

**TSA** TECNOLOGIE  
SPECIALI  
APPLICATE

STRUMENTAZIONE  
MOD. S010300

ALTEZZA DI LAVORO

400

ARTICULATED ARMS



**WORKBENCH  
ARTICULATED ARMS**



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# TSA

## SPECIAL APPLIED TECHNOLOGIES

**TSA** founded in 1984, for over 30 years has been designing, manufacturing and distributing pneumatic motors, articulated arms for torque reaction, assembling systems and special equipment.

Its technical design office is in charge of studying all of the required characteristics to guarantee maximum reliability and high productivity, according to modern ergonomic principles. Product quality and safety are now a consolidated standard for TSA.

Just-in-time deliveries, a wide, flexible range of products, including diversified motors and arms, an efficient spare parts warehouse and effective before- and after sales: these are the services offered by TSA to its customers. Thanks to its constant commitment and to the professionalism of its technicians,

**TSA** has gained the trust of major companies on the market. Its aim is to meet customer requirements in all respects: **QUALITY, PERFORMANCE AND COST EFFECTIVENESS.**



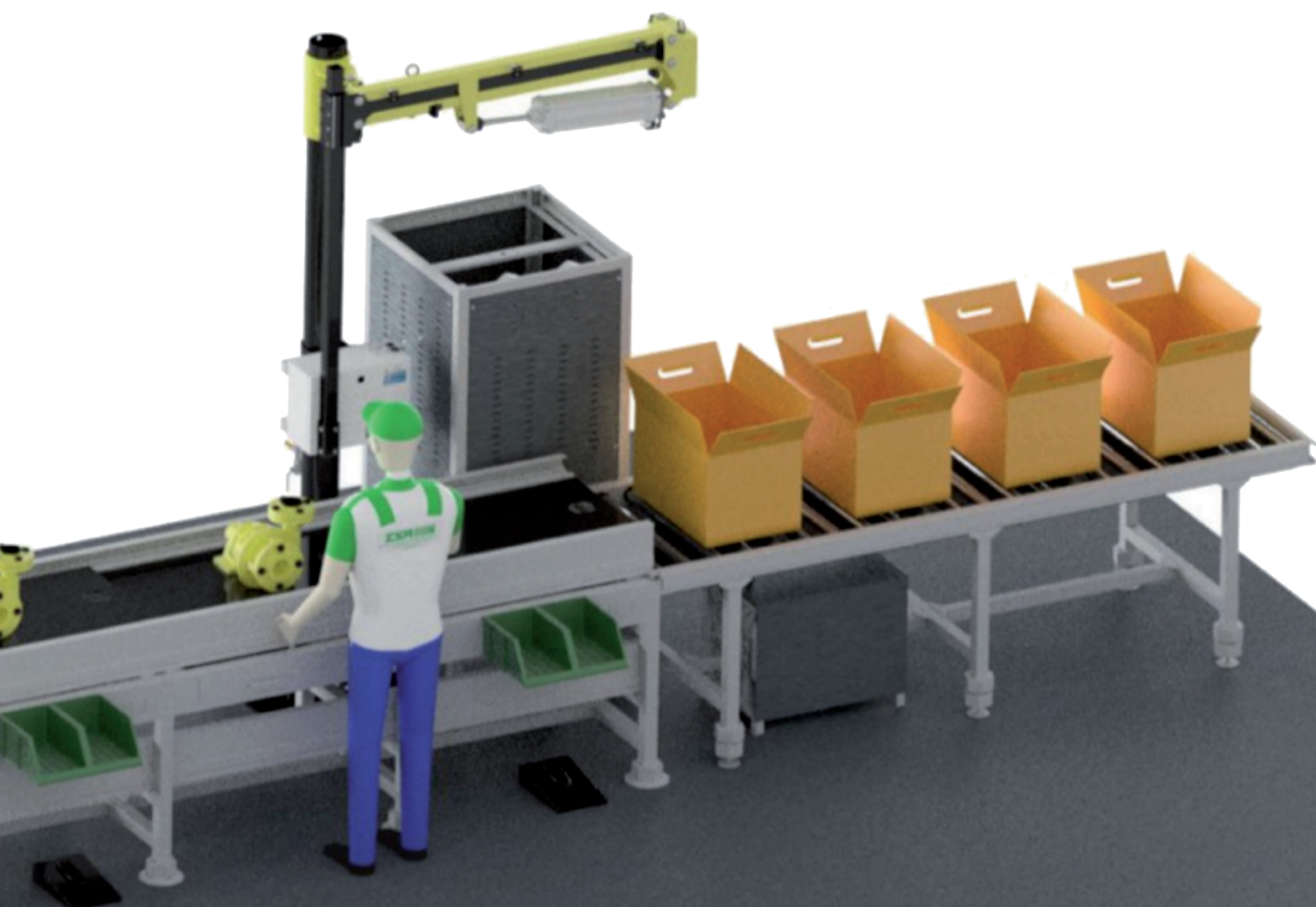
## BACKGROUND INFORMATION

**TSA** manufactures a set of technical items for specific requirements associated with the automotive sector and with industrial production in general. **TOOL-MATE** is the name of our own line of articulated arms and accessories for our customers, which includes a wide product range with an excellent price/quality ratio.

This catalogue includes a description of models for general use. There are also, however, specific applications which we can make available upon express request.

### BACKGROUND INFORMATION

The articulated-balanced **TSA** arms have been designed and developed in order to neutralise the reaction torque generated by tools (tighteners, tapping machines, drills etc.), and to reset their weight. All our articulated arms can be integrated with different kinds of wrists which allow for optimising tightening as required, having been designed to guarantee correct use and positioning of the tool during the tightening phase.



## WORKBENCH ARTICULATED ARMS

Our bench articulated arms are usually assembled on a bench "PIPE" SUPPORT, fitted as standard with a clamp which allows you to block it at the required height.

TSA, with its articulated arms, aims at solving problems related to assembling, for example excessive scrap caused by incorrect positioning; moreover less effort is required on the operator's part because the weight of the tool and the torque are neutralised by TOOL-MATE.

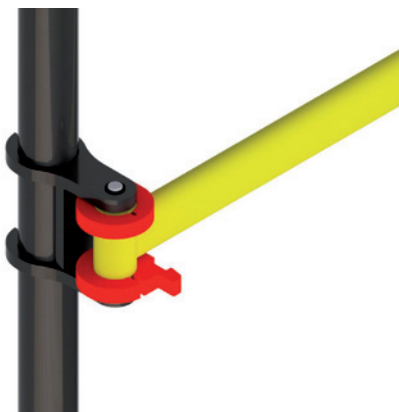
It is also worth noting that, for special applications, you can always refer to our technical office.

### CHARACTERISTICS

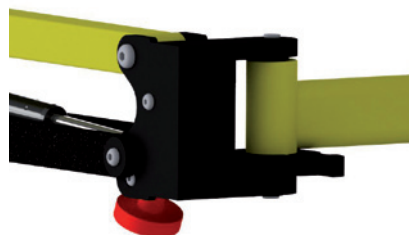
- Configuration of the left and right arm
- High vertical range
- Very user-friendly
- Adjustable limit switch for rotation
- Balancing adjustment registration

### BENEFITS

- Easy to install
- Low maintenance
- Fewer injuries on the workplace
- Less assembling scrap



End stroke rotation



Balance adjustment register



Tool support clamp



## SIZE "0" - "1"

Our articulated arms are available in various sizes, which determine the maximum torque with different balancing capabilities and different lengths of the components.



