITIONS

OPERATING MEDIA

Dry or lubricated air, inert/non-corrosive gases provided that they are compatible with the internal actuator parts and lubricant.

SUPPLY PRESSURE

For Double Acting and Spring Return actuators the maximum supply pressure is up to 8 bar (116 PSI), the minimum supply pressure is 2.5 bar (36 PSI). Higher working pressure can be evaluated thanks to the design and construction of this actuators series.

WORKING TEMPERATURE

Standard actuator	from -40 °C (-40 °F) to +80 °C (+176 °F)
High temperature actuator (HT)	from -15 °C (+5 °F) to +150 °C (+302 °F)
Extreme low temperature actuator (LLT2)	from -60 °C (-76 °F) to +80 °C (+176 °F)

LUBRICATION

Actuators are factory lubricated for life under normal operating conditions.

INSTALLATION

Actuator suitable both for indoor and outdoor installation. IP rated up to IP68.

PROTECTION AND CORROSION RESISTANCE

Air Torque actuators are available in 6+2 different protection levels suitable for different environmental conditions.
For severe duties refer to the protection levels table at page 18 or contact Air Torque.

ACTUATOR DESIGNATION AND MARKING

The actuator selection which reflects the operating conditions and the product designation, is marked on the actuator identification label.
Each single actuator has a QR code marked on the actuator label for easy identification and traciability of the product.

ACTUATOR FUNCTION, ROTATION & TORQUE CURVES

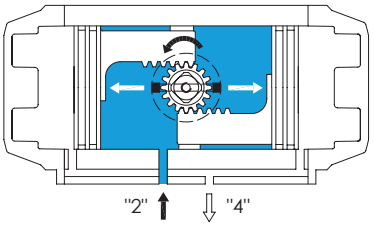
Unless defined, the standard actuator models rotation is clockwise to close.
→ See the technical data-sheet for details and non standard actuator model rotation.

DOUBLE ACTING ACTUATORS

FUNCTIONING (top view)

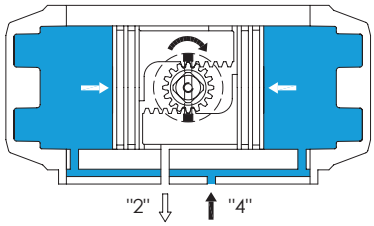
Air supplied to Port 2 forces the pistons towards the actuator end caps, with the exhaust air exiting from Port 4.

↳ A counter-clockwise rotation is achieved.



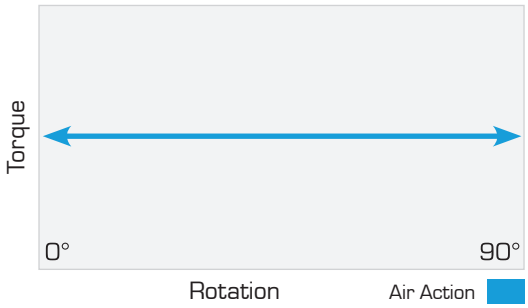
Air supplied to Port 4 forces the pistons inward, exhaust air exits from Port 2.

↳ A clockwise rotation is achieved.



OUTPUT TORQUE

The double acting actuator has constant torque over the whole stroke.

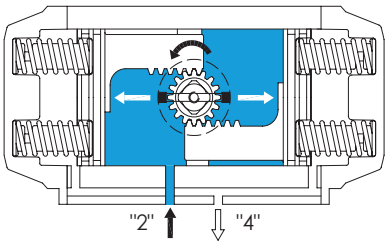


SINGLE ACTING ACTUATORS

FUNCTIONING (top view)

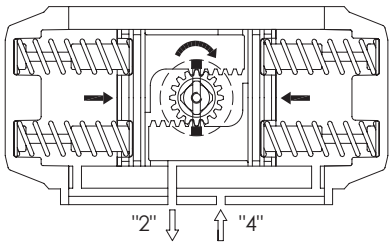
Air supplied to Port 2 forces the pistons toward the actuator end caps, compressing the springs, with the exhaust air exiting from Port 4.

↳ A counter-clockwise rotation is achieved.



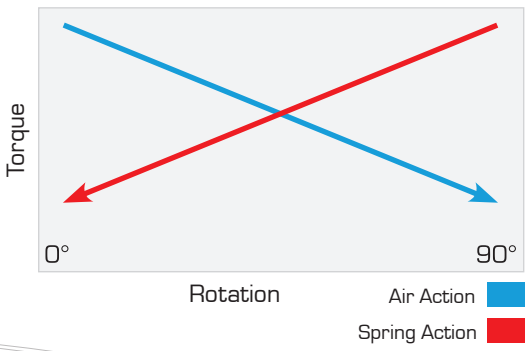
The loss of air pressure (air or electric failure) at Port 2 allows the springs to force the pistons inward with the exhaust air exiting from Port 2.

↳ A clockwise rotation is achieved.



OUTPUT TORQUE

The spring return actuator has four different relevant torque values: air torque at 0°; air torque at 90°; spring torque at 90°; spring torque at 0°.



DIMENSIONS AND TECHNICAL DATA

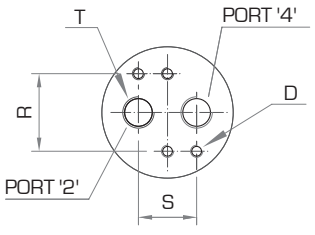
Technical data (Metric Unit - Dimensions in mm)

ACTUATOR MODEL	AT045U		AT051U		AT101U		AT201U		AT251U		AT301U		AT351U		AT401U		AT451U		AT501U		AT551U		AT601U		AT651U		AT701U		AT751U		AT801U		AT1001U	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S
A	118		135,5		153,5		203,5		241		259		304		333		394,5		422,5		474		528		605		710		812		855		950	
B	66		69		85		102		115		127		145		157		177		196		220,5		245		298,5		330		383		410		518	
C	62		71		84,5		93		106		118,5		136		146,5		166		181		200		221,5		262		330		371		418		528	
D	M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M6x10		M6x10		M6x10		M6x10		M6x10	
E	M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M6x10	
F	80		80		80		80		80		80		80		80		80		80		130		130		130		130		130		130		200	
G	30		30		30		30		30		30		30		30		30		30		30		30		30		30		30		30		50	
N	11		11		11		17		17		17		27		27		27		27		36		36		36		36		36		36		36	
P	15 / 20		20		20		20		20		20		30		30		30		30		50		50		50		50		50		50		80	
R	32		32		32		32		32		32		32		32		32		32		32		32		45		45		45		45		45	
S	24		24		24		24		24		24		24		24		24		24		24		24		40		40		40		40		40	
T ISO 228	1/8"		1/8"		1/8"		1/8"		1/8"		1/4"		1/4"		1/4"		1/4"		1/4"		1/4"		1/4"		3/8"		1/2"		1/2"		1/2"		1/2"	
øZ1	42		42		42		42		42		42		58		58		67,5		67,5		80		80		115		115		115		115		135	
ISO Range	F04		F04		F05 + F07		F05 + F07		F05 + F07		F07 + F10		F07 + F10		F07 + F10		F10 + F12		F10 + F12		F14		F14		F16		F16		F16		F16 + F25		F16 + F25 + F30	
Q	42		42		50		50		50		70		70		70		102		102		140		140		165		165		165		165		165	
Q1	-		-		70		70		70		102		102		102		125		125		-		-		-		-		-		254		254	
Q2	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		298	
W	M5		M5		M6		M6		M6		M8		M8		M8		M10		M10		M16		M16		M20		M20		M20		M20		M20	
W1	-		-		M8		M8		M8		M10		M10		M10		M12		M12		-		-		-		-		-		M16		M16	
W2	-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		M20	
OPTIONAL ISO Range	F03		F03 + F05		F04 + F07 F03 + F05 F05		F04 + F07 F05		F07		F05 + F07 F07		F10		F10		F12		F12		F10 + F12		F10 + F12		F12 F14		F12 F14		F14 F16 + F25		-		-	
* Opening Time (s)	0,15	0,2	0,2	0,25	0,25	0,3	0,3	0,4	0,4	0,5	0,5	0,7	0,7	0,9	0,9	1,2	1,2	1,5	1,5	1,8	2	2,4	2,7	3,5	3,5	4,1	4	4,5	5	6	6	7,5	8	10
* Closing Time (s)	0,2	0,25	0,25	0,3	0,3	0,35	0,35	0,5	0,5	0,6	0,6	0,9	0,8	1,1	1,1	1,4	1,4	1,8	1,7	2,1	2,2	2,8	3,2	4	4	4,6	4,5	5	6	7	7	8,5	9	11
Air Volume Opening (l)	0,06		0,09		0,16		0,31		0,51		0,71		1,19		1,54		2,41		3,14		4,26		5,94		10		14,5		20		25		49	
Air Volume Closing (l)	0,1		0,15		0,26		0,49		0,78		1,11		1,80		2,34		3,78		4,92		6,89		9,46		15,2		21,4		33		40		84	
Approx. Weight (kg)	0,75	0,9	1,1	1,3	1,6	1,8	2,7	3	3,8	4,4	5,2	6	8,1	9,4	10	12,4	14,2	17,1	17,8	21,4	24,3	32,7	34,3	43,6	54,6	69	76,3	95,5	118	150	127	169	170	238
Typical Drive Shaft connection for protection levels "A", "B", "D", "P"																																		
CH x l min SQ	-		9 x 11		9 x 11		14 x 19		14 x 19		17 x 20		22 x 25		22 x 25		22 x 35		22 x 40		22 x 40		22 x 40		27 x 40		27 x 40		46 x 52		55 x 61		75 x 81	
CH x l min SQ	-		11 x 13		14 x 16		17 x 19		17 x 20		22 x 25		-		27 x 29		27 x 30		27 x 30		36 x 40		36 x 40		46 x 50		46 x 50		55 x 60		-		-	
CH x l min DS	9 x 11		11 x 13		11 x 19		14 x 19		17 x 20		17 x 25		17 x 25		22 x 35		27 x 40		27 x 40		27 x 40		27 x 40		36 x 40		36 x 40		46 x 52		46 x 52		55 x 60	
CH x l min DS	11 x 12		-		14 x 16		17 x 19		-		22 x 25		22 x 32		27 x 29		-		-		36 x 40		36 x 40		46 x 64		46 x 52		55 x 61		55 x 61		75 x 81	
Typical Drive Shaft connection for protection levels "E", "F"																																		
CH x l min DS	-		9 x 11		11 x 19		14 x 19		17 x 20		17 x 25		17 x 25		22 x 35		22 x 35		27 x 40		27 x 35		27 x 40		36 x 40		36 x 40		46 x 52		46 x 52		55 x 60	
CH x l min DS	-		11 x 13		14 x 16		17 x 19		-		22 x 25		22 x 25		27 x 29		27 x 30		-		36 x 40		36 x 40		46 x 52		46 x 52		55 x 61		55 x 61		75 x 81	

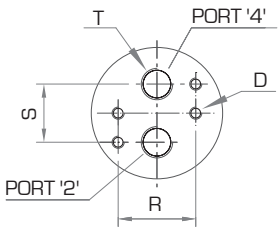
Note:

* The stroking time values refer to operations in clearly defined testing conditions. Please contact Air Torque for further information.

