

# Automatic Positioning System "APS"

0



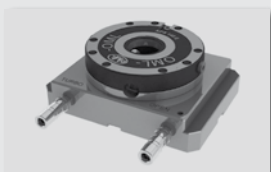
## MODULES

pag. 0. 2



## CLAMPING PINS

pag. 0. 5 / 0. 8



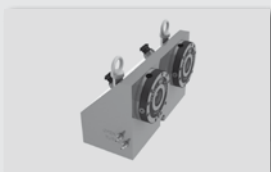
## PLATES

pag. 0. 9



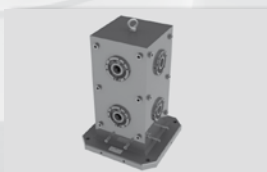
## PLATES FOR 5 AXIS

pag. 0. 13



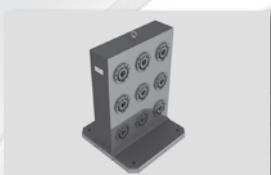
## ANGLE PLATE

pag. 0. 21



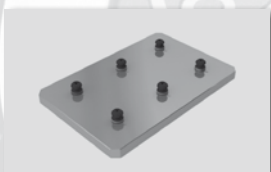
## TOMBSTONES

pag. 0. 26



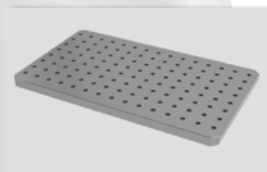
## CRANKWEBS

pag. 0. 30



## STEEL SMOOTH PLATES

pag. 0. 32



## STEEL PLATES WITH GRID

pag. 0. 33



## FLANGES FOR INDEXING TABLES "TOUCHDEX"

pag. 0. 34



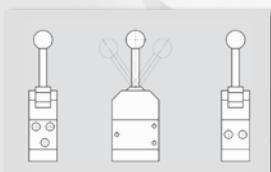
## COMBIDEX APS

pag. 0. 35



## INTERFACE PLATES

pag. 0. 36



## ACCESSORIES

pag. 0. 37





# AUTOMATIC POSITIONING SYSTEM

## WHAT IS APS?

APS (Automatic Positioning System) is a universal connection between the machine tool, the clamping device and/or the workpiece.

The flexibility of APS allows both positioning and clamping in one operation.

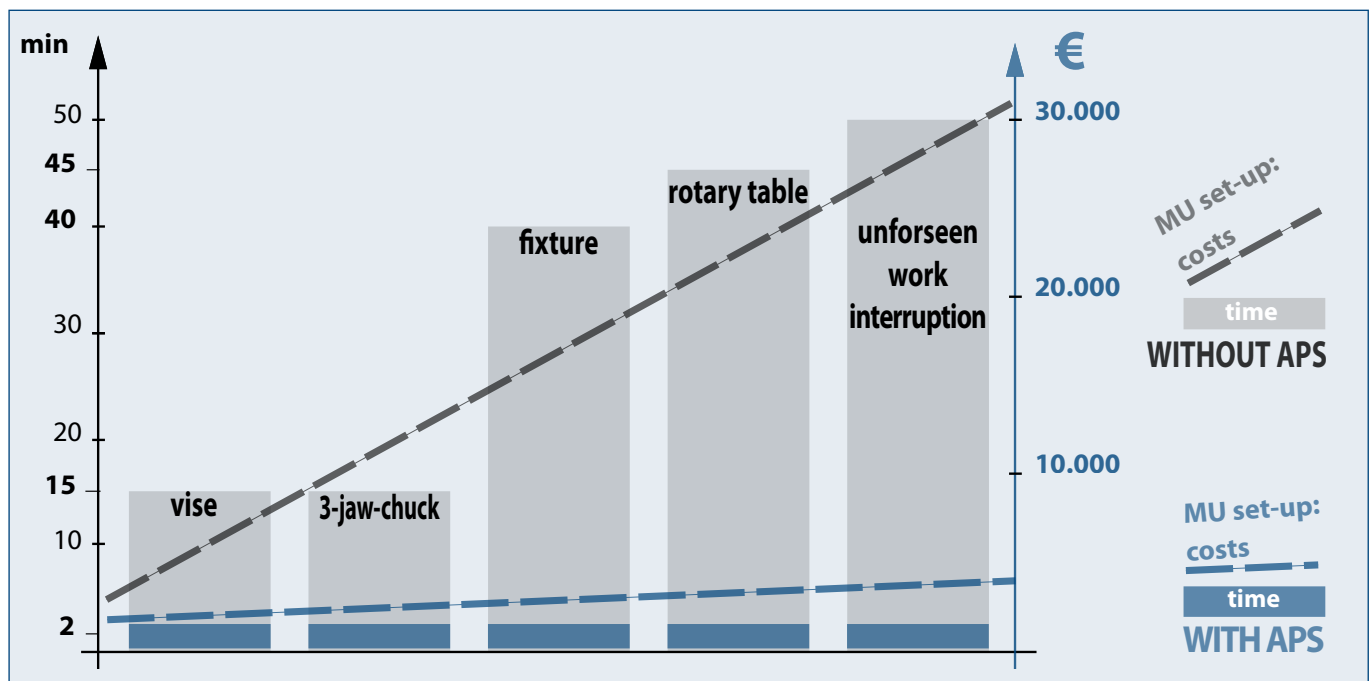
## HOW DOES IT WORK?

APS uses oiled compressed air (6 BAR-85 psi) for unlocking, it uses spring force for clamping. No compressed air is required in the locked condition.

Attach the clamping pins (A;B;C) on the clamping devices or on the workpiece and "it's done"!!! Positioning and clamping in one operation with repeatability accuracy < 0,005 mm (0.0002").

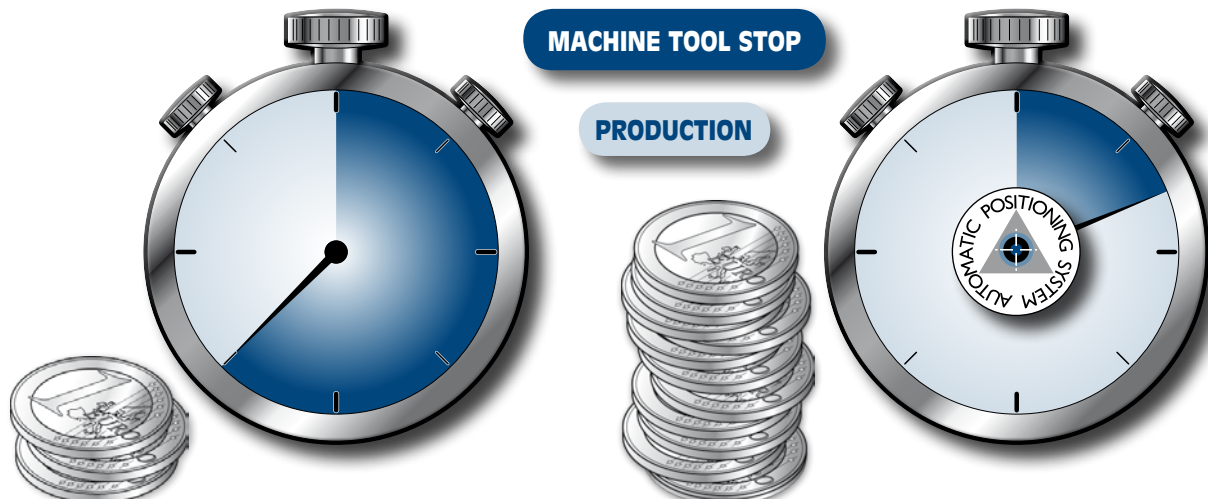
## WHAT ARE THE ADVANTAGES FOR YOUR COMPANY?

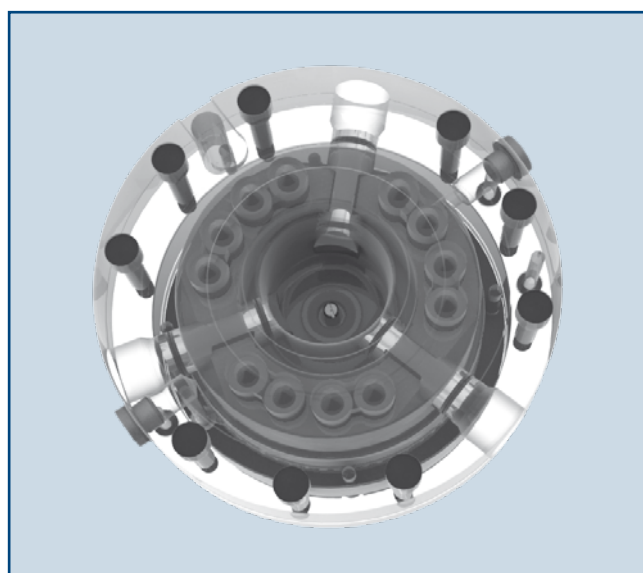
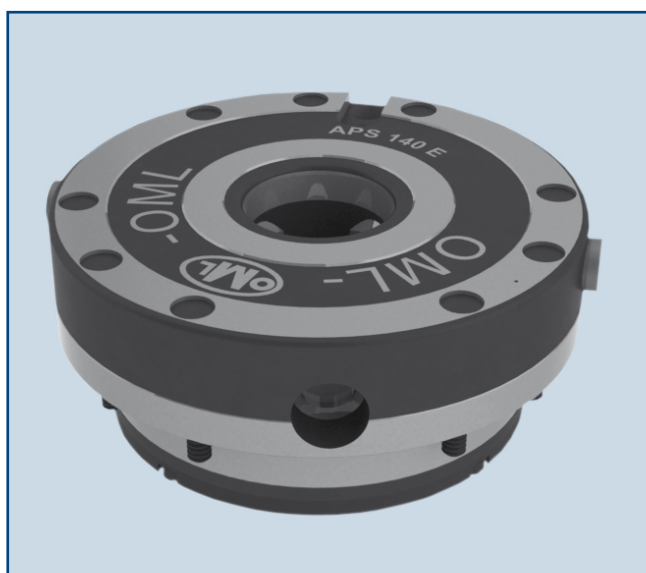
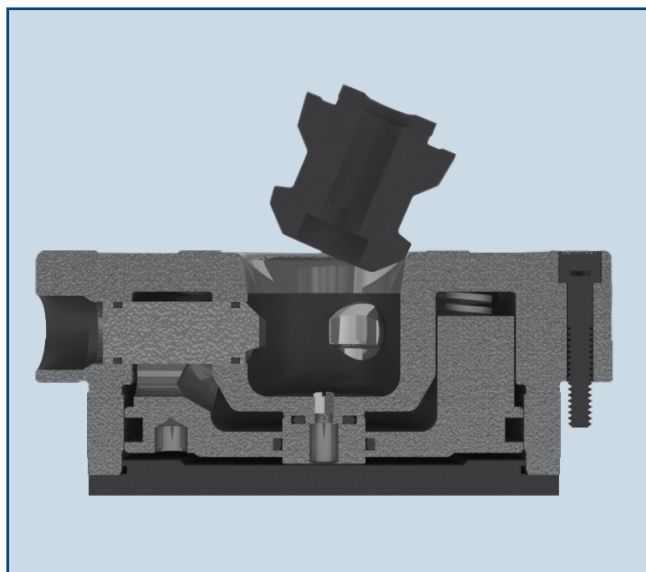
Your set-up times will be reduced by 90%. APS offers you greater flexibility in set-up and an increase in productivity resulting in a short pay-back time.



WITHOUT APS

WITH APS





- **PNEUMATIC SYSTEM**
- **3-JAW CLAMPING SYSTEM**
- **MECHANICAL POSITIVE LOCKING OF THE CLAMPING PIN BY DOUBLE IRREVERSIBLE WEDGE**
- **PULL DOWN FORCE OF 12.000 N (2,250 lbs)**
- **WITH TURBO EFFECT PULL DOWN FORCE OF 30.000 N (6,745 lbs)  
(THE CLAMPING FORCE OF THE SPRINGS IS FURTHER INCREASED BY THE COMPRESSED AIR)**
- **TAPERED PIN GIVES SELF-CENTERING CLAMPING**
- **REPEATABILITY ACCURACY < 0.005MM (0.0002")**
- **PNEUMATIC CLEANING FUNCTION AVAILABLE**

**A**

**CENTERING PIN**



**B**

**REFERENCE PIN**



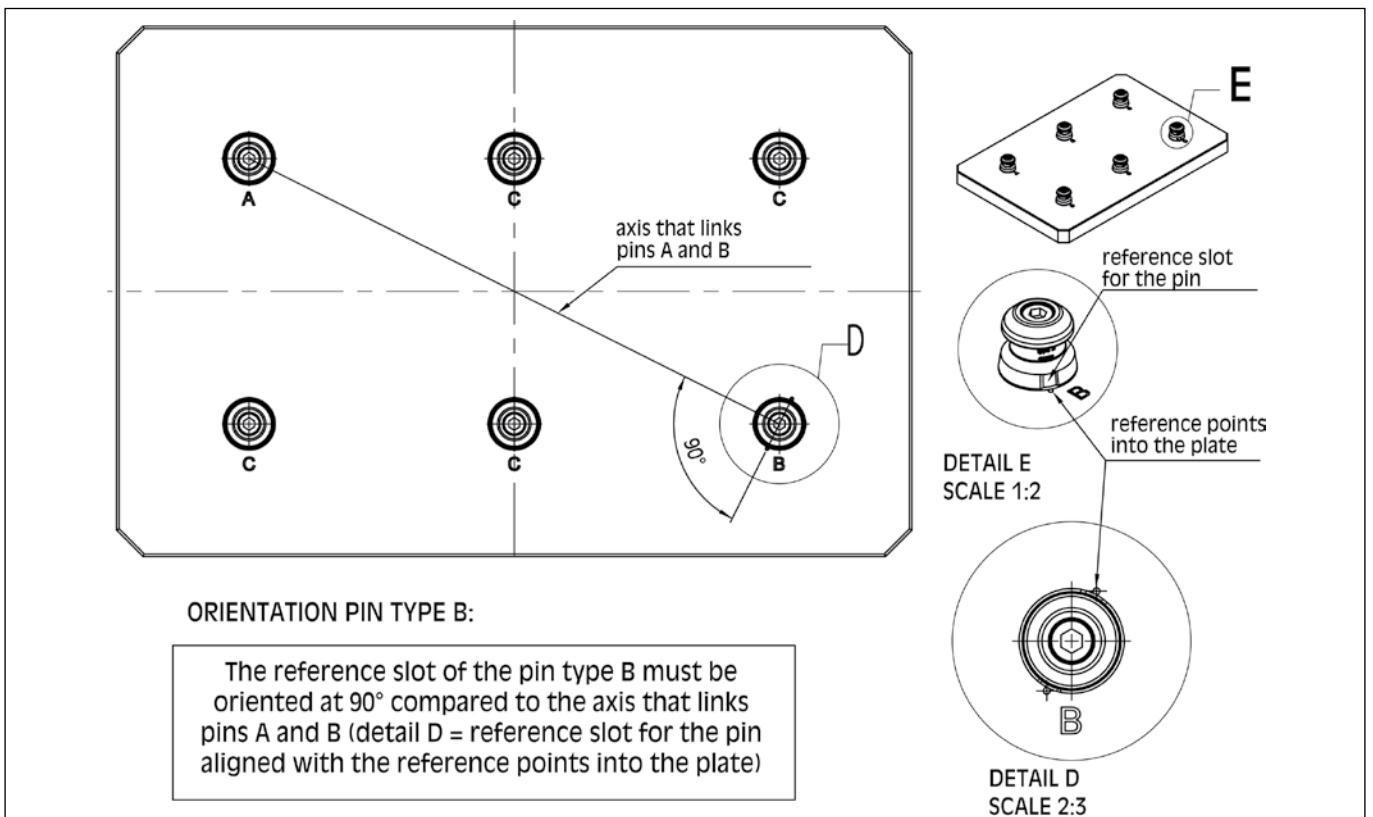
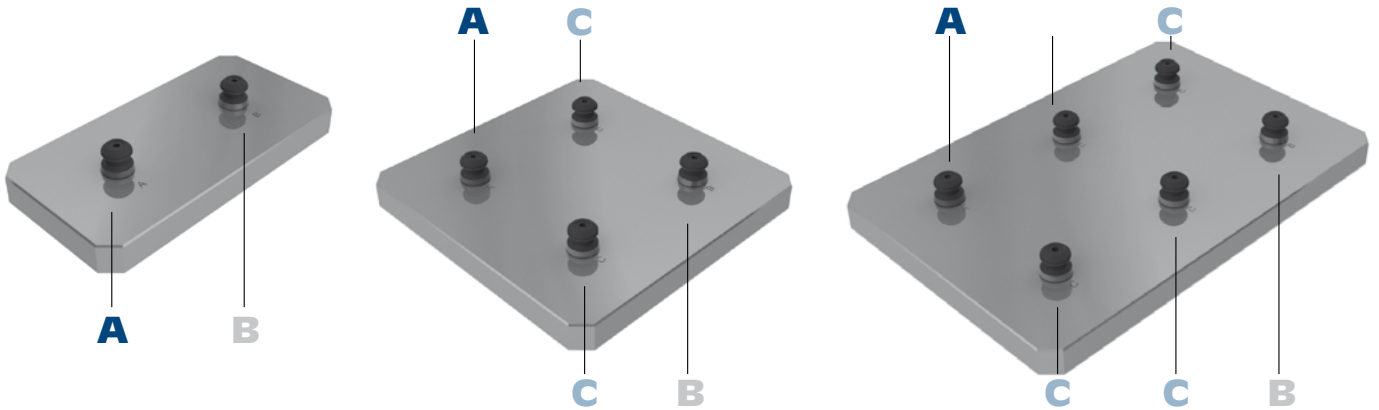
**C**