**SIZE "0" 25Nm**



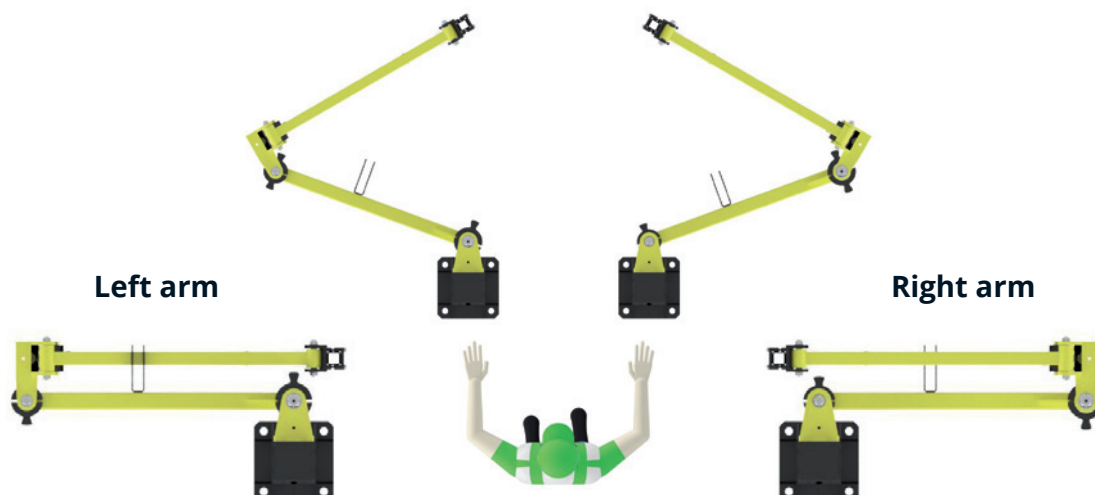
**SIZE "1" 80Nm**



**SIZE "1" 150Nm**

MODEL	Maximum reaction torque Nm	Maximum capacity Kg	Maximum vertical range mm
SIZE "0"	25	10	440
SIZE "1"	80	17	830
SIZE "1"	150	25	1030

Coverage range					
0.8 m	1.1 m	1.2 m	1.4 m	1.6 m	2 m
*					
*	*		*		
		*		*	*



## CONFIGURATION

In their basic configuration, our TOOL-MATE articulated arms consist of three main elements: column, boom and parallelogram arm.

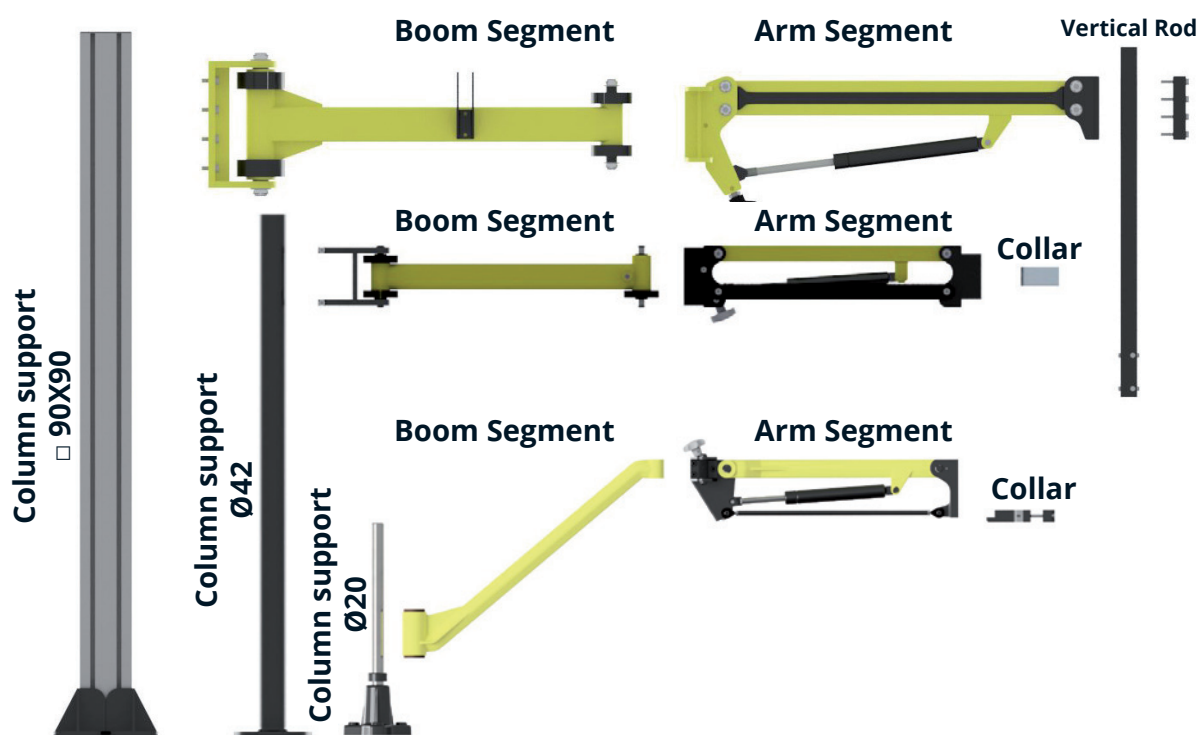
- The pipe element consists in a pipe made of steel or aluminium profile, with a assembling base and levelling grains onto which the arm is assembled at the required height.

On request there are other options available, for example wall mounting or assembling with slide tracks.

- The boom is a flag-shaped segment which supports

the arm and is fitted with rings which make it possible to limit its rotation; it also has adjustable clutches which prevent any accidental movement.

- The arm segment is fitted with a parallelogram system which, thanks to the gas-operated balancing unit, exerts an upward thrust to counteract the load applied and covers an 80° angle (40° above and 40° below the horizontal line).

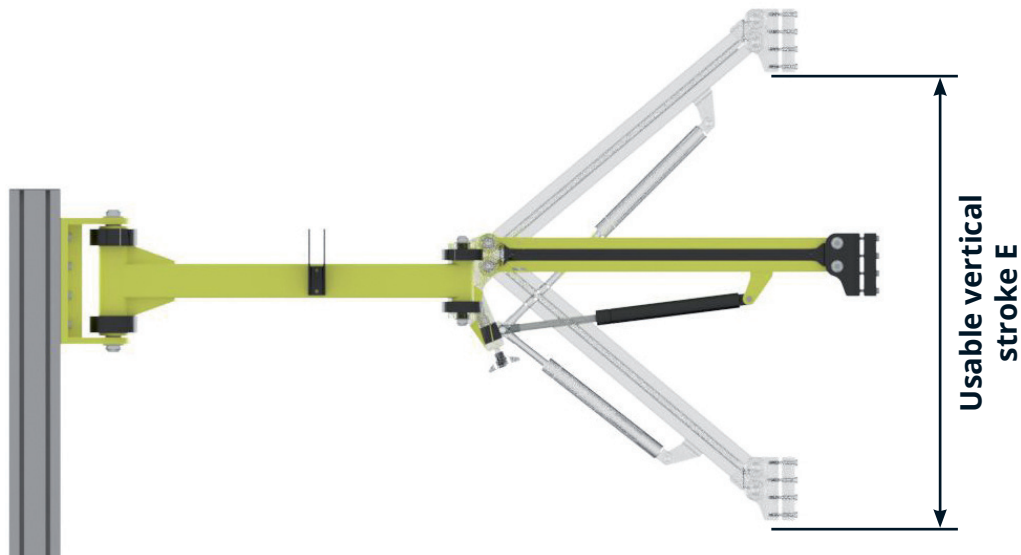


Models	Maximum reaction torque Nm	Column support	Pipe Boom Segment mm	Arm Segment mm	Vertical Rod	Collar
SIZE "0"	25	Ø20	400	350	-	Ø20- Ø45
SIZE "1"	80	Ø42	400	350	-	Ø20- Ø45
			550	500		
SIZE "1"	150	Ø20	700	650	-	-
			600	600		
			800	800		
SIZE "1"	150	Ø42	1000	1000	□ 30X30	-
					□ 30X30	
SIZE "1"	150	90X90			□ 30X30	-
					□ 30X30	

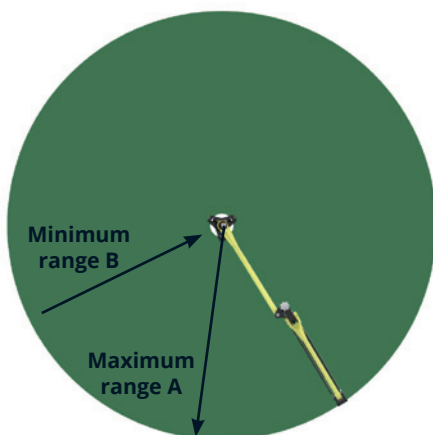


## TECHNICAL DATA FOR BENCH ARTICULATED ARMS

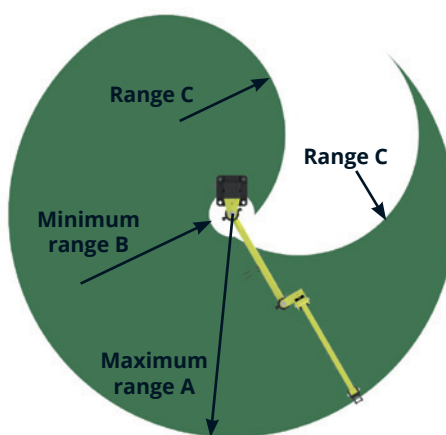
Models	Boom Segment mm	Arm Segment mm	Weight Kg	Maximum operating range A mm	Minimum operating range B mm	Range C mm	Usable vertical stroke E mm
<b>SIZE "0"</b>	400	350	5	1640	87	-	440
<b>SIZE "1"</b>	400	350	7	827	427	60	440
	550	500	10	1125	576	60	640
	700	650	12	1424	726	60	830
<b>SIZE "1"</b>	600	600	25	1296	130	696	770
	800	800	30	1694	130	895	1030
	1000	1000	35	2092	130	1094	1030



