penta s.r.l.

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TECNOLOGIA
TECHNOLOGY

Penta ha sviluppato tecnologie proprietarie uniche nel settore:
- l'unico materiale metallico per sedi auto-lubrificante PENTAFITE
- speciali guarnizioni in Grafoil adatte anche ad alte pressioni completamente realizzate internamente

Penta has developed proprietary technologies on:
- Valve metallic seating with the unique self lubricating PENTAFITE material
- In-shop manufactured special high pressure resistant Grafoilâ gaskets

ESPERIENZA
EXPERIENCE

Penta è nata nel 1977 per la produzione di valvole a sfera a sedi metalliche per condizioni critiche:
- alta temperatura (fino a 700C°)
- bassa temperatura (fino a –196°C)
- servizi abrasivi
- servizi pericolosi.

Penta started in 1977 with the production of Metal Seated Ball Valves for critical conditions:
- high temperatures (up to 700°C)
- low temperatures (down to —196°C)
- abrasive services
- dangerous services

PASSIONE
PASSION

Una azienda a completa conduzione privata
e con uno staff giovane e preparato tecnicamente

A private owned company with young but technical prepared staff.

ASSISTENZA
ASSISTANCE

Cooperiamo con i Clienti per identificare il modello e la costruzione più adatte alle reali condizioni di esercizio.
Penta mantiene tutte le informazioni relative a qualsiasi prodotto per una durata di 20 anni così come la disponibilità di ricambi. Le nostre officine sono sempre a disposizione per effettuare manutenzioni al nostro interno di nostri prodotti.

We cooperate with Customers to identify best model/construction with reference to real working conditions.
Penta keeps all informations related to any product available for 20 years as like as spares availability.
Our workshop is always available for in-shop maintenance of our products.

QUALITÀ
QUALITY

Tutte le valvole Penta sono testate con:
- Prova Idraulica Corpo
- Prova Idraulica Sedi
- Prova Pneumatica Sedi (6 bar)

per verificare la Tenuta Perfetta (nessuna perdita visibile è ammessa).
Penta è certificata ISO 9000-2001

All Penta valves are pressure tested as follow:
- high pressure body hydrotest
- high pressure seat hydrotest
- low pressure seat air test (6 bar)
No Visible Leakage is allowed during all above tests.
Penta is an ISO 9000-2001 certified company.

Company profile

FLESSIBILITÀ
FLEXIBILITY

Dare rispondenza a qualsiasi requisito specifico è una delle nostre principali strategie di vendita

Answering specific Customer requirements is one of the purpose of our selling strategy.

AFFIDABILITÀ
RELIABILITY

Attività di ricerca sono costantemente realizzate allo scopo di allungare la vita in servizio dei nostri prodotti.

Continuous research activities are developed in order to elongate our product life under service.

COSA E' PENTAFITE

PENTAFITE è un composto a matrice metallica con dispersione di lubrificante solido.
E' ottenuto attraverso un processo di produzione assimilabile alla sinterizzazione con il quale, partendo dalle polveri dei diversi costituenti, si arriva ad ottenere anelli metallici destinati a divenire l'inserto di tenuta in valvole a sfera per servizi in alta temperatura, alte pressioni o con combinazioni pressione/temperatura superiori ai limiti sopportabili dai materiali polimerici.

WHAT IS PENTAFITE

PENTAFITE is a metallic compound with metallic matrix and fine dispersion of solid lubricant inside. It is obtained by a manufacturing process similar to sintering with which, starting from fine powders of the single component, is possible to produce the metallic rings that form the seat insert for our metal seated ball valves for services with high temperature, high pressure or with combination pressure/temperature higher than tolerable limits for polymeric material.

SEGGIO IN PENTAFITE
PENTAFITE SEAT ASSEMBLY

inserto in **PENTAFITE**
***PENTAFITE** seat insert*

portaseggio
seat holder

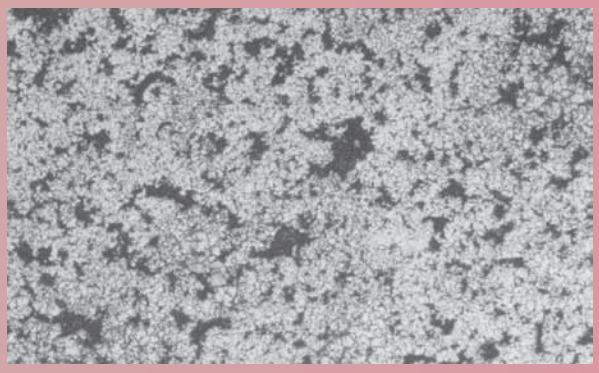
COMPOSIZIONI DISPONIBILI PER I SEGGI - *AVAILABLE SEAT MATERIAL COMPOSITIONS*

Materiale *Material*	Matrice metallica *Metallic matrix*	Lubrificante solido *Solid lubricant*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Dimensioni *Valve size*
PENTAFITE serie SXX (Base Nickel - *Nickel base*)	Nickel	Grafite *Graphite or MoS2*	-100°C / +780°C	ANSI 150 – 2500 API 10000 PN 10 - 420	½" – 20"
PENTAFITE serie RXX (Base Rame - *Rame base*)	Rame - *Copper*	Grafite - *Graphite*	-100°C / +500°C	ANSI 150 – 2500 PN 10 - 420	½" – 20"
PENTAFITE serie BXX (Base Carbone - *Carbon base*)	Carbone - *Carbon*	Grafite - *Graphite*	Amb. / +400°C PN 10 - 40	ANSI 150 – 300	½" – 4"