AIR CONNECTION VDI/VDE 3845 + EN 15714-3



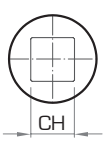
For models AT045U ÷ AT751U



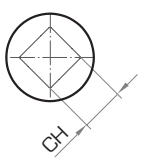
For models AT801U and AT1001U

DOUBLE SQUARE **(DS)**

PARALLEL SINGLE SQUARE **(SQ-L)**



DIAGONAL SINGLE SQUARE **(SQ-D)**

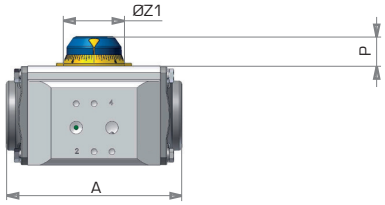


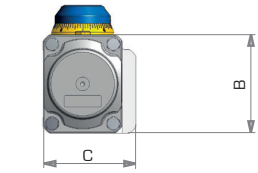
DIMENSIONS AND TECHNICAL DATA

FRONT VIEW

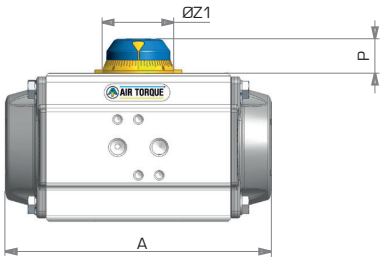
SIDE VIEW

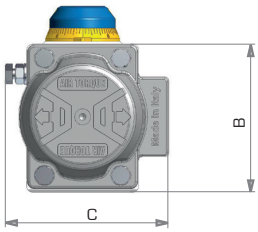
AT045U



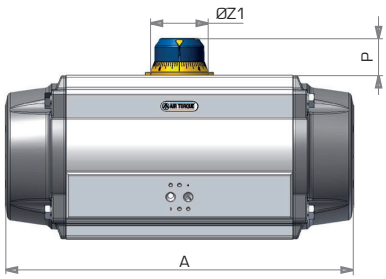


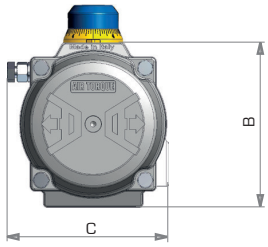
AT051U ÷ AT101U



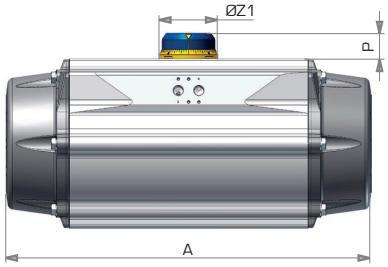


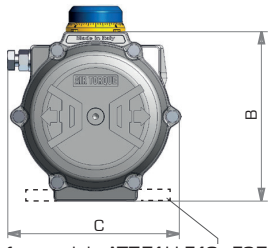
AT201U ÷ AT651U





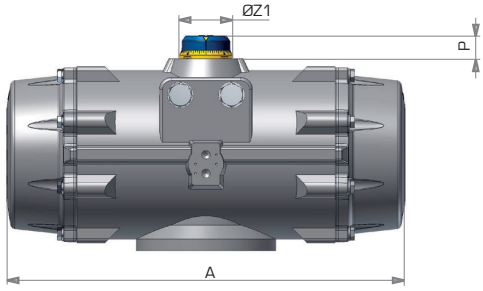
AT701U ÷ AT751U

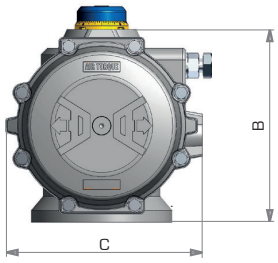




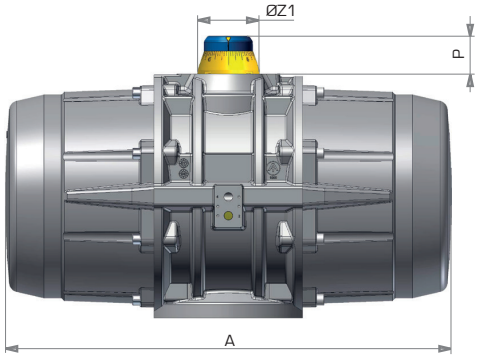
only for models AT751U F16+F25

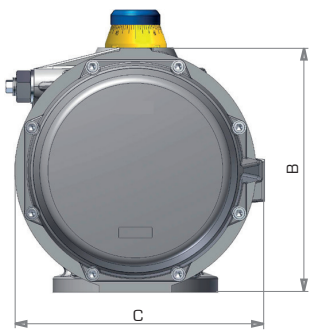
AT801U





AT1001U

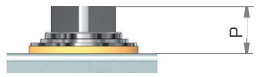




TOP DETAIL

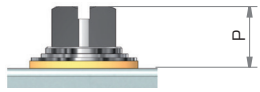
AT051U ÷ AT101U

Square Top Drive Shaft
for protection levels "A" "B" "D" "P"



AT045U ÷ AT101U

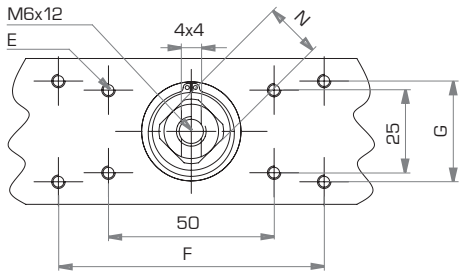
Integral Drive Shaft
AT045U: Protection levels "A" "B" "D" "P",
AT051U and AT101U: Protection levels "E" "F"



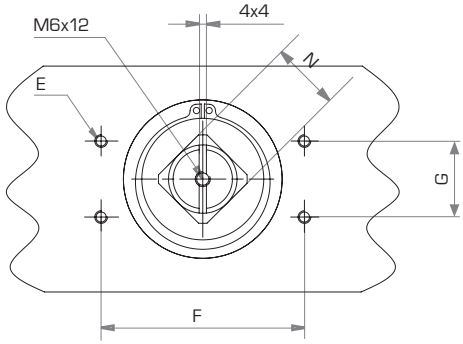
AT201U ÷ AT1001U

Top adaptor drive shaft for protection levels "A" "B" "D" "P"
Integral drive shaft for protection levels "E" "F"

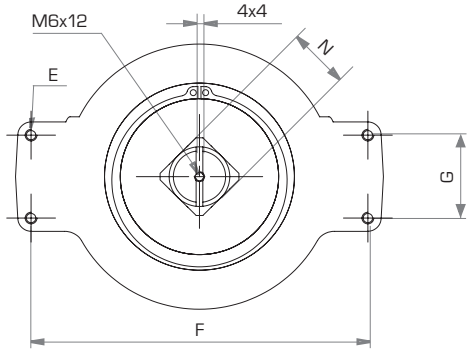
AT045U



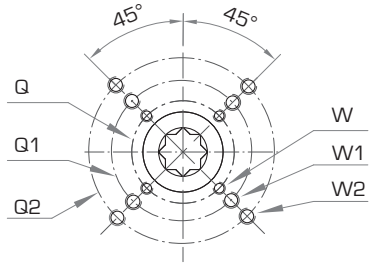
AT051U ÷ AT751U



AT801U ÷ AT1001U



BOTTOM VIEW ISO 5211



DIMENSIONS AND TECHNICAL DATA

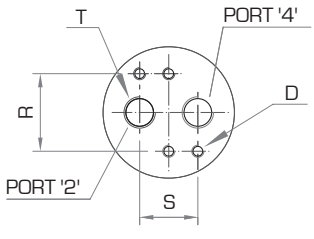
Technical data (Imperial Unit - Dimensions in inch)

ACTUATOR MODEL		AT045U		AT051U		AT101U		AT201U		AT251U		AT301U		AT351U		AT401U		AT451U		AT501U		AT551U		AT601U		AT651U		AT701U		AT751U		AT801U		AT1001U	
		D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S
A		4,65		5,33		6,04		8,01		9,49		10,20		11,97		13,11		15,53		16,63		18,66		20,79		23,82		27,95		31,97		33,66		37,40	
B		2,60		2,72		3,35		4,02		4,53		5,00		5,71		6,18		6,97		7,72		8,68		9,65		11,75		12,99		15,08		16,14		20,39	
C		2,44		2,80		3,33		3,66		4,17		4,67		5,35		5,77		6,54		7,13		7,87		8,72		10,31		12,99		14,61		16,46		20,79	
D		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M6x10		M6x10		M6x10		M6x10		M6x10	
E		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M5x8		M6x10	
F		3,15		3,15		3,15		3,15		3,15		3,15		3,15		3,15		3,15		3,15		5,12		5,12		5,12		5,12		5,12		5,12		7,87	
G		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,18		1,97	
N		0,43		0,43		0,43		0,67		0,67		0,67		1,06		1,06		1,06		1,06		1,42		1,42		1,42		1,42		1,42		1,42		1,42	
P		0,59 / 0,79		0,79		0,79		0,79		0,79		0,79		1,18		1,18		1,18		1,18		1,97		1,97		1,97		1,97		1,97		1,97		3,15	
R		1,26		1,26		1,26		1,26		1,26		1,26		1,26		1,26		1,26		1,26		1,26		1,26		1,77		1,77		1,77		1,77		1,77	
S		0,94		0,94		0,94		0,94		0,94		0,94		0,94		0,94		0,94		0,94		0,94		0,94		1,57		1,57		1,57		1,57		1,57	
T ISO 228		1/8"		1/8"		1/8"		1/8"		1/8"		1/4"		1/4"		1/4"		1/4"		1/4"		1/4"		1/4"		3/8"		1/2"		1/2"		1/2"		1/2"	
øZ1		1,65		1,65		1,65		1,65		1,65		1,65		2,28		2,28		2,66		2,66		3,15		3,15		4,53		4,53		4,53		4,53		5,31	
ISO Flange		F04		F04		F05 + F07		F05 + F07		F05 + F07		F07 + F10		F07 + F10		F07 + F10		F10 + F12		F10 + F12		F14		F14		F16		F16		F16		F16 + F25		F16 + F25 + F30	
Q		1,65		1,65		1,97		1,97		1,97		2,76		2,76		2,76		4,02		4,02		5,51		5,51		6,5		6,5		6,5		6,5		6,5	
Q1		-		-		2,76		2,76		2,76		4,02		4,02		4,02		4,92		4,92		-		-		-		-		-		10		10	
Q2		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		11,73	
W		M5		M5		M6		M6		M6		M8		M8		M8		M10		M10		M16		M16		M20		M20		M20		M20		M20	
W1		-		-		M8		M8		M8		M10		M10		M10		M12		M12		-		-		-		-		-		M16		M16	
W2		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		M20			
OPTIONAL ISO Flange		F03		F03 + F05		F04 + F07 F03 + F05 F05		F04 + F07 F05		F07		F05 + F07 F07		F10		F10		F12		F12		F10 + F12		F10 + F12		F12 F14		F12 F14		F14 F16 + F25		-		-	
* Opening Time	(s)	0,15	0,2	0,2	0,25	0,25	0,3	0,3	0,4	0,4	0,5	0,5	0,7	0,7	0,9	0,9	1,2	1,2	1,5	1,5	1,8	2	2,4	2,7	3,5	3,5	4,1	4	4,5	5	6	6	7,5	8	10
* Closing Time	(s)	0,2	0,25	0,25	0,3	0,3	0,35	0,35	0,5	0,5	0,6	0,6	0,9	0,8	1,1	1,1	1,4	1,4	1,8	1,7	2,1	2,2	2,8	3,2	4	4	4,6	4,5	5	6	7	7	8,5	9	11
Air Volume Opening	(in^3)	3,66		5,5		9,8		18,9		31,1		43,3		72,6		94		147,1		191,6		260		362,5		610,2		884,8		1.220		1.526		2.990	
Air Volume Closing	(in^3)	6,1		9,2		15,9		29,9		47,6		67,7		109,8		142,8		230,7		300,2		420,5		577,3		927,6		1.305		2.014		2.441		5.126	
Approx. Weight	(lb)	1,65	1,98	2,4	2,9	3,5	4,0	6,0	6,6	8,4	9,7	11,5	13,2	17,9	20,7	22,0	27,3	31,3	37,7	39,2	47,2	53,6	72,1	75,6	96,1	120	152	168	211	260	331	280	371	375	525
Typical Drive Shaft connection for protection "A", "B", "D", "P"																																			
CH x l min	SQ	-		0,35 x 0,43		0,35 x 0,43		0,55 x 0,75		0,55 x 0,75		0,67 x 0,79		0,87 x 0,98		0,87 x 0,98		0,87 x 1,38		0,87 x 1,57		1,42 x 1,57		0,87 x 1,57		1,06 x 1,57		1,06 x 1,57		1,81 x 2,05		2,17 x 2,40		2,95 x 3,19	
		-		0,43 x 0,51		0,55 x 0,63		0,67 x 0,75		0,67 x 0,79		0,87 x 0,98		-		1,06 x 1,14		1,06 x 1,18		1,06 x 1,18		-		1,42 x 1,57		1,81 x 1,97		1,81 x 1,97		2,17 x 2,36		-		-	
	DS	0,35 x 0,43		0,43 x 0,51		0,43 x 0,75		0,55 x 0,75		0,67 x 0,79		0,67 x 0,98		0,67 x 0,98		0,87 x 1,38		1,06 x 1,57		1,06 x 1,57		1,06 x 1,57		1,06 x 1,57		1,42 x 1,57		1,42 x 1,57		1,81 x 2,05		1,81 x 2,05		2,17 x 2,36	
		0,43 x 0,47		-		0,55 x 0,63		0,67 x 0,75		-		0,87 x 0,98		0,87 x 1,26		1,06 x 1,14		-		-		1,42 x 1,57		1,42 x 1,57		1,81 x 2,52		1,81 x 2,05		2,17 x 2,40		2,17 x 2,40		2,95 x 3,19	
Typical Drive Shaft connection for protection "E", "F"																																			
CH x l min	DS	-		0,35 x 0,43		0,43 x 0,75		0,55 x 0,75		0,67 x 0,79		0,67 x 0,98		0,67 x 0,98		0,87 x 1,38		0,87 x 1,38		1,06 x 1,57		1,06 x 1,38		1,06 x 1,57		1,42 x 1,57		1,42 x 1,57		1,81 x 2,05		1,81 x 2,05		2,17 x 2,36	
		-		0,43 x 0,51		0,55 x 0,63		0,67 x 0,75		-		0,87 x 0,98		0,87 x 0,98		1,06 x 1,14		1,06 x 1,18		-		1,42 x 1,57		1,42 x 1,57		1,81 x 2,05		1,81 x 2,05		2,17 x 2,40		2,17 x 2,40		2,95 x 3,19	

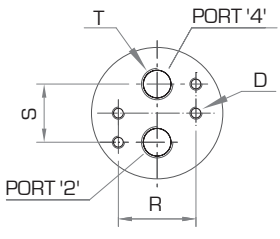
Note:

* The stroking time values refer to operations in clearly defined testing conditions. Please contact Air Torque for further information.