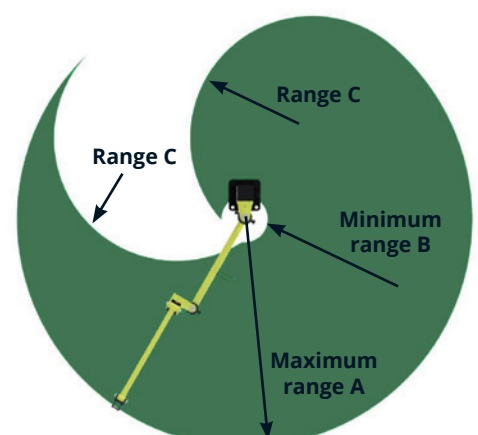
**Plan of the Arm  
T0**



**Plan of the Arm  
T1 SX**



**Plan of the Arm  
T1 DX**



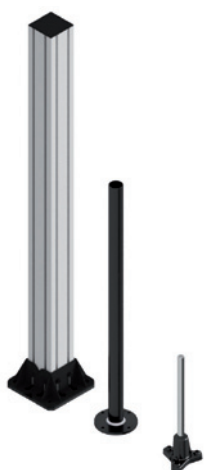
## ASSEMBLING OPTIONS FOR WORKBENCH ARTICULATED ARMS

### MOUNTING

Our bench articulated arms in their standard configuration are designed for column fixing; however they can be fixed in various configurations to meet different application requirements.

There are three types of mounting available:

- Column fixing (Standard)
- Wall mounting (Optional)
- Assembling with slide tracks (Optional)



**Column fixing  
(Standard)**



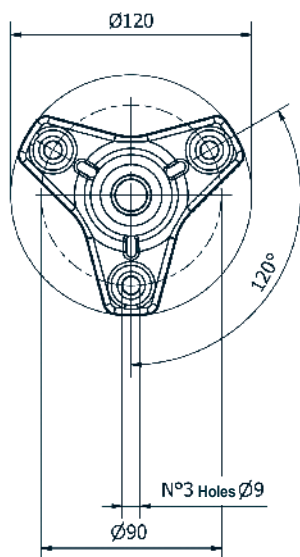
**Wall mounting  
(Optional)**



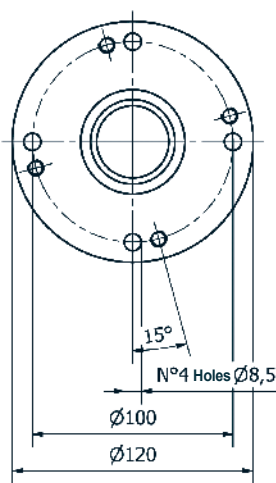
**Assembling with slide  
tracks (Optional)**

MODEL	Standard column height	Weight Kg	Diameter or column cross-section mm
SIZE "0"	350	1,5	Ø20
SIZE "1"	800	3	Ø42
SIZE "1"	1200	12,5	□ 90X90

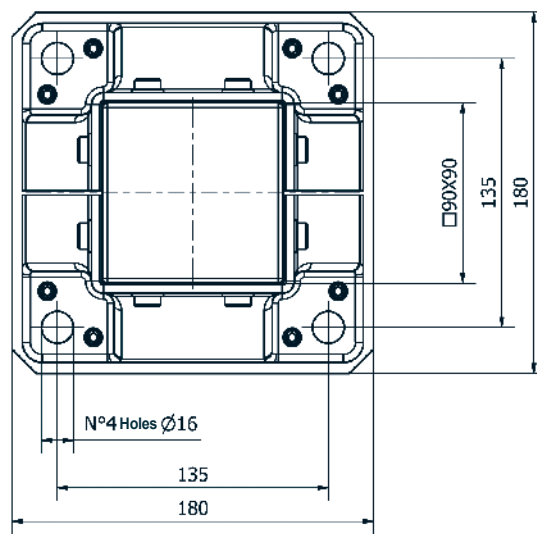
### BENCH ASSEMBLING FLANGE



**SIZE "0" 25Nm**



**SIZE "1" 80Nm**



**SIZE "1" 150Nm**

## OPTIONS FOR THE WORKBENCH ARTICULATED ARM BALANCING UNIT

### BALANCING UNIT

This unit controls the balancing strength of the arm by resetting the weight of the tools (tighteners, tapping machines, drills, etc.).

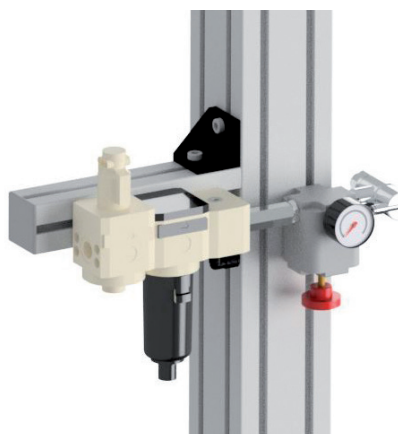
TSA makes available two different balancing units: one operated by a gas spring, the other by a pneumatic cylinder.

The balancing strength of the arm can be varied:

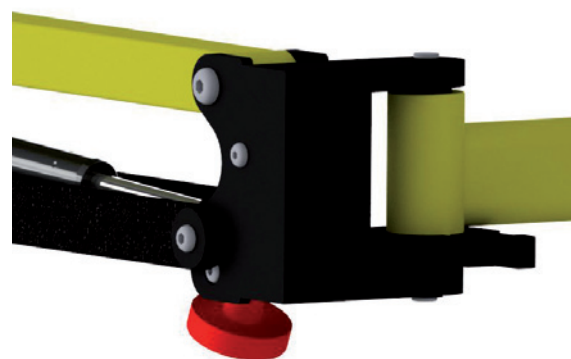
- by adjusting the handle on the lower part of the "BOOM-ARM" hinge which shifts the application point of the balancing unit in respect of the gas spring.
- by adjusting the pressure regulation knob, available as standard on arms with pneumatic cylinder, fitted onto the column.

MODEL	Boom Segment mm	Arm segment mm	Spring capacity N	Boring cylinder Ø
SIZE "0"	400	350	200	-
	400	350	300	
	400	350	400	
	400	350	600	
SIZE "1"	400	350	200	32 50
	550	500	400	
	700	650	600	
	600	600	1000	
SIZE "1"	600	600	1200	63
	800	800	1900	
	1000	1000	2500	

*For bench articulated arm capacities, please see our dedicated technical sheets.*