The Pentafite Seat technology

CARATTERISTICHE MECCANICHE E FISICHE - *MECHANICAL AND PHYSICAL FEATURES*	
Coefficiente di attrito su superficie rettificata ed indurita (1500 HV min.) (PENTAFITE serie SXX) *Friction factor against ground surface hardened to 1500 HV min. (SXX PENTAFITE Serie)*	0,2
Massima pressione specifica di contatto *Maximum working specific pressure*	30 Kg/mm^2
Massima temperatura di lavoro *Maximum working temperature*	780°C
Massima pressione di esercizio *Maximum working pressure*	720 bar
Coefficiente di dilatazione termica 0°-200°C *Thermal expansion 0°-200°C*	14 x 10^{-6}

Aspetto della microstruttura di seggio in PENTAFITE (ingrandimento 100x)
100x magnification of PENTAFITE cross-section



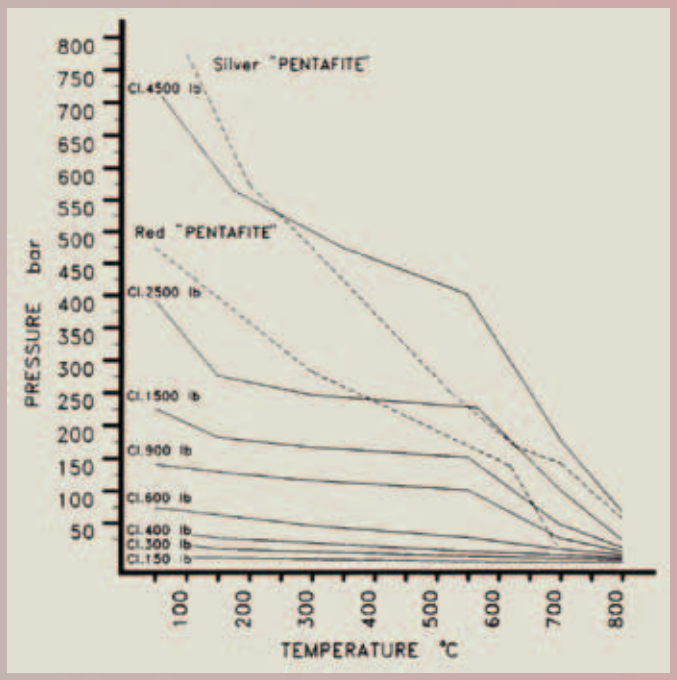


Grafico Pressioni/Temperature max. di lavoro per sedi realizzate in PENTAFITE
Pressure/Temperature working range for seats manufactured in PENTAFITE

Proprietà sedi PENTAFITE
PENTAFITE seat properties

PRINCIPALI PROPRIETA' DELLE SEDI METALLICHE IN PENTAFITE

Tenuta Perfetta
Le caratteristiche elasto-plastiche del materiale PENTAFITE permettono l'automatico adattamento dei seggi alla forma della sfera, annullando le imperfezioni di lavorazione. In questo modo è possibile eliminare ogni possibilità di fuga ed ottenere la perfetta tenuta dell'accoppiamento seggio-sfera.

Basse Coppie di Manovra
La presenza di lubrificante solido all'interno della matrice metallica permette di ridurre il coefficiente di attrito tra sede e sfera, riducendo al contempo le coppie di manovra della valvola. Per lo stesso motivo non sono possibili grippaggi, nemmeno in presenza di alte temperature di esercizio o alte pressioni specifiche di contatto.

Facilità di manutenzione
Non essendo necessarie lavorazioni di adattamento tra seggio e sfera (il seggio non deve essere lappato sulla sfera prima del montaggio) risultano semplificati gli interventi di montaggio o manutenzione delle valvole qualora equipaggiate con seggi in PENTAFITE.