AIR CONNECTION VDI/VDE 3845 + EN 15714-3

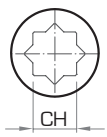


For models AT045U ÷ AT751U

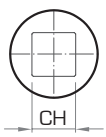


For models AT801U and AT1001U

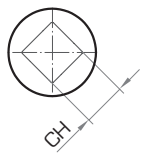
DOUBLE SQUARE **(DS)**



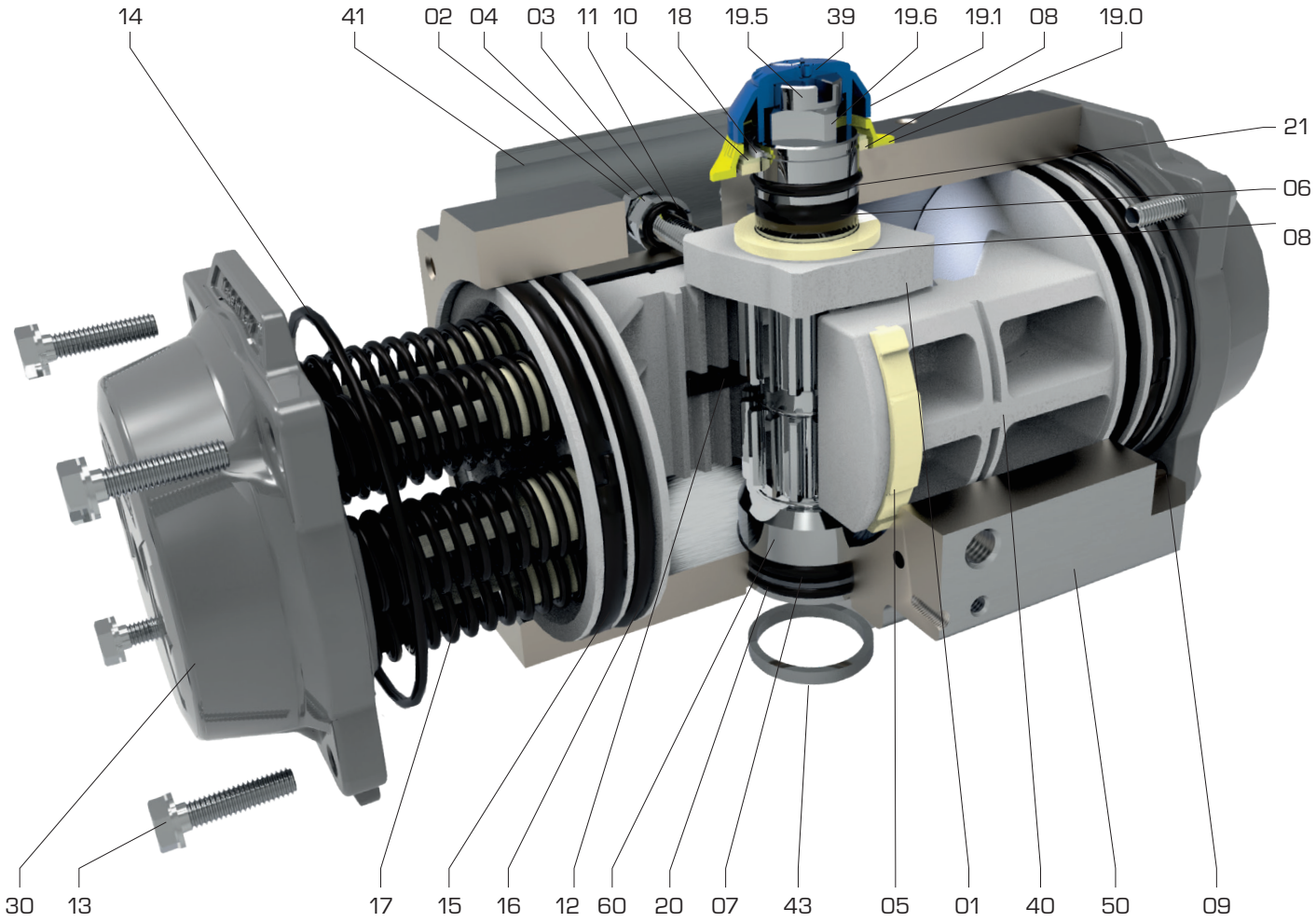
PARALLEL SINGLE SQUARE **(SQ-L)**



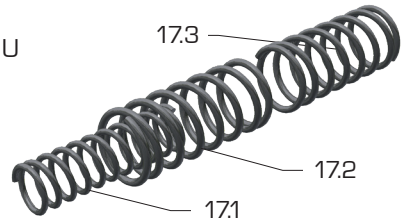
DIAGONAL SINGLE SQUARE **(SQ-D)**



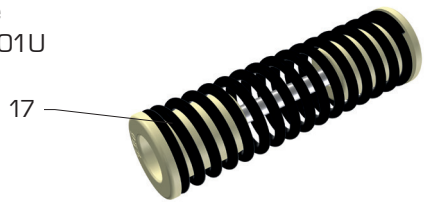
PARTS AND MATERIALS



Springs for
AT045U ÷ AT051U



Spring cartridge
AT101U ÷ AT1001U

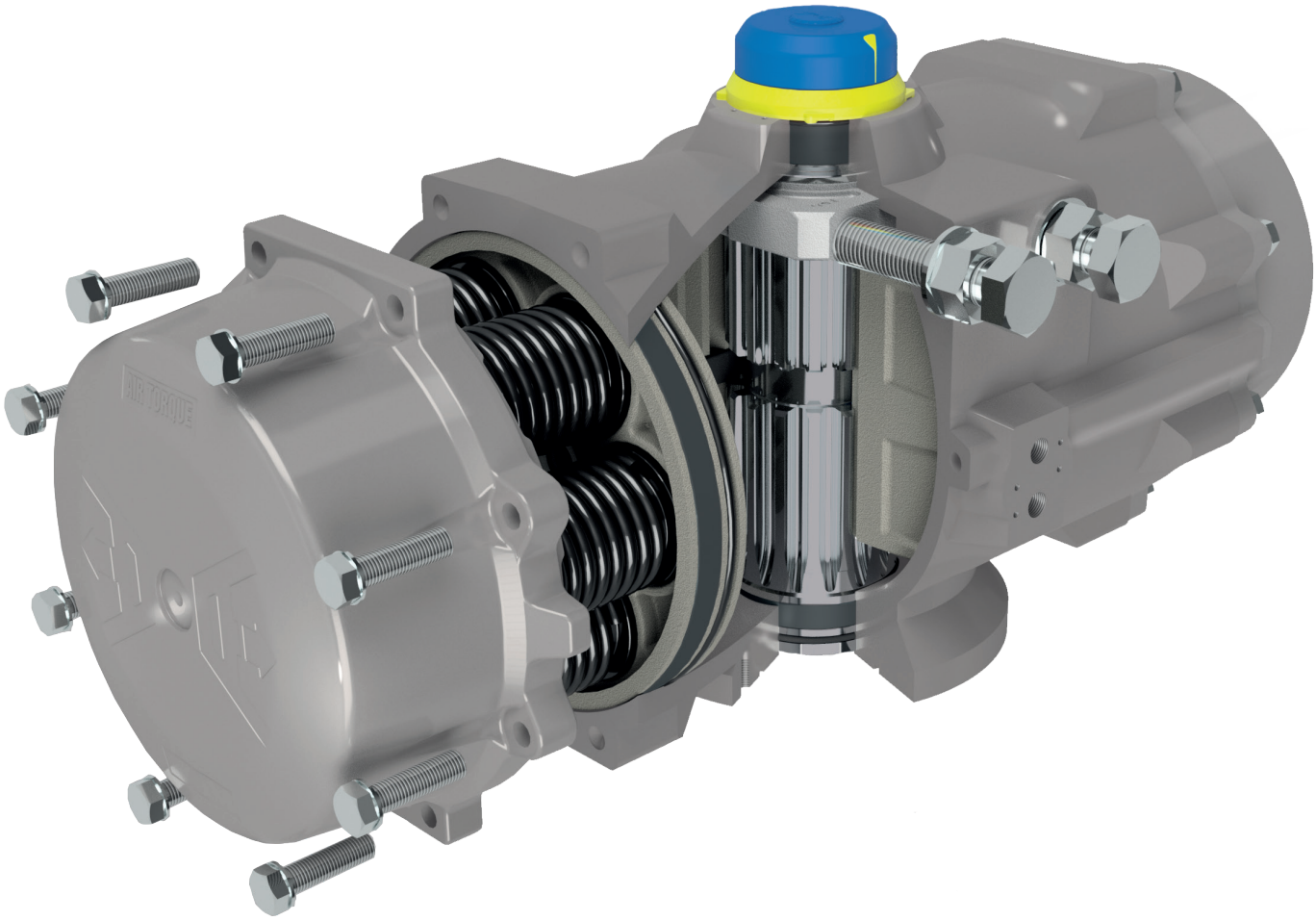


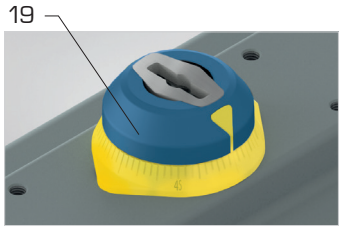
PART N°		UNIT Q.TY	NOTE	PART DESCRIPTION	STANDARD MATERIAL
01		1	NA for AT045U	OCTI-CAM (Stop arrangement)	Stainless Steel (only for AT051U ÷ AT301U)
					Carbon Steel, Zinc coated
02		2	NA for AT045U	STOP CAP SCREW	Stainless Steel
02.1		2	only for AT1001U	SPRING CLIP (Anti-blowout stop screw)	Stainless Steel
03		2	NA for AT045U	WASHER	Stainless Steel
04		2	NA for AT045U	NUT (Stop screw)	Stainless Steel
05	○	2		BEARING (Piston back)	High-grade polymers
		4	for AT1001U		
06	○	1		BEARING (Pinion top)	High-grade polymers
07	○	1		BEARING (Pinion bottom)	High-grade polymers
08	○	2	1 pc. for AT045U	THRUST BEARING (Pinion)	High-grade polymers
09	○ □	2	NA for AT801U ÷ AT1001U	PLUG	M-NBR / Silicone
09.1	○ □	2	only for AT801U ÷ AT1001U	"O" RING PLUG	M-NBR / Silicone
10		1		THRUST WASHER (Pinion)	Stainless Steel
11	○ □	2	NA for AT045U	"O" RING (Stop screw)	M-NBR
12		2	NA for AT045U	PISTON GUIDE	High-grade polymers

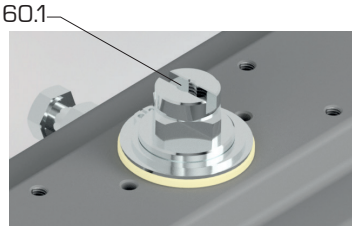
○ Parts included in Complete spare parts kit
□ Parts included in "O" ring spare parts kit

