



29-29G Series
Standard vices with
straight jaws

User's manual



29-29G

■ 1. TECHNICAL FEATURES

Made from carburizing treatment material DIN 14 CrMo13 (F155)

Casehardened layer: 1 mm

Hardness 60HRc. steel.

Fully grinded.

G8 (D dimensions) finished tolerance.

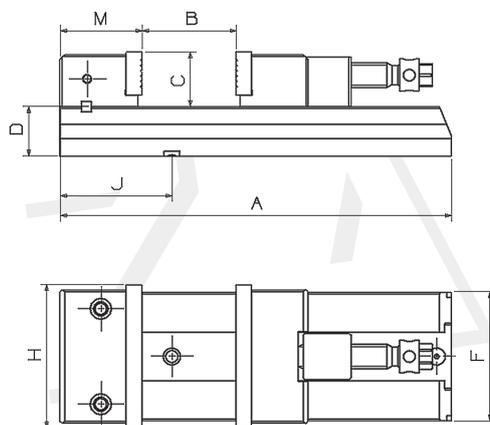
Parallel tolerance, less than 0.05 in all the length of the body.

Jaws-holder with oscillating effect. (SEE SECTION 3).

Fastening to the machine with clamps or with the two L holes. (SEE SECTION 4) .

Selection of fast mobile jaws-holder position, by ball insertion (SEE SECTION 5) .

Interchangeable spindle: mechanical, hydraulic or with mechanical multiplier. (SEE SECTION 6).



Ref.	A	B	C	D	F	H	J	M	mm.			BASE
29/100	250	109	34	37	90	100	70	50	12	12561	7,5	B/100
29/100L	296	150	34	37	90	100	70	50	12	12651	8	B/100
29/125	300	130	39,5	42	110	125	88	64	12	12561	13	B/125
29/125L	346	175	39,5	42	110	125	88	64	12	12561	14	B/125
29/125S	371	200	39,5	42	110	125	88	64	12	12561	14,5	B/125
29/150	402	200	57	51	135	150	115	84	16	15061	26	
29/150L	452	250	57	51	135	150	115	84	16	15061	28	
29/150S	502	300	57	51	135	150	115	84	16	15061	30	
29/150X	527	335	57	51	135	150	115	84	16	15061	31,5	
29/175	432	225	58,5	56	135	175	120	86	16	15061	34	
29/175L	482	275	58,5	56	135	175	120	86	16	15061	36,5	
29/175S	556	350	58,5	56	135	175	120	86	16	15061	40,0	
29/175X	610	400	58,5	56	135	175	120	86	16	15061	42,5	
29/200	470	250	65,5	61	160	200	145	92,5	16	20061	44	
29/200L	520	300	65,5	61	160	200	145	92,5	16	20061	46,5	
29/200S	570	350	65,5	61	160	200	145	92,5	16	20061	49	
29/200X	595	375	65,5	61	160	200	145	92,5	16	20061	50,5	
29/200XL	675	455	65,5	61	160	200	145	92,5	16	20061	53	

■ **2. STRAIGHT JAWS**

As these jaws include straight jaws, they cannot work with the descending effect.

However, considering that the spindle is in a very high tightening position, the workpiece do not tend to go up. Nevertheless, it is necessary to hit the workpiece with a hammer in order to set it and get full contact with the body of the machine vice.



■ **3. MOVABLE JAW-HOLDER GUIDE**

The unguided vices have the oscillating movable jaws-holders.

This allows the jaws-holder to adapt perfectly to irregular pieces.

Significantly improves tightening in roughing, forging, casting parts or badly finished parts. (SEE FIG 3.1)

If we tie an irregular part with a guided vice, the part will be fasten only in a point.

As much as we fasten the part, it will be released when milling (SEE FIG 3.2)

With the non guided vices you can not make lateral moorings. To do it, you have to put a limit block .

Usually one screw and one nut are enough.