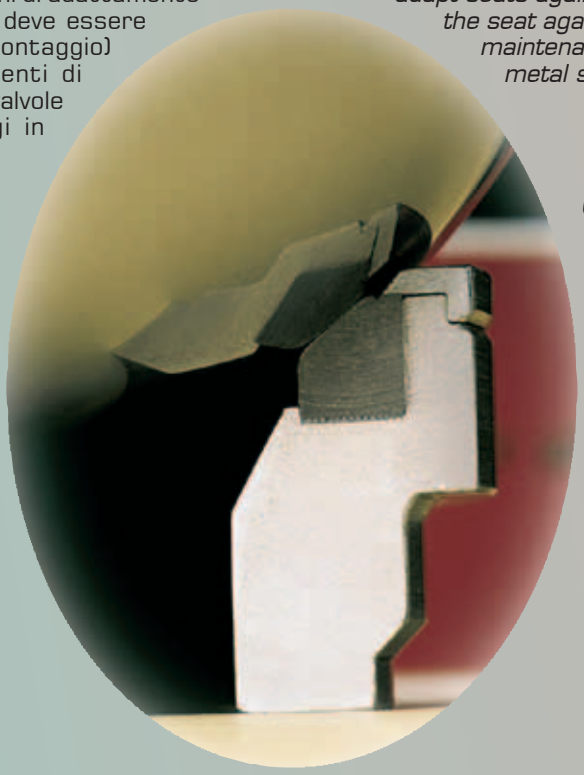
Tenuta perfetta con gas
Essendo possibile il raggiungimento di elevate pressioni specifiche di contatto tra seggio e sfera grazie alla presenza del lubrificante solido disperso nella matrice metallica, l'accoppiamento sede-sfera è in grado di trattenere gas ad elevate pressioni.

MOST IMPORTANT PROPERTIES OF PENTAFITE METAL SEATS

Perfect Tightness
Elastic properties of PENTAFITE seat material allow the automatic adaptation of seats against ball shape, eliminating machining imperfections. This way it is possible to eliminate any possible leak-point and to meet the perfect tightness.

Low valve torque
The presence of the solid lubricant dispersion inside the metallic matrix, reduces the seat to ball friction factor and also the valve torque. For the same reason seizure or galling between seat and ball surfaces are eliminated even when the working temperature is high.

Easy maintenance
Because it is not necessary for additional machining to adapt seats against the ball (You do not have to lap the seat against to the ball) valve assembly and maintenance are very easy when PENTAFITE metal seats are used.



Gas tightness
The presence of the solid lubricant inside allows the PENTAFITE material to reach very high working specific pressures resulting in perfect tightness when high pressure gases must be stopped.

penta s.r.l.

AP

MODELLO / *MODEL*

AP

ALFA VALVOLE s.r.l.

TÜV SÜD

CE 97/23/CE "PED"

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Il modello AP combina:

- la affidabilità e la capacità di risolvere i problemi della intercettazione di fluidi ad alta temperatura tipiche delle valvole a seggi metallici in PENTAFITE prodotte da PENTA

con

- la qualità di una produzione di grande serie caratteristiche dei modelli di produzione ALFA VALVOLE.

Tutte le valvole della serie AP sono equipaggiate con sedi metalliche in PENTAFITE che permettono la realizzazione di valvole a sfera a seggi metallici con PREDITA ZERO e di facile manutenzione, non necessitando di lavoro di adattamento tra sedi e sfere, grazie alle particolari caratteristiche elasto-plastiche del materiale dei seggi PENTAFITE.

La stessa attenzione è posta alla verifica del grado di tenuta verso l'esterno mediante la certificazione RWTUV della rispondenza ai limiti imposti dal regolamento TA-LUFT tedesco.

The AP series combines:

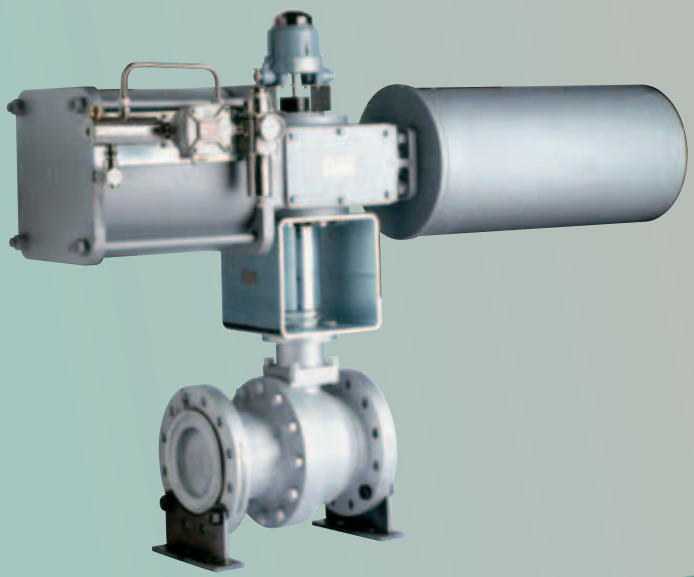
- *the well known reliability and capability to solve the problem of high temperature fluid handling typical of all PENTA metal seated ball valves,*

and

- *the quality of the mass produced standard ALFA VALVOLE models.*

All valves of AP series are equipped with metallic seats in PENTAFITE to allow the manufacturing of metal seated ball valves with absolutely ZERO LEAKAGE and easy maintenance without necessity of additional lapping of the seats to the ball, typical of PENTAFITE elastic properties.

