

■ REFERENCE SECTORS

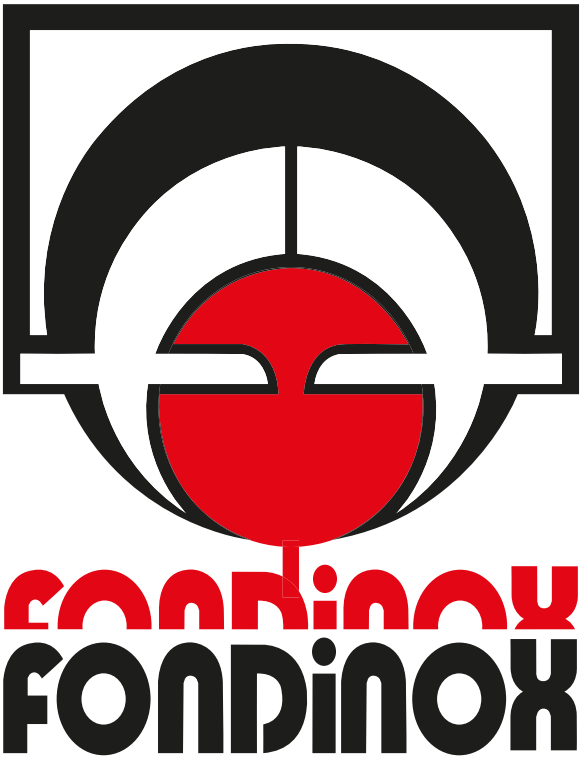
Hydrostatic cylinders or Piston Accumulators are used when the conversion of hydraulic energy into mechanical energy (force or movement) is required.

We supply rough and fully machined tubes to customers operating in the following fields:

- earth moving machinery;
- agricultural machinery;
- lifting machinery;
- buildings;
- industry: presses and special machinery;
- naval;
- aeronautics.



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**Pipes for Hydraulic Cylinders
and Piston Accumulator Construction**

■ FONDINOX

Fondinox has been producing stainless steel and nickel-based alloy castings for 50 years. During this time we have gained vast experience and introduced many innovations that have enabled us to become a leading producer of high value added castings which are used when reliability matters.

More than 30 years ago we expanded our production with the introduction of centrifugal casting technology which, thanks to the inherent advantages given by the process, allow us to react in a very quick and efficient way to the increasing and evolving requirements of the market.

Thanks to our **internal qualified machining shop** we are able to supply our finish machined components on short lead times.

■ PIPES FOR HYDRAULIC CYLINDERS AND PISTON ACCUMULATOR CONSTRUCTION

The Hydraulic field continues to grow globally due to the possibility of managing considerable power using components with a relatively small size and weight.

At Fondinox Spa we have continually improved our production processes, enhanced our technology and technical content and optimized our quality performance through large-scale investment in both plant and personnel.

Fondinox SpA could be seen not only as a supplier but, first and foremost as a reliable and highly qualified partner in the production of **stainless steel** and **special alloys centrifugally cast pipes** for Cylinder or Accumulator construction.



■ TUBES DIMENSIONS

External Diameter	From 150 to 1200mm
Internal Diameter	Honed from 65mm, rough from 50mm
Thickness	Rough from 10 to 150mm*
Length	Up to 4750mm in single piece, possibility to obtain higher lengths through weld joint

* function of ANSI class

■ MATERIALS

The absence of thermos-mechanical processing inside the casting process gives the opportunity to optimize the chemical analysis inside the standardized range, so optimal mechanical and corrosion resistance performances are obtained. We continuously offer our expertise and knowledge to our customer for materials choice and design. Table of materials normally used in these application, with their cross reference, is listed below.

CROSS REFERENCE – CASTINGS / FORGINGS							CASTINGS CHEMICAL ANALYSIS ACC. TO ASTM (% wt)				
Structure	ACI/Cast	Cast ASTM	Cast EN/DIN	Cast UNS	Wrought UNS	Wrought grade	C	Cr	Ni	Mo	Other
Martensitic	CPCA15	A426, A487	1.4008 GX8CrNi13	J91150	S41000	AISI 410	<0.15	11.5-14.0	-	<0.5	
Martensitic	CA6NM	A487, A757	1.4313 GX5CrNi134	J91540	S41500	13-4, F6NM	<0.06	11.5-14.0	3.5-4.5	0.4-1.0	
Austenitic	CPF3	A451	1.4306 X2CrNi19-11	J92500	S30403	AISI 304L	<0.03	17.0-21.0	8.0-21.0	<0.5	
Austenitic	CPF8	A451	1.4308 GX6CrNi189	J92600	S30400	AISI 304	<0.08	18.0-21.0	8.0-11.0	<0.5	
Austenitic	CPF3M	A451	1.4404/1.4409 X2CrNiMo17-12-2	J92800	S31603	AISI 316L	<0.03	17.0-21.0	9.0-13.0	2.0-3.0	
Austenitic	CPF8M	A451	1.4408 GX6CrNiMo18-10	J92900	S31600	AISI 316	<0.08	18.0-21.0	9.0-12.0	2.0-3.0	
Lean Duplex	SAF 2304®	-	1.4362	S32304	-	SAF 2304	<0.03	21.5-24.5	3.0-5.5	0.05-0.6	N
Duplex	CD3MN	A995	1.4470 GX2CrNiMoN22-5	J92205	S31803	SAF 2205, F51	<0.03	21.0-23.5	4.5-6.5	2.5-3.5	N
Superduplex	CE3MN	A995	1.4469 GX2CrNiMoN26-7	J93404	S32750	SAF 2507®, F53	<0.03	24.0-26.0	6.0-8.0	4.0-5.0	N
Superduplex	CD3MWCuN	A995	-	J93380	S39276	ZERON 100®, F55	<0.03	24.0-26.0	6.5-8.5	3.0-4.0	Cu, W, N