(SEE FIG 3.3)

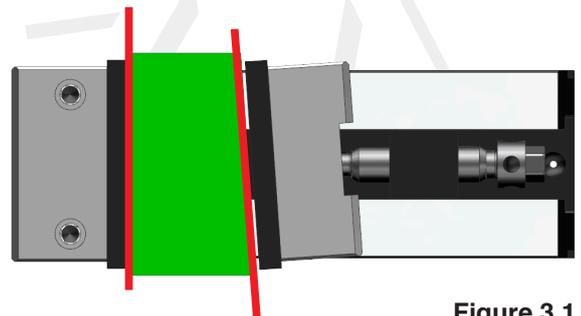


Figure 3.1

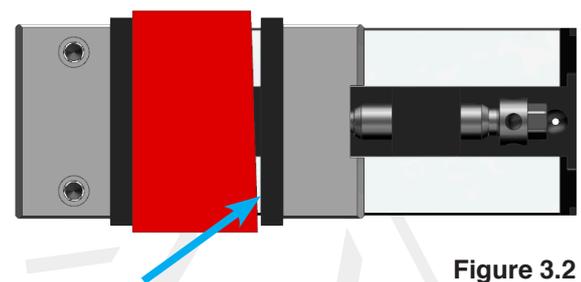


Figure 3.2

One fasten point

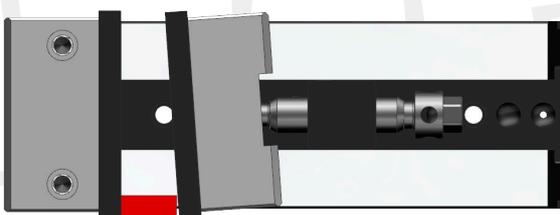


Figure 3.3

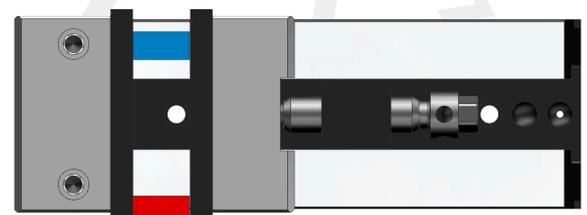


Figure 3.3

Guided machine vices DO NOT the oscillating movable jaw.

They are supplied with a spare T-piece to have this effect. (SEE FIG 3.4)

Pay special attention when working with guided jaws.

If the piece to be machined is not perfect, it can have a bad tie. It is convenient to change the T part to get the oscillating effect (SEE FIG 3.5)

Fastening lateral parts like the one in figure 3.6 is incorrect, the mooring will be very light and the piece can be released.

When attaching lateral pieces, be sure to perform very light operations

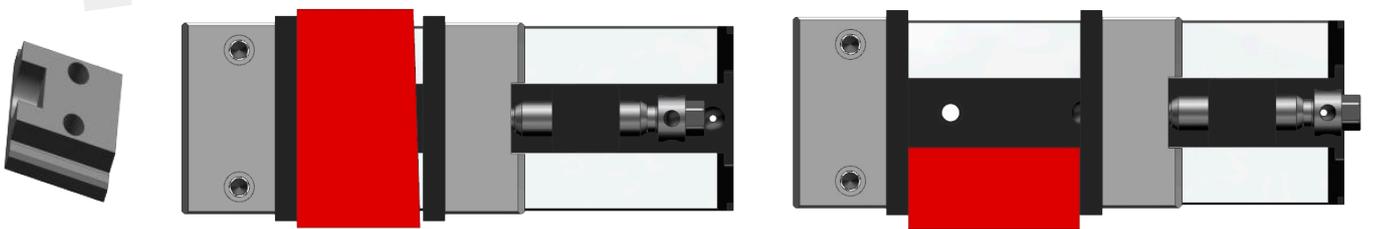


Figura 3.4

Figura 3.5

Figura 3.6

■ 4. VICE FITTING

4.1. With clamps:

To fit the vice in the machine we have to tie-down clamps and alignment key-nuts.

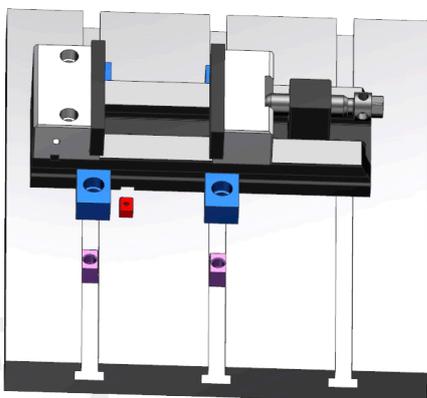


Figure 4.1

1. Use the key-nuts for a rough alignment.
2. Place clamps as close as possible to the jaws.
3. Tighten the clamps.
4. Align with the dial gauge.