**PULL-DOWN PIN ± 0,05 mm**

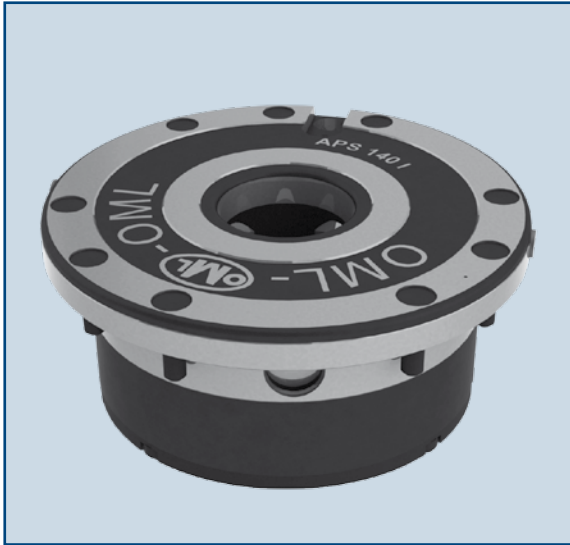


•

•

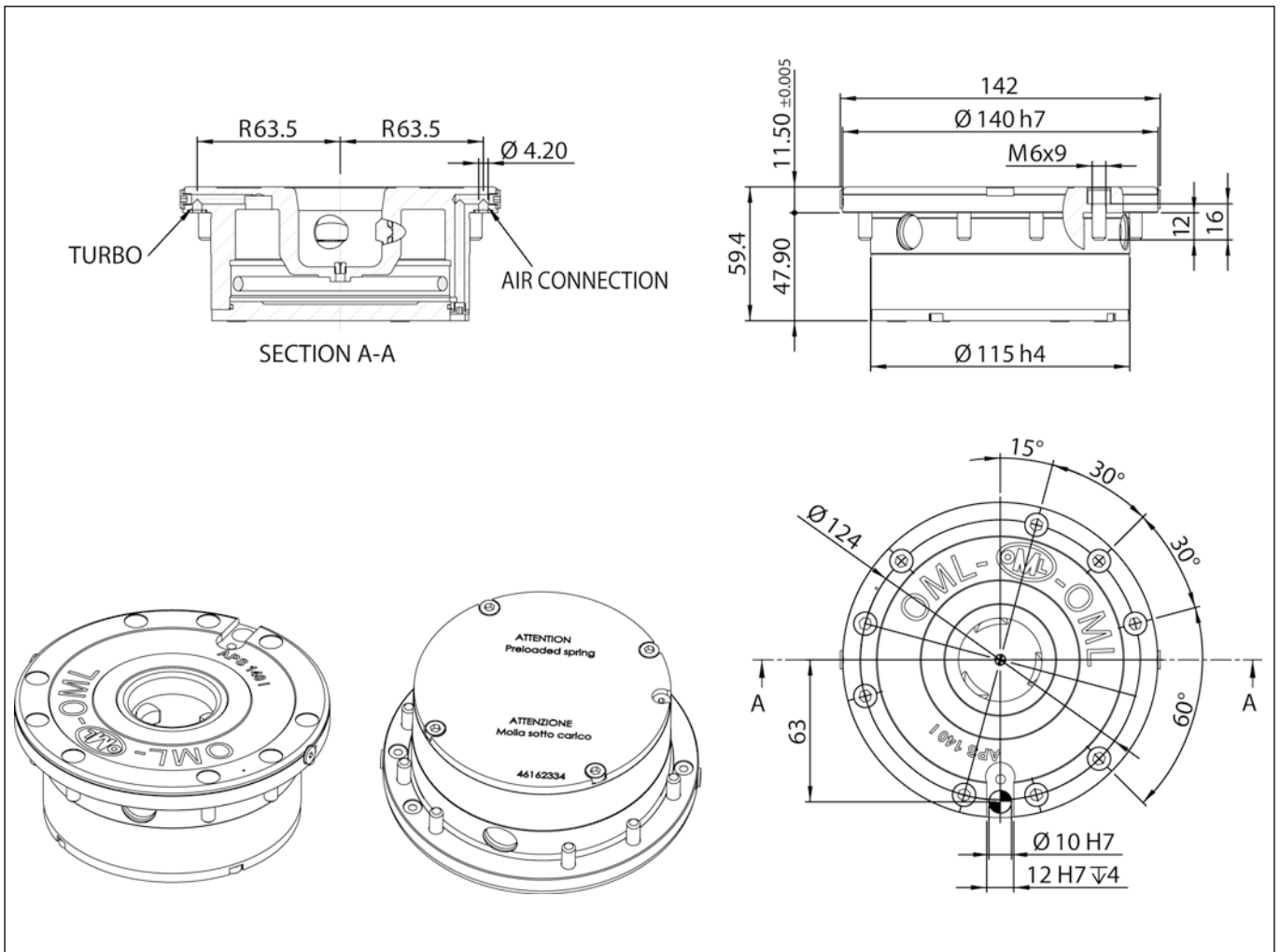




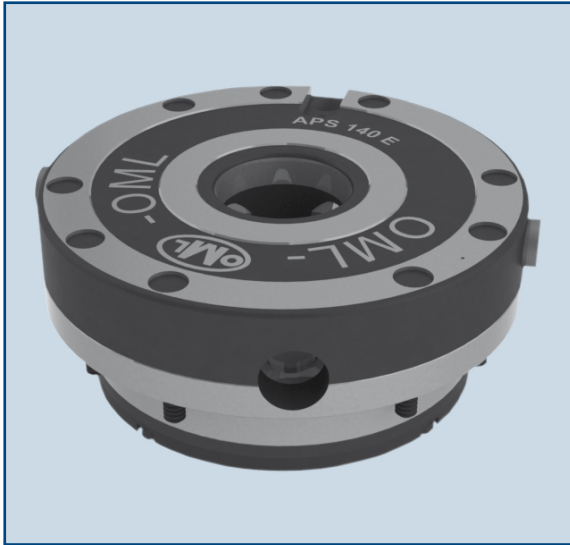


**Flange mounting module APS 140-I**

**with turbo effect**

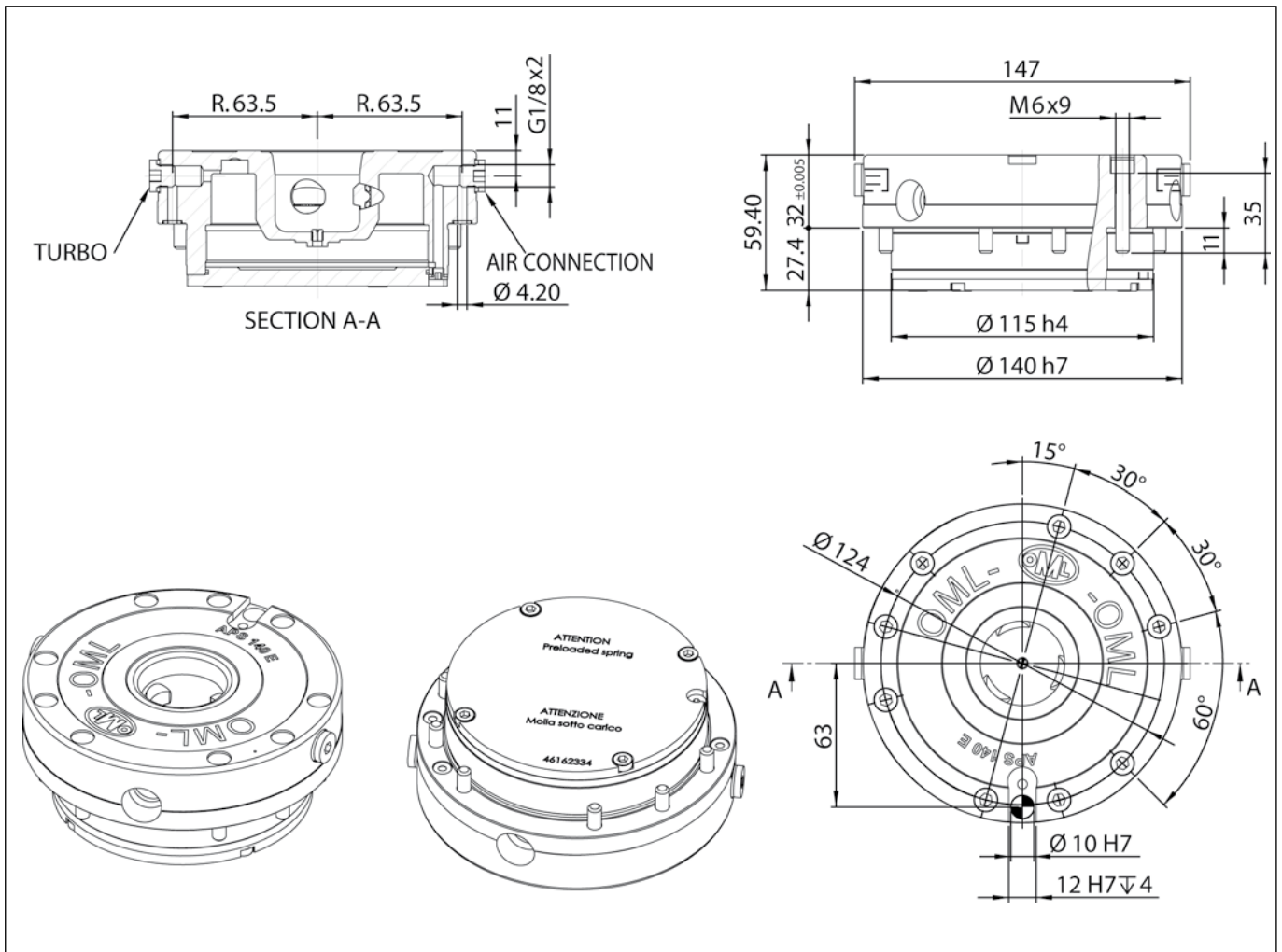


code	pull down force N (lbs)	unlocking pressure bar	repeatability mm	weight kg
<b>46 16 24 00</b>	<b>30.000 (6.745)</b>	<b>6</b>	<b>&lt; 0,005</b>	<b>4</b>

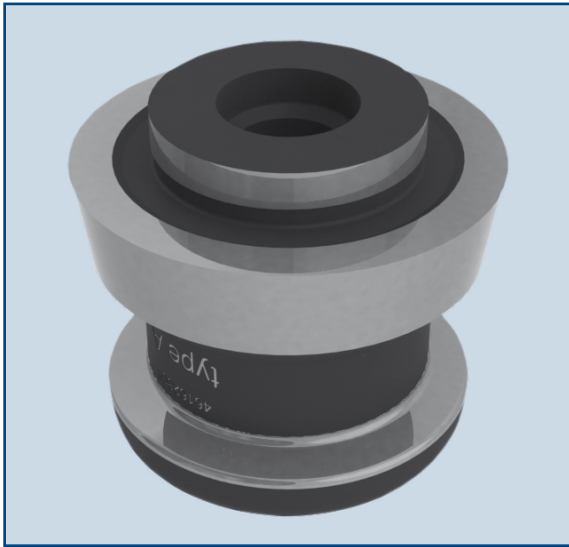


Top mounting module APS 140-E

with turbo effect

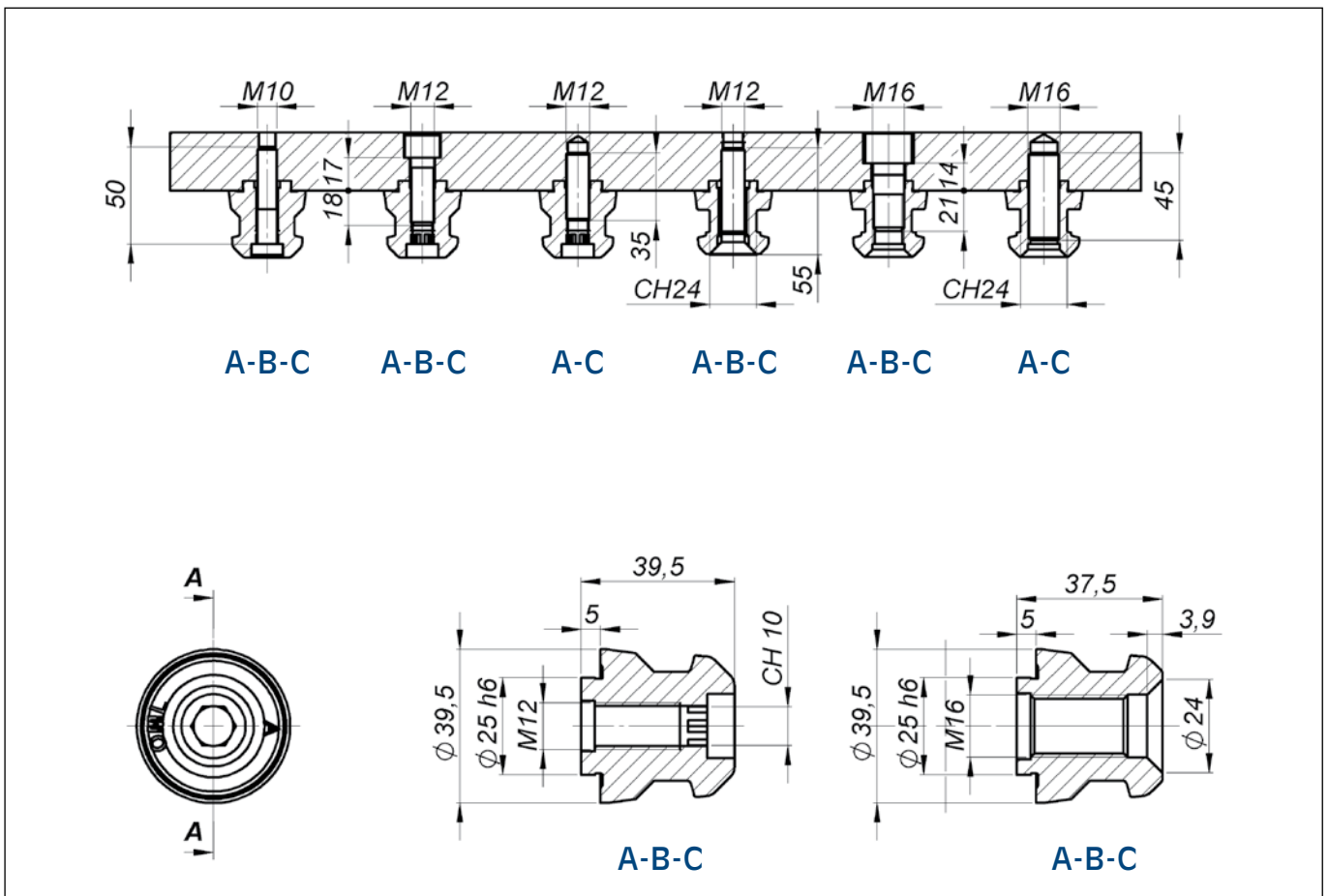


code	pull down force N (lbs)	unlocking pressure bar	repeatability mm	weight kg
<b>46 16 23 00</b>	30.000 (6.745)	6	< 0,005	4,5



## Clamping Pins APS (A-B-C)

- CAN BE USED WITH UNILOCK SYSTEM
- (see page 0.5 for operating instructions)



		<b>A</b>	<b>B</b>	<b>C</b>	weight kg
code	M 12	46 16 23 05	46 16 23 06	46 16 23 07	0,22
	M 16	46 16 24 05	46 16 24 06	46 16 24 07	0,18



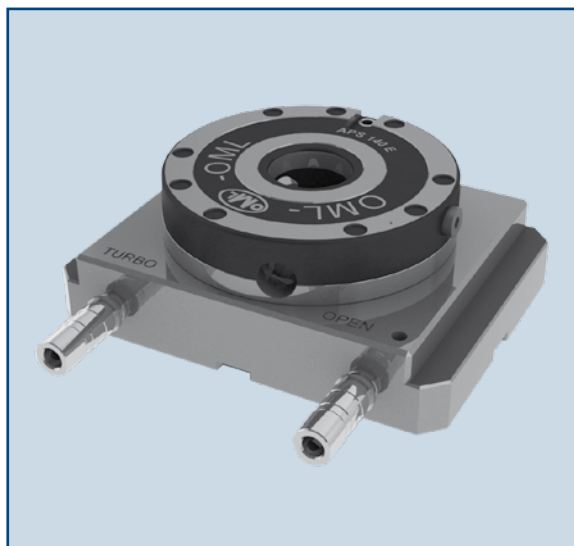
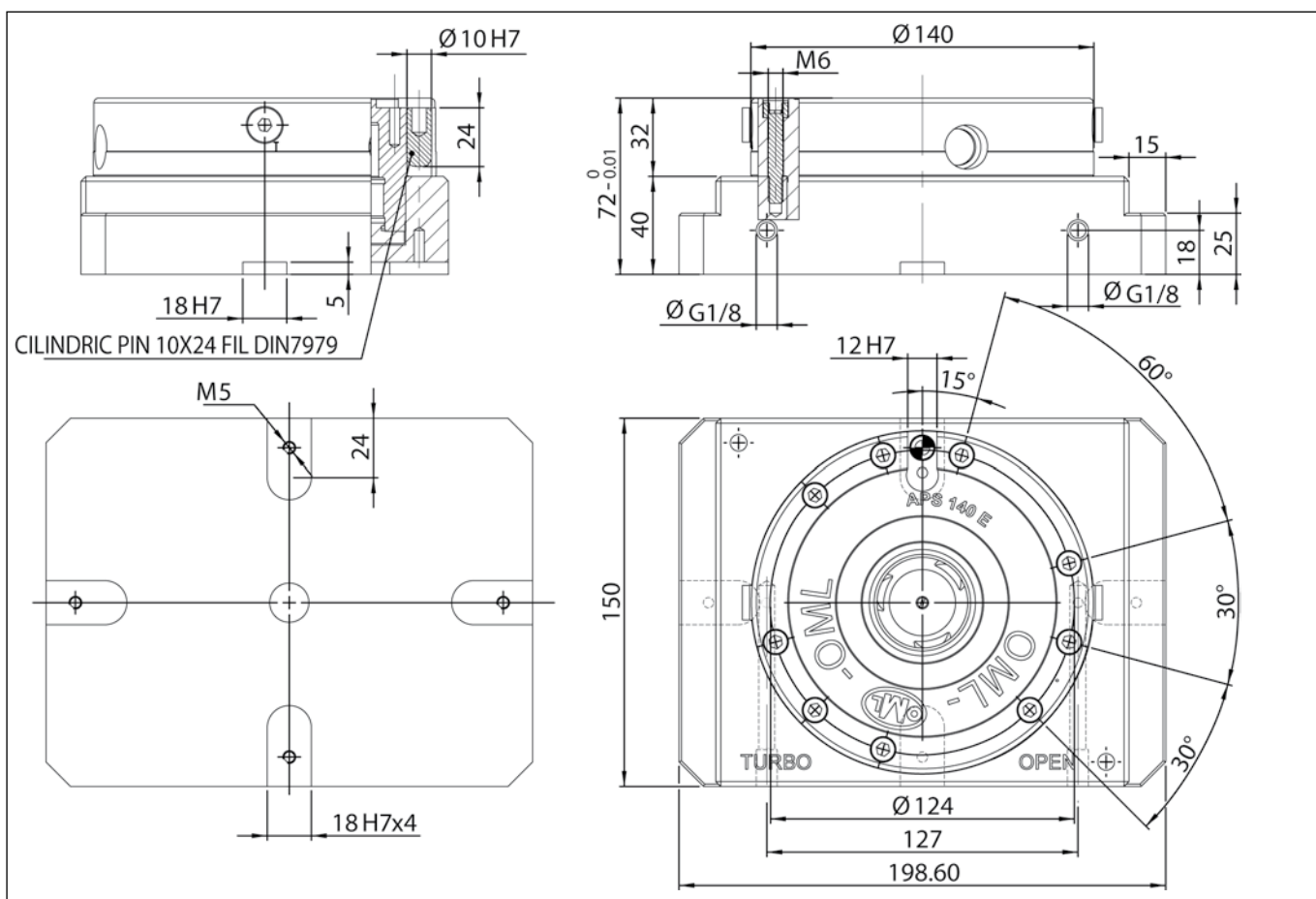


Plate with 1 module APS 140-E

with turbo effect



code	pull down force N (lbs)	unlocking pressure bar	repeatability mm	weight kg
<b>46 16 70 10</b>	<b>30.000 (6.745)</b>	<b>6</b>	<b>&lt; 0,005</b>	<b>11</b>

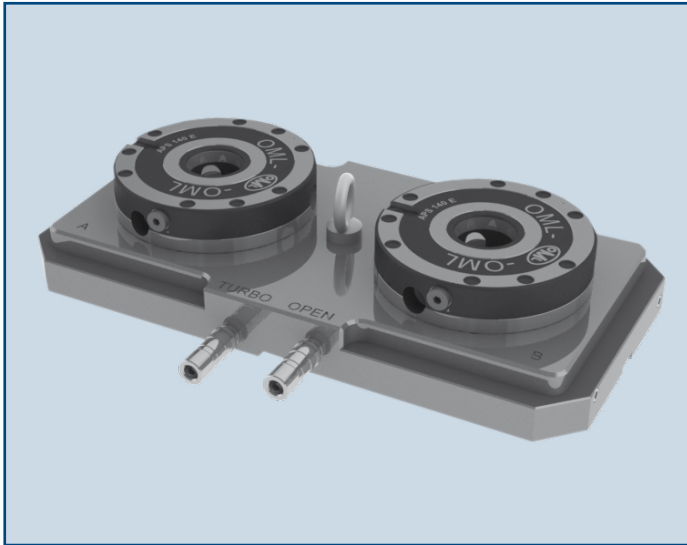
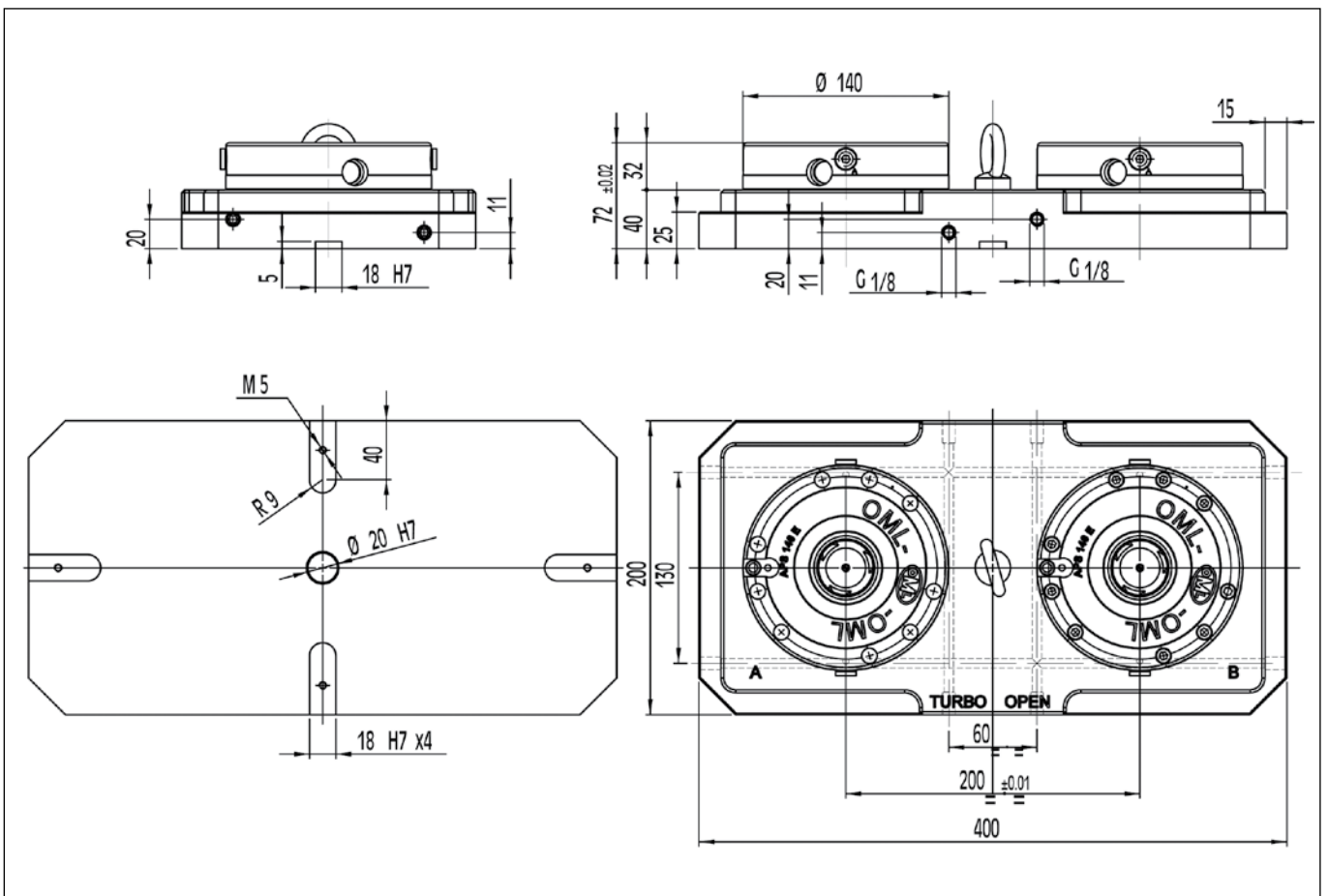
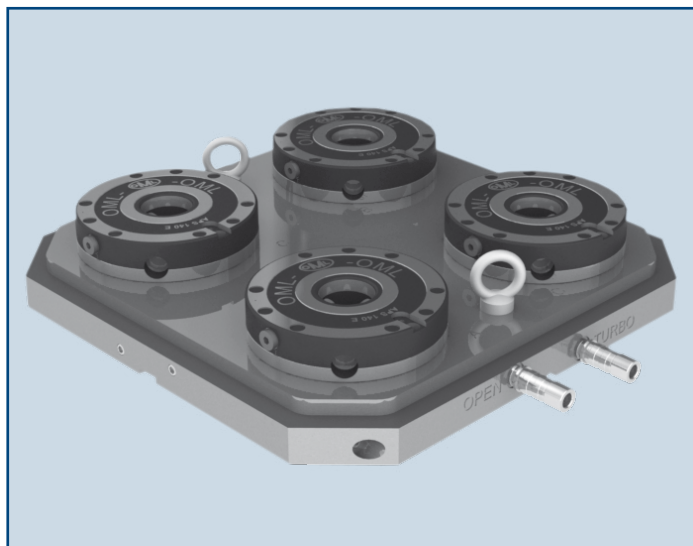