The same attention is put on the verification of class of tightness toward the outside by RWTUV referred to the limits imposed from the German regulation TA-LUFT.



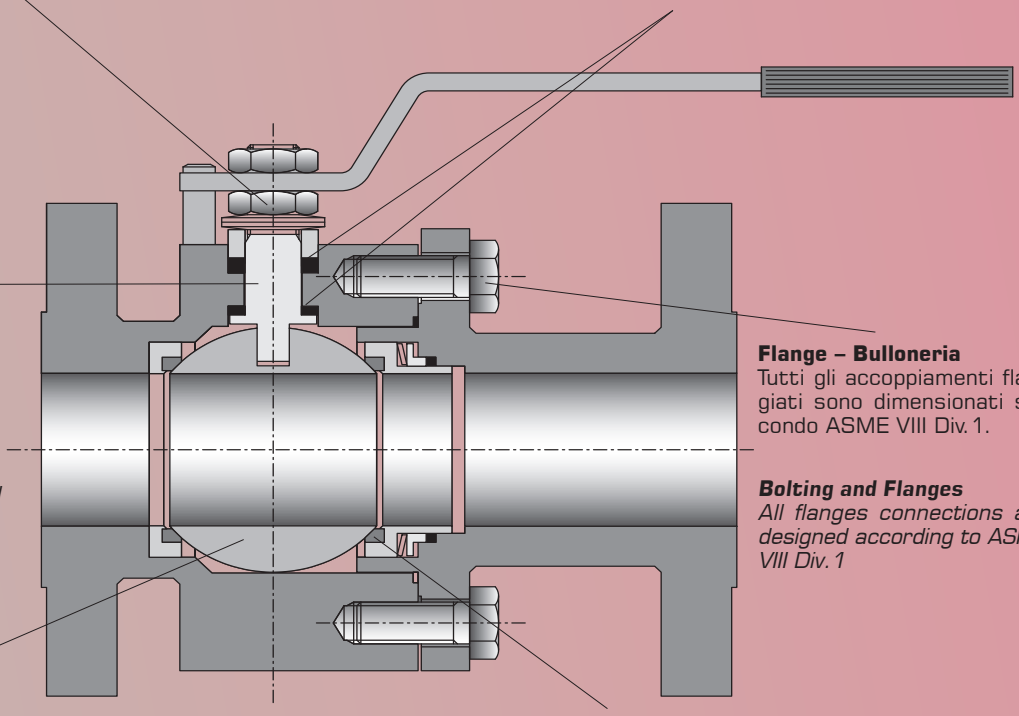
VALVOLE A SFERA A SEGGI METALLICI
METAL SEATED BALL VALVES

Tenuta stelo
Il sistema a doppia molla e dadi di serraggio consente di fornire il corretto precarico alle tenute stelo, di recuperare usure e differenziali di dilatazione tra stelo e corpo.

Stem tightness
The double spring system with loading nuts, allows the correct stem gasket pre-loading and the adjustment to recuperate wearing and clearance for different thermal dilation between stem and body.

Guarnizioni
Sono utilizzate esclusivamente guarnizioni in Grafoil® resistenti alle alte temperature; nessun materiale polimerico è impiegato.

Gasket
Only Grafoil® gaskets are used, inherently resistant to high temperatures; no polymers are used.



Stelo
Gli steli sono 100% sovradimensionati rispetto alla coppia attesa al max. DP di rating.

Stem
Stem are 100% oversized against expected torque at max. rated DP.

Flange – Bulloneria
Tutti gli accoppiamenti flangiati sono dimensionati secondo ASME VIII Div. 1.

Bolting and Flanges
All flanges connections are designed according to ASME VIII Div. 1

Sfera
Sfere rettificate ad alta precisione sono prodotte internamente e quindi indurite superficialmente con riporti a tecnologia avanzata.

Ball
Very high precision grounded balls are produced inside and then hard coated with most advanced system.

Seggi
I seggi metallici sono precaricati con molle per una perfetta tenuta alle basse pressioni, per recuperare l'usura e le differenti dilatazioni termiche tra i diversi componenti interni.

Seats
Metallic seats are pre-loading with springs for a perfect low-pressure bubble tightness and to recuperate life wearing and different thermal dilatation between internals.