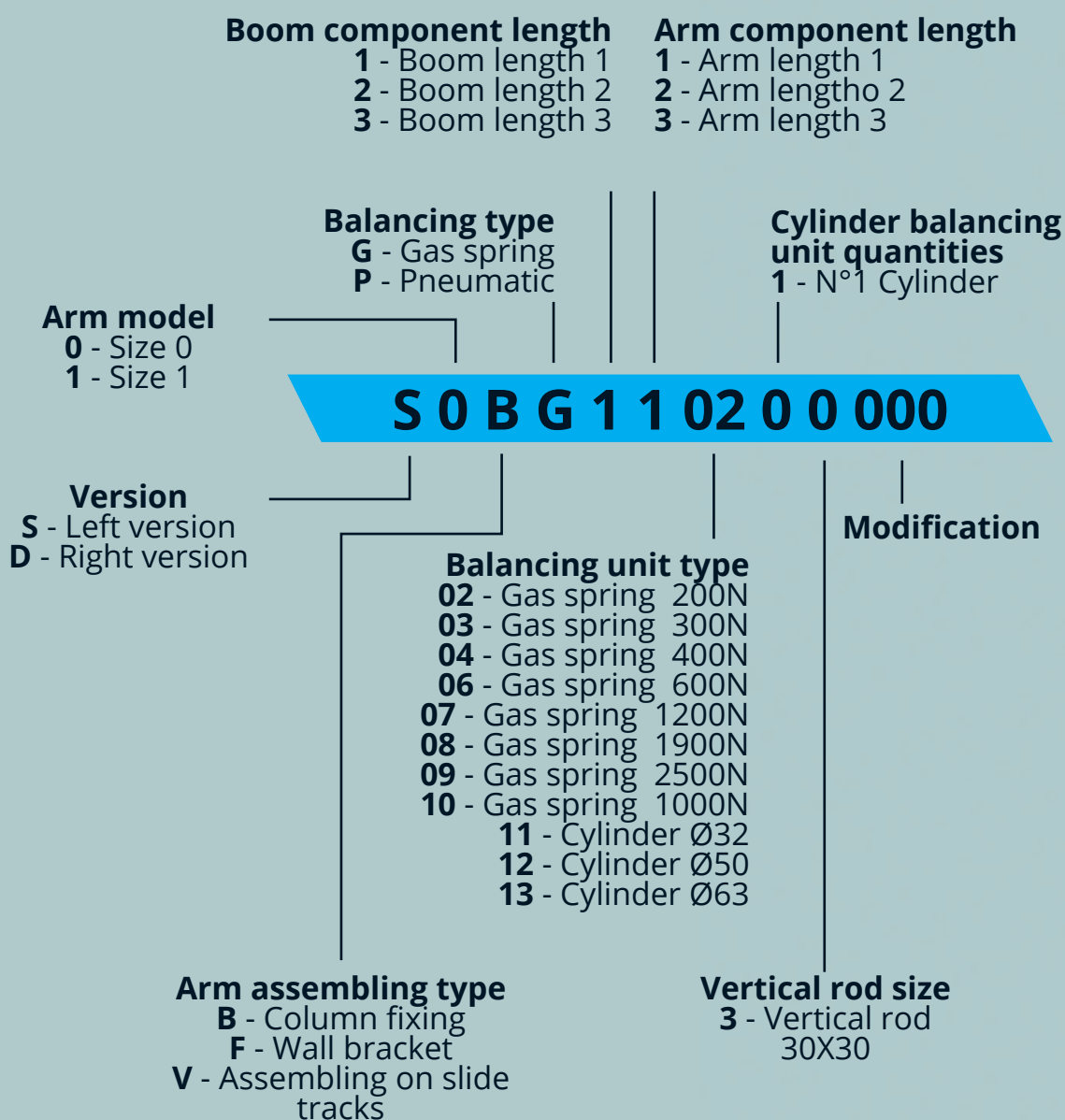


**Pressure adjustment knob**

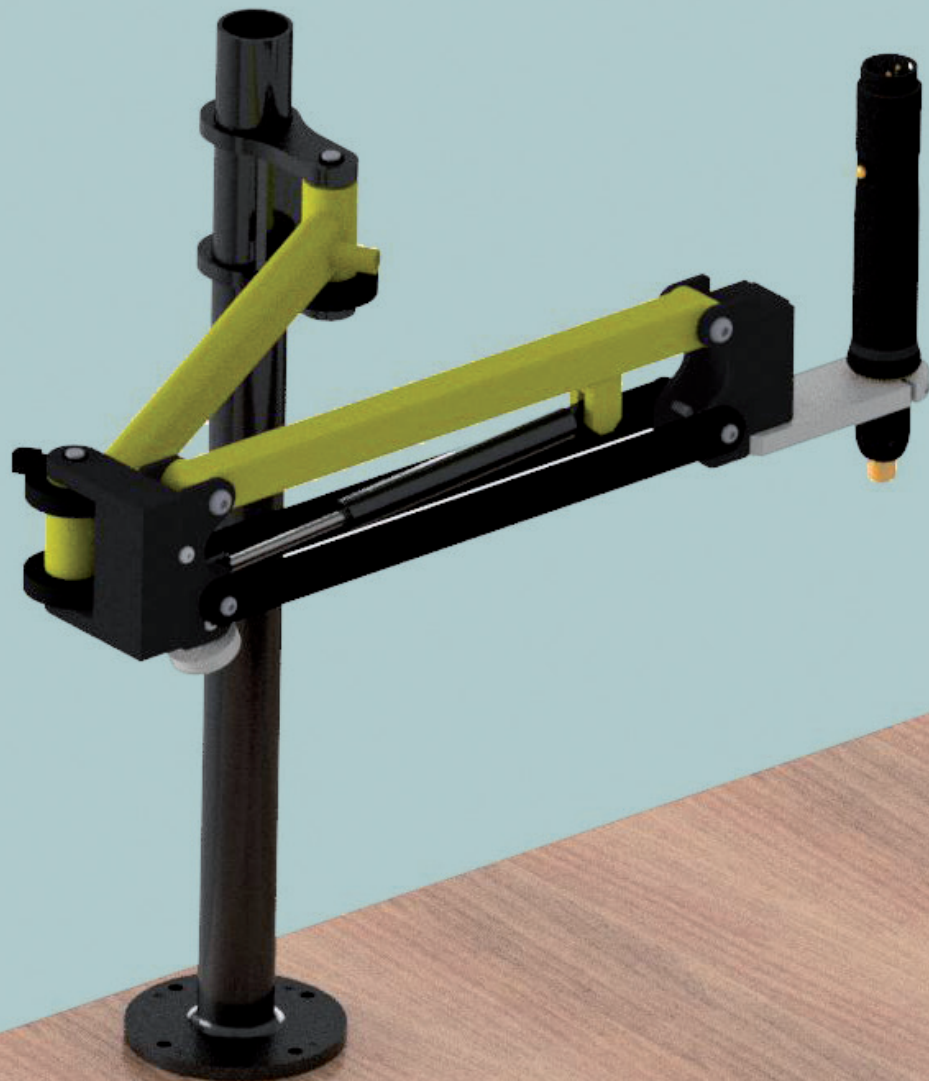


**Balancing adjustment registration**

## ORDER CODE



## WORKBENCH ARTICULATED ARMS



## SIZE "0" 25NM - GAS WORKBENCH ARTICULATED ARMS



PERFORMANCES AND SIZES							
Models	Boom length mm	Arm length mm	Spring capacity N	Minimum capacity kg	Maximum capacity kg	Maximum reaction torque Nm	Usable vertical stroke mm
<b>S0BG110200000</b>	400	350	200	1,2	2,8	25	440
<b>D0BG110200000</b>	400	350	200	1,2	2,8	25	440
<b>S0BG110300000</b>	400	350	300	2,5	5,0	25	440
<b>D0BG110300000</b>	400	350	300	2,5	5,0	25	440
<b>S0BG110400000</b>	400	350	400	3,2	6,4	25	440
<b>D0BG110400000</b>	400	350	400	3,2	6,1	25	440
<b>S0BG110600000</b>	400	350	600	5,0	10,0	25	440
<b>D0BG110600000</b>	400	350	600	5,0	10,0	25	440

### Available accessories

Column fixing (standard)

S0BG...  
D0BG...