Plate with 2 modules APS 140-E

with turbo effect

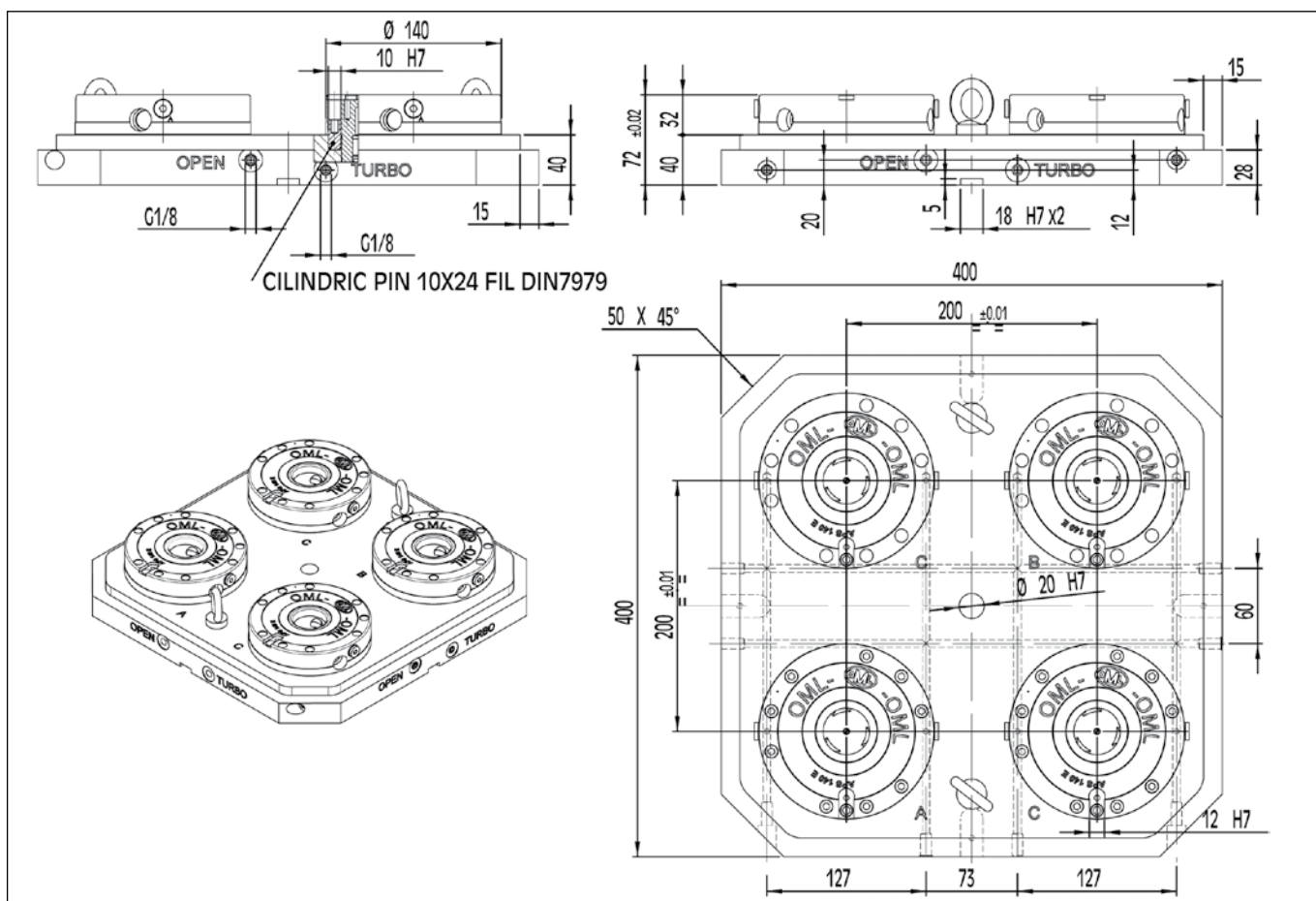


code	pull down force N (lbs)	unlocking pressure bar	repeatability mm	weight kg
<b>46 16 70 20</b>	<b>30.000 (6.745)</b>	<b>6</b>	<b>&lt; 0,005</b>	<b>28</b>

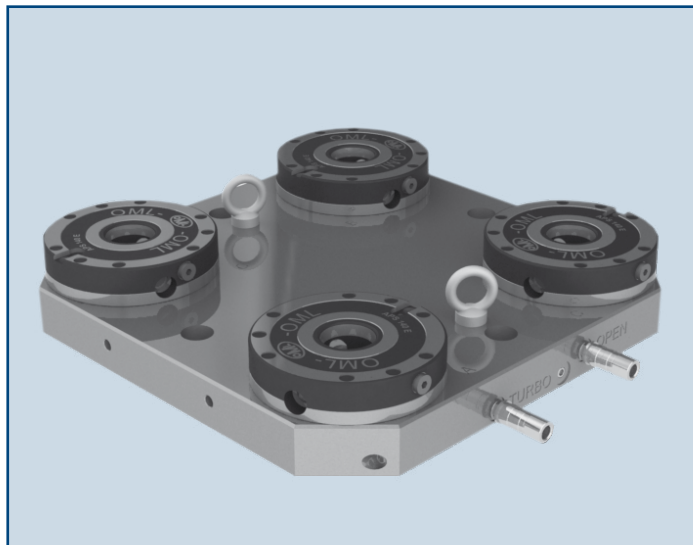


**Plate with 4 modules APS 140-E for vertical machining centers**

**with turbo effect**

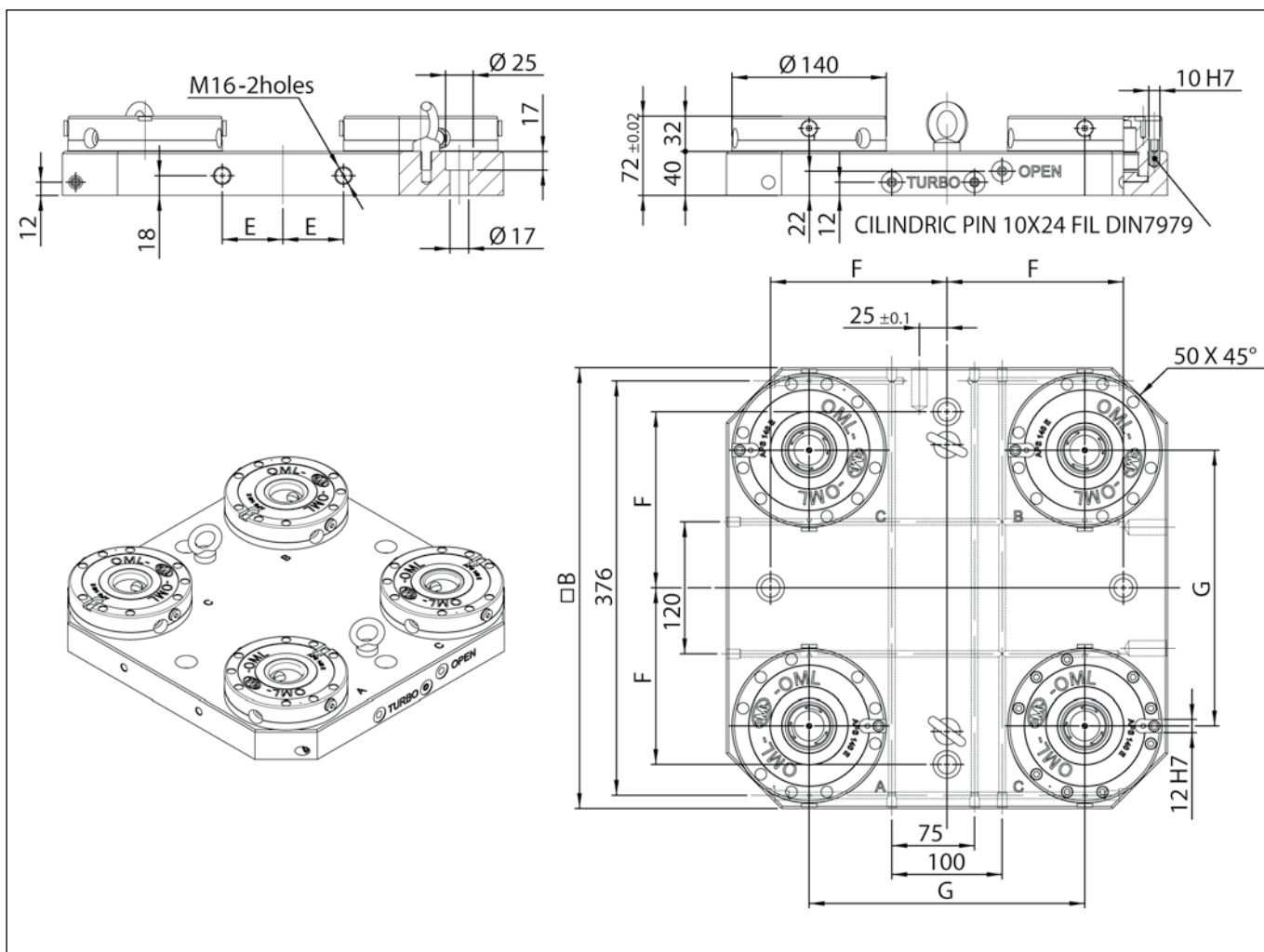


code	pull down force N (lbs)	unlocking pressure bar	repeatability mm	weight kg
<b>46 16 70 30</b>	<b>30.000 (6.745)</b>	<b>6</b>	<b>&lt; 0,005</b>	<b>56</b>



**Plate with 4 modules APS 140-E  
for horizontal machining centers**

**with turbo effect**



code	B mm	E mm	F mm	G mm	pull down force N (lbs)	unlocking pressure bar	repeatability mm	weight kg
<b>46 16 70 40</b>	400	55	160	250	30.000 (6.745)	6	< 0,005	57
<b>46 16 70 50</b>	500	75	200	300	30.000 (6.745)	6	< 0,005	85
<b>46 16 70 60</b>	630	100	250	420	30.000 (6.745)	6	< 0,005	130

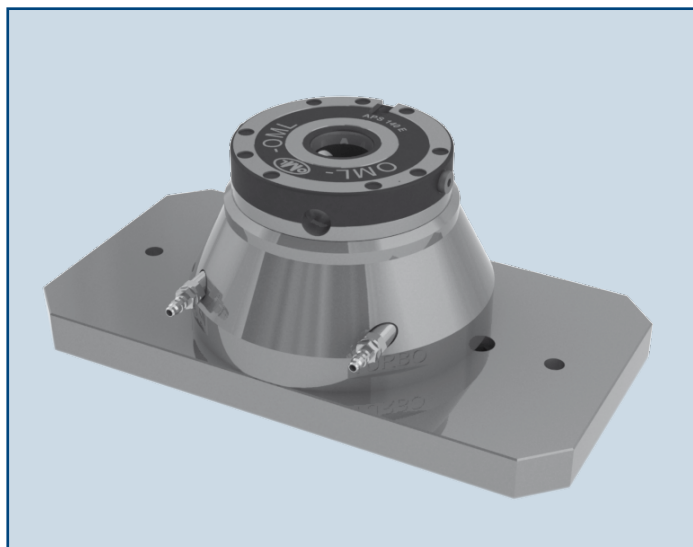
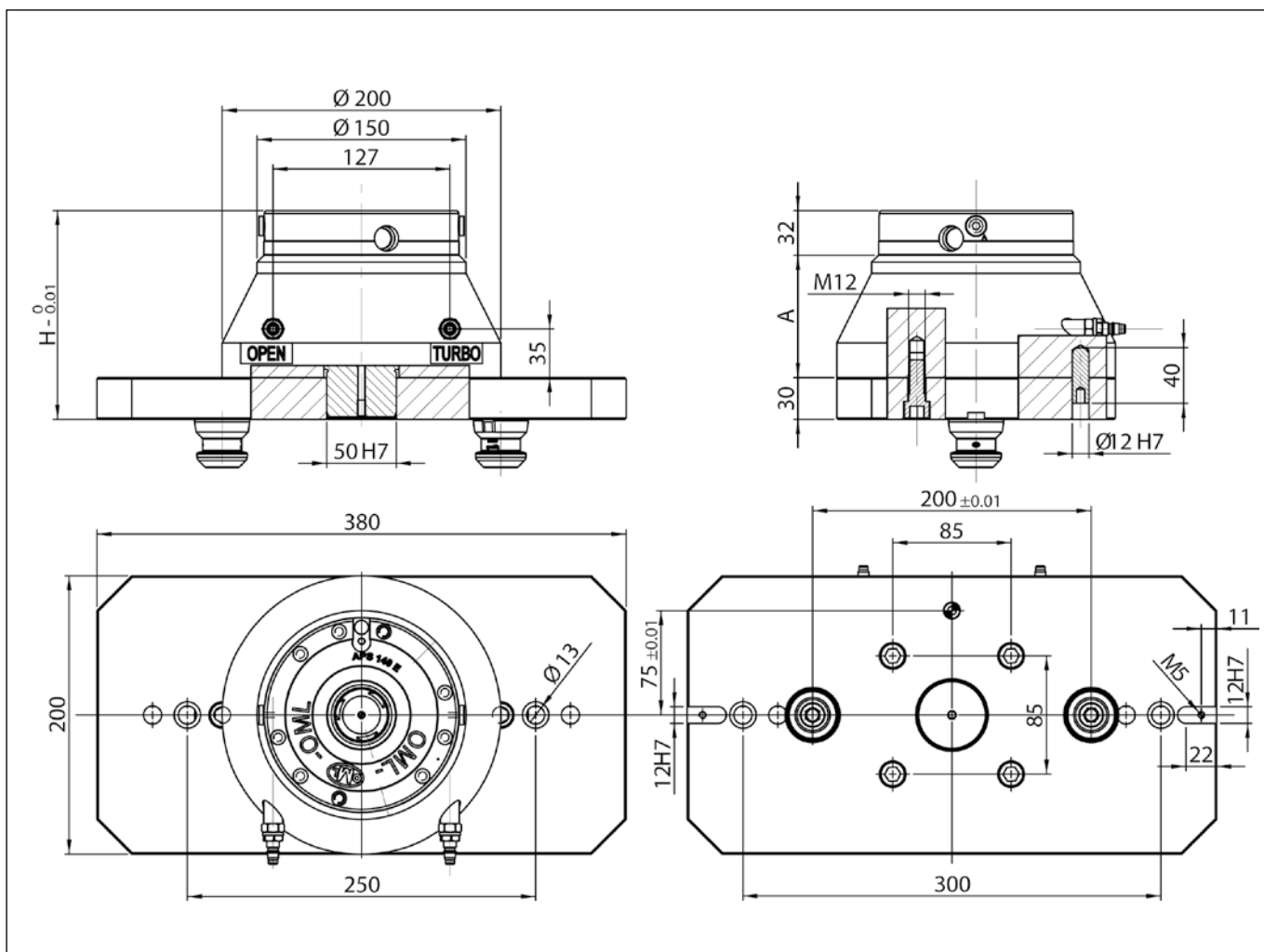


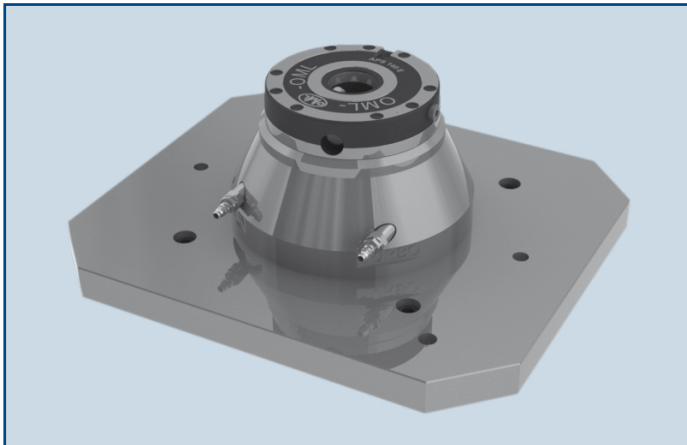
Plate with 1 module APS 140 E for 5 axis machine tools

with turbo effect



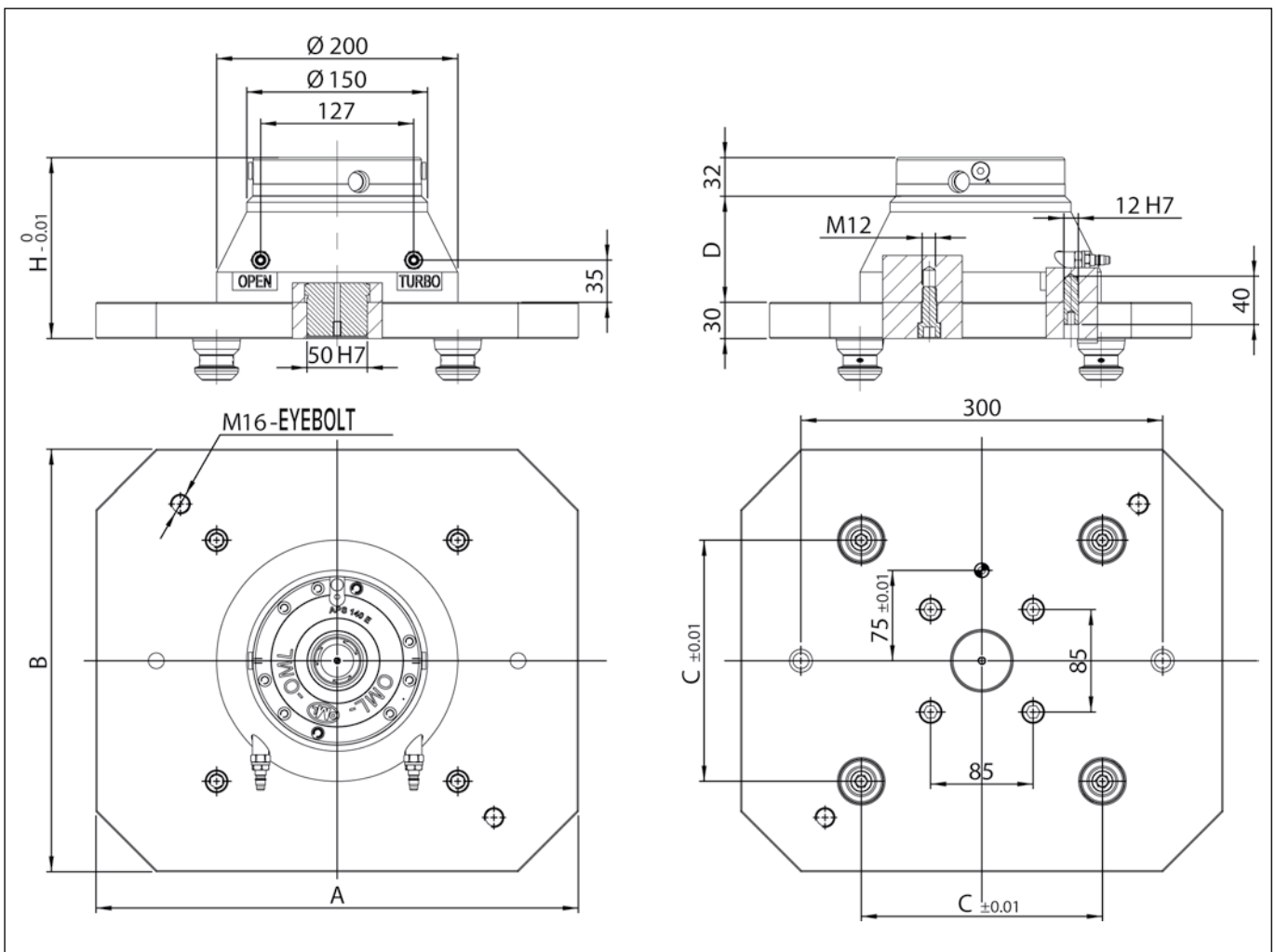
	H mm	A mm	weight kg
46 16 78 10	150	88	38
46 16 78 20	240	178	49