MATERIALI DISPONIBILI PER I SEGGI - *AVAILABLE SEAT MATERIAL*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service Limits*
S01	**SILVER PENTAFITE** (Nickel + Graphite)	120 HB	-100°C / +780°C (-148°F / +1436°F)	ANSI 150 – 1500 PN 10 - 250	For clean services both liquid or gas. For use with **HTC, HTCN, HCR, WC, CRC, ST6** ball coated
R01	**RED PENTAFITE** (Cu + Graphite)	100 HB	-100°C / +500°C (-148°F / +932°F)	ANSI 150 – 600 PN 10 - 100	For clean servicesboth liquid or gas. Lower friction factors in dry gas or steam service. For use with **HTC, HTCN, HCR, ST6** ball coated
B01	**BLACK PENTAFITE** (Carbon + Graphite)	80 HB	Amb. / +400°C (Amb. / +752°F)	ANSI 150 – 300 PN 10 - 40	For low pressure specific services where **S01** and **R01** cannot be used due to corrosion problems. A ball coat is not strictly necessary and should be evaluated time to time
WC	**CARBURO DI TUNGSTENO** *Tungsten Carbide Coat (Detonation Gun/HVOF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected. For use with WC ball coat
ST6	**STELLITE Gr.6** *(Detonation Gun/HVOF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry gas or steam services.For use with **WC, CRC** ball coat
PK1	**PEEK** *(Polietheretherketone)*		-100°C. / +240°C (-148°F / +464°F)	ANSI 150 – 600 PN 10 - 100	For clean liquid or gas services with high frequency of valve operation.

MATERIALI DISPONIBILI PER RIVESTIMENTO SFERE - *AVAILABLE BALL COATING MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service Limits*
HTC	**NITRURI DI TITANIO** *Titanium Nitride* (PVD)	2500 HV	-100°C / +600°C (-148°F / +1112°F)	ANSI 150 – 600 PN 10 - 100	For clean services both liquid or gas. For gas and steam up to 180°C
HTCN	**CARBO-NITRURI DI TITANIO** *Carbo-Titanium Nitride* (PVD)	3500 HV	-100°C / +400°C (-148°F / +752°F)	ANSI 150 – 1500 PN 10 - 250	For liquid or gas services with small presence of solids. For gas and steam up to 180°C
HCR	**NITRURI DI CROMO** *Chrome- Nitride* (PVD)	3000 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 1500 PN 10 - 250	For clean services both liquid or gas. Best on oxidizing services
WC	**CARBURO DI TUNGSTENO** *Tungsten Carbide (Detonation Gun/HVOF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 1500 PN 10 - 250	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected.
CRC	**CARBURO DI CROMO** *Chrome Carbide (Detonation Gun/HVOF)*	800 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 1500 PN 10 - 250	For liquid or gas services with small presence of solids. Not suitable when small presence of caustic soda is expected.
ST6	**STELLITE GR.6** *(Detonation Gun/HVOF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 1500 PN 10 - 250	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry or steam services.

GRADO DI TENUTA - *TIGHTNESS*

Tutte le valvole PENTA modello AP sono collaudate per verificarne la TENUTA PERFETTA (perdita zero alla prova idraulica dei seggi secondo ANSI B16.34 e a 6 bar con aria).

All PENTA valves AP model are tested to verify their BUBBLE TIGHTNESS (no visible leakage during hydraulic seat test according to ANSI B 16.34 and during low pressure air seats test at 100 psi)

INTERVALLO DI PRODUZIONE - *PRODUCTION RANGE*

CLASSI - *PRESSURE CLASSES*

ANSI B 16.34	150		300		600		800		900		1500	
PN	16 - 25		40 - 50		64 - 100				160		250	
	F	T	F	T	F	T	F	T	F	T	F	T
Modelli *Models*	AP54 AP64 AP68 AP10N AP11N	APT2	AP50 AP60 AP10N AP11N	APT2	AP506 AP606 AP10HP	APT2	AP20P		AP609	APT2	AP615	APT2
DN												
½"	■	■	■	■	■	■	■		■	■	■	■
¾"	■	■	■	■	■	■	■		■	■	■	■
1"	■	■	■	■	■	■	■		■	■	■	■
1¼"	■		■						■	■		■
1½"	■	■	■	■	■	■	■		■	■		■
2"	■	■	■	■	■	■	■		■	■		■
2 ½"	■	■	■	■	■	■	■		■			■
3"	■	■	■	■	■	■						
4"	■	■	■	■		■						
6"	■		■									
8" RB [1]	■		■									

F = Sfera flottante - *Floating ball*
T = Sfera vincolata - *Trunnion mounted ball*

[1] solo AP50 e AP54 - *AP50 and AP54 only*

VERSIONI DISPONIBILI - *AVAILABLE VERSIONS*

AP10N
AP10HP
Valvola a corpo piatto a sfera flottante, completamente smontabile per manutenzioni
Wafer ball valve floating ball, fully replaceable seats

AP11N
Valvola a corpo piatto completamente smontabile per manutenzioni con camicia di riscaldamento integrale
Wafer ball valve fully detachable for maintenance with integral heating jacket

AP20P
Valvola con corpo in due pezzi avvitati a sfera flottante
Ball valve with two pieces screwed body and floating ball