A complete list of our materials is available on our website www.fondinox.com

CENTRIFUGAL CASTINGS, ADVANTAGES:

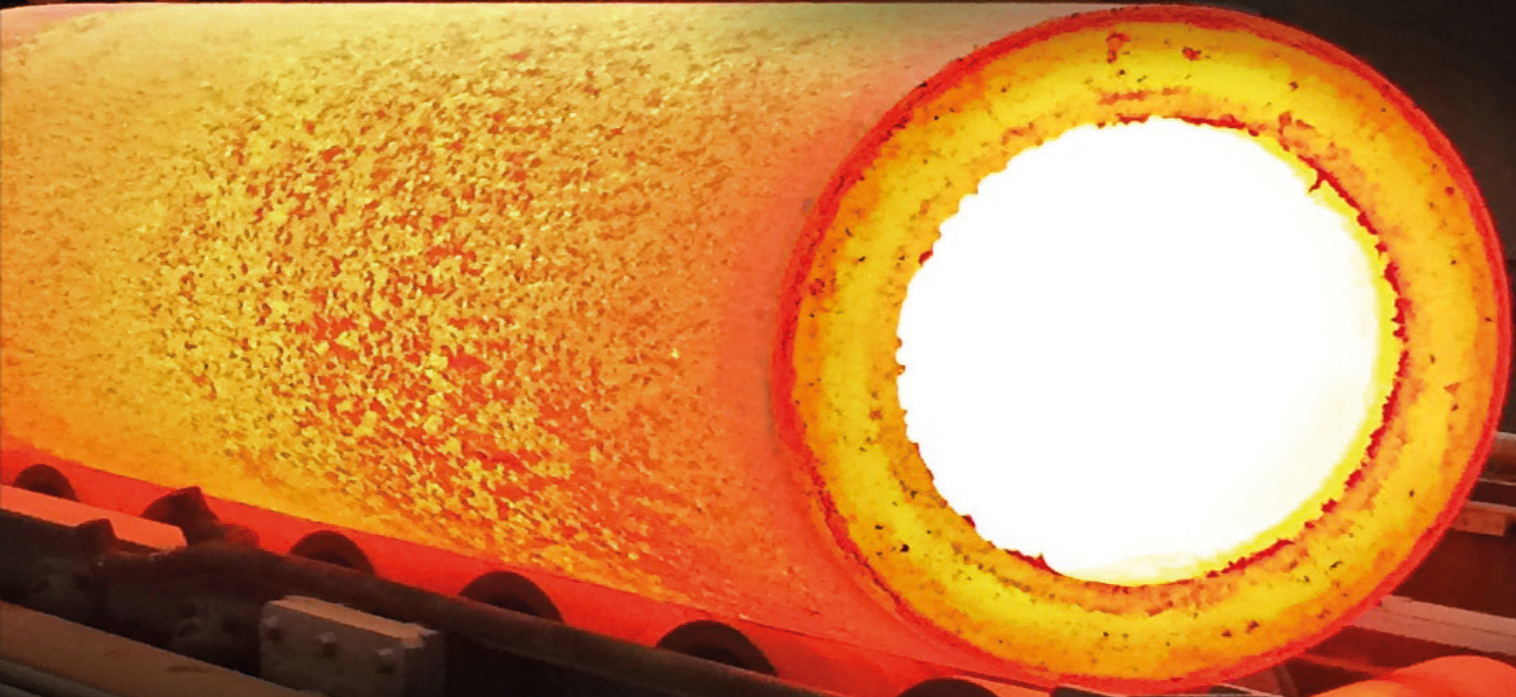
Extreme material cleanliness due to inclusions separation induced by centrifugation.

Very fine microstructure given by the rapid cooling inside metallic mould means high mechanical and corrosion resistance.

Optimization of chemical analysis.

Total absence of gas and shrinkage cavities with subsequent density increase, which mean no UT and RT examination needed.

Very simple and fast production cycle: short lead times.



SUPPLY CONDITIONS

Our tubes are supplied in the following conditions:
rough condition: annealed, quenched tempered, solution annealed or as requested;

premachined cylindrical;

finish machined with internal honing.