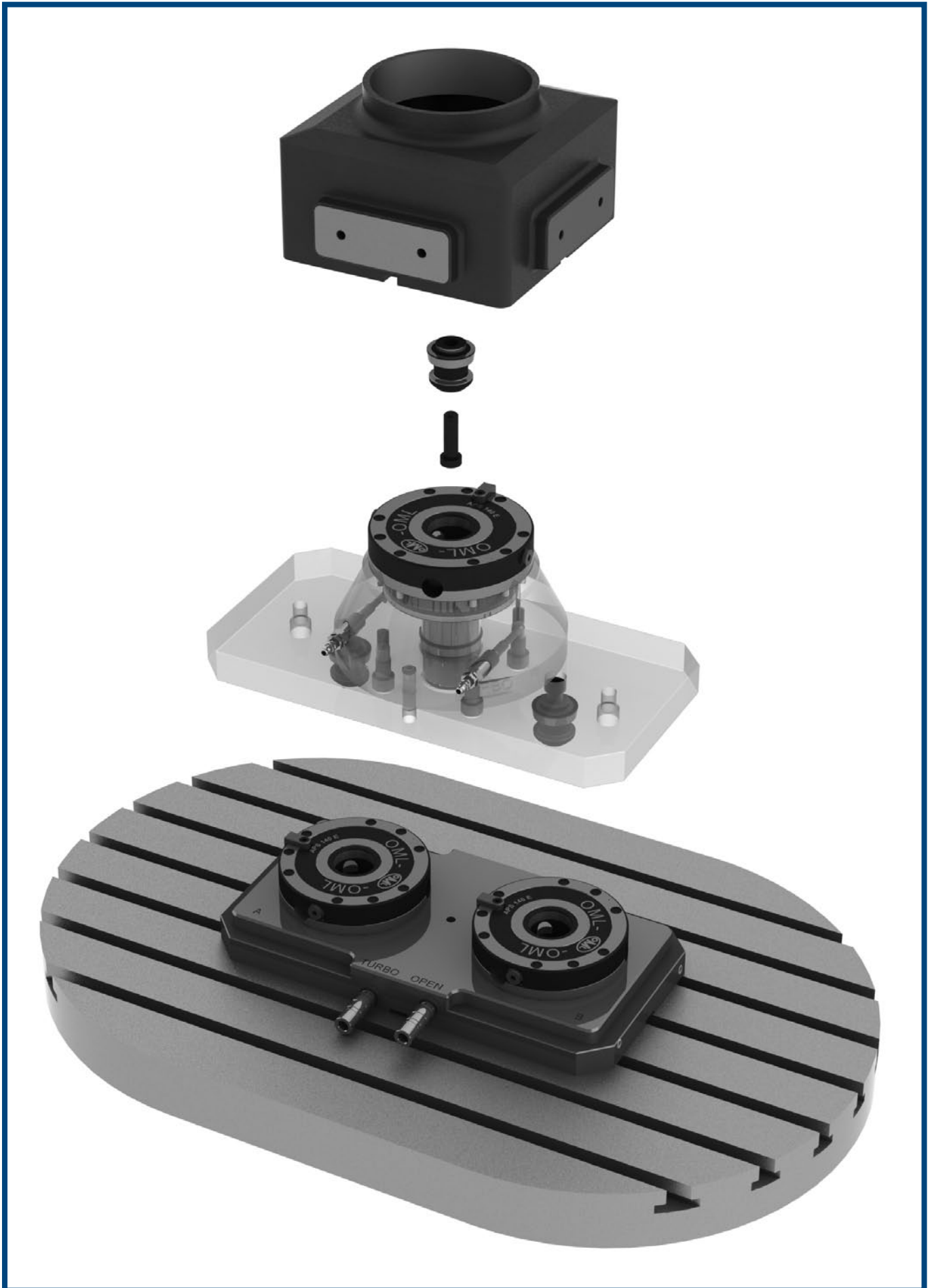


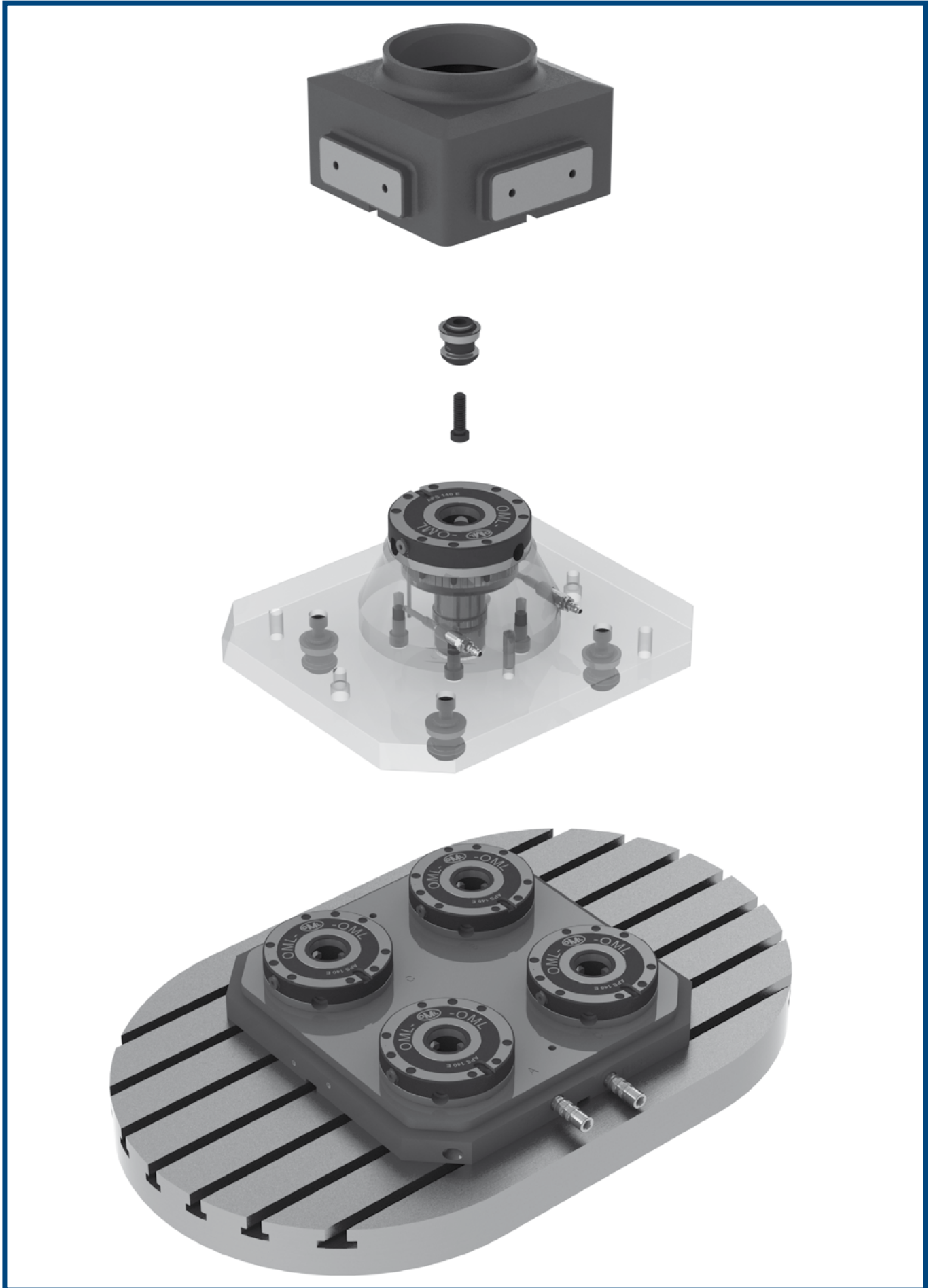
**Plate with 1 module APS 140 E for 5 axis M.T. (adaptation for plates at 4 modules)**

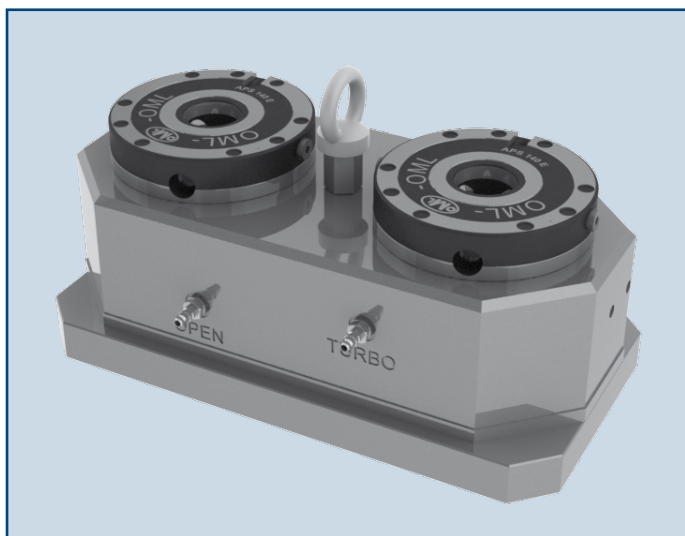
**with turbo effect**



code	A mm	B mm	C mm	D mm	H mm	weight kg
<b>46 16 78 30</b>	400	350	200	88	150	56
<b>46 16 78 40</b>	400	350	200	178	240	67,1
<b>46 16 78 50</b>	500	450	300	88	150	76,6
<b>46 16 78 60</b>	500	450	300	178	240	87,7

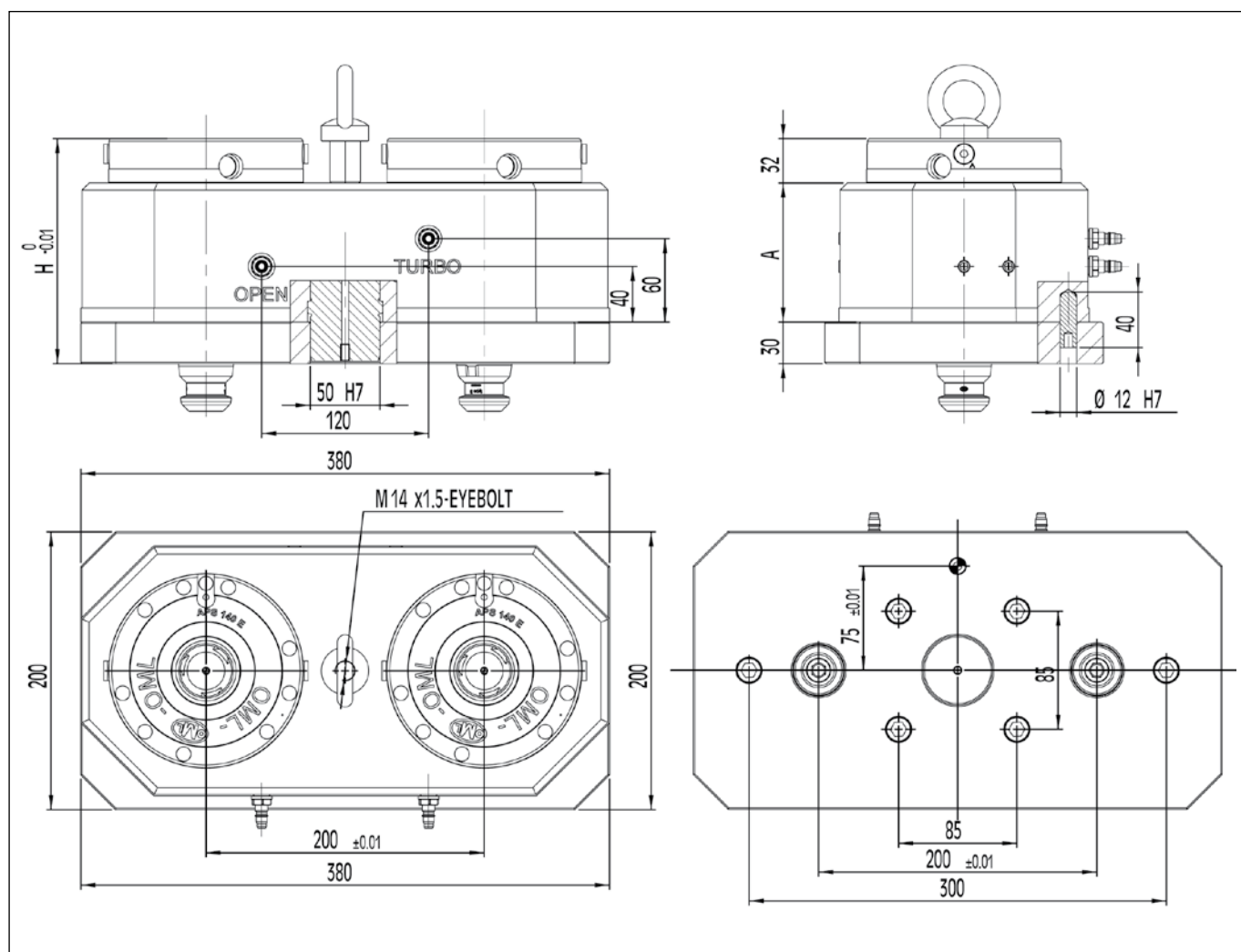




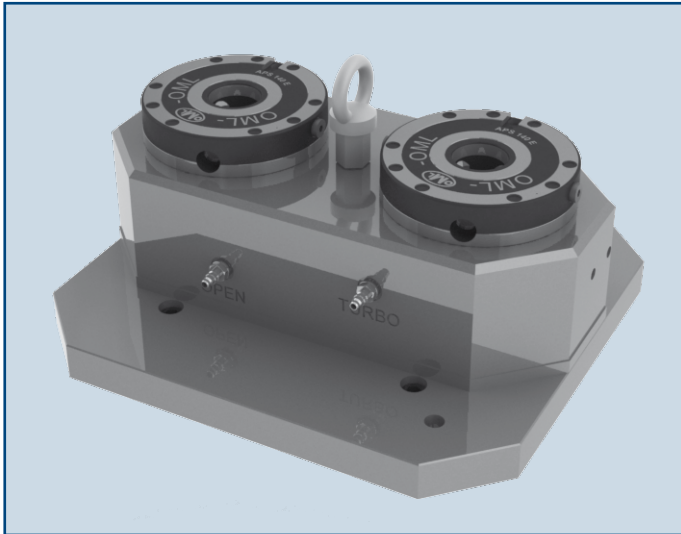


**Plate with 2 modules APS 140 E for 5 axis machine tools**

**with turbo effect**

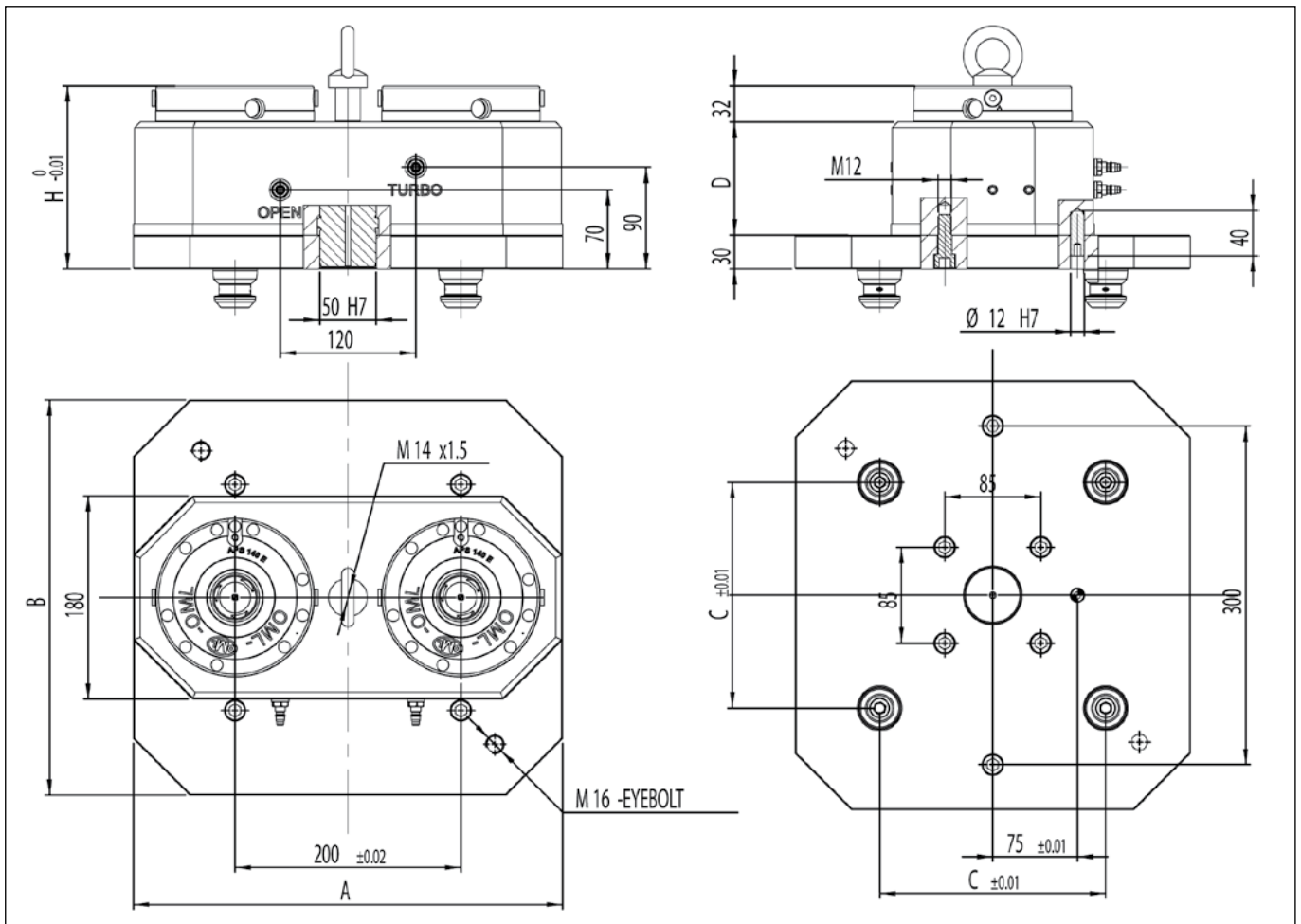


code	H mm	A mm	weight kg
<b>46 16 79 10</b>	162	100	70,5
<b>46 16 79 20</b>	262	200	118,5



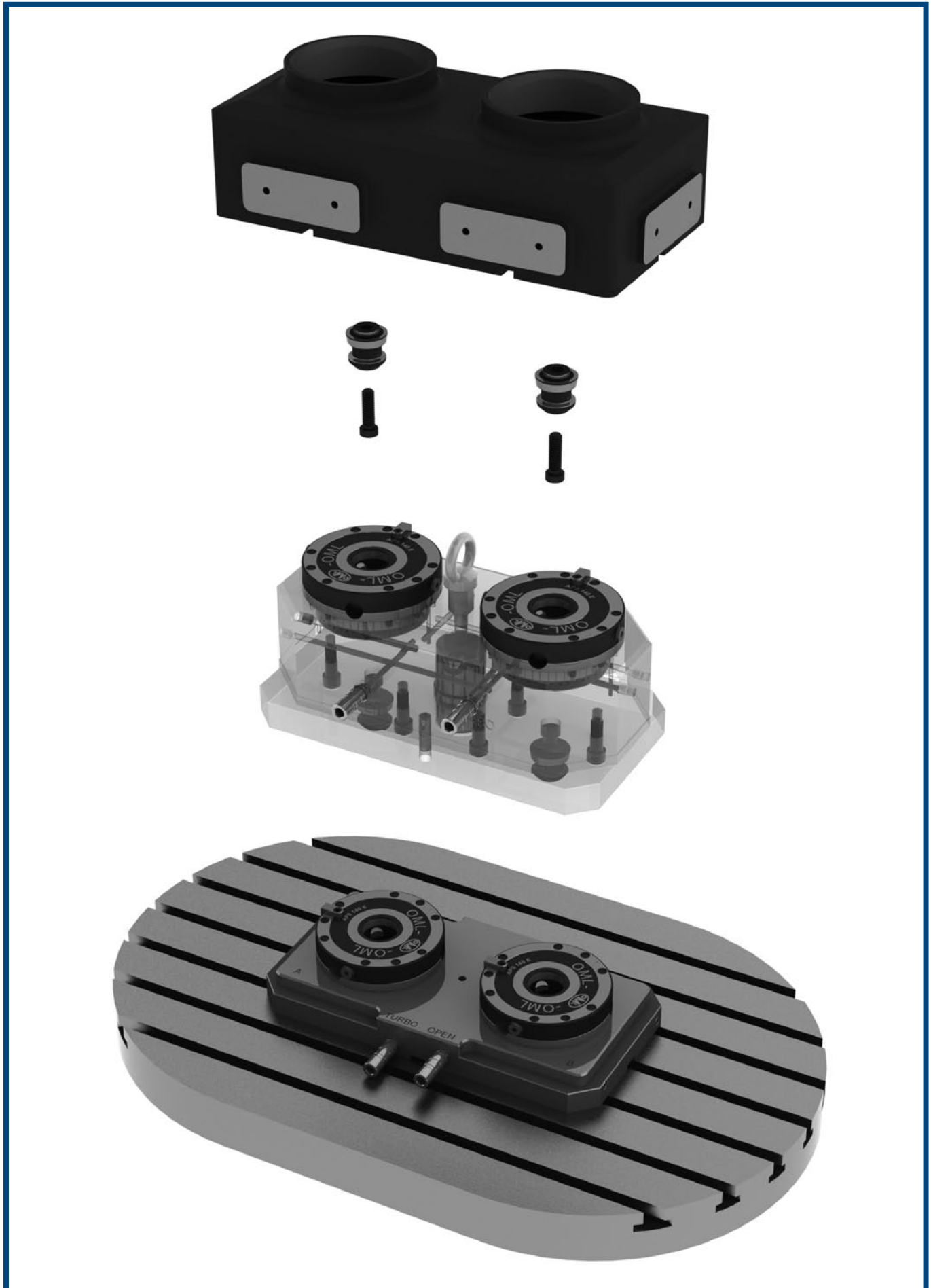
**Plate with 2 modules APS 140 E for 5 axis M.T. (adaptation for plates at 4 modules)**