IMPORTANT

The key-nuts of the 29 series vice varies the alignment of the vice in 0.02mm.

It is advisable to check with a dial gauge before start working.

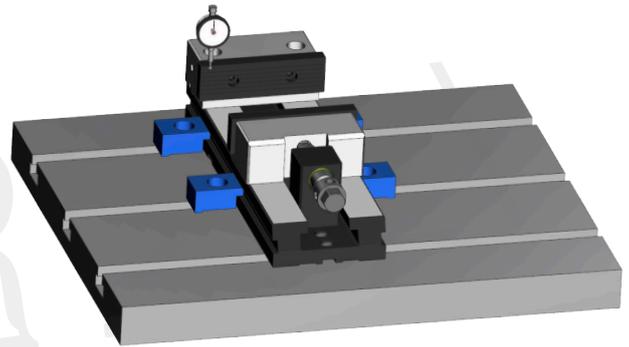


Figura 4.2

4.1. Without clamps:

To place the clamp in the longitudinal direction, the body has two holes to screw directly to the slotted table

1. Use the key-nuts for rough alignment.
2. Tighten the screws.
3. Align with the dial gauge.
4. Remember that the vice is only fastened with two screws.
5. For higher strength works add lateral clamps.

■ 5. SPINDLE FITTING

Quick course selection.

In this type of vices, the selection of spindle course is very fast. Just lift the spindle, move it to its new position and lower it back again.

This mechanism also allows changing very easily the vice tightening type.

Just take the spindle placed in the vice and put another one of the other optional tight-ening that we have.

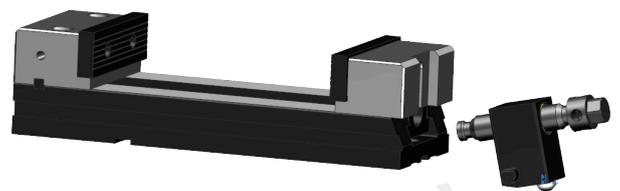


Figure 5.1

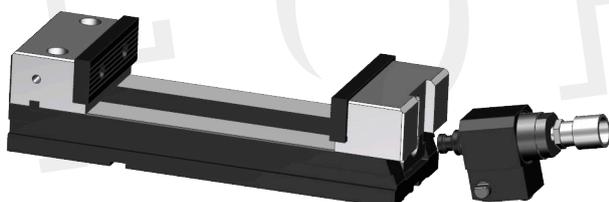


Figure 5.3

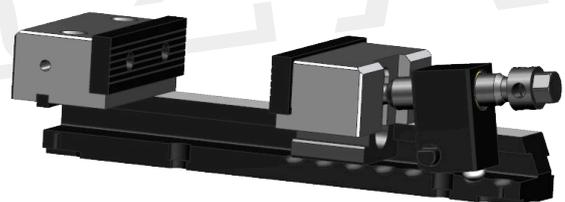


Figure 5.2

■ 6. SPINDLE TYPES

Any of our vices can use indifferently the tightening spindle listed below. These spindles can be easily changed.

Therefore, with the same vice, the user can obtain the most convenient tightening for each job at any time.

6.1 Selection of the appropriate spindle

Each piece that is going to work, requires a different tightening effort. Before selecting the type of mooring, keep in mind:

More strength does not necessarily mean better tightening.

All the jaws are deformed under pressure. Thus, the clamping force is the enemy of the precision.

Descending jaw vices need less tightening pressure than straight ones, because they make a cone effect over workpiece and they guarantee the perfect placement of it during working tie, avoiding vibrations.

A correct selection of work stops and clamping points in workpieces is as important as clamping strength (SEE SECTION 8).