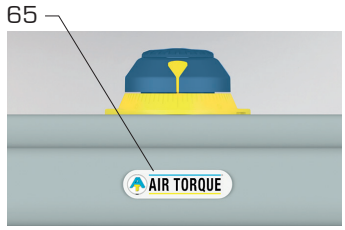
PARTS AND MATERIALS

AT801U







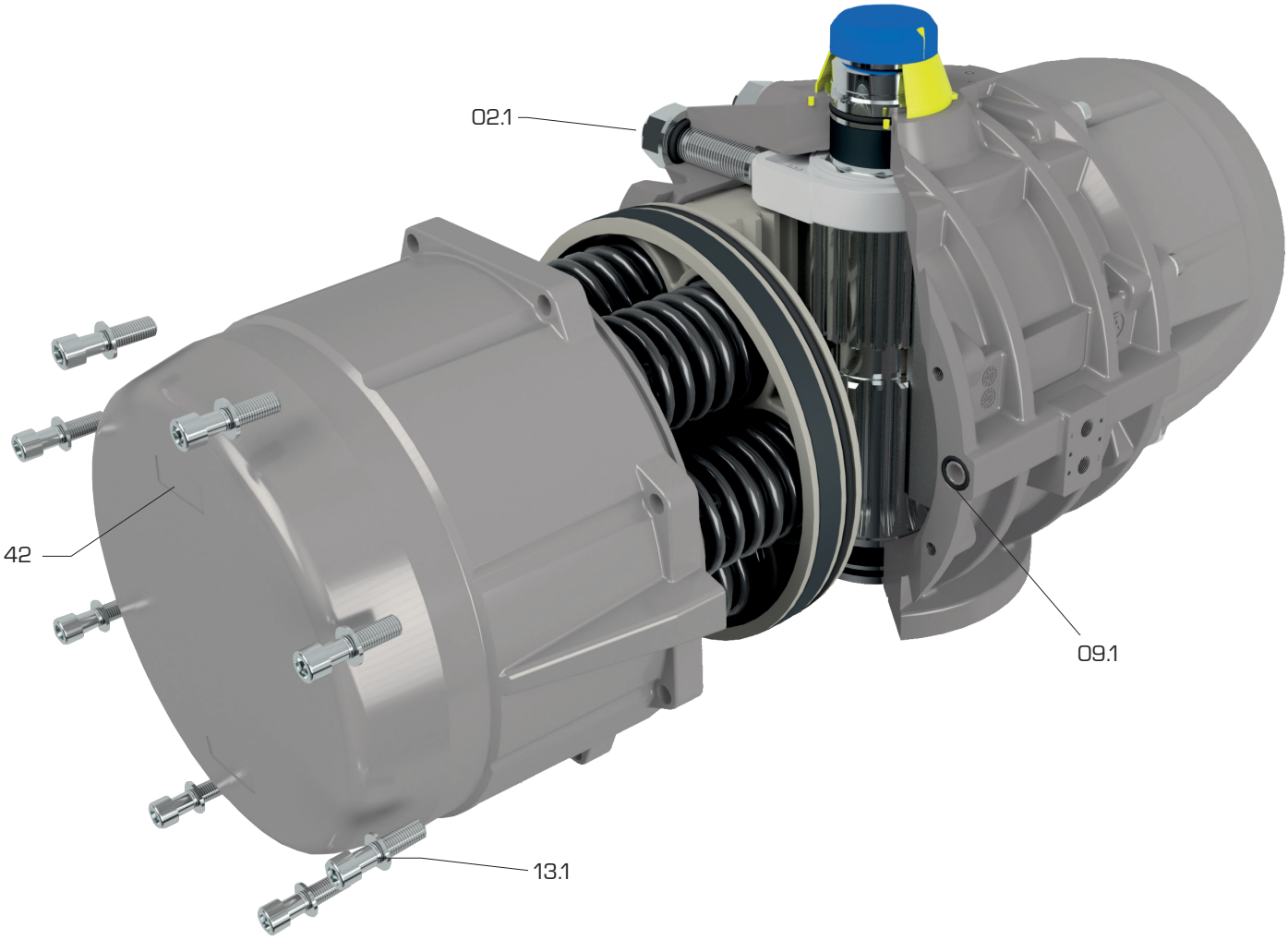


PART N°		UNIT Q.TY	NOTE	PART DESCRIPTION	STANDARD MATERIAL
13		8	for AT045U ÷ AT651U	CAP SCREW (End cap)	Stainless Steel
		12	for AT701U ÷ AT751U		
		16	for AT801U ÷ AT1001U		
13.1		16	only for AT1001U	WASHER (Cap Screw end cap)	Stainless Steel
14	○ □	2		O-RING (End cap)	M-NBR
15	○	2		BEARING (Piston head)	High-grade polymers
16	○ □	2		"O" RING (Piston)	M-NBR
17		max. 12	for AT101U ÷ AT1001U	SPRING (Cartridge)	SiCr Spring Alloy Steel coated
17.1		max. 2	only for AT045U	SPRING	
17.2					
17.3		max. 4	only for AT051U		
18		1		SPRING CLIP (Pinion)	Spring Steel, ENP
19		1	for AT045U ÷ AT101U	POSITION INDICATOR	High-grade polymers / Stainless Steel
19.0		1		GRADUATED RING	High-grade polymers
19.1		1	NA for AT045U ÷ AT101U	POSITION INDICATOR	High-grade polymers
19.5		1	NA for AT045U ÷ AT101U	TOP ADAPTOR	Extruded Aluminium Alloy, Anodized
19.6		2	NA for AT045U ÷ AT101U	HEX. SOCKET SCREW (Top adaptor)	Stainless Steel

○ Parts included in Complete spare parts kit
□ Parts included in "O" ring spare parts kit

PARTS AND MATERIALS

AT1001U



PART N°		UNIT Q.TY / NOTE		PART DESCRIPTION	STANDARD MATERIAL
20	○ □	1		"O" RING (Pinion bottom)	M-NBR
21	○ □	1		"O" RING (Pinion top)	M-NBR
30		2		END CAP	Pressure Die Cast Aluminium Alloy, anodized and coated
					Cast Aluminium Alloy, anodized and coated (for AT1001U)
39		1		CAP SCREW (indicator)	High-grade polymers
40		2		PISTON	Pressure Die Cast Aluminium Alloy, anodized
					Cast Aluminium Alloy, anodized (for AT1001U)
41		1		ACTUATOR IDENTIFICATION LABEL	Polyester-Silver
42		2	Only for AT045U, AT751U and AT1001U	END CAP LABEL	Polyester-Silver
43		1		SPIGOT (Only on request)	Extruded Aluminium Alloy, anodized
50		1		BODY	Extruded Aluminium Alloy, coated
					Cast Aluminium Alloy, coated (for AT801U and AT1001U)
60		1		DRIVE SHAFT	Carbon Steel, ENP
					Extruded Aluminium Alloy, anodized (for AT045U and AT1001U)
60.1		1		INTEGRAL DRIVE SHAFT	Stainless Steel, ENP
65		1		PLASTIC INSERT	High-grade polymers

○ Parts included in Complete spare parts kit
□ Parts included in "O" ring spare parts kit

OUTPUT TORQUE (Nm)

SPRING RETURN TORQUE

Supply Pressure		2,5 bar		3 bar		3,5 bar		4 bar		4,2 bar		4,5 bar		5 bar		5,5 bar		6 bar		7 bar		8 bar		Spring stroke	
Model	Spring set	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	90° Start	0° End
AT045U	S 1-1	4,3	2,9																					3,1	1,7
	S 1-2			4,7	2,4																			4,8	2,6
	S 2-2					4,9	2,0	6,1	3,2	6,6	3,7	7,3	4,4											6,4	3,5
	S 2-3											6,6	2,8	7,8	4,0	9,0	5,2	10,2	6,4					8,0	4,2
	S 3-3															8,2	3,6	9,4	4,8	11,8	7,2	14,1	9,5	9,6	5,0
AT051U	S 1	5,0	3,0	7	4,7	8	6,3	10,0	8	9,4	8,3	11,7	9,6	13,3	11,3									5,3	3,3
	S 2	4	1,9	6,0	3,6	7,7	5,3	9,3	6,9	9	7,4	11,0	8,6	12,7	10,2	14,3	11,9							6,4	4,0
	S 3			5,3	2,5	7,0	4,2	8,7	5,8	8,2	6,6	10,3	7,5	12,0	9,2	13,7	10,8	15,3	12,5					7,4	4,6
	S 4					6,3	3	8,0	5	8,7	5,5	9,7	6,4	11,3	8,1	13,0	9,8	14,7	11,4	18,0	14,7			8,5	5,3
	S 5							7,3	3,7	7,0	4,9	9,0	5,4	10,7	7,0	12,3	8,7	14,0	10	17,3	13,7	20,6	17,0	9,6	5,9
	S 6											8,4	4,3	10,0	6,0	11,7	7,6	13,3	9,3	16,7	12,6	20,0	16	10,6	6,6
	S 7													9,4	4,9	11	6,6	13	8,2	16,0	11,6	19,3	14,9	11,7	7,3
	S 8															10,4	6	12,0	7,2	15,3	10,5	18,7	13,8	12,8	7,9
AT101U	S 05	9,1	6,2	12	9,2	15	12,1	17,9	15	19,1	16,2	20,8	17,9	23,8	20,9									8,4	5,5
	S 06	8	4,5	10,9	7,5	13,9	10,4	16,8	13,3	18	14,5	19,7	16,3	22,7	19,2	25,6	22,1							10,1	6,7
	S 07			9,8	5,8	12,8	8,7	15,7	11,6	16,9	12,8	18,6	14,6	21,5	17,5	24,5	20,4	27,4	23,4					11,8	7,8
	S 08					11,6	7	14,6	10	15,7	11,1	17,5	12,9	20,4	15,8	23,4	18,7	26,3	21,7	32,2	27,5			13,5	8,9
	S 09							13,5	8,3	14,6	9,4	16,4	11,2	19,3	14,1	22,3	17,1	25,2	20	31,1	25,9	36,9	31,7	15,2	10
	S 10											15,3	9,5	18,2	12,4	21,1	15,4	24,1	18,3	29,9	24,2	35,8	30	16,9	11,1
	S 11													17,1	10,8	20	13,7	23	16,6	28,8	22,5	34,7	28,3	18,6	12,2
	S 12															18,9	12	21,9	14,9	27,7	20,8	33,6	26,7	20,2	13,3
AT201U	S 05	18	11,8	23,8	17,6	29,7	23,4	35,5	29,2	37,8	31,6	41,3	35	47,1	40,9									17,3	11,1
	S 06	15,8	8,3	21,6	14,1	27,5	19,9	33,3	25,8	35,6	28,1	39,1	31,6	44,9	37,4	50,7	43,2							21	13,3
	S 07			19,4	10,7	25,2	16,5	31,1	22,3	33,4	24,6	36,9	28,1	42,7	33,9	48,5	39,8	54,3	45,6					24,2	15,5
	S 08					23	13	28,8	18,8	31,2	21,2	34,7	24,7	40,5	30,5	46,3	36,3	52,1	42,1	63,7	53,7			27,7	17,7
	S 09							26,6	15,4	29	17,7	32,5	21,2	38,3	27	44,1	32,8	49,9	38,6	61,5	50,3	73,2	61,9	31	19,9
	S 10											30,2	17,7	36,1	23,6	41,9	29,4	47,7	35,2	59,3	46,8	71	58,5	34,6	22,1
	S 11													33,8	20,1	39,7	25,9	45,5	31,7	57,1	43,4	68,7	55	38,1	24,3
	S 12															37,5	22,4	43,3	28,3	54,9	39,9	66,5	51,5	41,5	26,5
AT251U	S 05	27,4	16,9	36,6	26	45,7	35,2	54,9	44,3	58,5	48	64	53,5	73,2	62,6									28,9	18,3
	S 06	23,8	11,1	32,9	20,3	42,1	29,4	51,2	38,6	54,9	42,2	60,4	47,7	69,5	56,9	78,7	66							34,7	22
	S 07			29,2	14,5	38,4	23,6	47,5	32,8	51,2	36,4	56,7	41,9	65,8	51,1	75	60,2	84,2	69,4					40,4	25,7
	S 08					34,7	17,9	43,9	27	47,5	30,7	53	36,2	62,2	45,3	71,3	54,5	80,5	63,6	98,8	81,9			46,2	29,3
	S 09							40,2	21,2	43,9	24,9	49,4	30,4	58,5	39,5	67,7	49	76,8	57,8	95,1	76,1	113	94,5	52	33
	S 10											45,7	24,6	54,8	33,8	64	42,9	73,1	52,1	91,5	70,4	110	88,7	57,8	36,7
	S 11													51,2	28	60,3	37,1	69,5	46,3	87,8	64,6	106	82,9	63,5	40,3
	S 12															56,7	31,4	65,8	40,5	84,1	58,8	102	77,1	69,3	44
AT301U	S 05	41,1	27,1	54,4	40,4	67,7	53,7	81	67	86,3	72,3	94,3	80,3	108	93,6									39,4	25,3
	S 06	36,1	19,2	49,4	32,5	62,7	45,8	76	59,1	81,3	64,4	89,3	72,4	103	85,7	116	99							47,3	30,4
	S 07			44,3	24,6	57,6	37,9	70,9	51,2	76,2	56,5	84,2	64,5	97	77,8	111	91,1	124	104					55,1	35,5
	S 08					52,5	30	65,8	43,3	71,1	48,7	79,1	56,6	92,4	69,9	106	83,2	119,0	96,5	146	123			63	40,5
	S 09							60,8	35,5	66,1	40,8	74,0	48,8	87,3	62,1	101	75,3	113,9	88,6	141	115	167	142	70,9	45,6
	S 10											69	40,9	82,3	54,2	95,6	67,5	109	80,8	135	107	162	134	78,8	50,7
	S 11													77,2	46,3	90,5	59,6	104	72,9	130	99	157	126	86,7	55,7
	S 12															85,4	51,7	99	65	125	92	152	118	94,5	60,8
AT351U	S 05	66,5	41,9	87,9	63,4	109,4	84,9	131	106	140	115	152	128	174	149									65,5	41
	S 06	58,3	28,8	79,7	50,3	101,2	71,8	123	93,3	131	102	144	115	166	136	187	158							78,6	49,2
	S 07			71,5	37,2	93	58,7	115	80,2	123	88,8	136	102	158	123	179	145	200	166					91,7	57,4
	S 08					84,8	45,6	106	67,1	115	75,7	128	88,6	149	110	171	132	192	153	235	196			105	65,6
	S 09							98,1	54	107	62,6	120	75	141	97	163	118	184	140	227	183	270	226	118	73,8
	S 10											111	62,4	133	83,9	154	105	176	127	219	170	262	213	131	82
	S 11													125	70,8	146	92,3	168	114	211	157	254	200	144	90,2
	S 12															138	79,2	159	101	202	144	245	187	157	98,4
AT401U	S 05	86	56,1	114	83,8	141	111	169	139	180	150	197	167	224	195									82,4	52,5
	S 06	75,5	39,6	103	67,3	131	95,0	159	123	170	134	186	150	214	178	242	206							98,9	63
	S 07			92,7	50,8	120	78,5	148	106	159	117	176	134	203	162	231	189	259	217					115	73,5
	S 08					110	62	138	89,7	149	101	165	117	193	145	221	173	248	201	304	256			132	84
	S 09							127	73,3	138	84,3	155	101	182	129	210	156	238	184	293	239	349	295	148	94,5
	S 10											144	84,5	172	112	200	140	227	168	283	223	338	278	165	105
	S 11													161	95,7	189	123	217	151	272	206	328	262	181	116
	S 12															179	107	206	135	262	190	317	245	198	126
AT451U	S 05	135	89	179	132	222	176	265	219	283	236	309	262	352	306									129	82,4
	S 06	119	63	162	106	206	149,7	249	193	266	211	293	237	336	280	379	324							155	99
	S 07			146	80	189	124	233	167	250	185	276	211	320	254	363	298	406	341					180	115
	S 08					173	98	216	142	233	159	260	185	303	229	347	272	390	316	477	403			206	132
	S 09							200	116	217	133	243	159	287	203	330	246	374	290	460	377	547	464	232	148
	S 10											227	134	270	177	314	221	357	264	444	351	531	438	258	165
	S 11													254	151	297	195	341	238	428	325	515	412	283	181
	S 12															281	169	324	213	411	299	498	386	309	198
PT501U	S 05	171	118	228	174	285	231	342	288	364	310	398	344	455	401									166	112
	S 06	149	84	206	141	262	198	319	255	342	277	376	311	433	368	489	425							199	135
	S 07			183	108	240	165	297	221	319	244	353	278	410	335	467	391	524	448					233	157
	S 08					218	131	274	188	297	211	331	245	388	302	444	358	501	415	615	528			266	180
	S 09							252	155	275	178	309	212	365	268	422	325	479	382	592	495	706	609	299	202
	S 10											286	178	343	235	400	292	456	349	570	462	683	575	332	224
	S 11													320	202	377	259	434	315	547	429	661	542	365	247
	S 12															355	225	411	282	525	396	638	509	399	269
AT551U	S 05	225	146	301	223	378	299	455	376	485	406	531	452	608	529									237	158
	S 06	193	99	270	175	346	252	423	329	454	359	500	405	576	482	653	558							284	190
	S 07			238	128	315	205	391	281	422	312	468	358	544	434	621	511	698	587					332	221
	S 08					283	157	360	234	390	264	436	310	513	387	589	464	666	540	819	693			379	253
	S 09							328	186	359	217	405	263	481	340	558	416	634	493	788	646	941	799	426	285
	S 10											373	216	450	292	526	369	603	445	756	599	909	752	474	316
	S 11													418	245	495	321	571	398	724	551	877	704	521	348
	S 12															463	274	540	351	693	504	846	657	568	379