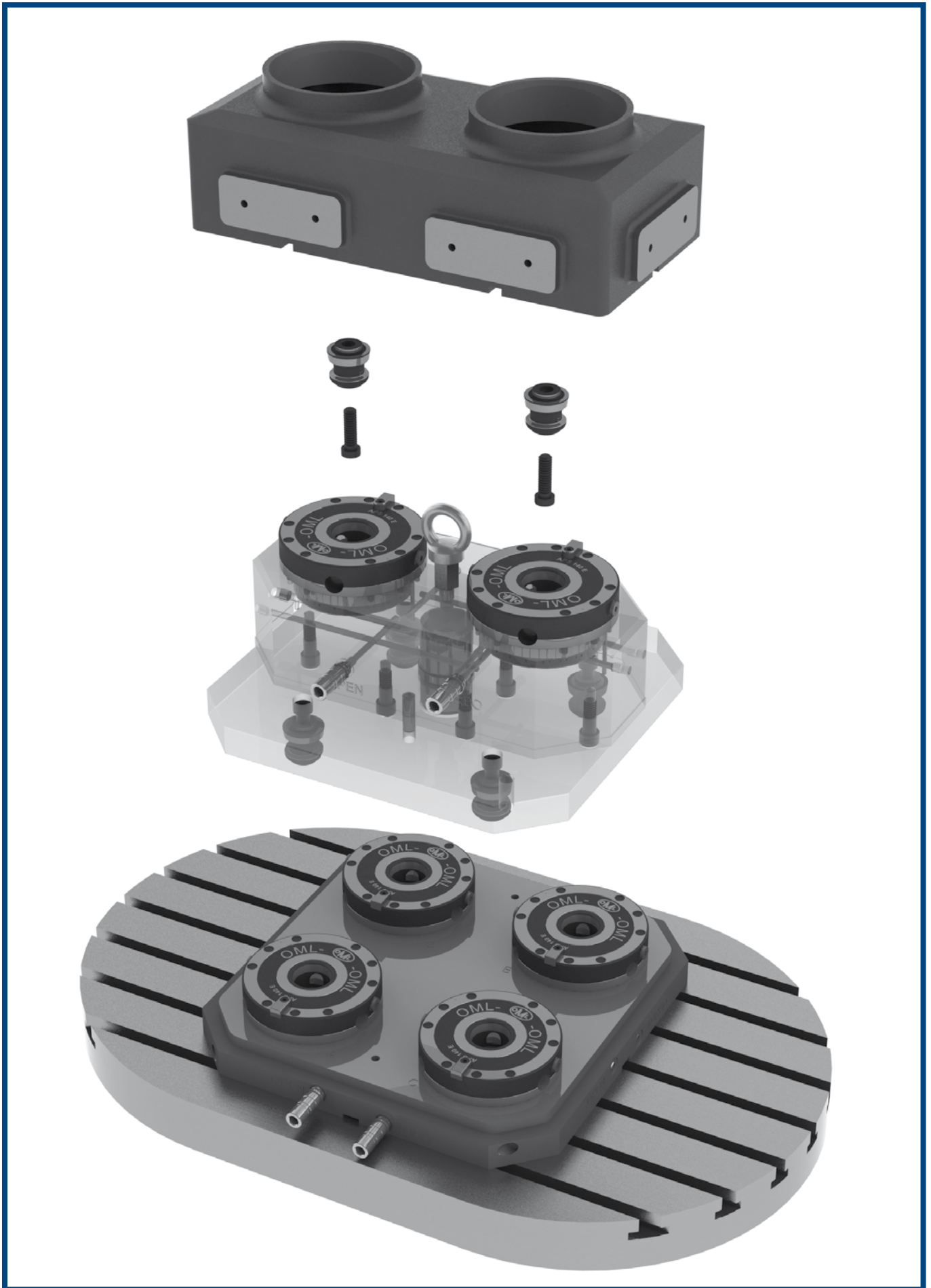
**with turbo effect**

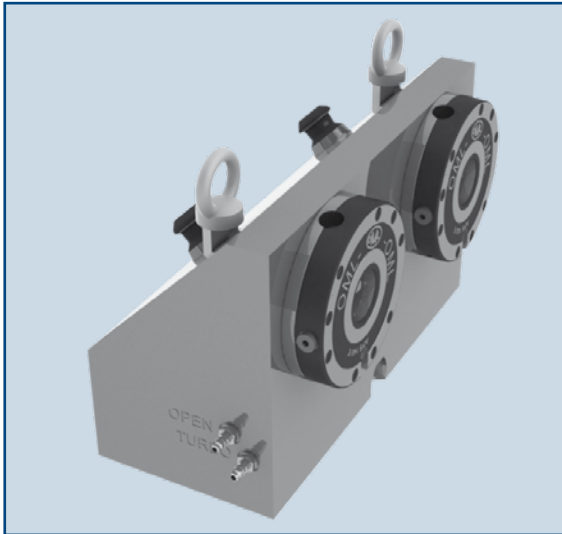


code	A mm	B mm	C mm	D mm	H mm	weight kg
<b>46 16 79 30</b>	400	350	200	100	162	88,7
<b>46 16 79 40</b>	400	350	200	200	262	136,6
<b>46 16 79 50</b>	500	450	300	100	162	109,2
<b>46 16 79 60</b>	500	450	300	200	262	157,2



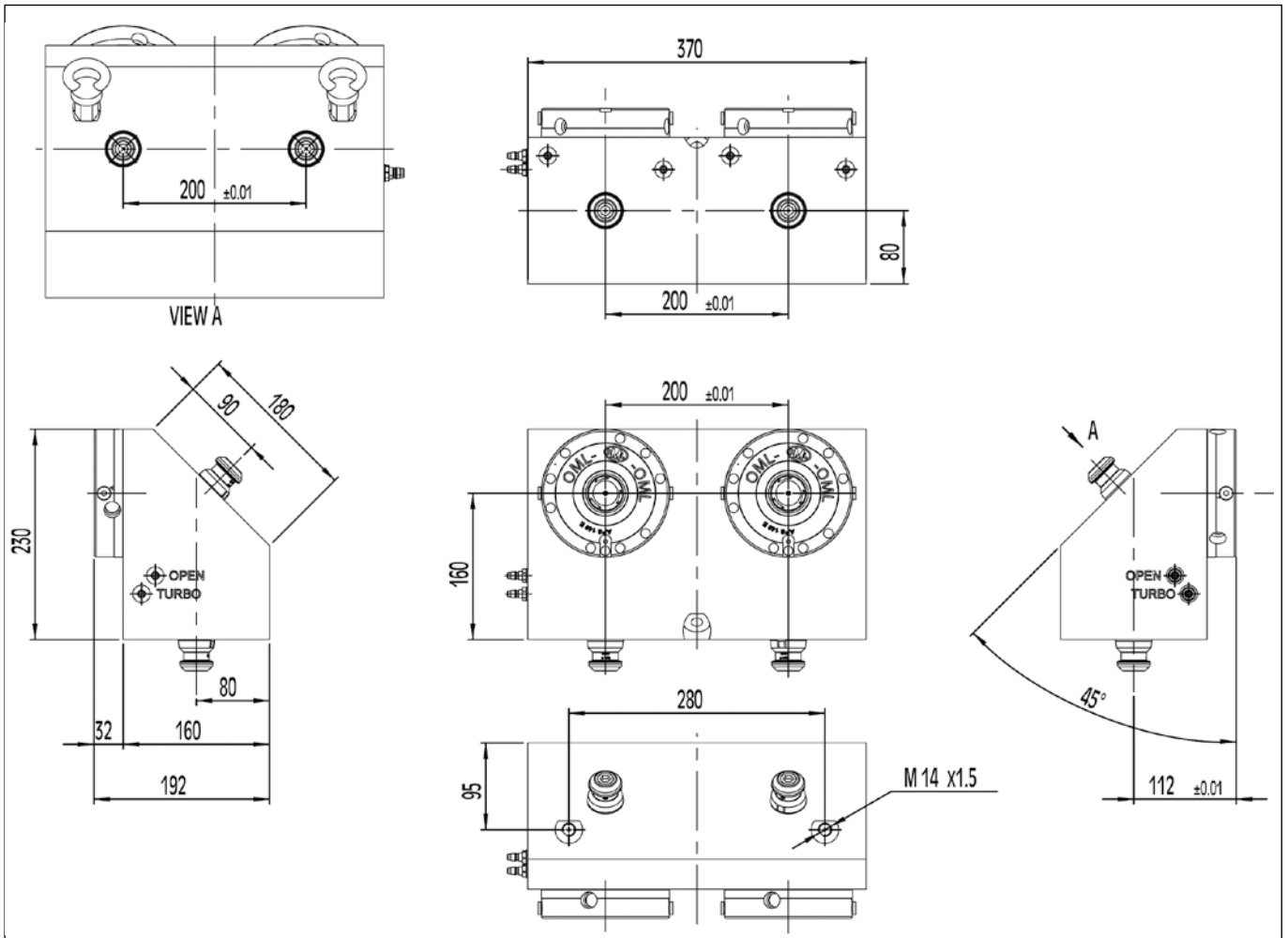






**Angle plate with 2 modules APS 140 E**

**with turbo effect**



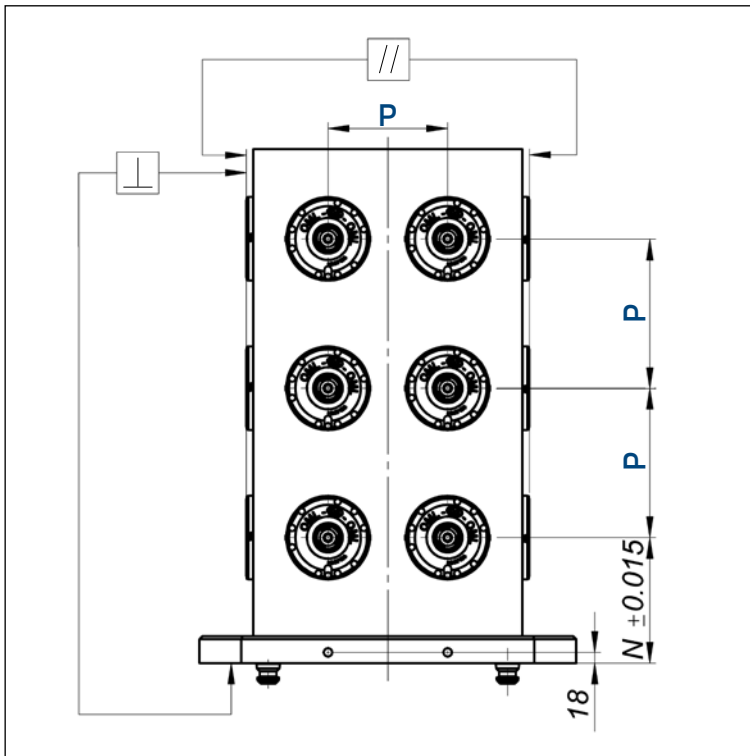
code	pull down force N (lbs)	unlocking pressure (bar)	Repeatability mm	weight kg
<b>46 16 77 50</b>	<b>30.000 (6.745)</b>	<b>6</b>	<b>&lt;0,005</b>	<b>87,7</b>





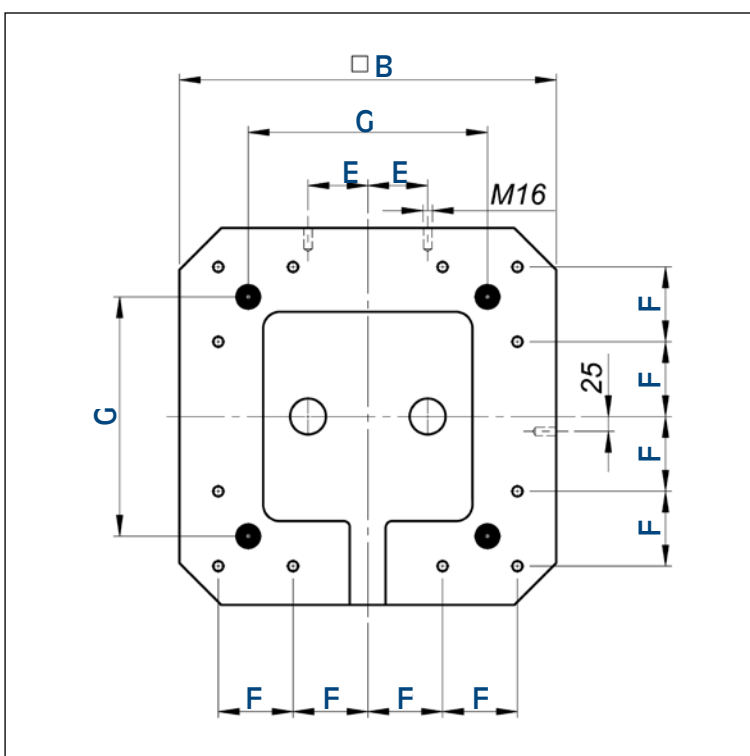






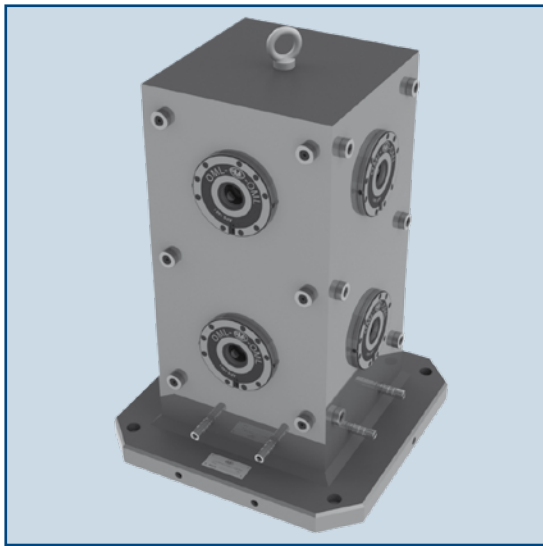
## Manufacturing tolerances

<b>⊥</b>	0,02 0,035	500 1000
<b>//</b>	0,03 0,05	500 1000
<b>P</b>	± 0,01 ± 0,02	200 300



## Standard interface for machine tools pallet

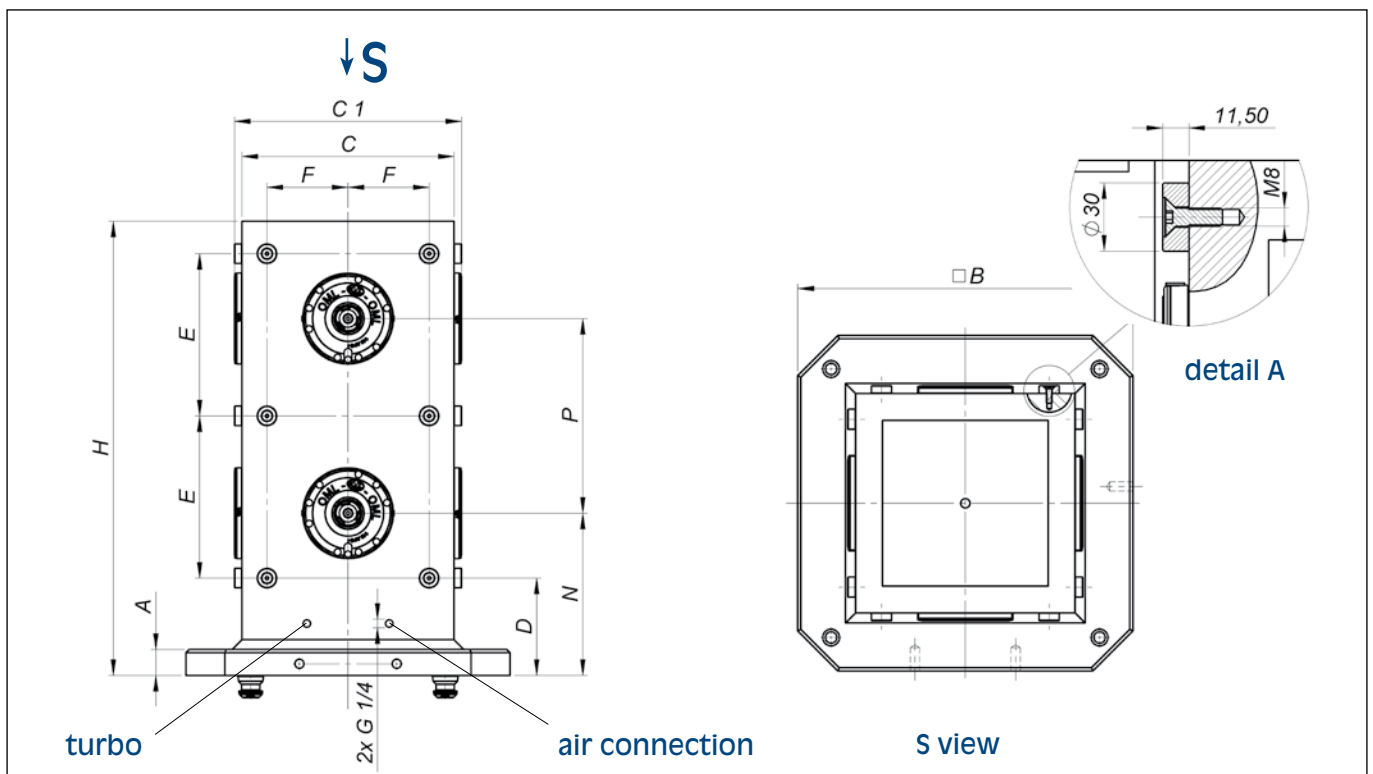
<b>B</b> mm	<b>E</b> mm	<b>F</b> mm	<b>G</b> mm
400	55	80	250
500	75	100	300
630	100	125	420



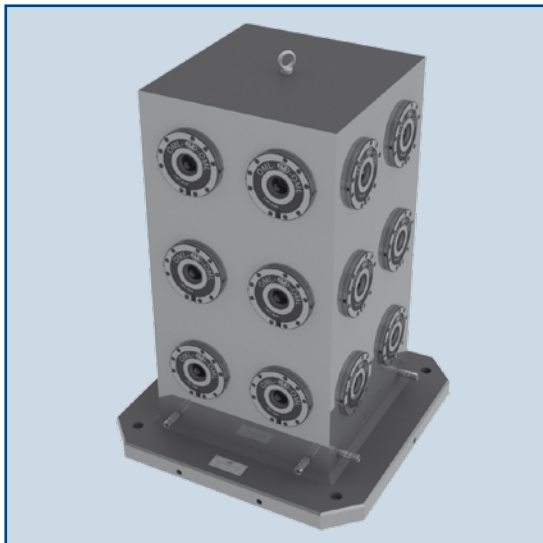
**Tombstone with 8 modules APS 140-I**

**with turbo effect**

- **Clamping / unclamping the modules on the same face is simultaneous**



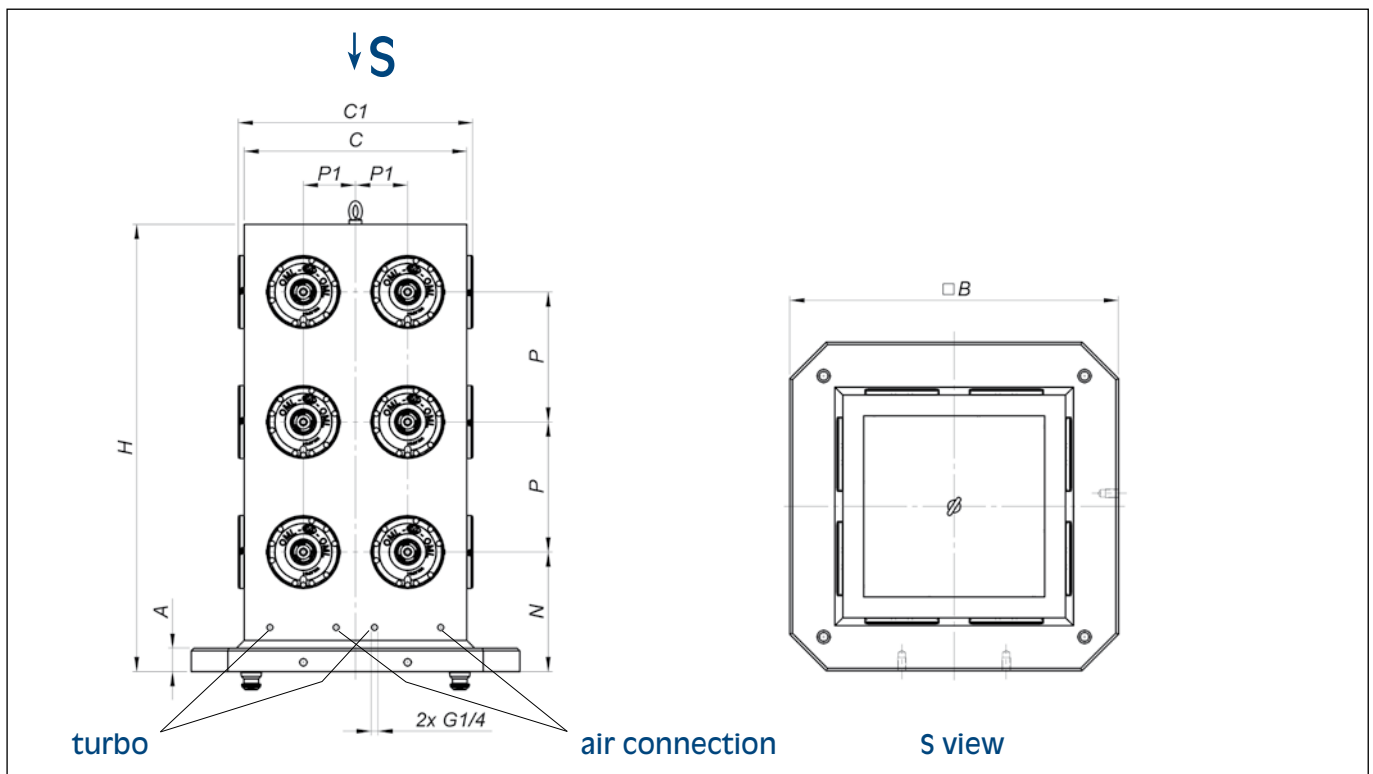
	code	A mm	B mm	C mm	H mm	P mm	N mm	C1 mm	D mm	E mm	FG mm	weight kg
STEEL	46 16 71 10	40	400	250	600	250	225	273	125	225	100	195
	46 16 71 20	40	500	350	700	300	250	373	150	250	125	328
ALUMINIUM	46 16 71 40	40	400	250	600	250	225	273	125	225	100	90
	46 16 71 50	40	500	350	700	300	300	373	150	250	125	137
CAST IRON	46 16 71 70	40	400	250	600	250	225	273	125	225	100	190
	46 16 71 80	40	500	350	700	300	300	373	150	250	125	315