TABLA 6.1 Características de los diferentes tipos de aprietes

	Mecanico	Multiplicador mecánico	Multiplicador Hidráulico	Oleoneumático
Precio/Calidad	El mejor	Medio	El peor	Medio
Mantenimiento	Nada	Casi nada	Pierde aceite, juntas	Juntas
Velocidad de apriete	Rápida	Mediana	El más lento	Muy rápido
Comodidad	Normal	Normal	Normal	El más comodo
Recorrido del apriete	Ilimitado	Ilimitado	1 mm	14 o 27 mm
Control de fuerza	Llave dinamométrica	Medidor incorporado	Rayas en husillo	presión de aire
Tipo de trabajo	Casi todos	Grandes esfuerzos	Pocos	Ciclos cortos, series largas
Pérdida de fuerza con uso	No	No	20 al 30%	No
Seguridad de trabajo	Total	Total	Fugas. Difícil de detectar	Fugas. Fácil de detectar

6.2 Importance of the precision effort:

Vices bend when making strengths, therefore we should take into account the following advice:

Kinds of deformation:

A workpiece leaned against the jaw, can bend and slide about 0,1 mm with pressures of 5 to 6 Tons.

Elasticity of the vice:

It is very important that the vice is made of elastic material, because when applying the same strength it will also bend. Therefore, always check clamping strength in accurate works.

FORZA vice are made of case hardened steel (F155 hardened and tempered) which characteristics are the following ones:

- Yield point until 460-530 MPa.
- Mechanical strength: 720-910 MPa.

Steel is 3 more elastic than cast.

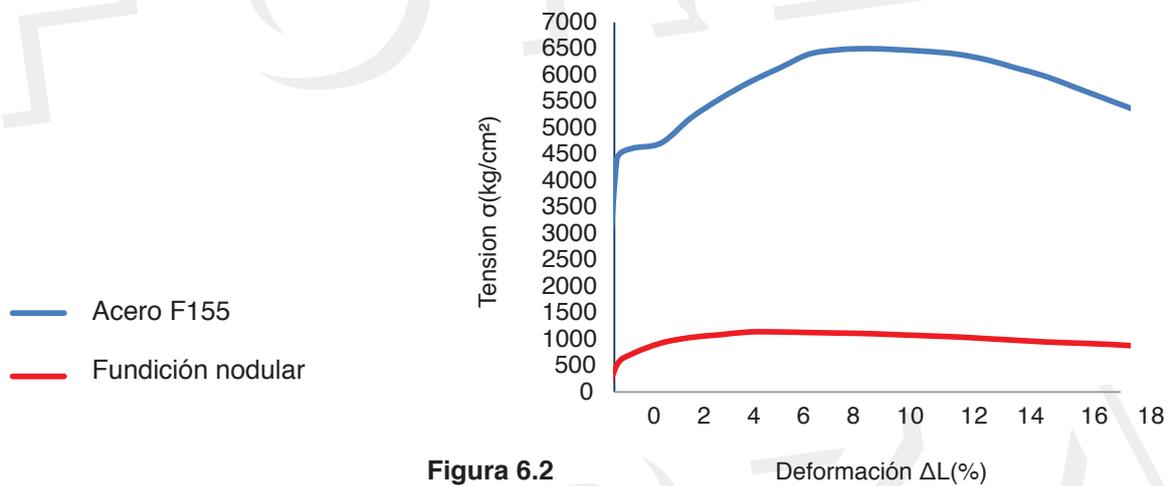
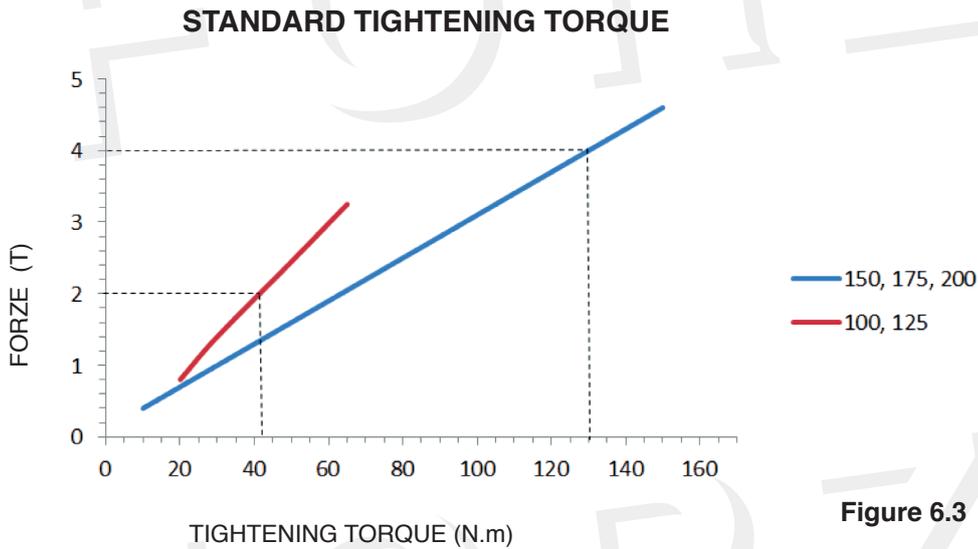