AP50
AP54
AP506
AP60
AP64
AP68
AP606
AP609
Valvola Split Body a sfera flottante, interamente smontabile (per la sostituzione di seggi e guarnizioni)
Split Body valve, floating ball, with fully replaceable seats

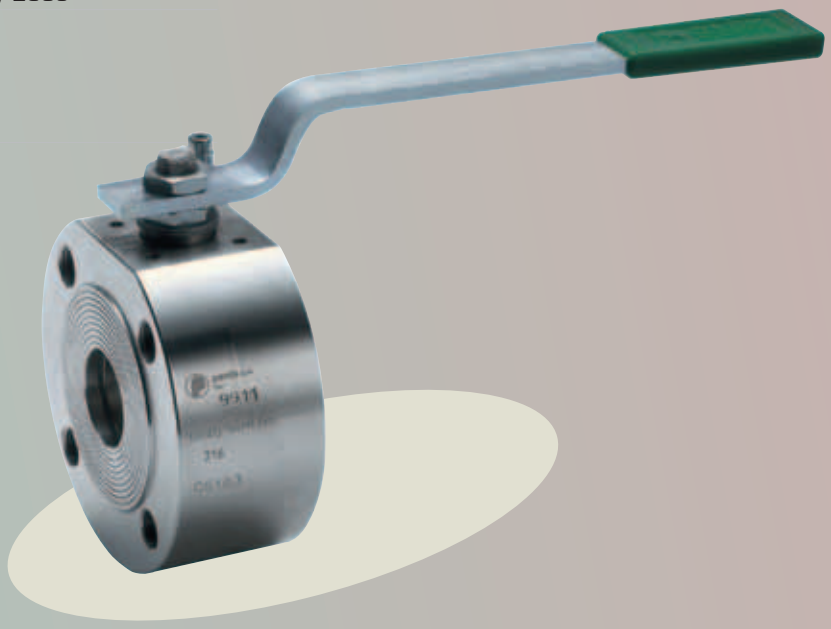
APT2
Valvola split body a sfera trunnion, interamente smontabile (per la sostituzione di seggi e guarnizioni)
Split body valve, trunnion mounted ball, with fully replaceable seats

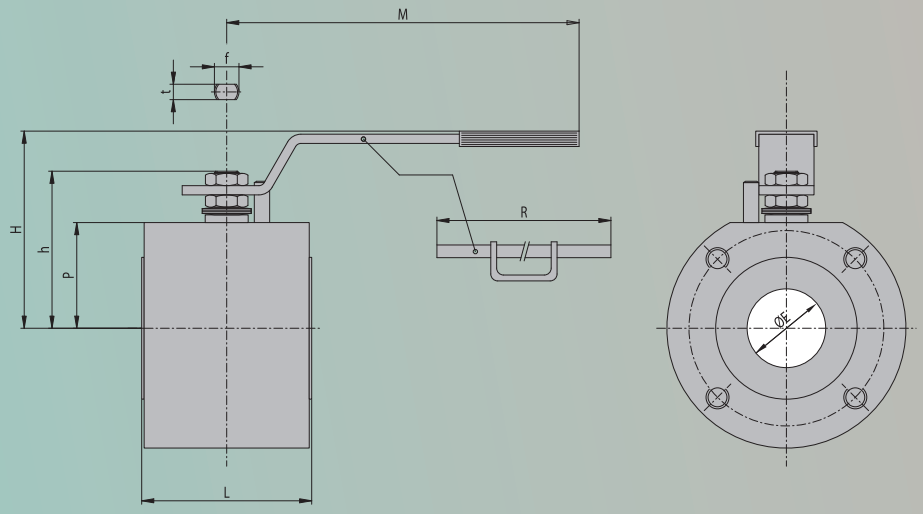
OPERATORI DISPONIBILI - *AVAILABLE OPERATORS*

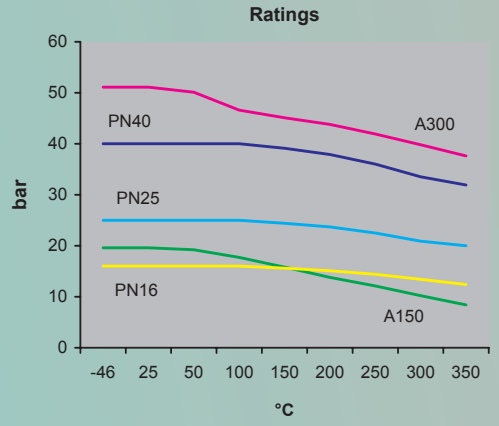
- Riduttori manuali — *Manual gears*
- Attuatori pneumatici a semplice o doppio effetto — *Single or double acting pneumatic actuators*
- Attuatori elettrici — *Electric actuator*
- Attuatori idraulici — *Hydraulic actuators*
- Leva con lucchettaggio — *Lever c/w locking device*

UNI-DIREZIONALE

Dimensionamento *Design*	ANSI B16.34 / EN 12569 / API 608 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	ANSI B16.5 Cl.150 / 300 EN 1092-1 PN 10/16/25/40 DIN 2632 / 2633 / 2634 / 2635
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I