**Tombstone with 24 modules APS 140-I**

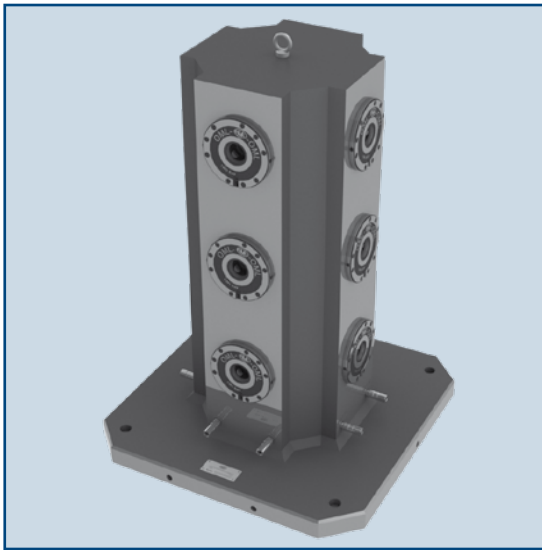
**with turbo effect**

- **Clamping / unclamping the modules on the same face is simultaneous**



	code	A mm	B mm	P1 mm	C mm	H mm	P mm	I mm	weight kg
<b>STEEL</b>	<b>46 16 71 30</b>	45	630	100	450	860	250	230	565
<b>ALUMINIUM</b>	<b>46 16 71 60</b>	45	630	100	450	860	250	230	280
<b>CAST IRON</b>	<b>46 16 71 90</b>	45	630	100	450	860	250	230	550

# APS 140

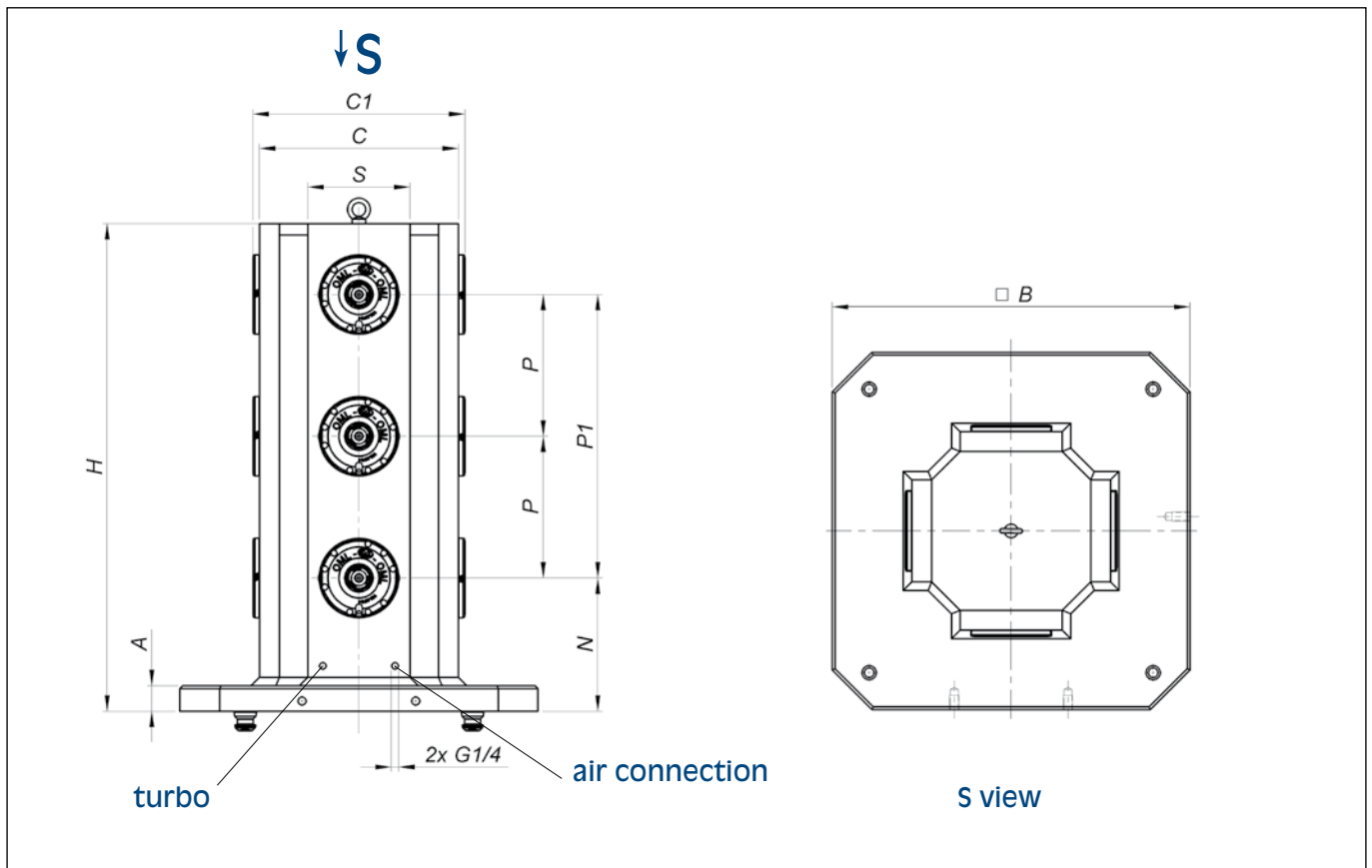


**Cross tombstone with 8 modules APS 140-I for 400 x 400 and 500 x 500**

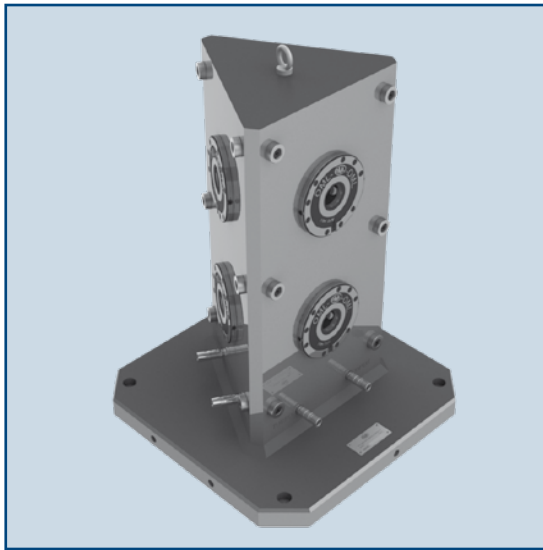
**Cross tombstone with 12 modules APS 140-I for 630 x 630**

**with turbo effect**

- **Clamping / unclamping the modules on the same face is simultaneous**



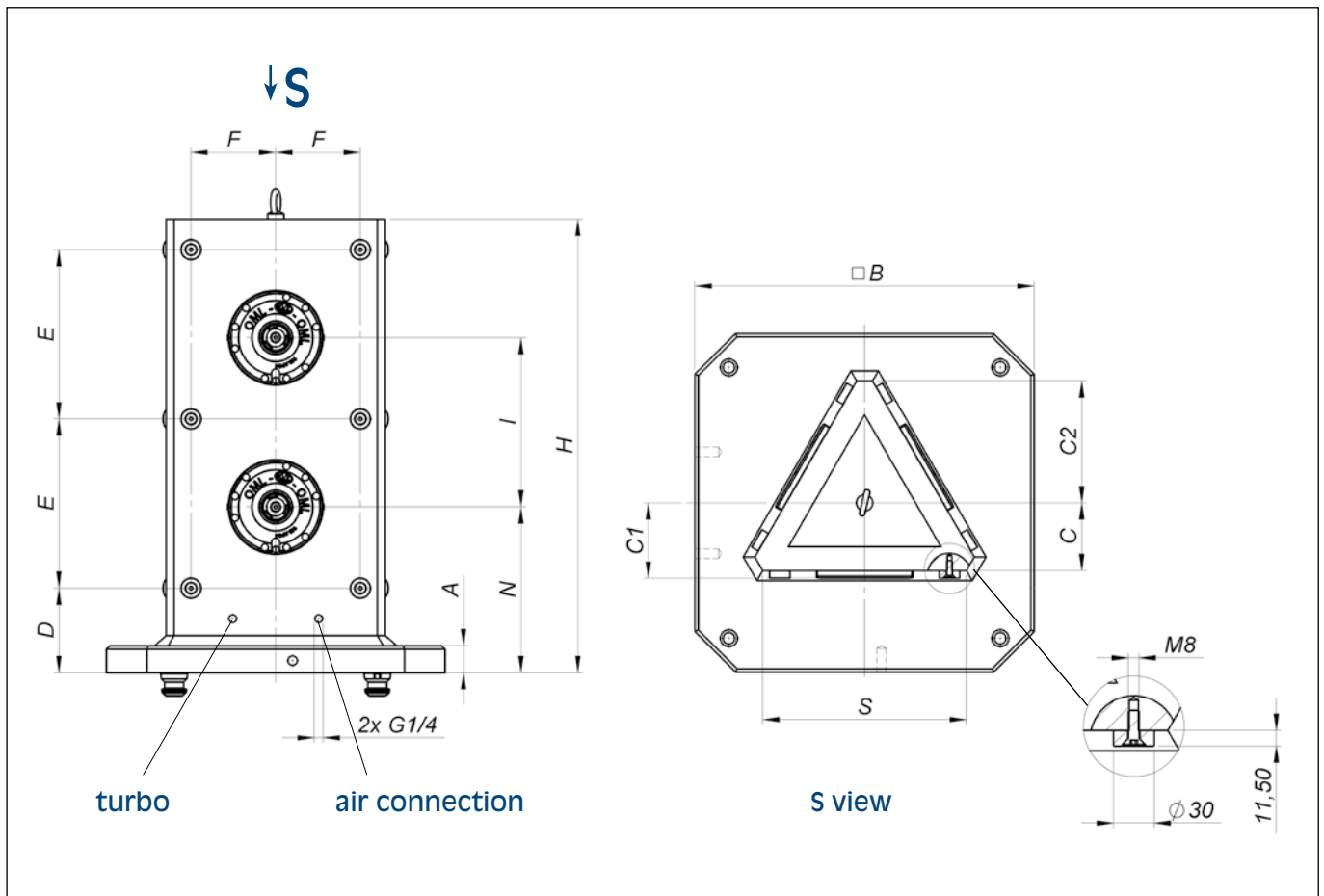
	code	A mm	B mm	C mm	H mm	P mm	P1 mm	C1 mm	N mm	S mm	weight kg
STEEL	46 16 72 10	40	400	280	600	-	250	303	225	150	188
	46 16 72 20	40	500	300	690	-	250	323	235	150	222
	46 16 72 30	45	630	350	860	250	500	373	235	180	365



**Triangular tombstone with 6 modules APS 140-I**

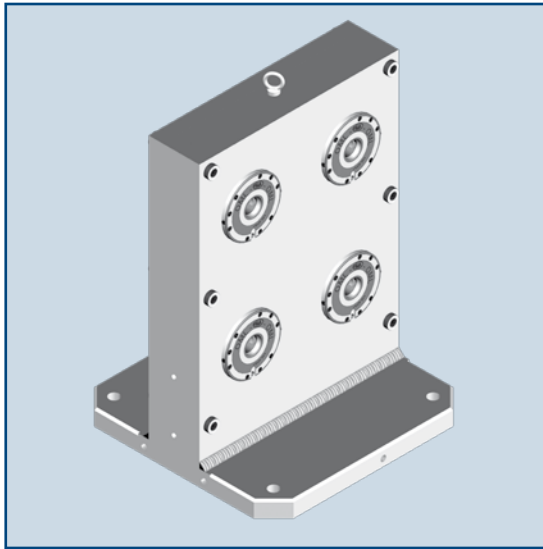
**with turbo effect**

- **Clamping / unclamping the modules on the same face is simultaneous**



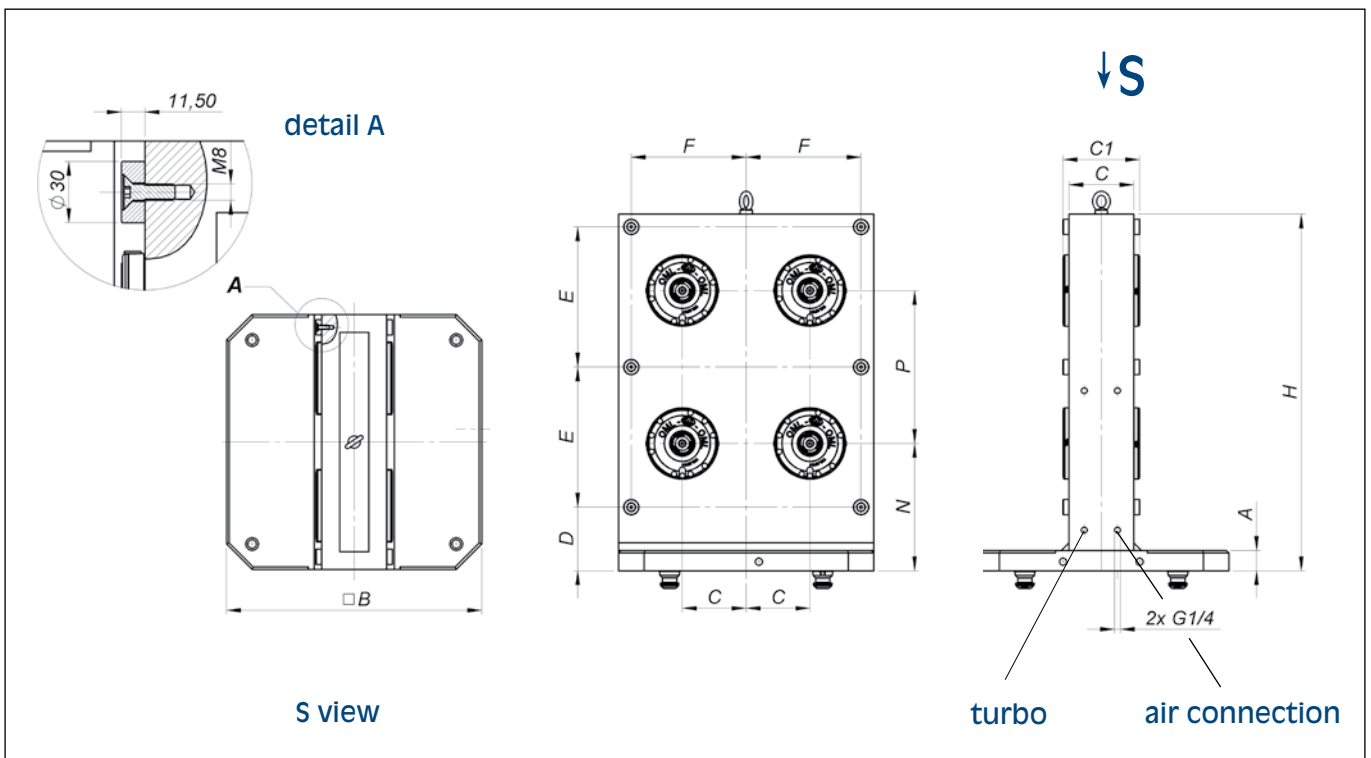
STEEL	46 16 72 40	40	400	600	250	225	100	225	125	125	111,5	180	300	200	
	46 16 72 50	40	500	660	250	245	100	250	125	125	111,5	180	300	227	



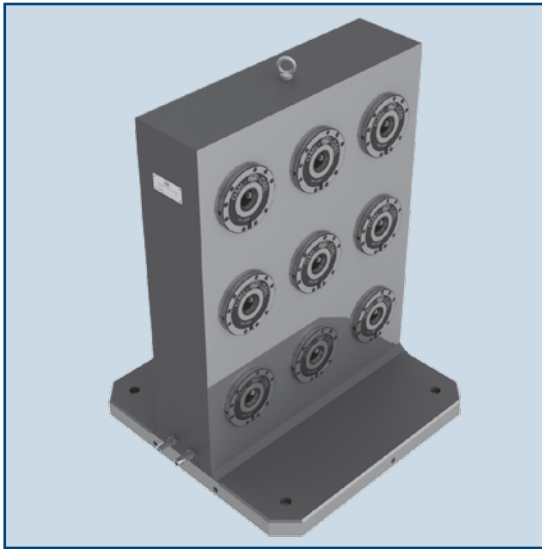


**Crankweb with 8 modules APS 140-I**

- **Clamping / unclamping the modules on the same face is simultaneous**



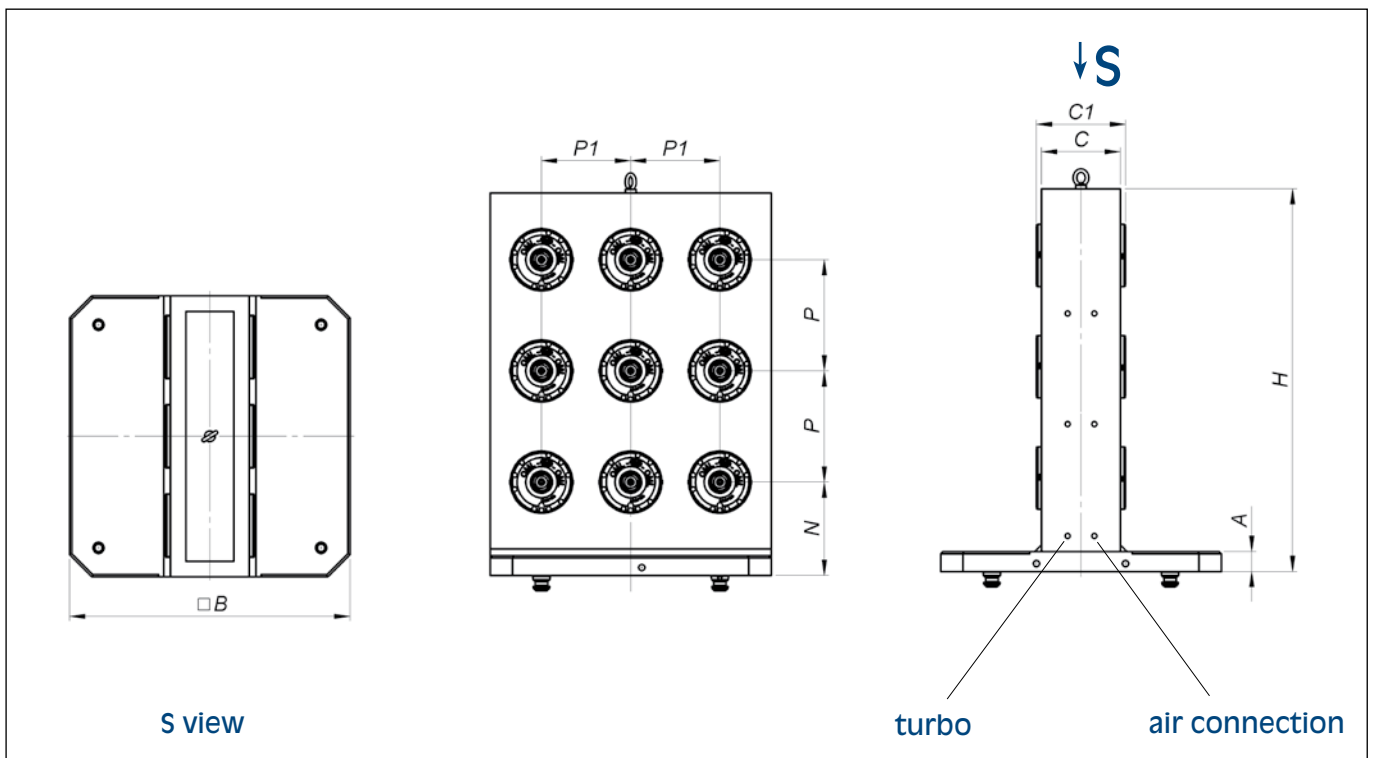
	code	A mm	B mm	C mm	H mm	P mm	N mm	C1 mm	D mm	E mm	F mm	weight kg
STEEL	46 16 73 10	40	400	150	600	250	225	173	125	215	175	200
	46 16 73 20	40	500	150	700	300	250	173	150	275	225	290
ALUMINIUM	46 16 73 40	40	400	150	600	250	225	173	125	215	175	90
	46 16 73 50	40	500	150	700	300	250	173	150	275	225	120
CAST IRON	46 16 73 70	40	400	150	600	250	225	173	125	215	175	185
	46 16 73 80	40	500	150	700	300	250	173	150	275	225	270