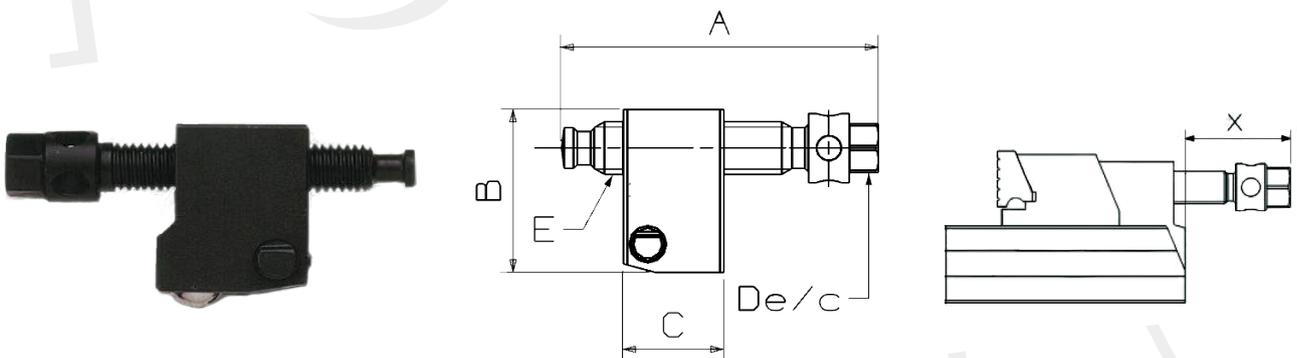
Figura 6.2

6.3 Mechanical spindle

It is the most advisable spindle for 90% of the milling works (SEE TABLE BELOW). It can work with handle, hexagonal or torque wrench. It is always recommended to use torque wrenches to make a better control of clamping strength.



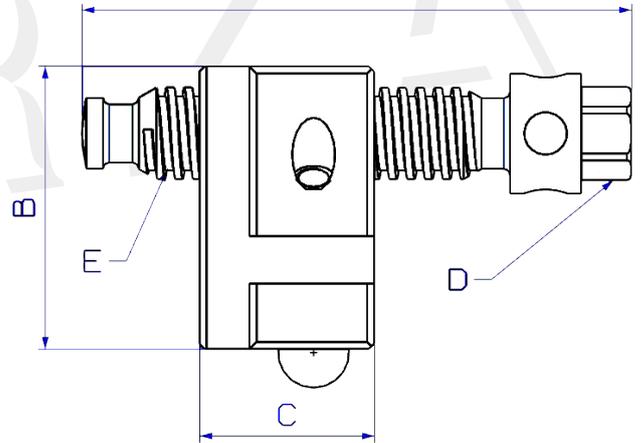
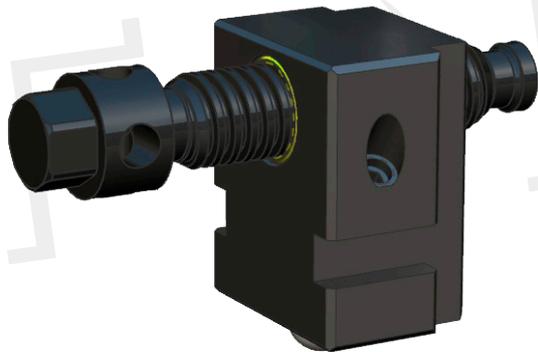
6.3.1 Mechanical spindle horizontal position



Horizontal spindle table

Ref.	Vice	A	B	C	D	Ton	E	X
10090	100	115	52	45	21	2	M18x2,5	65
12590	125	130	52	45	21	2	M18x2,6	60
15090	150-200	154	80	49	24	4	TR26x5	95