Wall mounting

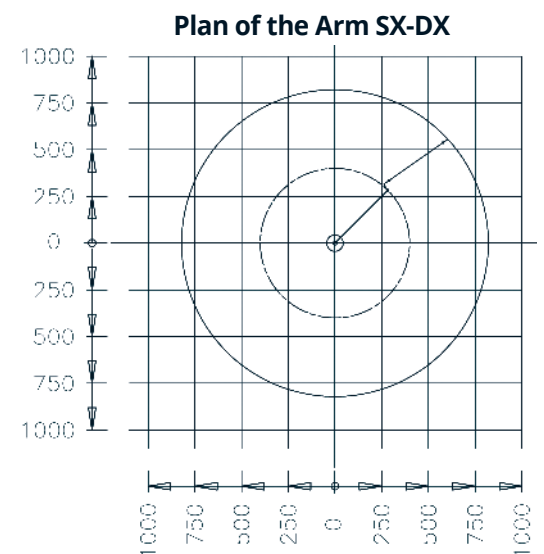
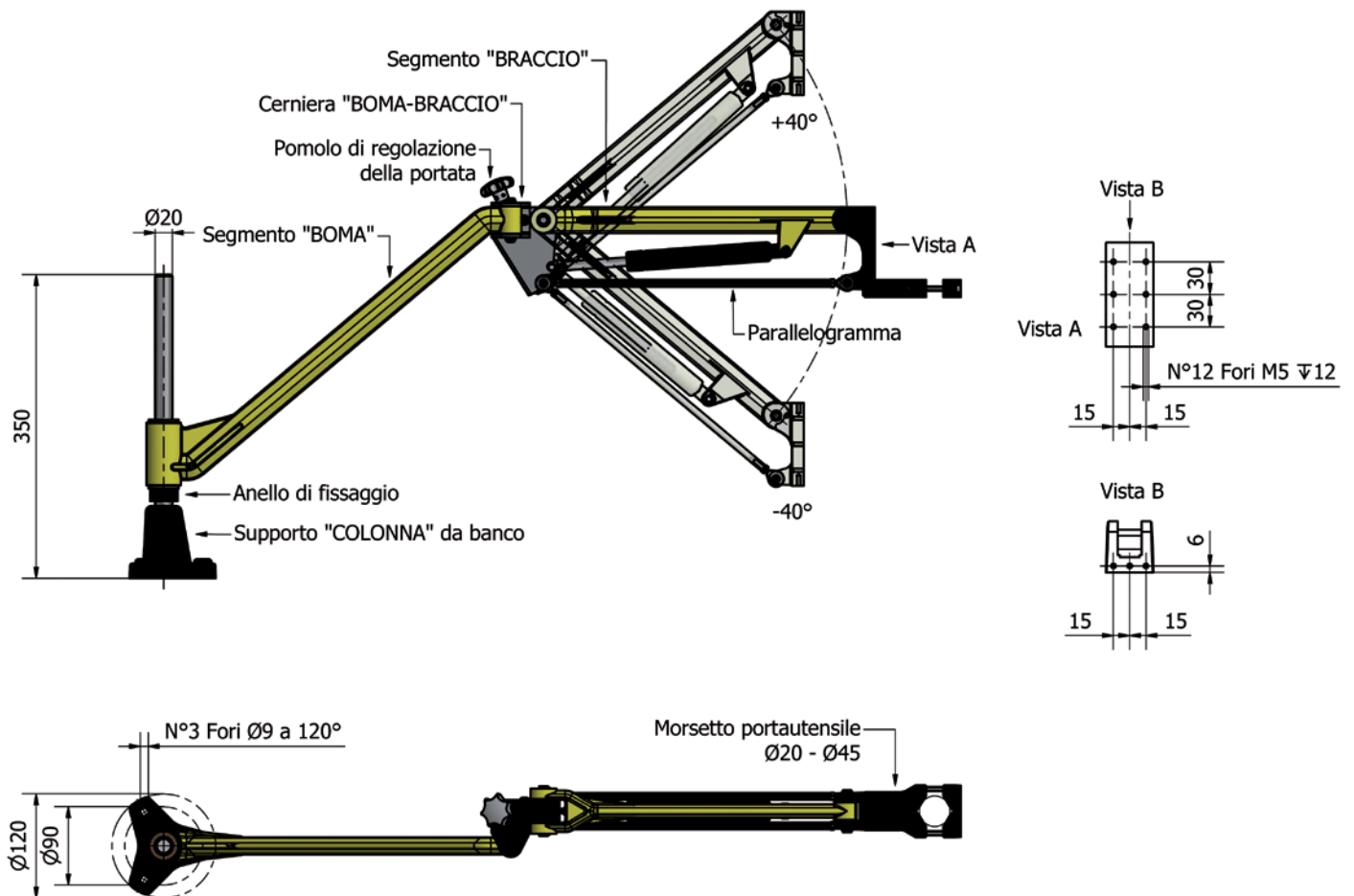
S0FG...  
D0FG...

Tool-holding clamp provided with the arm.

Add the diameter of the tool when making a purchase.

From Ø20 to Ø45





## SIZE "1" 80NM - GAS WORKBENCH ARTICULATED ARMS



PERFORMANCES AND SIZES							
Models	Boom length mm	Arm length mm	Spring capacity N	Minimum capacity kg	Maximum capacity kg	Maximum reaction torque Nm	Usable vertical stroke mm
S1BG110200000	400	350	200	0,0	2,5	80	440
D1BG110200000	400	350	200	0,0	2,5	80	440
S1BG110400000	400	350	400	2,0	5,5	80	440
D1BG110400000	400	350	400	2,0	5,5	80	440
S1BG110600000	400	350	600	4,0	9,0	80	440
D1BG110600000	400	350	600	4,0	9,0	80	440
S1BG111000000	400	350	1000	8,0	17,0	80	440
D1BG111000000	400	350	1000	8,0	17,0	80	440
S1BG220200000	550	500	200	0,0	1,2	80	640
D1BG220200000	550	500	200	0,0	1,2	80	640
S1BG220400000	550	500	400	1,0	3,0	80	640
D1BG220400000	550	500	400	1,0	3,0	80	640
S1BG220600000	550	500	600	2,0	5,0	80	640
D1BG220600000	550	500	600	2,0	5,0	80	640
S1BG221000000	550	500	1000	4,5	10,5	80	640
D1BG221000000	550	500	1000	4,5	10,5	80	640
S1BG330400000	700	650	400	0,0	2,0	80	830
D1BG330400000	700	650	400	0,0	2,0	80	830
S1BG330600000	700	650	600	1,0	3,0	80	830
D1BG330600000	700	650	600	1,0	3,0	80	830
S1BG331000000	700	650	1000	2,5	7,5	80	830
D1BG331000000	700	650	1000	2,5	7,5	80	830

### Available accessories

Column fixing (standard)

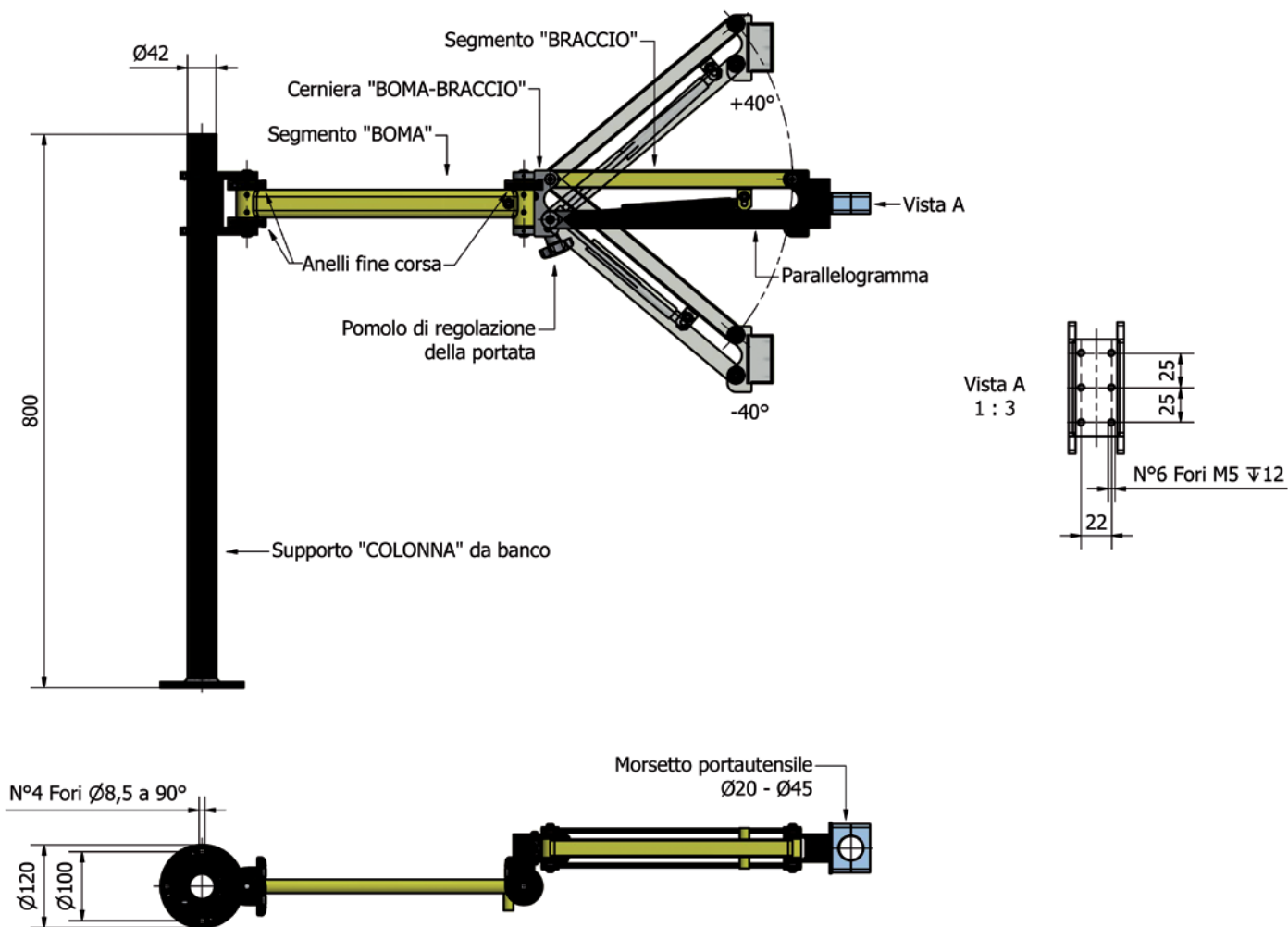
S1BG...  
D1BG...