Dimensioni - *outline dimensions*

DN	15	20	25	32	40	50	65	80	100	150
Ø"	1/2"	3/4"	1"	1¼"	1½"	2"	2½"	3"	4"	6"
ØE	14	19	24	29	38	48	64	76	95	152
L	36	39	43	51	63	83	120	120	152	243/255*
M	145	145	180	180	275	275	380	380	440	— [1]
R	—	—	—	—	—	—	—	—	500	800
H	64	66	85	90	118	126	139	144	200	265
h	52	55	70	73	96	101	122	128	157	220
P	33	36	43	48	63	68.5	82	88.5	111	145
F/t	10/6	10/6	12/8	12/8	16/10	16/10	22/14	22/14	30/18	45/30
Kg	1.5	2	2.7	4	6.5	9	16	20.5	42	80
ISO5211	F03	F03	F03	F03	F05	F05	F07	F07	F10	F14

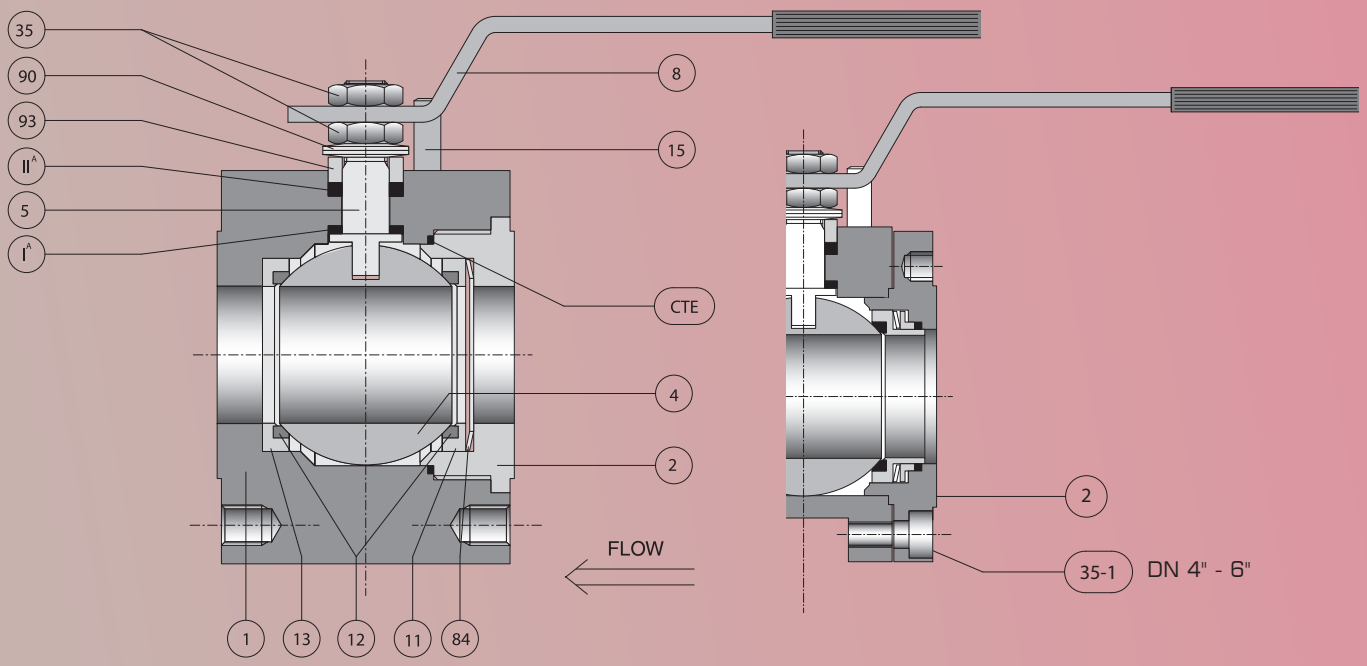
* PN25-40/ANSI 300 RF

[1] É raccomandato riduttore manuale - *Manual gear recommended*

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

UNI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304SS	304SS	304SS
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	304 S.S.	304 S.S.	304 S.S.
35	Dadi Stelo	*Nut*	304 S.S	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	UNI 3740 Gr. 8.8	UNI 3740 Gr. 8.8	UNI 3740 Gr. 8.8
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	316 S.S.	Tp.316 S.S.	316 S.S.
2	Terminale	*Connector*	A105	A479 Tp.304	A479 Tp.316/A351 CF8M
1	Corpo	*Body*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M