6.3.2 Mechanical spindle vertical position

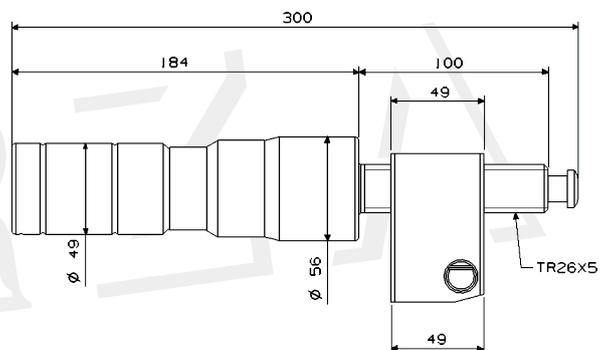
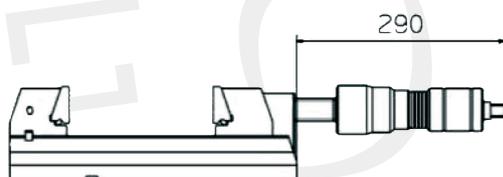


Ref.	Vice	B	C
12595	125	60	39
15095	150-200	80	49

6.4 Hydraulic spindle for 150, 175 and 200 vices

It is only used with 150, 175, and 200mm jaw vices.
5T force can be perform on these vices.

It is advisable to carry out periodic clamping pressure controls (every 6 months), due to leaks are very difficult to detect. (SEE TABLE).

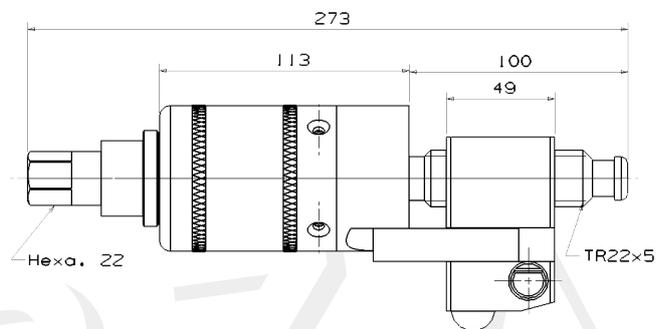
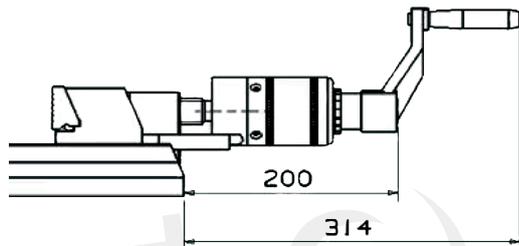


6.5 Mechanical multiplier. For 150, 175 and 200 vices

Comfortable: It allows to multiply the tightening force by 4 times

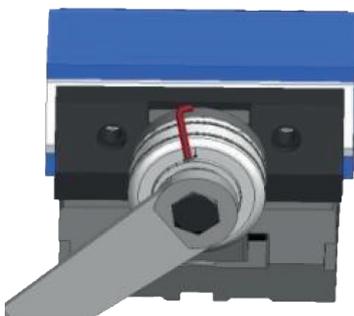
Quickly: One turn of spindle gives 4 Ton.

Accurate: It always allows controlling with great accuracy working strength over workpiece
(SEE SECTION 6, importance of strength with accuracy).

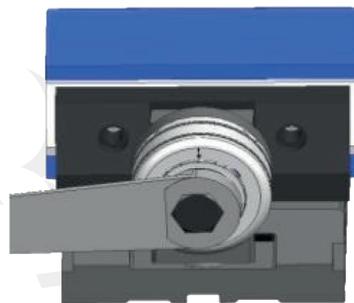
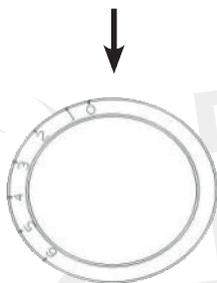


Measurement of clamping force:

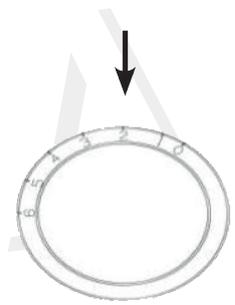
- a) Turn the spindle handily, until jaws touch the workpiece.
- b) With an Allen wrench, loosen the grub screw of the force measuring ring.
- c) Set the arrow to zero.
- d) Now when you tighten, you will directly measure the force in tons. You can continue working with equal parts without changing the position of the ring.