Wall mounting

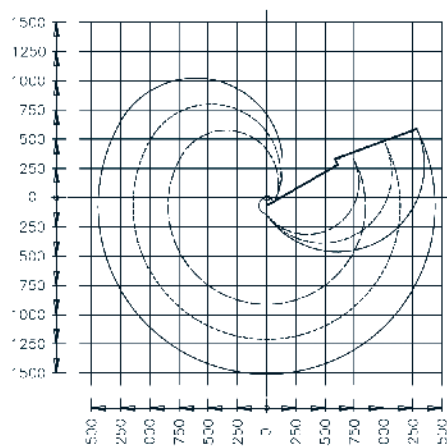
S1FG...  
D1FG...

Tool-holding clamp provided with the arm.  
Add the diameter of the tool when making a purchase.

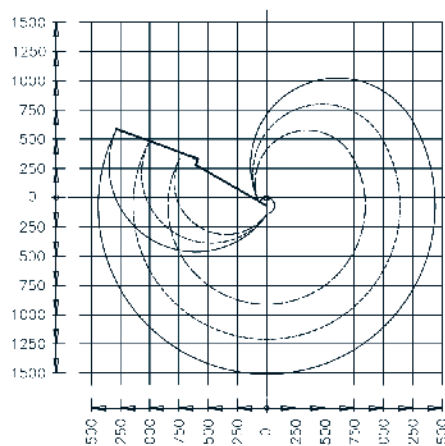
From Ø20 to Ø45



Plan of the Arm SX



Plan of the Arm DX



----- Boom L-400 Arm L-350  
..... Boom L-550 Arm L-500  
———— Boom L-700 Arm L-650

## SIZE "1" 150NM - GAS WORKBENCH ARTICULATED ARMS

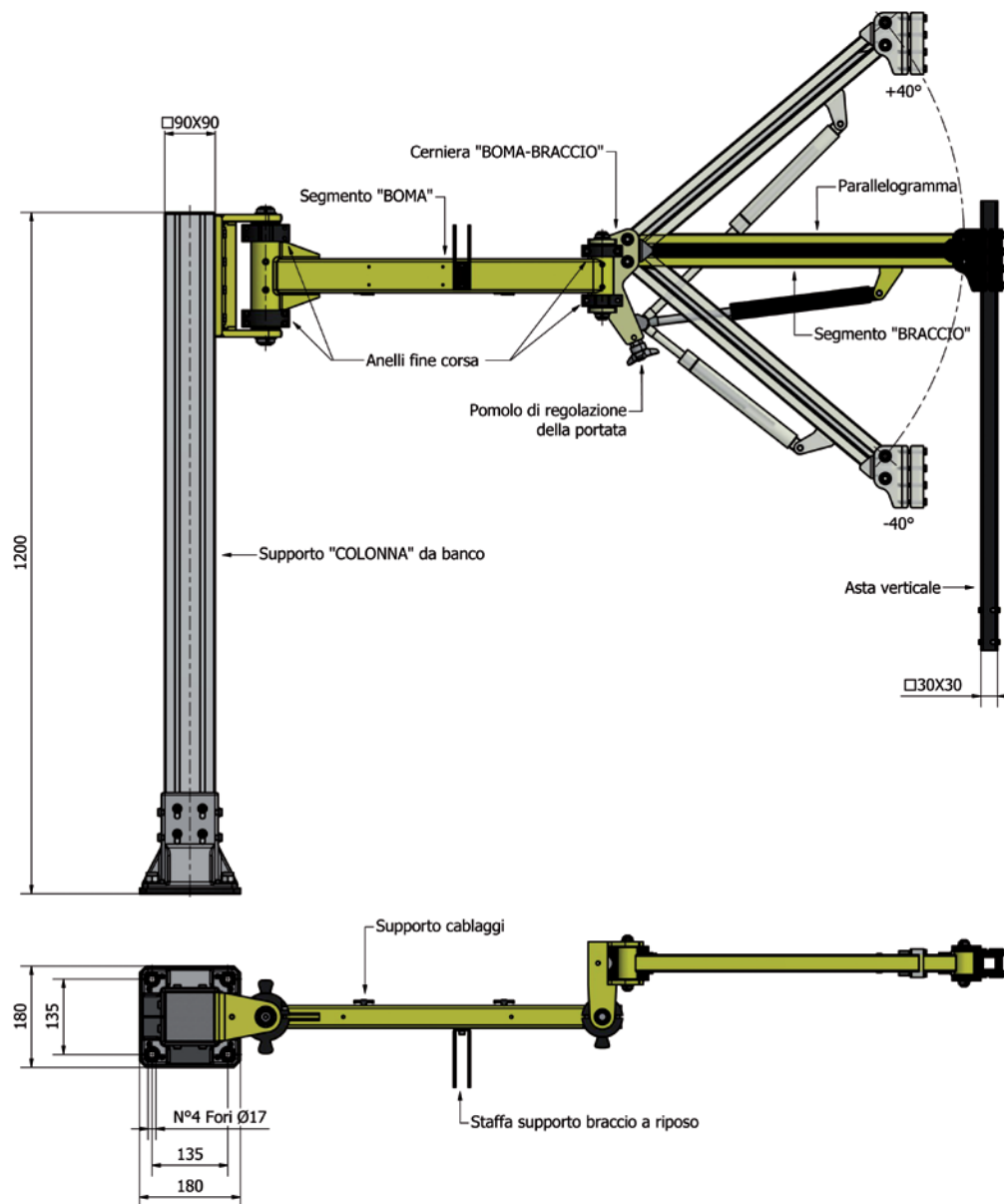


PERFORMANCES AND SIZES								
Models	Boom length mm	Arm length mm	Spring capacity N	Minimum capacity kg	Maximum capacity kg	Maximum reaction torque Nm	Vertical Rod	Usable vertical stroke mm
<b>S1BG110713000</b>	600	600	1200	4	14	150	30x30	770
<b>D1BG110713000</b>	600	600	1200	4	14	150	30x30	770
<b>S1BG110813000</b>	600	600	1900	8	25	150	30x30	770
<b>D1BG110813000</b>	600	600	1900	8	25	150	30x30	770
<b>S1BG220713000</b>	800	800	1200	2	10	150	30x30	1030
<b>D1BG220713000</b>	800	800	1200	2	10	150	30x30	1030
<b>S1BG220813000</b>	800	800	1900	7	17	150	30x30	1030
<b>D1BG220813000</b>	800	800	1900	7	17	150	30x30	1030
<b>S1BG220913000</b>	800	800	2500	10	25	150	30x30	1030
<b>D1BG220913000</b>	800	800	2500	10	25	150	30x30	1030
<b>S1BG330713000</b>	1000	1000	1200	1	9	150	30x30	1030
<b>D1BG330713000</b>	1000	1000	1200	1	9	150	30x30	1030
<b>S1BG330813000</b>	1000	1000	1900	6	16	150	30x30	1030
<b>D1BG330813000</b>	1000	1000	1900	6	16	150	30x30	1030
<b>S1BG330913000</b>	1000	1000	2500	9	24	150	30x30	1030
<b>D1BG330913000</b>	1000	1000	2500	9	24	150	30x30	1030

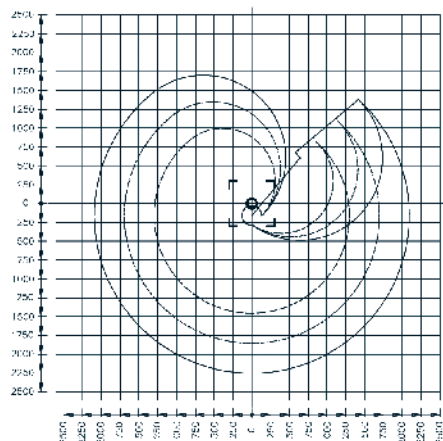
### Available accessories

For individual accessory performance levels, see the dedicated section.