Spring set	The above values are the output torque that remain available to operate the valve when the port "2" is pressurized	Output torque available when air supply fails.

OUTPUT TORQUE (Nm)

SPRING RETURN TORQUE

Supply Pressure		2,5 bar		3 bar		3,5 bar		4 bar		4,2 bar		4,5 bar		5 bar		5,5 bar		6 bar		7 bar		8 bar		Spring stroke	
Model	Spring set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
AT601U	S 05	**319**	**217**	426	323	532	430	638	536	681	578	745	642	851	749									**315**	**213**
	S 06	277	154	**383**	**260**	489	367	596	473	638	515	702	579	808	686	915	792							**378**	**255**
	S 07			341	197	**447**	**304**	553	410	596	453	660	516	766	623	872	729	979	835					**441**	**298**
	S 08					404	241	**511**	**347**	**553**	**390**	617	453	723	560	830	666	936	772	1.149	985			**504**	**340**
	S 09							468	284	511	327	**575**	**390**	681	497	787	603	894	709	1.106	922	1.319	1.135	**567**	**383**
	S 10											532	327	**638**	**434**	745	540	851	646	1.064	859	1.277	1.072	**630**	**425**
	S 11													596	371	**702**	**477**	809	583	1.021	796	1.234	1.009	**693**	**468**
	S 12															660	414	**766**	**520**	979	733	1.192	946	**756**	**510**
AT651U	S 05	**533**	**372**	712	551	890	730	1.069	908	1.141	980	1.248	1.087	1.426	1.266									**521**	**360**
	S 06	461	268	**640**	**447**	818	625	997	804	1.068	876	1.176	983	1.354	1.162	1.533	1.340							**625**	**433**
	S 07			568	343	**746**	**521**	925	700	996	771	1.104	879	1.282	1.057	1.461	1.236	1.640	1.415					**730**	**505**
	S 08					674	417	**853**	**596**	**924**	**667**	1.032	774	1.210	953	1.389	1.132	1.568	1.310	1.925	1.668			**834**	**577**
	S 09							781	491	852	563	**959**	**670**	1.138	849	1.317	1.028	1.495	1.206	1.853	1.564	2.210	1.921	**938**	**649**
	S 10											887	566	**1.066**	**745**	1.245	923	1.423	1.102	1.781	1.459	2.138	1.817	**1.042**	**721**
	S 11													994	640	**1.173**	**819**	1.351	998	1.709	1.355	2.066	1.713	**1.146**	**793**
	S 12															1.101	715	**1.279**	**894**	1.637	1.251	1.994	1.608	**1.251**	**865**
AT701U	S 05	**751**	**496**	1.011	755	1.270	1.015	1.529	1.274	1.633	1.378	1.789	1.533	2.048	1.793									**801**	**546**
	S 06	642	336	**902**	**595**	1.161	854	1.420	1.114	1.524	1.217	1.680	1.373	1.939	1.632	2.198	1.892							**961**	**655**
	S 07			792	435	**1.052**	**694**	1.311	954	1.415	1.057	1.570	1.213	1.830	1.472	2.089	1.732	2.349	1.991					**1.121**	**764**
	S 08					943	534	**1.202**	**793**	**1.306**	**897**	1.461	1.053	1.721	1.312	1.980	1.571	2.239	1.831	2.758	2.350			**1.281**	**873**
	S 09							1.093	633	1.197	737	**1.352**	**893**	1.612	1.152	1.871	1.411	2.130	1.671	2.649	2.189	3.168	2.708	**1.442**	**982**
	S 10											1.243	732	**1.503**	**992**	1.762	1.251	2.021	1.510	2.540	2.029	3.059	2.548	**1.602**	**1.091**
	S 11													1.393	832	**1.653**	**1.091**	1.912	1.350	2.431	1.869	2.950	2.388	**1.762**	**1.200**
	S 12															1.544	931	**1.803**	**1.190**	2.322	1.709	2.840	2.228	**1.922**	**1.309**
AT751U	S 05	**1.064**	**703**	1.423	1.062	1.782	1.421	2.141	1.780	2.284	1.924	2.500	2.139	2.859	2.498									**1.092**	**731**
	S 06	918	485	**1.277**	**844**	1.636	1.203	1.995	1.562	2.138	1.706	2.354	1.921	2.713	2.280	3.072	2.639							**1.310**	**877**
	S 07			1.131	626	**1.489**	**985**	1.848	1.344	1.992	1.487	2.207	1.703	2.566	2.062	2.925	2.421	3.284	2.780					**1.528**	**1.023**
	S 08					1.343	766	**1.702**	**1.125**	**1.846**	**1.269**	2.061	1.484	2.420	1.843	2.779	2.202	3.138	2.561	3.856	3.279			**1.746**	**1.170**
	S 09							1.556	907	1.700	1.051	**1.915**	**1.266**	2.274	1.625	2.633	1.984	2.992	2.343	3.710	3.061	4.428	3.779	**1.965**	**1.316**
	S 10											1.769	1.048	**2.128**	**1.407**	2.487	1.766	2.846	2.125	3.564	2.843	4.282	3.560	**2.183**	**1.462**
	S 11													1.982	1.188	**2.341**	**1.547**	2.700	1.906	3.418	2.624	4.135	3.342	**2.401**	**1.608**
	S 12															2.194	1.329	**2.553**	**1.688**	3.271	2.406	3.989	3.124	**2.620**	**1.754**
AT801U	S 05	**1.332**	**1.014**	1.783	1.465	2.233	1.915	2.684	2.365	2.864	2.546	3.134	2.816	3.585	3.266									**1.238**	**920**
	S 06	1.149	767	**1.599**	**1.217**	2.049	1.667	2.500	2.118	2.680	2.298	2.950	2.568	3.401	3.019	3.851	3.469							**1.486**	**1.104**
	S 07			1.415	969	**1.865**	**1.420**	2.316	1.870	2.496	2.050	2.766	2.321	3.217	2.771	3.667	3.222	4.118	3.672					**1.733**	**1.288**
	S 08					1.682	1.172	**2.132**	**1.623**	**2.312**	**1.803**	2.582	2.073	3.033	2.524	3.483	2.974	3.934	3.424	4.835	4.325			**1.981**	**1.472**
	S 09							1.948	1.375	2.128	1.555	**2.398**	**1.825**	2.849	2.276	3.299	2.726	3.750	3.177	4.651	4.078	5.551	4.978	**2.229**	**1.656**
	S 10											2.215	1.578	**2.665**	**2.028**	3.115	2.479	3.566	2.929	4.467	3.830	5.386	4.731	**2.476**	**1.839**
	S 11													2.481	1.781	**2.931**	**2.231**	3.382	2.682	4.283	3.582	5.184	4.483	**2.724**	**2.023**
	S 12															2.748	1.983	**3.198**	**2.434**	4.099	3.335	5.000	4.236	**2.971**	**2.207**
AT1001U	S 05	**2.474**	**1.695**	3.308	2.529	4.142	3.362	4.976	4.196	5.310	4.530	5.810	5.030	6.644	5.864									**2.475**	**1.695**
	S 06	2.135	1.200	**2.969**	**2.034**	3.803	2.867	4.637	3.701	4.971	4.035	5.471	4.535	6.305	5.369	7.139	6.203							**2.970**	**2.034**
	S 07			2.630	1.539	**3.464**	**2.373**	4.298	3.206	4.632	3.540	5.132	4.040	5.966	4.874	6.800	5.708	7.633	6.542					**3.465**	**2.373**
	S 08					3.125	1.878	**3.959**	**2.711**	**4.292**	**3.045**	4.793	3.545	5.627	4.379	6.461	5.213	7.294	6.047	8.962	7.715			**3.960**	**2.712**
	S 09							3.620	2.217	3.953	2.550	**4.454**	**3.050**	5.288	3.884	6.122	4.718	6.955	5.552	8.623	7.220	10.291	8.887	**4.455**	**3.051**
	S 10											4.115	2.555	**4.949**	**3.389**	5.783	4.223	6.616	5.057	8.284	6.725	9.952	8.393	**4.949**	**3.390**
	S 11													4.610	2.894	**5.444**	**3.728**	6.277	4.562	7.945	6.230	9.613	7.898	**5.444**	**3.729**
	S 12															5.105	3.233	**5.938**	**4.067**	7.606	5.735	9.274	7.403	**5.939**	**4.068**
	Spring set	The above values are the output torque that remain available to operate the valve when the actuator port "2" is pressurized.																						Output torque available when air supply fails.	