Set to 0 with the first piece

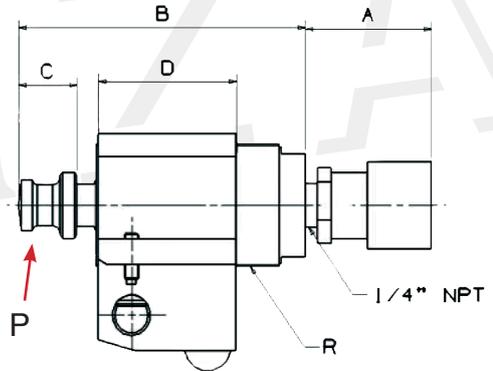
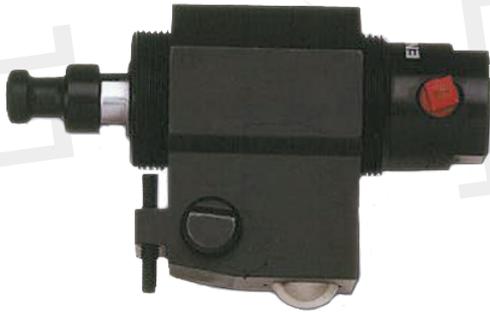


Measure the force in the rest of the parts



6.6 OILPNEUMATIC SPINDLE

Specially designed spindle for very fast moorings in medium or large series.



NOTE: Make sure that the point "P" is tightened against the piston road.

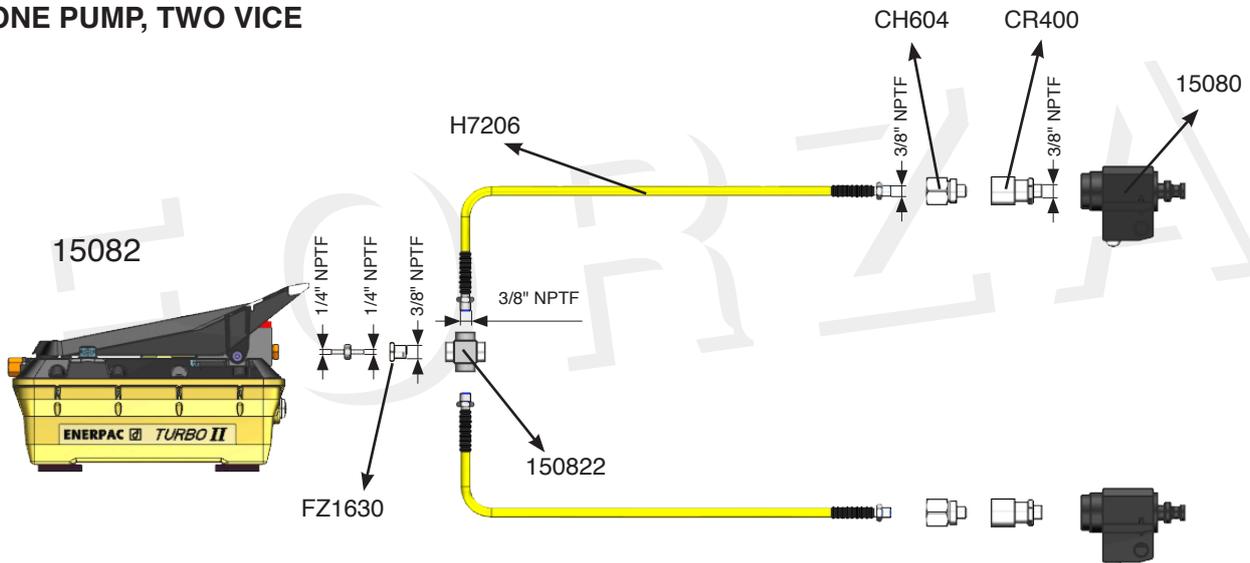
Ref.	Vice	A	B	C	D	R	E
10080	100	53	95	23	45	M36x1,5	2
12580	125	53	95	23	48	M36x1,5	2
20080	150-200	53	128	25	58	M48x1,5	5