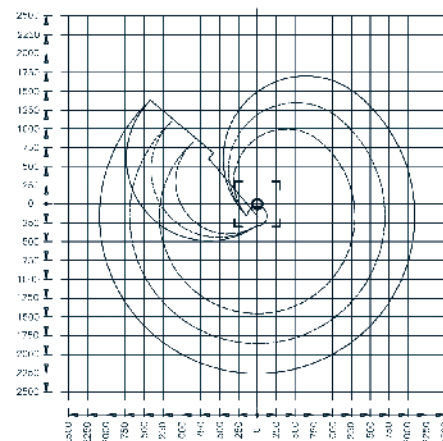
Column fixing (standard)	S1BG... D1BG...	Vertical revolving wrist	PGV300000 PGV300003
Wall mounting	S1FG... D1FG...	Revolving tool body axis wrist	PAO310000
Floor mounting	S1PG... D1PG...	Horizontal revolving wrist	PGO310000
Vertical rod provided with the arm. Add the length when making the purchase.	A13000000	Tool-supporting clamp	MSO310000
Vertical axis pneumatic brake	F13P09000	Tool-supporting bracket	SSO310000
Vertical fixed wrist	PFV300000 PFV300003	Adjustable vertical-horizontal wrist	PPO310000
		Encoder supporting brackets	E11000000 E12000000
		Sensors outside working area	Y10000000



**Plan of the Arm SX**



**Plan of the Arm DX**



## SIZE "1" 80NM - PNEUMATIC WORKBENCH ARTICULATED ARMS



PRESTAZIONE E DIMENSIONI						
MODELLI	Boom length mm	Arm length mm	Ø Pneumatic unit balancing mm	Flow rate adjustment range at 6 bar pressure Kg.	Maximum reaction torque Nm	Vertical useful stroke mm
<b>S1BP111110000</b>	400	350	32	0-4	80	440
<b>D1BP111110000</b>	400	350	32	0-4	80	440
<b>S1BP111210000</b>	400	350	50	0-10	80	440
<b>D1BP111210000</b>	400	350	50	0-10	80	440
<b>S1BP221110000</b>	550	500	32	0-3	80	640
<b>D1BP221110000</b>	550	500	32	0-3	80	640
<b>S1BP221210000</b>	550	500	50	0-8	80	640
<b>D1BP221210000</b>	550	500	50	0-8	80	640
<b>S1BP331110000</b>	700	650	32	0-2	80	830
<b>D1BP331110000</b>	700	650	32	0-2	80	830
<b>S1BP331210000</b>	700	650	50	0-6	80	830
<b>D1BP331210000</b>	700	650	50	0-6	80	830

### Available accessories

Column fixing (standard)

Wall mounting

Tool-holding clamp provided with the arm.

Add the diameter of the tool when making a purchase.

S1BP...

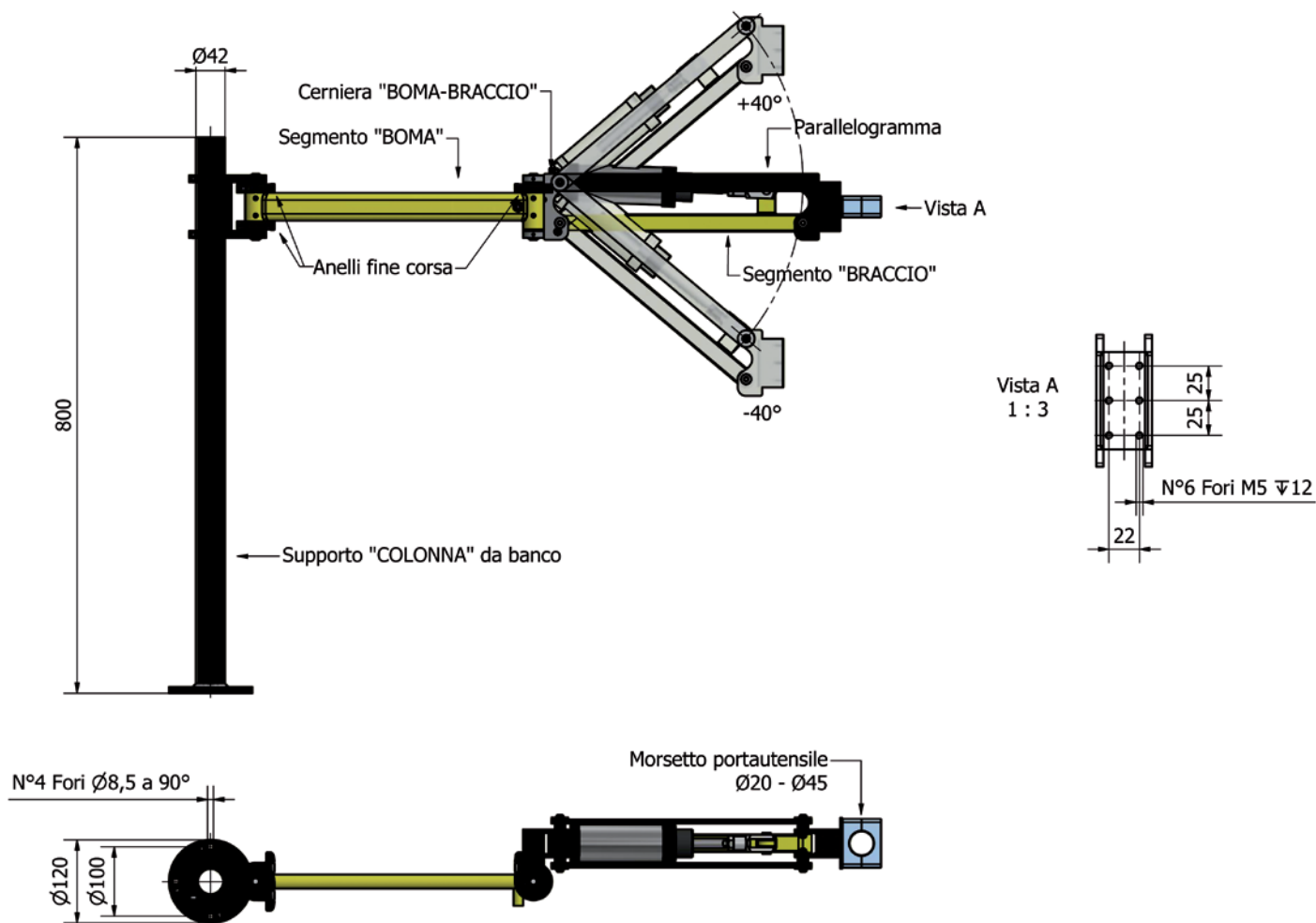
D1BP...

S1FP...

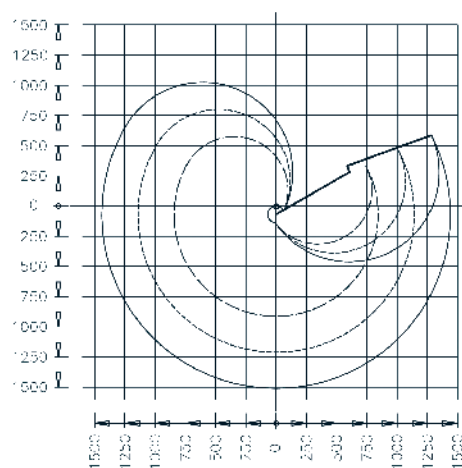
D1FP...