DOUBLE ACTING TORQUE

Supply Pressure	2,5 bar	3 bar	3,5 bar	4 bar	4,2 bar	4,5 bar	5 bar	5,5 bar	6 bar	7 bar	8 bar
Model											
AT045U D	6,0	7,2	8,4	9,6	10,1	10,8	12,0	13,2	14,4	16,8	19,1
AT051U D	8,3	10,0	11,6	13,3	14,0	15,0	16,6	18,3	19,9	23,3	26,6
AT101U D	14,7	17,6	20,5	23,5	24,6	26,4	29,3	32,2	35,2	41,0	46,9
AT201U D	29,1	34,9	40,7	46,5	48,9	52,4	58,2	64,0	69,8	81,4	93,1
AT251U D	45,8	54,9	64,1	73,2	76,9	82,4	91,5	100,7	109,8	128,1	146,4
AT301U D	66,5	79,8	93,1	106	112	120	133	146	160	186	213
AT351U D	107	129	150	172	181	193	215	236	258	301	344
AT401U D	138	166	194	222	233	249	277	305	332	388	443
AT451U D	217	261	304	348	365	391	435	478	522	609	696
AT501U D	284	340	397	454	477	511	567	624	681	794	908
AT551U D	383	459	536	613	643	689	766	842	919	1.072	1.225
AT601U D	532	638	745	851	893	957	1.064	1.170	1.276	1.489	1.702
AT651U D	893	1.072	1.251	1.430	1.501	1.608	1.787	1.966	2.144	2.502	2.859
AT701U D	1.297	1.556	1.815	2.075	2.179	2.334	2.594	2.853	3.112	3.631	4.150
AT751U D	1.795	2.154	2.513	2.872	3.015	3.231	3.590	3.949	4.308	5.026	5.744
AT801U D	2.252	2.703	3.153	3.604	3.784	4.054	4.504	4.955	5.405	6.306	7.207
AT1001U D	4.169	5.003	5.837	6.671	7.005	7.505	8.339	9.173	10.007	11.674	**

** Contact AIR TORQUE for AT1001U D special consruction to operate at supply pressure of 8 bar (116 Psi).

OUTPUT TORQUE (Lb-In)

SPRING RETURN TORQUE

Supply Pressure		40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring stroke	
Model	Spring	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
	set	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
AT045U	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**
	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**
	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**
AT051U	S 1	51,9	34	72,2	54,4	92,5	74,7	113	94,9	133	115	153	136	174	156					**47,1**	**29,2**
	S 2	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 3	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**
	S 4			54,7	26,1	75	46,3	95,2	67	116	87	136	107	156	127	176	148	189	160	**75**	**46,8**
	S 5			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**
	S 6					63,3	27,6	83,5	47,9	104	68	124	88,4	144	109	165	129	177	141	**94,1**	**58,5**
	S 7					57,4	18,1	77,7	38,4	98,0	58,7	118	79,0	139	99	159	120	171	132	**104**	**64,3**
	S 8							71,9	29,0	92,1	49,2	112,4	69,5	133	90	153	110	165	122	**113**	**70,2**
AT101U	S 05	94	68,5	130	104	166	140	201	176	237	212	273	247	309	283					**74,7**	**49,1**
	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**
	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**
	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**
	S 12													240	179	276	214	297	236	**179**	**118**
AT201U	S 05	186	131	257	202	328	273	399	344	470	415	541	486	612	557					**153**	**97,8**
	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**
	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**
	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**
	S 12													475	342	546	413	589	456	**368**	**235**
AT251U	S 05	285	191	396	303	508	415	620	526	731	638	843	750	955	862					**256**	**162**
	S 06	252	140	476	252	476	364	587	475	699	587	811	699	922	810	1.034	922			**307**	**195**
	S 07	220	89	331	201	443	313	555	424	667	536	778	648	890	759	1.002	871	1.069	938	**358**	**227**
	S 08			299	150	411	261	522	373	634	485	746	597	858	708	969	820	1.036	887	**409**	**260**
	S 09					378	210	490	322	602	434	713	545	825	657	937	769	1.004	836	**460**	**292**
	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**
	S 12													728	504	839	616	906	683	**613**	**389**
AT301U	S 05	425	301	587	463	750	625	912	787	1.074	950	1.236	1.112	1.399	1.274					**349**	**224**
	S 06	380	231	542	393	705	555	867	718	1.029	880	1.192	1.042	1.354	1.205	1.516	1.367			**418**	**269**
	S 07	335	161	498	323	660	486	822	648	984	810	1.147	973	1.309	1.135	1.471	1.297	1.569	1.395	**488**	**314**
	S 08			453	254	615	416	777	578	940	741	1.102	903	1.264	1.065	1.426	1.227	1.524	1.325	**558**	**359**
	S 09					570	346	732	509	895	671	1.057	833	1.219	995	1.382	1.158	1.479	1.255	**627**	**404**
	S 10							688	439	850	601	1.012	763	1.174	926	1.337	1.088	1.434	1.185	**697**	**449**
	S 11									805	531	967	694	1.130	856	1.292	1.018	1.389	1.116	**767**	**493**
	S 12													1.085	786	1.247	949	1.344	1.046	**837**	**538**
AT351U	S 05	687	470	949	732	1.211	994	1.474	1.257	1.736	1.519	1.998	1.781	2.260	2.044					**580**	**363**
	S 06	614	354	876	616	1.139	878	1.401	1.141	1.663	1.403	1.926	1.665	2.188	1.928	2.450	2.190			**696**	**435**
	S 07	541	238	804	500	1.066	762	1.328	1.025	1.591	1.287	1.853	1.549	2.115	1.812	2.378	2.074	2.535	2.231	**812**	**508**
	S 08			731	384	993	646	1.256	909	1.518	1.171	1.780	1.433	2.043	1.696	2.305	1.958	2.463	2.115	**928**	**581**
	S 09					921	530	1.183	793	1.446	1.055	1.708	1.317	1.970	1.580	2.233	1.842	2.390	1.999	**1.044**	**653**
	S 10							1.111	677	1.373	939	1.635	1.201	1.898	1.464	2.160	1.726	2.317	1.883	**1.160**	**726**
	S 11									1.300	823	1.563	1.085	1.825	1.348	2.087	1.610	2.245	1.767	**1.276**	**798**
	S 12													1.753	1.232	2.015	1.494	2.172	1.652	**1.392**	**871**
AT401U	S 05	888	623	1.226	961	1.564	1.299	1.902	1.637	2.240	1.976	2.578	2.314	2.916	2.652					**729**	**465**
	S 06	795	477	1.133	815	1.471	1.154	1.809	1.492	2.147	1.830	2.485	2.168	2.823	2.506	3.161	2.844			**875**	**558**
	S 07	702	331	1.040	670	1.378	1.008	1.716	1.346	2.054	1.684	2.392	2.022	2.730	2.360	3.069	2.698	3.271	2.901	**1.021**	**651**
	S 08			947	524	1.285	862	1.623	1.200	1.961	1.538	2.299	1.876	2.637	2.214	2.976	2.552	3.178	2.755	**1.167**	**744**
	S 09					1.192	716	1.530	1.054	1.868	1.392	2.206	1.730	2.544	2.068	2.883	2.407	3.085	2.609	**1.313**	**837**
	S 10							1.437	908	1.775	1.246	2.113	1.584	2.452	1.923	2.790	2.261	2.993	2.464	**1.459**	**930**
	S 11									1.682	1.100	2.020	1.439	2.359	1.777	2.697	2.115	2.900	2.318	**1.604**	**1.023**
	S 12													2.266	1.631	2.604	1.969	2.807	2.172	**1.750**	**1.116**
AT451U	S 05	1.394	983	1.925	1.514	2.456	2.044	2.987	2.575	3.517	3.106	4.048	3.637	4.579	4.167					**1.140**	**729**
	S 06	1.248	755	1.779	1.285	2.310	1.816	2.841	2.347	3.372	2.878	3.902	3.409	4.433	3.939	4.964	4.470			**1.369**	**875**
	S 07	1.103	527	1.633	1.057	2.164	1.588	2.695	2.119	3.226	2.650	3.757	3.181	4.287	3.711	4.818	4.242	5.137	4.561	**1.597**	**1.021**
	S 08			1.488	829	2.018	1.360	2.549	1.891	3.080	2.422	3.611	2.952	4.142	3.483	4.672	4.014	4.991	4.333	**1.825**	**1.166**
	S 09					1.873	1.132	2.403	1.663	2.934	2.194	3.465	2.724	3.996	3.255	4.527	3.786	4.845	4.104	**2.053**	**1.312**
	S 10							2.258	1.435	2.788	1.965	3.319	2.496	3.850	3.027	4.381	3.558	4.699	3.876	**2.281**	**1.458**
	S 11									2.643	1.737	3.173	2.268	3.704	2.799	4.235	3.330	4.553	3.648	**2.509**	**1.604**
	S 12													3.558	2.571	4.089	3.102	4.408	3.420	**2.737**	**1.750**
AT501U	S 05	1.777	1.300	2.469	1.992	3.162	2.685	3.854	3.377	4.547	4.070	5.239	4.762	5.931	5.455					**1.470**	**993**
	S 06	1.578	1.006	2.271	1.698	2.963	2.391	3.655	3.083	4.348	3.776	5.040	4.468	5.733	5.161	6.425	5.853			**1.764**	**1.192**
	S 07	1.380	712	2.072	1.404	2.764	2.097	3.457	2.789	4.149	3.482	4.842	4.174	5.534	4.867	6.227	5.559	6.642	5.975	**2.058**	**1.390**
	S 08			1.873	1.110	2.566	1.803	3.258	2.495	3.951	3.188	4.643	3.880	5.336	4.573	6.028	5.265	6.444	5.681	**2.352**	**1.589**
	S 09					2.367	1.509	3.060	2.201	3.752	2.894	4.445	3.586	5.137	4.279	5.829	4.971	6.245	5.387	**2.646**	**1.788**
	S 10							2.861	1.907	3.553	2.600	4.246	3.292	4.938	3.985	5.631	4.677	6.046	5.093	**2.940**	**1.986**
	S 11									3.355	2.306	4.047	2.998	4.740	3.691	5.432	4.383	5.848	4.799	**3.234**	**2.185**
	S 12													4.541	3.397	5.234	4.089	5.649	4.505	**3.528**	**2.383**
AT551U	S 05	2.340	1.644	3.275	2.578	4.210	3.513	5.145	4.448	6.079	5.383	7.014	6.318	7.949	7.253					**2.096**	**1.399**
	S 06	2.060	1.225	2.995	2.159	3.930	3.094	4.865	4.029	5.800	4.964	6.734	5.899	7.669	6.833	8.604	7.768			**2.515**	**1.679**
	S 07	1.780	805	2.715	1.740	3.650	2.675	4.585	3.610	5.520	4.545	6.454	5.480	7.389	6.414	8.324	7.349	8.885	7.910	**2.934**	**1.959**
	S 08			2.435	1.321	3.370	2.256	4.305	3.191	5.240	4.126	6.175	5.060	7.109	5.995	8.044	6.930	8.605	7.491	**3.353**	**2.239**
	S 09					3.090	1.837	4.025	2.772	4.960	3.706	5.895	4.641	6.830	5.576	7.764	6.511	8.325	7.072	**3.772**	**2.519**
	S 10							3.745	2.353	4.680	3.287	5.615	4.222	6.550	5.157	7.485	6.092	8.045	6.653	**4.191**	**2.798**
	S 11									4.400	2.868	5.335	3.803	6.270	4.738	7.205	5.673	7.766	6.234	**4.610**	**3.078**
	S 12													5.990	4.319	6.925	5.254	7.486	5.814	**5.029**	**3.358**
	Spring set	The above values are the output torque that remain available to operate the valve when the port "2" is pressurized																		Output torque available when air supply fails	

OUTPUT TORQUE (Lb-In)