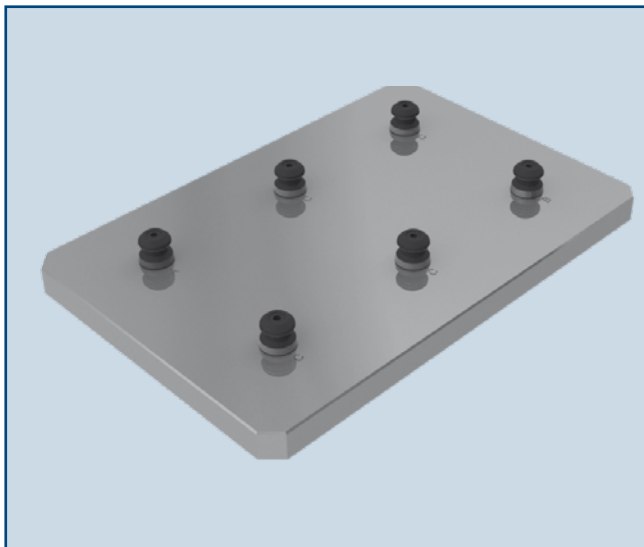
**Crankweb with 18 modules APS 140-I**

**with turbo effect**

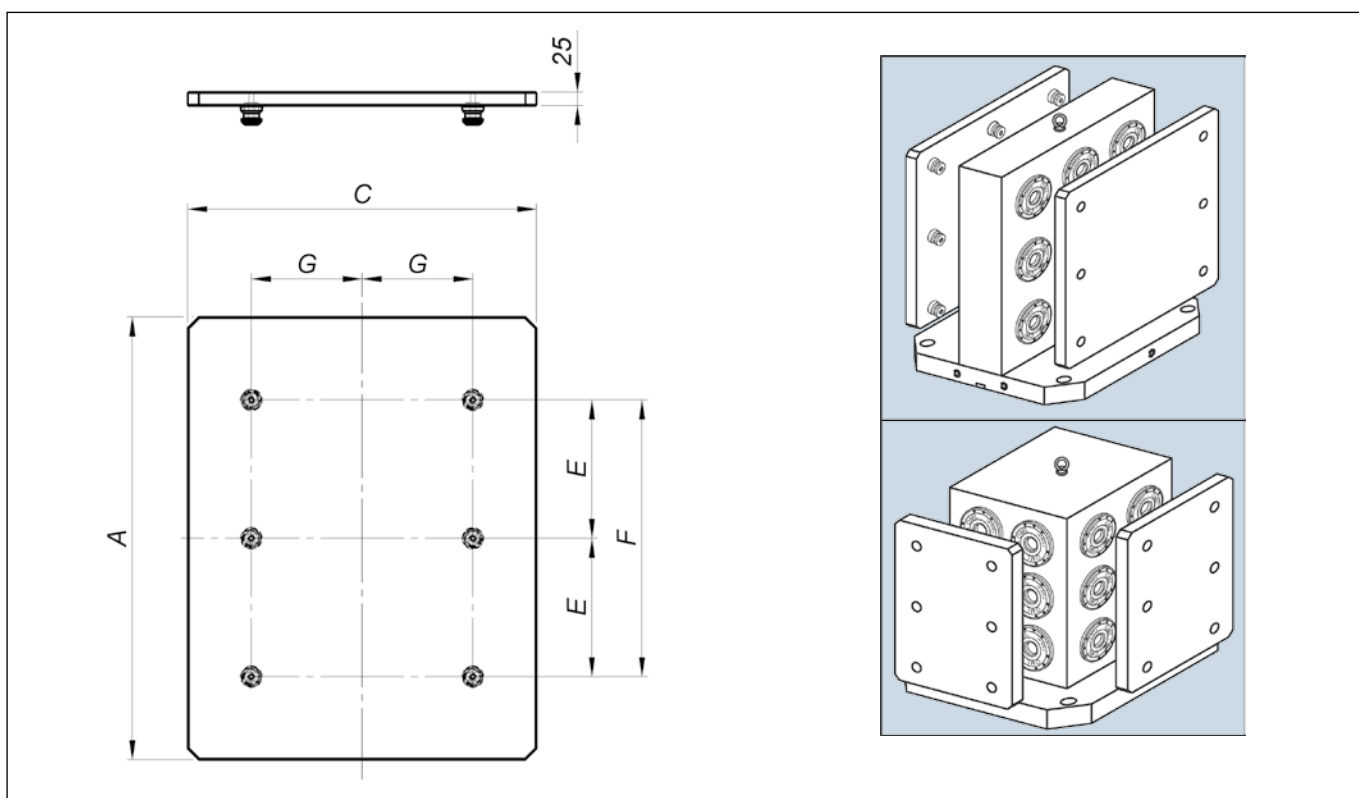
- **Clamping / unclamping the modules on the same face is simultaneous**



	code	A mm	B mm	P1 mm	C mm	C1 mm	H mm	P mm	N mm	weight kg
<b>STEEL</b>	<b>46 16 73 30</b>	45	630	200	200	223	860	250	230	495
<b>ALUMINIUM</b>	<b>46 16 73 60</b>	45	630	200	200	223	860	250	230	230
<b>CAST IRON</b>	<b>46 16 73 90</b>	45	630	200	200	223	860	250	230	480



Smooth plate for APS 140



	code	A mm	C mm	E mm	F mm	G mm	weight kg
For Tombstones	46 16 74 10	500	250	-	250	-	25
	46 16 74 20	600	350	-	300	-	42
	46 16 74 30	760	450	250	500	100	67
For Crankwebs	46 16 74 40	500	400	-	250	100	48
	46 16 74 50	600	500	-	300	125	60
	46 16 74 60	800	630	250	500	200	98

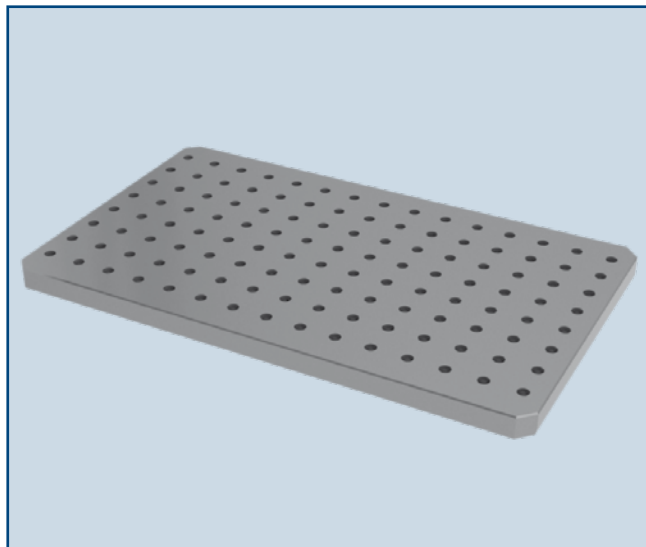
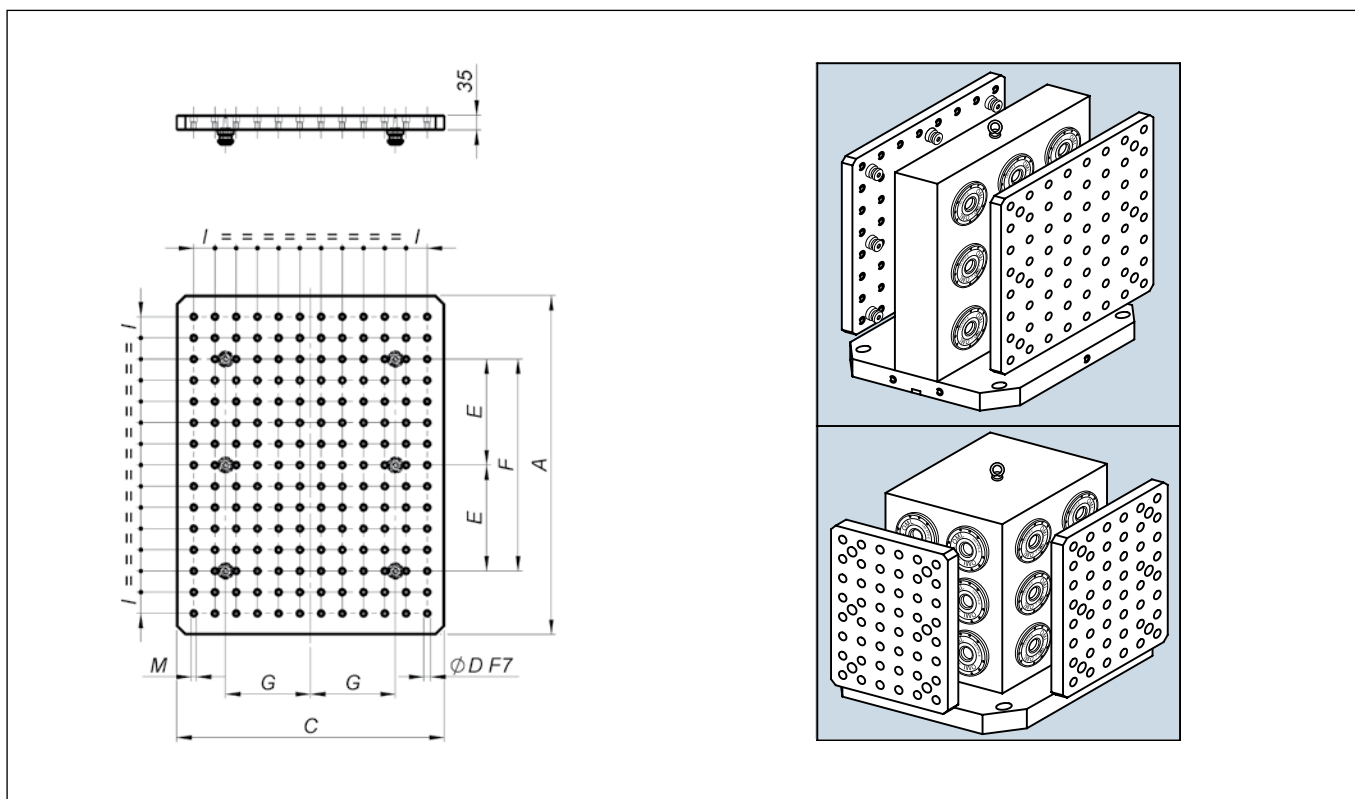


Plate with grid for APS 140

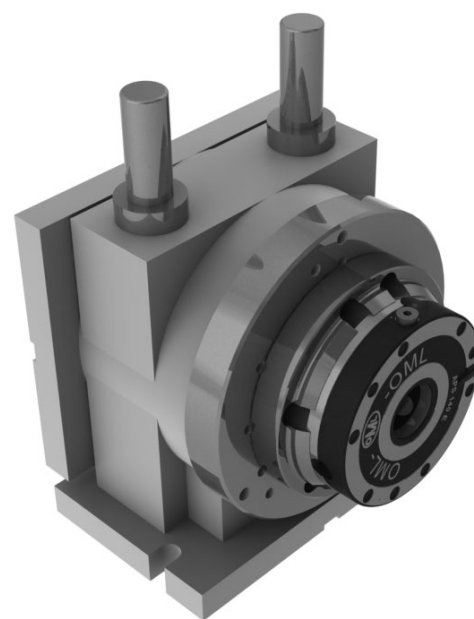


	code	A mm	C mm	E mm	F mm	G mm	I mm	M mm	Ø D mm	weight kg
For Tombstones	46 16 75 10	500	250	-	250	-	50	12	16	32
	46 16 75 20	600	350	-	300		50	12	16	55
	46 16 75 30	760	450	250	500	100	50	12	16	96
For Crankwebs	46 16 75 40	500	400	-	250	100	50	12	16	64
	46 16 75 50	600	500	-	300	125	50	12	16	79
	46 16 75 60	800	630	250	500	200	50	12	16	132

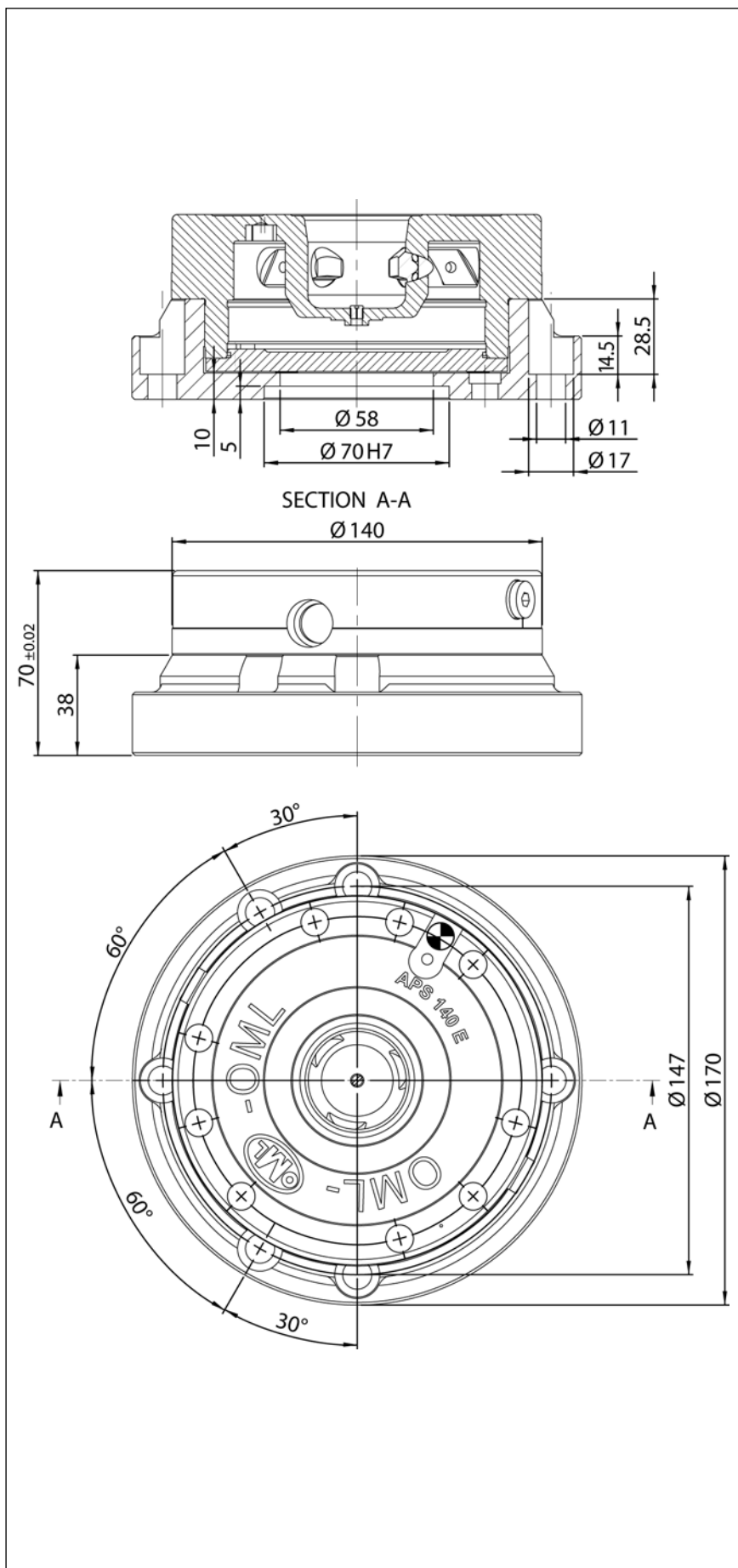
# APS 140

## Flanges for indexing tables "TOUCHDEX" and CNC indexing tables with T slots Flanges

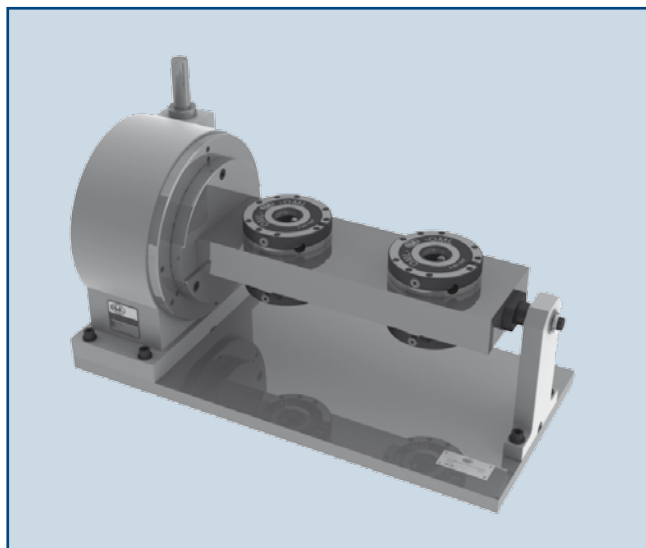
**Flange with 1 module APS 140-E for indexing tables "TOUCHDEX" FDM-150 and FD-200-04 and FD-200-360, FDM-230, FDR-230, FDM-230-360, FDR-230-360 and for orientation on indexing tables with T slots. See key ways on page O. 41.**



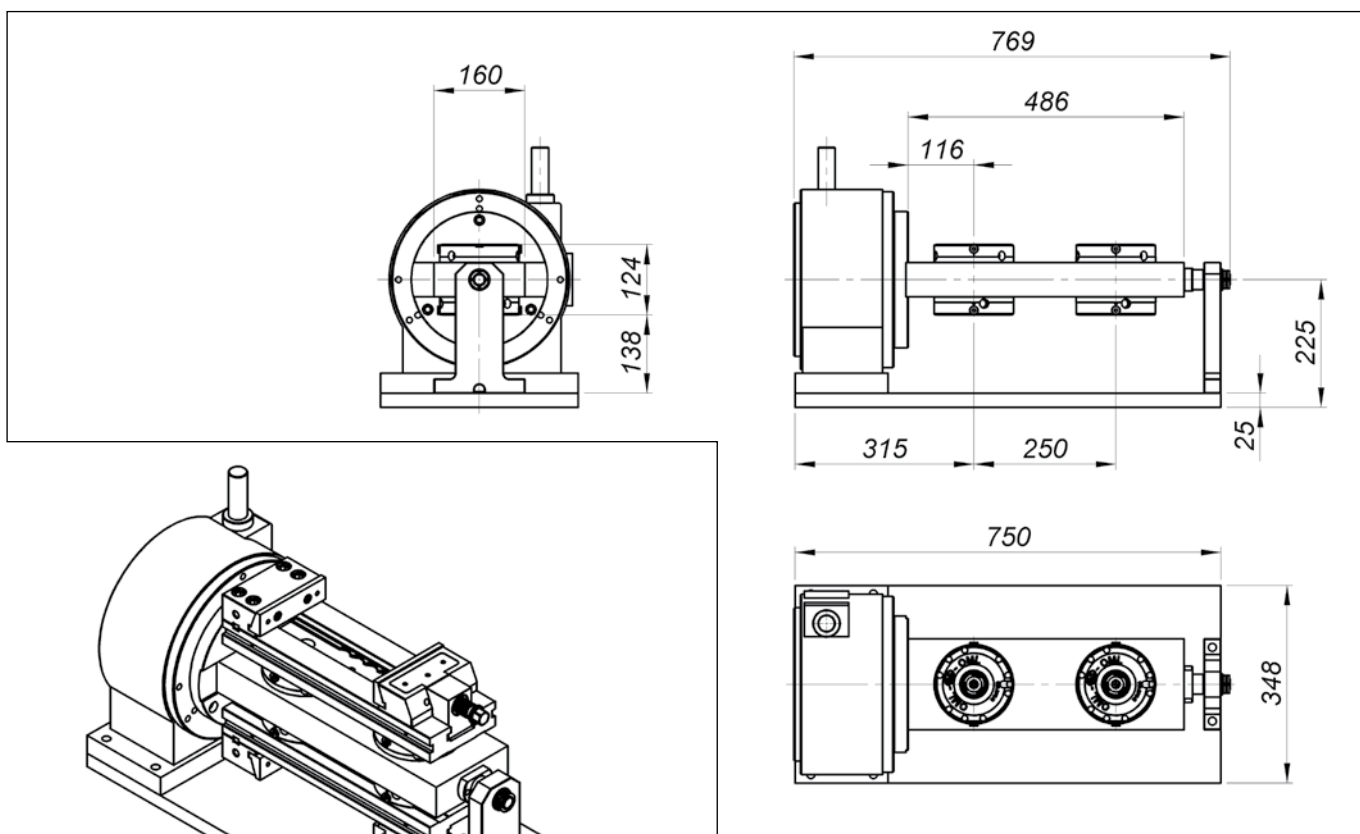
**Example with FDR-230**



code	weight kg
46 16 76 20	17



COMBIDEX with 4 modules APS 140-E



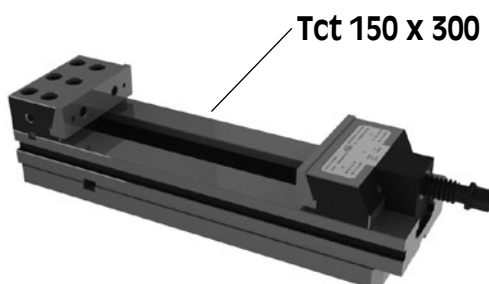
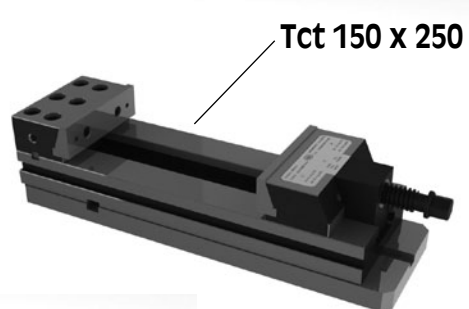
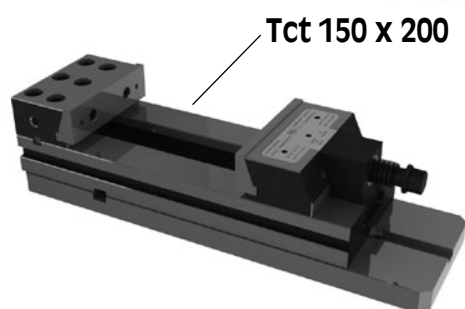
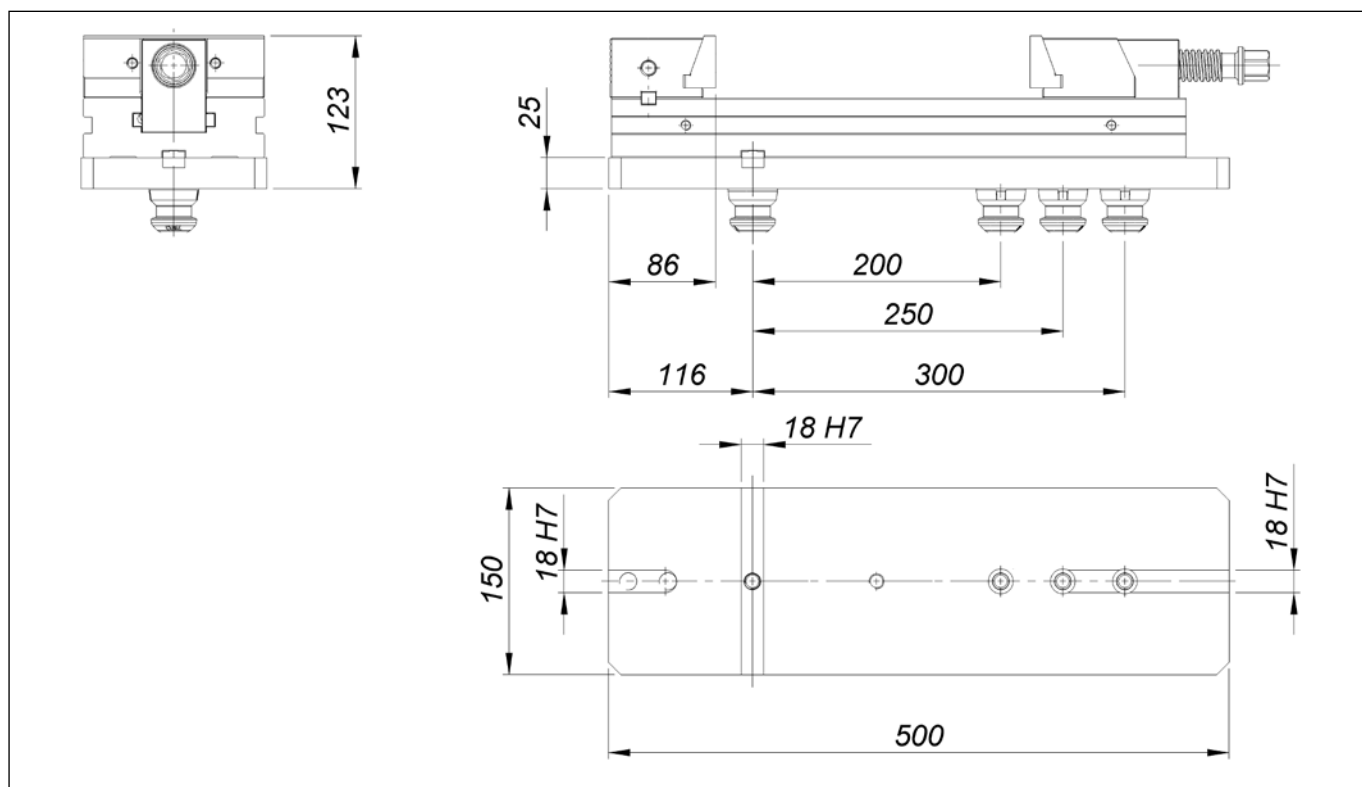
Working examples

code	for type	indexing angles		pushbar Stroke mm	weight kg
		min°	max°		
46 16 76 10	FDV-301	5°	45°	75	126