From Ø20 to Ø45

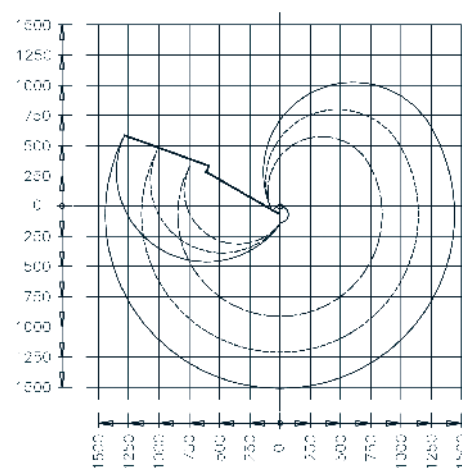




**Plan of the Arm SX**



**Plan Arm D X**

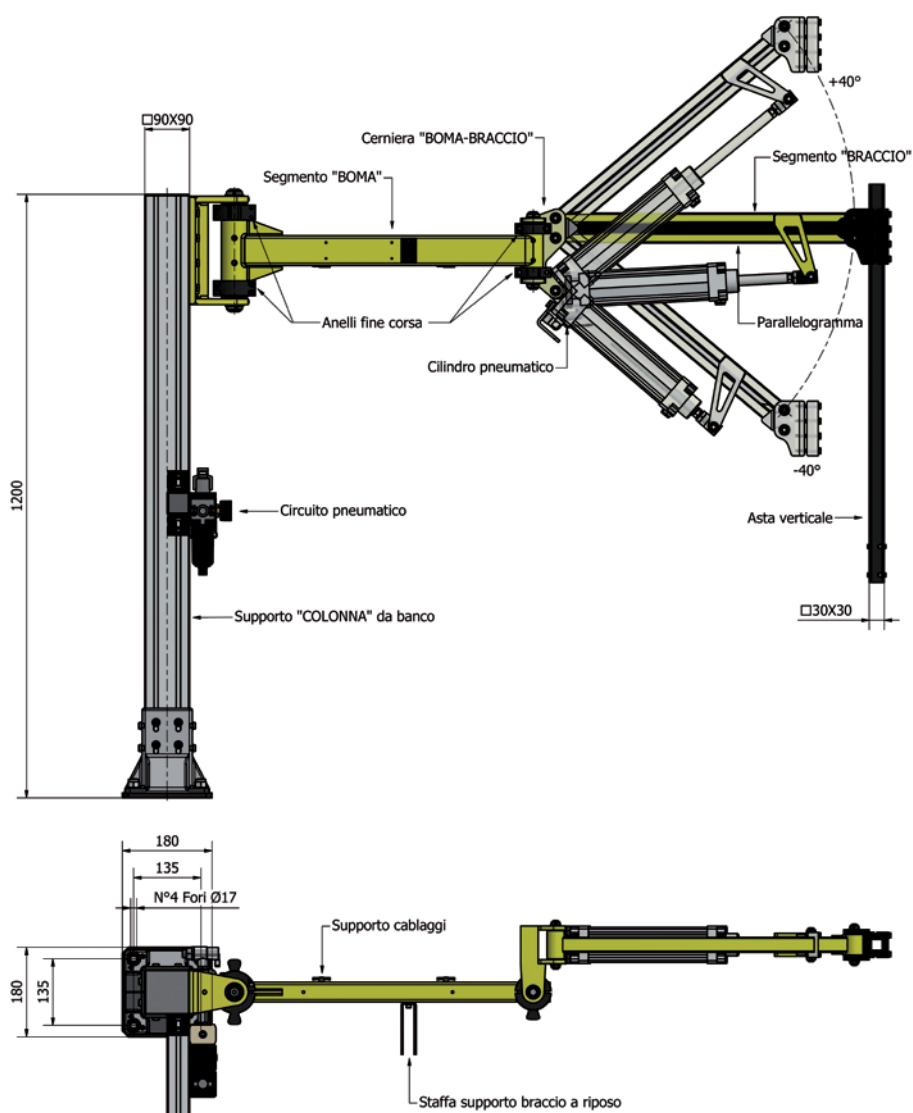


## SIZE "1" 150NM - BENCH PNEUMATIC

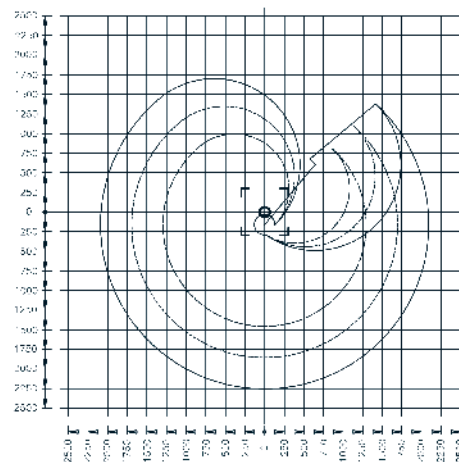


PRESTAZIONE E DIMENSIONI SINGLE CYLINDER						
MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S1BP111313000 D1BP111313000	7,5 Kg.	15 Kg.	23 Kg.	32 Kg.	38 Kg.	40 Kg.
S1BP221313000 D1BP221313000	2 Kg.	7 Kg.	12 Kg.	17 Kg.	24 Kg.	29 Kg.
S1BP331313000 D1BP331313000	/ Kg.	5 Kg.	10 Kg.	15 Kg.	22 Kg.	27 Kg.
MODELS	boom length mm	arm length mm	ø units of balancing	torque limit Nm	vertical stroke mm	vertical useful stroke mm
S1BP111313000 D1BP111313000	600	600	63	150	30x30	770
S1BP221313000 D1BP221313000	800	800	63	150	30x30	1030
S1BP331313000 D1BP331313000	1000	1000	63	150	30x30	1030

PRESTAZIONE E DIMENSIONI DOUBLE CYLINDER						
MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S1BP111323000 D1BP111323000	14 Kg.	30 Kg.	40 Kg.	40 Kg.	40 Kg.	40 Kg.
S1BP221323000 D1BP221323000	4 Kg.	14 Kg.	24 Kg.	34 Kg.	40 Kg.	40 Kg.
S1BP331323000 D1BP331323000	2 Kg.	12 Kg.	22 Kg.	32 Kg.	40 Kg.	40 Kg.
MODELS	boom length mm	arm length mm	ø units of balancing	torque limit Nm	vertical stroke mm	vertical useful stroke mm
S1BP111323000 D1BP111323000	600	600	63	150	30x30	770
S1BP221323000 D1BP221323000	800	800	63	150	30x30	1030
S1BP331323000 D1BP331323000	1000	1000	63	150	30x30	1030

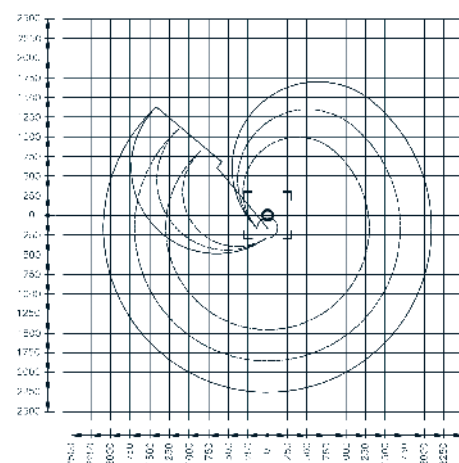


**Plan of the Arm SX**



----- Boom L-600 Arm L-600  
 ..... Boom L-800 Arm L-800  
 ——— Boom L-1000 Arm L-1000

**Plan of the Arm DX**



### Available accessories

Column fixing (standard)	S1FP... D1FP...	Vertical revolving wrist	PGV300000 PGV300003
Floor mounting	S1PP... D1PP...	Horizontal revolving wrist	PGO310000
Vertical Rod fornita con il Arm. Comunicare la lunghezza al momento dell'acquisto.	A13000000 A23000000	Polso asse corpo utensile girevole	PAO310000
Vertical axis pneumatic brake	F13P09000	Tool-supporting clamp	MSO310000
Freno pneumatico di rotazione Arm	G10P09000	Tool-supporting bracket	SSO310000
Vertical fixed wrist	PFV300000 PFV300003	Adjustable vertical-horizontal wrist	PPO310000
		Encoder supporting brackets	E11000000 E12000000

For individual accessory performance levels, see the dedicated section.

## PNEUMATIC MOTORS



## GEAR-MOTORS



## TELESCOPIC ARMS



## ARTICULATED ARMS

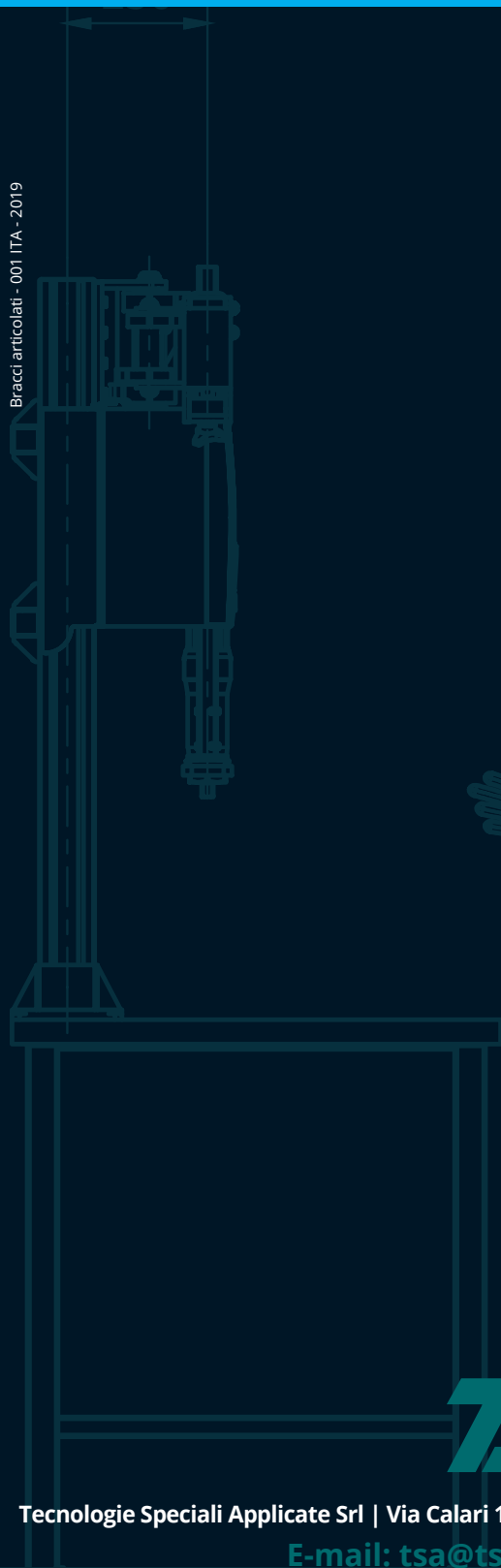


## ACCESSORIES





Bracci articolati - 001 ITA - 2019



270

940

900

SUPPORTO ST

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