SPRING RETURN TORQUE

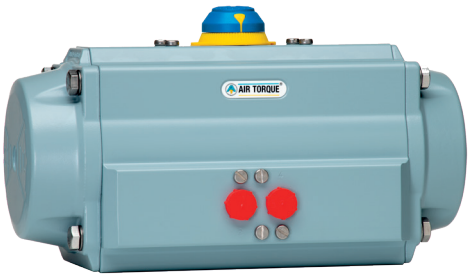
Supply Pressure		40 Psi		50 Psi		60 Psi		70 Psi		80 Psi		90 Psi		100 Psi		110 Psi		116 Psi		Spring stroke	
Model	Spring set	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
AT601U	S 05	3.312	2.406	4.610	3.704	5.908	5.003	7.207	6.301	8.505	7.599	9.803	8.898	11.102	10.196					**2.787**	**1.882**
	S 06	2.935	1.849	4.234	3.147	5.532	4.445	6.830	5.744	8.129	7.042	9.427	8.340	10.725	9.639	12.024	10.937			**3.345**	**2.258**
	S 07	2.559	1.291	3.857	2.589	5.156	3.888	6.454	5.186	7.752	6.485	9.051	7.783	10.349	9.081	11.648	10.380	12.427	11.159	**3.902**	**2.634**
	S 08			3.481	2.032	4.779	3.330	6.078	4.629	7.376	5.927	8.674	7.225	9.973	8.524	11.271	9.822	12.050	10.601	**4.460**	**3.011**
	S 09					4.403	2.773	5.701	4.071	7.000	5.370	8.298	6.668	9.596	7.966	10.895	9.265	11.674	10.044	**5.017**	**3.387**
	S 10							5.325	3.514	6.623	4.812	7.922	6.110	9.220	7.409	10.518	8.707	11.297	9.486	**5.575**	**3.763**
	S 11									6.247	4.255	7.545	5.553	8.844	6.851	10.142	8.150	10.921	8.929	**6.132**	**4.140**
	S 12													8.467	6.294	9.766	7.592	10.545	8.371	**6.690**	**4.516**
AT651U	S 05	5.535	4.113	7.716	6.294	9.898	8.475	12.079	10.657	14.260	12.838	16.441	15.019	18.623	17.200					**4.612**	**3.190**
	S 06	4.897	3.190	7.078	5.372	9.260	7.553	11.441	9.734	13.622	11.915	15.803	14.097	17.985	16.278	20.166	18.459			**5.534**	**3.828**
	S 07	4.259	2.268	6.440	4.449	8.622	6.631	10.803	8.812	12.984	10.993	15.165	13.174	17.347	15.356	19.528	17.537	20.837	18.845	**6.457**	**4.466**
	S 08			5.802	3.527	7.984	5.708	10.165	7.889	12.346	10.071	14.527	12.252	16.709	14.433	18.890	16.614	20.199	17.923	**7.379**	**5.104**
	S 09					7.346	4.786	9.527	6.967	11.708	9.148	13.889	11.329	16.071	13.511	18.252	15.692	19.561	17.001	**8.302**	**5.742**
	S 10							8.889	6.045	11.070	8.226	13.251	10.407	15.433	12.588	17.614	14.770	18.923	16.078	**9.224**	**6.380**
	S 11									10.432	7.303	12.613	9.485	14.795	11.666	16.976	13.847	18.285	15.156	**10.147**	**7.018**
	S 12													14.157	10.743	16.338	12.925	17.647	14.233	**11.069**	**7.656**
AT701U	S 05	7.836	5.576	11.002	8.742	14.168	11.907	17.333	15.073	20.499	18.239	23.665	21.405	26.831	24.571					**7.088**	**4.828**
	S 06	6.870	4.158	10.036	7.324	13.202	10.490	16.368	13.656	19.534	16.822	22.700	19.987	25.865	23.153	29.031	26.319			**8.505**	**5.793**
	S 07	5.905	2.741	9.071	5.906	12.236	9.072	15.402	12.238	18.568	15.404	21.734	18.570	24.900	21.736	28.066	24.902	29.965	26.801	**9.923**	**6.759**
	S 08			8.105	4.489	11.271	7.655	14.437	10.821	17.603	13.986	20.769	17.152	23.934	20.318	27.100	23.484	29.000	25.384	**11.340**	**7.724**
	S 09					10.305	6.237	13.471	9.403	16.637	12.569	19.803	15.735	22.969	18.901	26.135	22.067	28.034	23.966	**12.758**	**8.690**
	S 10							12.506	7.986	15.672	11.151	18.837	14.317	22.003	17.483	25.169	20.649	27.069	22.549	**14.176**	**9.655**
	S 11									14.706	9.734	17.872	12.900	21.038	16.066	24.204	19.231	26.103	21.131	**15.593**	**10.621**
	S 12													20.072	14.648	23.238	17.814	25.138	19.713	**17.011**	**11.586**
AT751U	S 05	11.059	7.868	15.441	12.250	19.823	16.632	24.205	21.014	28.587	25.395	32.969	29.777	37.351	34.159					**9.660**	**6.469**
	S 06	9.765	5.936	14.147	10.318	18.529	14.700	22.911	19.081	27.293	23.463	31.675	27.845	36.057	32.227	40.439	36.610			**11.592**	**7.763**
	S 07	8.471	4.004	12.853	8.386	17.235	12.767	21.617	17.149	25.999	21.531	30.381	25.913	34.763	30.295	39.146	34.678	41.774	37.306	**13.524**	**9.056**
	S 08			11.560	6.454	15.942	10.835	20.323	15.217	24.705	19.599	29.087	23.981	33.469	28.363	37.852	32.746	40.480	35.374	**15.456**	**10.350**
	S 09					14.648	8.903	19.030	13.285	23.412	17.667	27.794	22.049	32.176	26.431	36.558	30.814	39.187	33.442	**17.388**	**11.644**
	S 10							17.736	11.353	22.118	15.735	26.500	20.117	30.882	24.499	35.264	28.882	37.893	31.510	**19.320**	**12.938**
	S 11									20.824	13.803	25.206	18.185	29.588	22.567	33.971	26.950	36.599	29.578	**21.252**	**14.231**
	S 12													28.294	20.635	32.677	25.018	35.305	27.646	**23.184**	**15.525**
AT801U	S 05	13.855	11.037	19.353	16.536	24.852	22.034	30.350	27.533	35.849	33.031	41.347	38.530	46.846	44.028					**10.957**	**8.140**
	S 06	12.227	8846	17.725	14.344	23.224	19.843	28.722	25.341	34.221	30.840	39.719	36.338	45.218	41.837	50.717	47.335			**13.149**	**9.767**
	S 07	10.599	6654	16.097	12.153	21.596	17.651	27.094	23.150	32.593	28.648	38.091	34.147	43.590	39.645	49.089	45.144	52.388	48.443	**15.340**	**11.395**
	S 08			14.469	9961	19.968	15.460	25.466	20.958	30.965	26.457	36.464	31.955	41.962	37.454	47.461	42.953	50.760	46.252	**17.531**	**13.023**
	S 09					18.340	13.268	23.839	18.767	29.337	24.265	34.836	29.764	40.334	35.263	45.833	40.761	49.132	44.060	**19.723**	**14.851**
	S 10							22.211	16.576	27.709	22.074	33.208	27.573	38.706	33.071	44.205	38.570	47.504	41.869	**21.914**	**16.279**
	S 11									26.081	19.883	31.580	25.381	37.078	30.880	42.577	36.378	45.876	39.677	**24.106**	**17.907**
	S 12													35.450	28.688	40.949	34.187	44.248	37.486	**26.297**	**19.535**
AT1001U	S 05	25.715	18.812	35.894	28.991	46.073	39.170	56.252	49.349	66.431	59.528	76.610	69.707	86.790	79.887					**21.904**	**15.001**
	S 06	22.715	14.432	32.894	24.611	43.073	34.790	53.252	44.969	63.431	55.148	73.610	65.327	83.789	75.506	93968	85658			**26.285**	**18.001**
	S 07	19.715	10.051	29.894	20.230	40.073	30.409	50.252	40.588	60.431	50.767	70.610	60.946	80.789	71.125	90968	81304	97076	87.411	**30.665**	**21.001**
	S 08			26.894	15.849	37.073	26.028	47.252	36.207	57.431	46.386	67.610	56.565	77.789	66.744	87968	76923	94076	83.031	**35.046**	**24.001**
	S 09					34.073	21.647	44.252	31.826	54.431	42.005	64.610	52.184	74.789	62.364	84968	72543	91075	78.650	**39.427**	**27.001**
	S 10							41.252	27.455	51.431	37.634	61.610	47.813	71.789	57.992	81968	68171	88075	74.278	**43.799**	**30.002**
	S 11									48.431	33.253	58.610	43.432	68.789	53.611	78.968	63.790	85.075	69.897	**48.179**	**33.002**
	S 12											55.609	39.051	65.788	49.230	75.967	59.409	82.075	65.517	**52.560**	**36.002**
	Spring set	The above values are the output torque that remain available to operate the valve when the port "2" is pressurized																		Output torque available when air supply fails.	

DOUBLE ACTING TORQUE

Supply Pressure	40 Psi	50 Psi	60 Psi	70 Psi	80 Psi	90 Psi	100 Psi	110 Psi	116 Psi
Model									
AT045U D	58,3	72,9	87,4	102	117	131	146	161	169
AT051U D	81,1	101	122	142	162	183	203	223	235
AT101U D	143	179	215	251	286	322	358	394	415
AT201U D	284	355	426	497	568	639	710	781	824
AT251U D	447	559	670	782	894	1.005	1.117	1.229	1.296
AT301U D	649	811	974	1.136	1.298	1.461	1.623	1.785	1.883
AT351U D	1.049	1.312	1.574	1.836	2.099	2.361	2.623	2.886	3.043
AT401U D	1.352	1.691	2.029	2.367	2.705	3.043	3.381	3.719	3.922
AT451U D	2.123	2.654	3.185	3.716	4.246	4.777	5.308	5.839	6.157
AT501U D	2.770	3.462	4.155	4.847	5.540	6.232	6.925	7.617	8.032
AT551U D	3.739	4.674	5.609	6.544	7.479	8.413	9.348	10.283	10.844
AT601U D	5.193	6.492	7.790	9.088	10.387	11.685	12.984	14.282	15.061
AT651U D	8.725	10.906	13.087	15.269	17.450	19.631	21.812	23.994	25.302
AT701U D	12.663	15.829	18.995	22.161	25.327	28.493	31.659	34.825	36.724
AT751U D	17.528	21.910	26.292	30.674	35.056	39.438	43.820	48.202	50.831
AT801U D	21.994	27.493	32.991	38.490	43.988	49.487	54.985	60.484	63.783
AT1001U D	40.716	50.895	61.074	71.253	81.432	91.611	101.790	111.969	* *

* * Contact AIR TORQUE for AT1001U D special consruction to operate at supply pressure of 8 bar (116 Psi).

PROTECTION LEVELS

PROTECTION LEVEL	PARTS	MATERIAL / COATING
A 	Body (AT045U to AT751U)	ALODUR hard anodized
	Body (AT801U and AT1001U)	Anodized plus epoxy primer, plus polyurethane coating (RAL9007 grey)
	End-caps	Anodized plus polyester coating (RAL9007 grey - or RAL5015 blue)
	Drive shaft (AT051U to AT801U)	ENP Carbon Steel
	Drive shaft (AT045U and AT1001U)	ALODUR hard anodized Aluminium alloy
	Screws	Stainless Steel A2 70
	Spring Clip	Spring Steel ENP
B 	Body (AT045U to AT751U)	ALODUR hard anodized plus coating with PTFE (light grey)
	Body (AT801U and AT1001U)	Anodized plus coating with PTFE (light grey)
	End-caps	Anodized plus polyester coating (RAL9007 grey - or RAL5015 blue)
	Drive shaft (AT051U to AT801U)	ENP Carbon Steel
	Drive shaft (AT045U and AT1001U)	ALODUR hard anodized Aluminium alloy
	Screws	Stainless Steel A2 70
	Spring Clip	Spring Steel ENP
D 	Body (AT045U to AT751U)	ALODUR hard anodized plus coating with PTFE (light grey)
	Body (AT801U and AT1001U)	Anodized plus coating with PTFE (light grey)
	End-caps	Anodized plus coating with PTFE (light grey)
	Drive shaft (AT051U to AT801U)	ENP Carbon Steel
	Drive shaft (AT045U and AT1001U)	ALODUR hard anodized Aluminium alloy
	Screws	Stainless Steel A2 70
	Spring Clip	Spring Steel ENP
E 	Body (AT045U to AT751U)	ALODUR hard anodized plus coating with PTFE (light grey)
	Body (AT801U and AT1001U)	Anodized plus coating with PTFE (light grey)
	End-caps	Anodized plus coating with PTFE (light grey)
	Drive shaft	ENP Stainless Steel 316 grade
	Screws	Stainless Steel A2 70
	Spring Clip	Stainles Steel AISI 302