### Interface plate for APS 140 with Tct 150

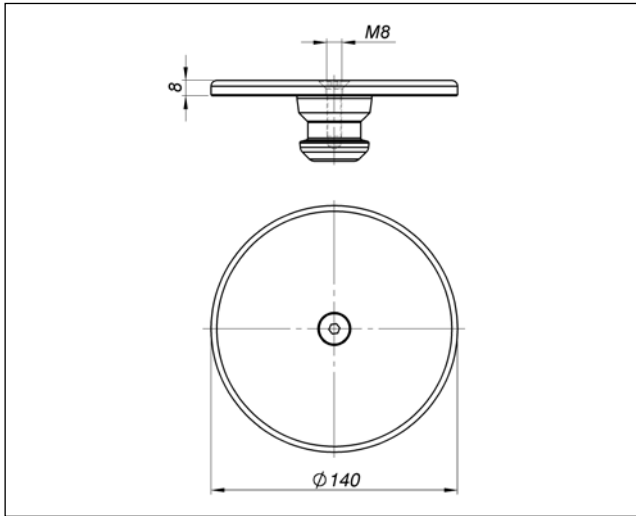
code	weight kg
46 16 77 10	14



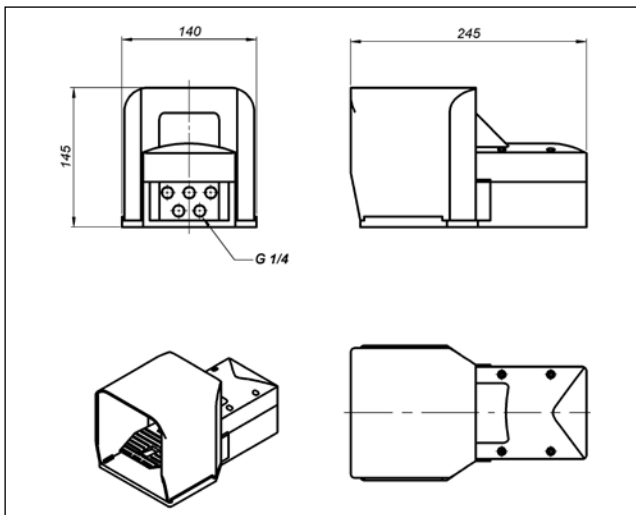
### Working examples

● SPECIAL INTERFACES PLATES FOR ANY OTHER VISES ON REQUEST

## Protection cover

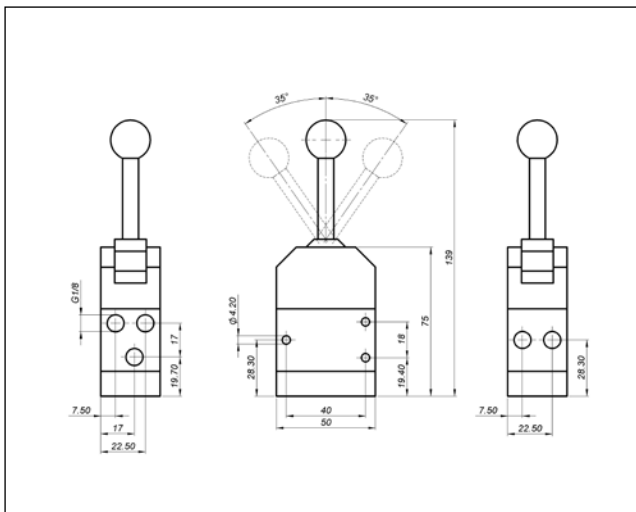


code	weight kg
46 16 23 25	1,1



## 5/2 1/4" way foot valve with guarded pedal

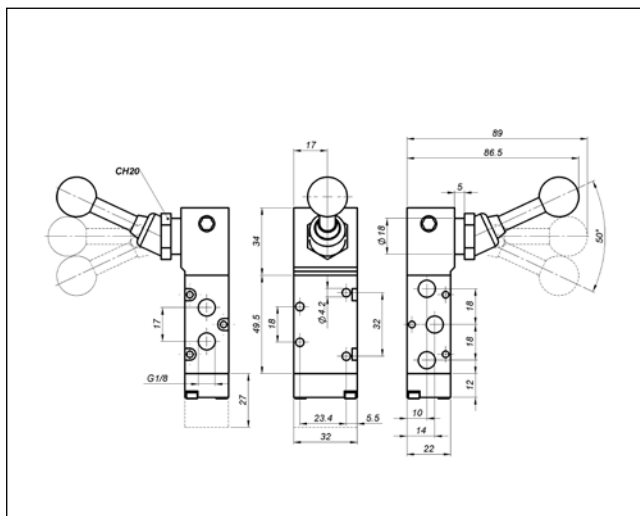
code	weight kg	symbol
71 64 22 14	1,035	



## Hand-operated valve front lever 5/3 1/8"

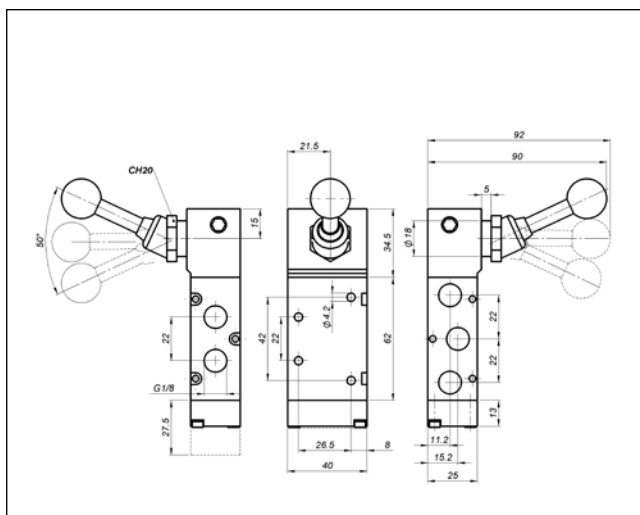
code	weight kg	symbol
71 64 21 04	0,316	

### Hand-operated valve angular lever 90° 5/3 1/8"



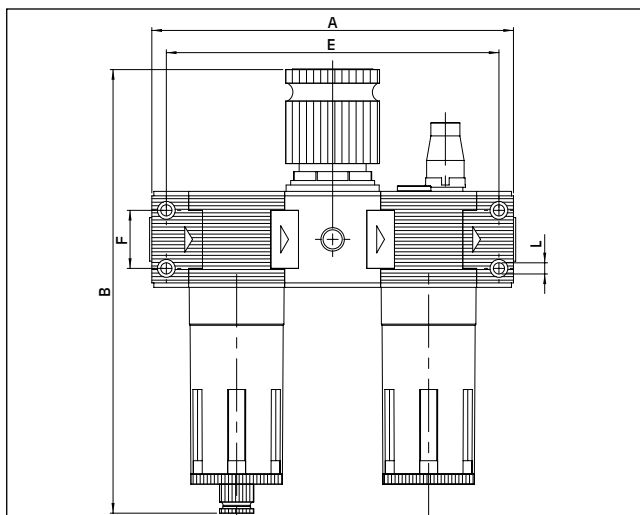
code	weight kg	symbol
71 64 21 05	0,194	

### Hand-operated valve angular lever 90° 5/3 1/4"



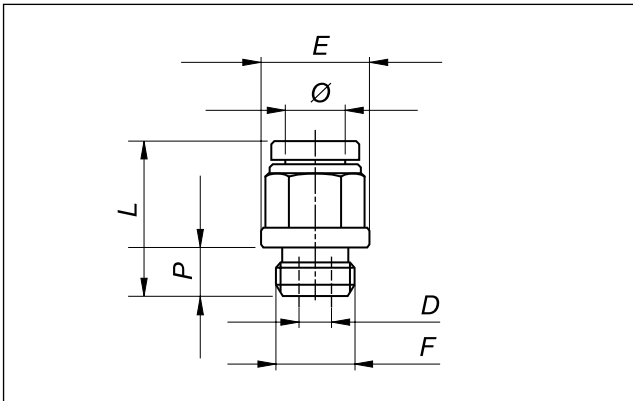
code	weight kg	symbol
71 64 21 14	0,288	

### FRL filter



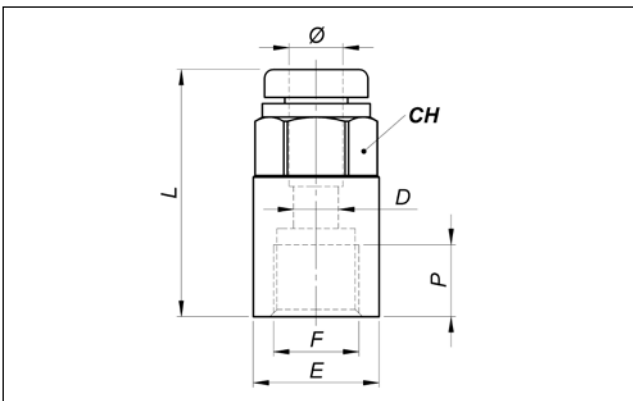
code	weight kg
71 64 21 15	0,803

## Straight, cylindrical, male fitting



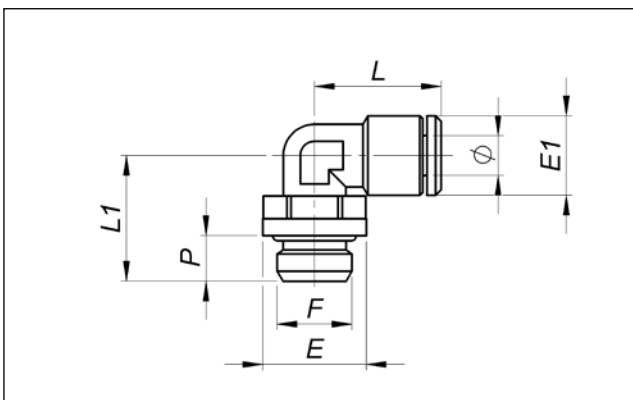
code	Ø	G	Ch	Ch1	P	L	D	E
71 61 20 01	6	1/8	13	4	6.0	24.0	4.2	15.0
71 61 20 02	6	1/4	13	4	8.0	24.0	4.2	18.0
71 61 20 03	8	1/8	15	5	6.0	27.5	5.2	16.5
71 61 20 04	8	1/4	15	6	8.0	25.5	6.2	18.0

## Straight, female fitting



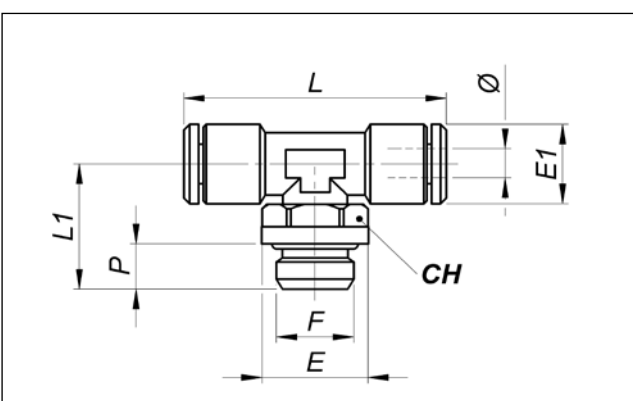
code	Ø	F	Ch	P	L	D	E
71 61 20 05	6	1/8	13	4	6.0	24.0	4.2
71 61 20 06	6	1/4	13	4	8.0	24.0	4.2
71 61 20 07	8	1/8	15	5	6.0	27.5	5.2
71 61 20 08	8	1/4	15	6	8.0	25.5	6.2

## Rotary elbow male cylindrical



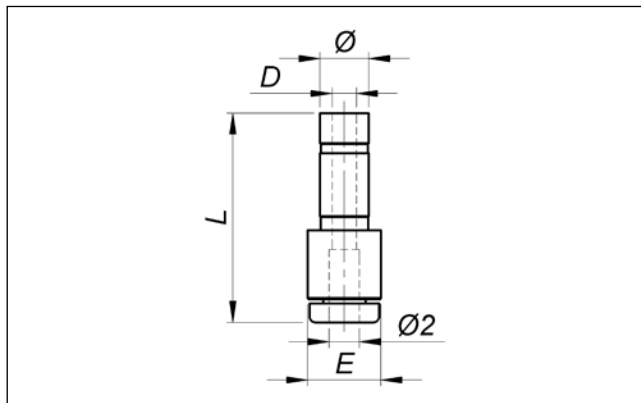
code	Ø	F	Ch	E	E1	L	L1	P
71 61 20 09	6	1/8	13	15	12.5	24.5	21	6
71 61 20 10	6	1/4	16	18	12.5	26	24.5	8
71 61 20 11	8	1/8	13	15	14.5	27.5	22.5	6
71 61 20 12	8	1/4	16	18	14.5	27.5	24.5	8

## Central tee male cylindrical rotary



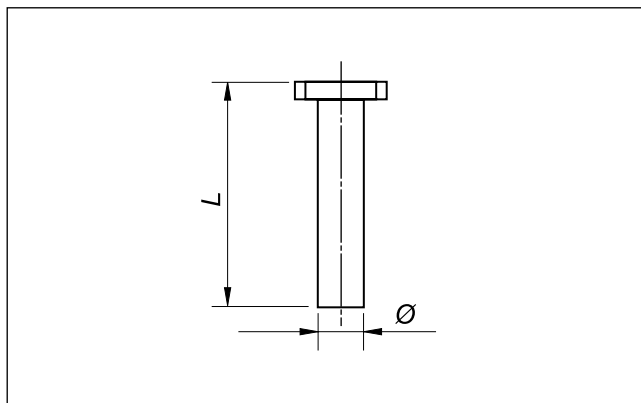
code	Ø	F	Ch	E	E1	L	L1	P
71 61 20 13	6	1/8	13	15	12.5	49	21	6
71 61 20 14	6	1/4	16	18	12.5	52	24.5	8
71 61 20 15	8	1/8	13	15	14.5	55	22.5	6
71 61 20 16	8	1/4	16	18	14.5	55	24.5	8

### Reducer



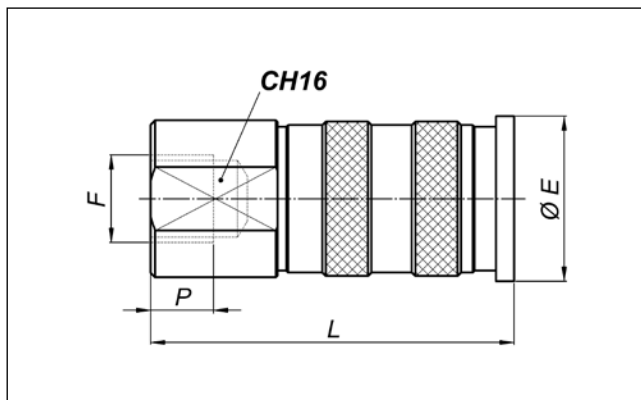
code	Ø1	Ø2	L	D	
71 61 20 17	6	1/8	13	4	6.0

### Plug



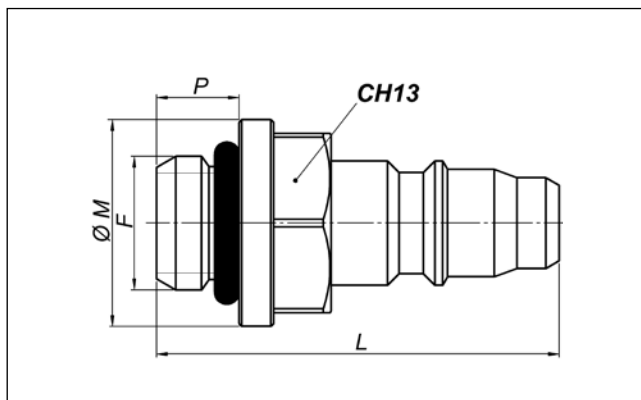
code	Ø	L
71 61 20 18	6	29.8
71 61 20 19	8	33.6

### Quick fitting 1/8 female

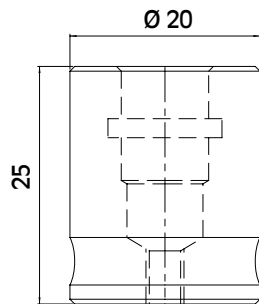
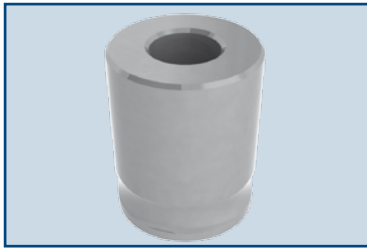


code	Ø E	F	L	P
71 61 28 01	18.8	G 1/8	42	7

### Quick fitting 1/8 male



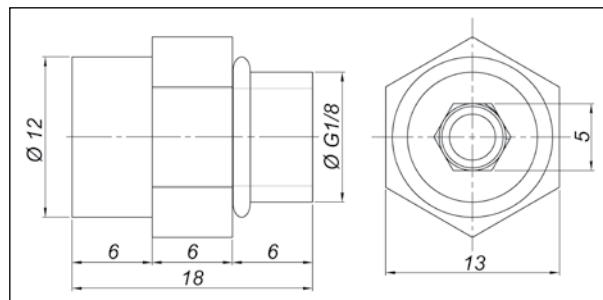
code	F	L	Ø M	P
71 61 28 02	G 1/8	29.3	15	6



**Cover plug for APS**

code

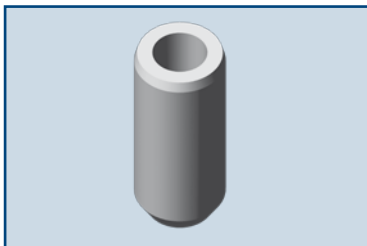
71 29 02 08



**Valve for air compressed gun**

code

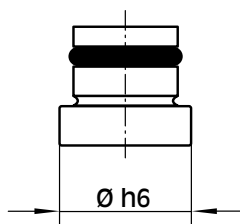
46 16 78 00



**Pin for orientation (single use)**

code

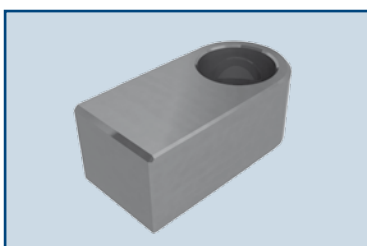
71 20 08 16



**Positioning round key for T slots indexing tables**

h6 keys code

$\varnothing$ mm 12	$\varnothing$ mm 14	$\varnothing$ mm 16	$\varnothing$ mm 18
46 16 76 92	46 16 76 93	46 16 76 94	46 16 76 95



**Key for single use**

Tf7 code \*

mm 12

46 16 23 28

\* Th6 on request