* 2 or 3 outputs adapters available

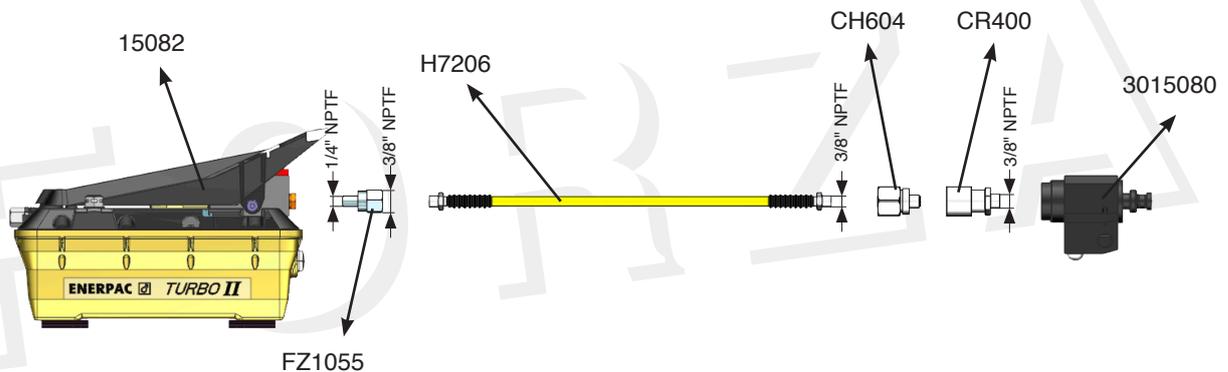
The OLN tightening requires a pump.
The maximum force of the vice is about 350Bar with air pressure. VIEW MANUAL PUMP



ONE PUMP, TWO VICE



ONE PUMP, ONE VICE



WARNING!

The vent screw is the primary means to vent the reservoir when the pump is operated in the horizontal position. It is located near the hydraulic outlet port on top of the reservoir. To use this plug, open the screw 1-2 turns.

The vent screw can NOT be used when the pump is mounted vertically! When mounting in the vertical position, use the vent/fill plug.

CAUTION:

Pump reservoir must be vented using one of the two vent options. Failure to do so may cause cavitation and pump damage.

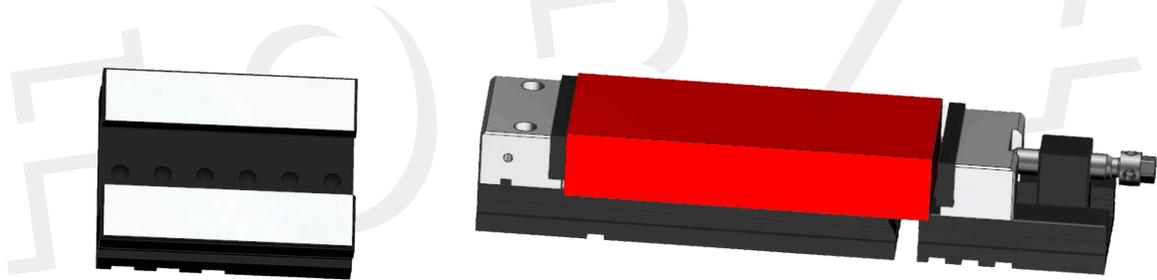


The Vent/Fill plug is located on the air inlet end of the pump, opposite the vent screw.

1. To use as a vent: Pull up on hex plug until first detent is reached.
2. To use as a fill port: Pull hex plug up past the first detent and remove the plug from the reservoir. The oil level should be to the bottom of the port.
3. To use as a return-to-tank port: Remove the flush plug from the hex and install a return line in the 3/8 -18 NPTF port. Torque return line to 20-27 Nm in hex plug.

■ **7. LENGTH EXTENDER**

We have extenders to increase the opening of the vice.



■ **8. HINGE JOINTED HANDLE Ref: 150004**

We have available an articulated wrench for the 29/150 up to 29/200XL.

This wrench facilitates the tightening and the turning of the vice inside the machine





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