PROTECTION LEVEL	PARTS	MATERIAL / COATING
F 	Body (AT045U to AT751U)	ALODUR hard anodized plus epoxy primer, plus epoxy coating (RAL 7046 grey)
	Body (AT801U to AT1001U)	Anodized plus epoxy primer, plus epoxy coating (RAL7046 grey)
	End-caps	Anodized plus epoxy primer, plus epoxy coating (RAL7046 grey)
	Drive shaft	ENP Stainless Steel 316 grade
	Screws	Stainles Steel A4 70
	Spring Clip	Stainles Steel AISI 302
P 	Body (AT045U to AT751U)	ALODUR hard anodized
	Body (AT801U and AT1001U)	Anodized
	End-caps	Anodized
	Drive shaft (AT051U to AT801U)	ENP Carbon Steel
	Drive shaft (AT045U and AT1001U)	ALODUR hard anodized Aluminium alloy
	Screws	Stainless Steel A2 70
	Spring Clip	Spring Steel ENP
V 	Body and End-caps (assembled)	ALODUR hard anodized plus multilayer painting according to customer spec. Total coating thickness > 130 µm
	Drive shaft	Recommanded ENP Stainless steel 316 grade
	Screws	Stainless Steel A2 70 (A4 70 optional availble)
	Spring Clip	Recommended Stainless Steel AISI 302
X 	Body (AT045U to AT751U)	ALODUR hard anodized plus epoxy primer plus epoxy coating or polyurethany coating. Total coating thickness up to 135 µm
	Body (AT801U and AT1001U)	Anodized plus epoxy primer, plus epoxy coating or polyurethany coating. Total coating thickness up to 200 µm
	End-caps (AT045U to AT801U)	Anodized plus epoxy primer, plus epoxy coating or polyurethany coating. Total coating thickness up to 130 µm
	End-caps (AT1001U)	Anodized plus epoxy primer, plus epoxy coating or polyurethany coating. Total coating thickness up to 200 µm
	Drive shaft (AT051U to AT801U)	Carbon steel ENP
	Drive shaft (AT045U and AT1001U)	ALODUR hard anodized Aluminium alloy
	Screws	Stainless Steel A2 70
	Spring Clip	Spring Steel ENP

Note:

- Refer to technical data-sheet for protection levels details

PRODUCT FUNCTIONS

- 4th GENERATION UPGRADE SERIES
  - DOUBLE ACTING
    from 13,2 Nm to 9173 Nm
    at 5,5 bar
    - DOUBLE ACTING 90° rotation
      - 3 POSITION actuator 90° rotation
      - FAST ACTING
      - HYDRAULIC DAMPER
    - DOUBLE ACTING 120° rotation
    - DOUBLE ACTING 135° rotation
    - DOUBLE ACTING 180° rotation
      - 3 POSITION actuator 180 ° rotation
  - SPRING RETURN
    from 8,1 Nm to 4.068 Nm
    with 12 springs
    - SPRING RETURN 90° rotation
      - 3 POSITION actuator 90° rotation
      - FAST ACTING
      - HYDRAULIC DAMPER
    - SPRING RETURN 120° rotation
    - SPRING RETURN 180° rotation
      - FAIL MID 180° rotation

PRODUCT OPTIONS

LIFTING LUGS

Under request the heaviest actuators can be supplied with lifting lugs in order to simplify the lift of the actuators and to handle these actuators safely.

NAMEPLATE

The actuator nameplate in stainless steel is available as an option.

The nameplate is fixed on the actuator body and includes all the relevant information to identify the actuators and to grant the product traceability.

LOCK-OUT CAPABILITY

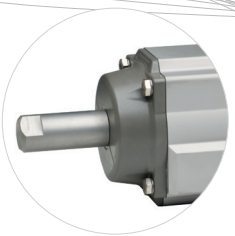
In order to permanently lock the actuator in position, the actuator can be supplied with a special locking device by using a padlock and therefore preventing unwanted operation.

EXTRA TRAVEL STOP ADJUSTMENT

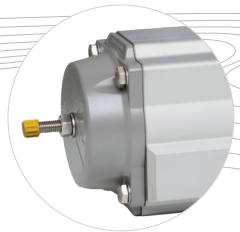
Available in both opening or closing directions for standard assembly (clockwise to close) in order to provide maximum flexibility.

RC100 Stroke adjustment	← In close direction	
R100 Stroke adjustment	In open direction →	
R50 Stroke adjustment		In open direction →
Standard Stroke adjustment	-5° to 15°	75° to 95°

Referred to standard actuator assembly



RC100 →
Travel limitation in the closing direction



R100 / R50 →
Travel limitation in the opening direction

HOW TO ORDER 4TH Generation Upgrade Series

AVAILABLE OPTIONS AND ORDERING CODES:

The most relevant information in the How To Order are transferred in the product label and in other Air Torque documents (as order acknowledgment, packing list, invoice and certificates). The position of the information can change respect the How To Order. Contact Air Torque for further details.

1 — **AT045U** to **AT1001U**

2 — **D**: Double Acting | **S**: Spring Return

3 — Actuator model, series and rotation:
90° Rotation (Standard): **AT045U** to **AT1001U**
120° Rotation (only Double Acting): **AT052U** to **AT752U**
135° Rotation (only Double Acting): **AT053U** to **AT753U**
180° Rotation (Double Acting): **AT058U** to **AT758U**
180° Rotation (Spring Return): **AT058U** to **AT758U**

4 — **(Blank)**: for standard actuator
R50: 50% opening travel stop adjustment (45° up to 90°)
R100: 100% opening travel stop adjustment (0° up to 90°)
RC100: 100% closing travel stop adjustment (from 90° up to 0°)
FM: fail mid 180° rotation
3P: 3 position (only for spring return)
3PD: 3 position (both for spring return and double acting)
HCD: hydraulic damper

5 — **(Blank)**: for standard actuator | **FA**: fast acting | **W**: water as power media

6 — **(Blank)**: for standard version (no lock-out capability) | **K**: lock-out capability

7

Double acting actuators:	Spring return actuators:		
	AT045U	**AT051U**	**AT101U → AT1001U**
(Blank)	Spring Set configuration: **S1-1 / S1-2 / S2-2 / S2-3 / S3-3**	Spring Set configuration: **S1 / S2 / S3 / S4 / S5 / S6 / S7 / S8**	Number of Spring: **05 to 12** spring for standard 90° rotation **10 to 24** spring only for 180° rotation

8 — ISO 5211 Flange

Model	AT045U	AT051U	AT101U	AT201U	AT251U	AT301U	AT351U	AT401U	AT451U	AT501U	AT551U	AT601U	AT651U	AT701U	AT751U	AT801U	AT1001U
Standard	F04	F04	F05 + F07	F05 + F07	F05 + F07	F07 + F10	F07 + F10	F07 + F10	F10 + F12	F10 + F12	F14	F14	F16	F16	F16	F16 + F25	F16 + F25 + F30
Options	F03	F03+F05	F03+F05 F04+F07 F05	F04+F07 F05	F07	F05+F07 F07	F10	F10	F12	F12	F10+F12	F10+F12	F12 F14	F12 F14	F14 F16+F25		

9 — **G**: air connection threads according to ISO 228 (BSPP) | **N**: air connection threads according to ANSI B1.20.1 (NPT)

10 — **(Blank)**: no spigot | **Y** : spigot

11 — Protection level: **A / B / D / E / F / P / *V / X***

12 — **(Blank):**
Actuator suitable for -40°C (-40°F) to +80°C (+176°C)
HT: actuator suitable for -15°C (+5°F) to +150°C (+302°F)
LLT 2: actuator suitable for -60°C (-76°F) to +80°C (+176°F)

13

Single square (SQ):	Double square (DS):	Optional connections:
XXD → Diagonal single square **XXL** → Parallel single square	**XXDS**	**S x d (D)** → flat head dimensions **W x d** → double keys dimensions

Protection level	Available square dimensions and type (according to ISO 5211)																
	AT045 U	AT051U	AT101U	AT201U	AT251U	AT301U	AT351U	AT401U	AT451U	AT501U	AT551U	AT601U	AT651U	AT701U	AT751U	AT801U	AT1001U
"A" "B" "D" "P"	9DS 11DS	9SQ 11SQ 11DS	9SQ 11DS 14DS 14SQ	14SQ 14DS 17DS 17SQ	14SQ 17DS 17SQ	17SQ 17DS 22SQ 22DS	17DS 22SQ 22DS	22SQ 22DS 27SQ 27DS	22SQ 27SQ 27DS	22SQ 27SQ 27DS	22SQ 27DS 36SQ 36DS	22SQ 27DS 36SQ 36DS	27SQ 46SQ 36DS 46DS	27SQ 46SQ 36DS 46DS	46SQ 46DS 55SQ 55DS	46DS 55SQ 55DS	55DS 75SQ 75DS
"E" "F"		9DS 11DS	11DS 14DS	14DS 17DS	17DS	17DS 22DS	17DS 22DS	22DS 27DS	22DS 27DS	27DS	27DS 36DS	27DS 36DS	36DS 46DS	36DS 46DS	46DS 55DS	46DS 55DS	55DS 75DS

14 — **Position Indicator:** | **(Blank)**: position indicator with graduated ring | **MF**: multifunction indicator

15 — **Actuator assembly type:**

(Blank): standard assembly type ST, clockwise to close (spring to close) and close indication at air failure condition (or with pressurized port 4 for double acting) for in line mounting.	**LF**: counterclockwise to close (spring to open) and open indication at air failure condition (or with pressurized port 4 for double acting) for across line mounting.	**STR**: clockwise to close (spring to close) and close indication at air failure condition (or with pressurized port 4 for double acting) for across line mounting.	**LFR**: counterclockwise to close (spring to open) and open indication at air failure condition (or with pressurized port 4 for double acting) for in line mounting.

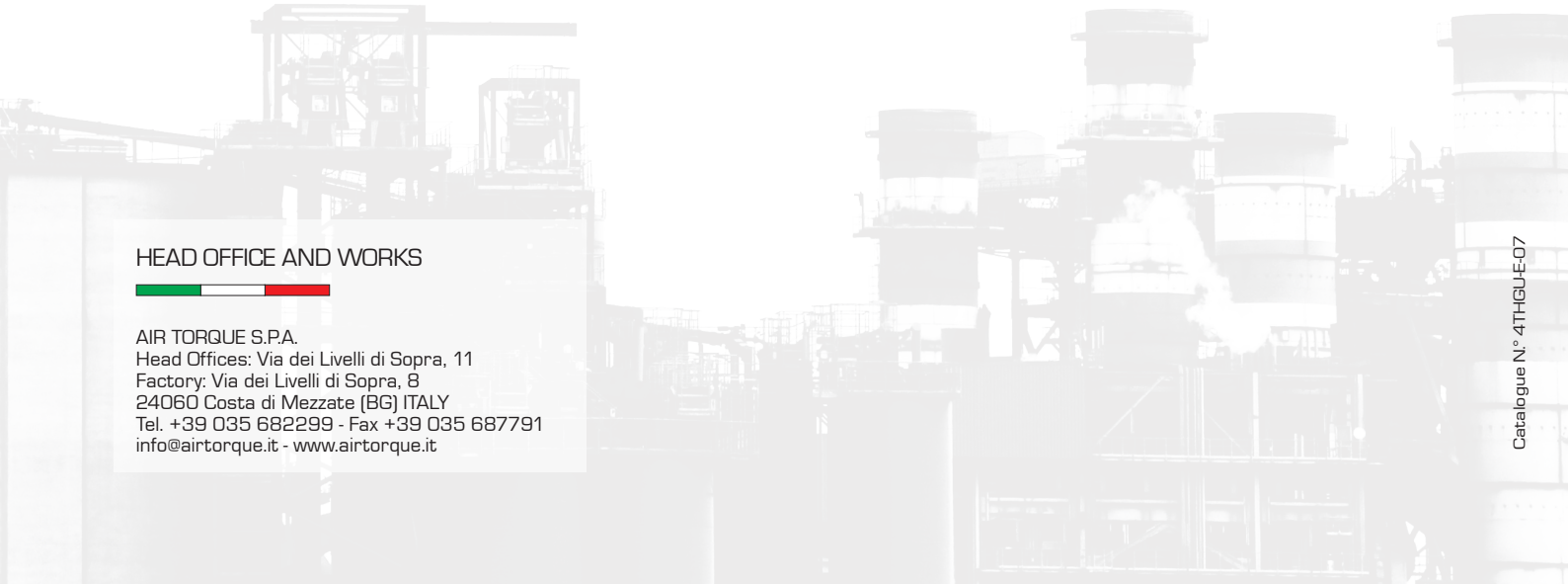
EXAMPLE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AT401U	S	90°	R100	FA	K	12	F07+F10	G	Y	A	HT	14DS	MF	STR

PNEUMATIC ACTUATOR model **AT401U,** Spring Return type **S,** rotation **90°,** 100% Travel Stop limitation **R100,** Fast Acting **FA,** Lock-out capability assembly cam **K,** Number of springs **12,** ISO flange **F07+F10,** air connection **G1/8",** with Spigot **Y,** protection level **A,** Actuator with seals for Hight Temperature **(- 15 °C to + 150 °C), Ch14** double square drive shaft **14DS,** Black multifunction Indicator **MF,** Clockwise to close assembly type **(STR).**

REFER TO TECHNICAL DATA SHEETS FOR UPDATED DIMENSIONS AND MATERIALS.

Catalogue N.° 4THGU-E-07



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