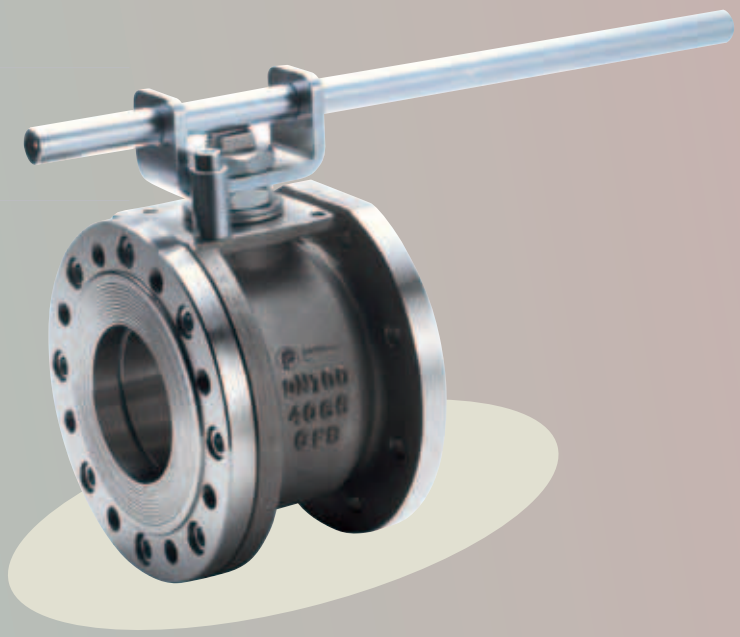
P. No. **Parte - *Part Name*** **Materiale - *Material***

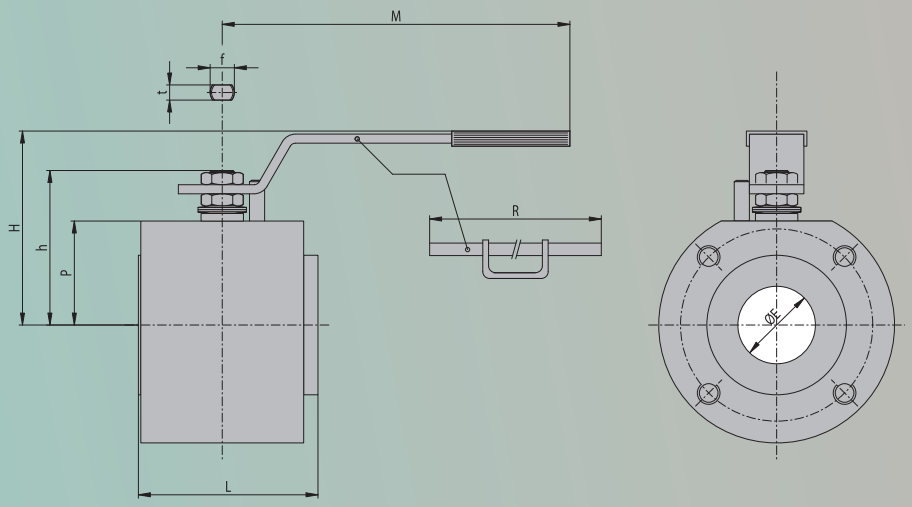
Altri materiali disponibili su richiesta – *Other materials are available on request*

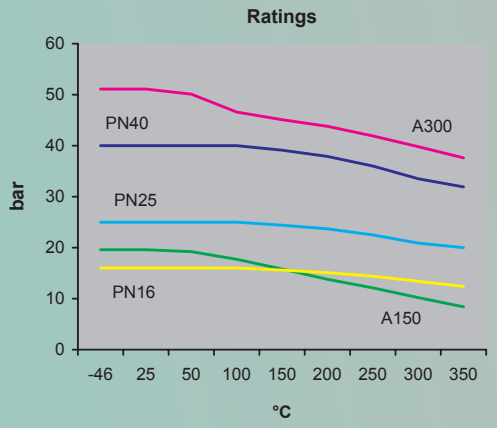
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

BI-DIREZIONALE

Dimensionamento *Design*	ANSI B16.34 / EN 12569 / API 608 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	ANSI B16.5 Cl.150 / 300 EN 1092-1 PN 10/16/25/40 DIN 2632 / 2633 / 2634 / 2635
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I







Dimensioni - *outline dimensions*

DN	15	20	25	32	40	50	65	80	100	150
Ø"	1/2"	3/4"	1"	1¼"	1½"	2"	2½"	3"	4"	6"
ØE	14	19	24	29	38	48	64	76	95	152
L	45	50	56	60	75	91	120	127	152	243/255*
M	145	145	180	180	275	275	380	380	440	— [1]
R	—	—	—	—	—	—	—	—	500	800
H	64	66	85	90	118	126	139	144	200	265
h	52	55	70	73	96	101	122	128	157	220
P	33	36	43	48	63	68.5	82	88.5	111	145
F/t	10/6	10/6	12/8	12/8	16/10	16/10	22/14	22/14	30/18	45/30
Kg	1.5	2	2.7	4	6.5	9	16	20.5	42	80
ISO5211	F03	F03	F03	F03	F05	F05	F07	F07	F10	F14

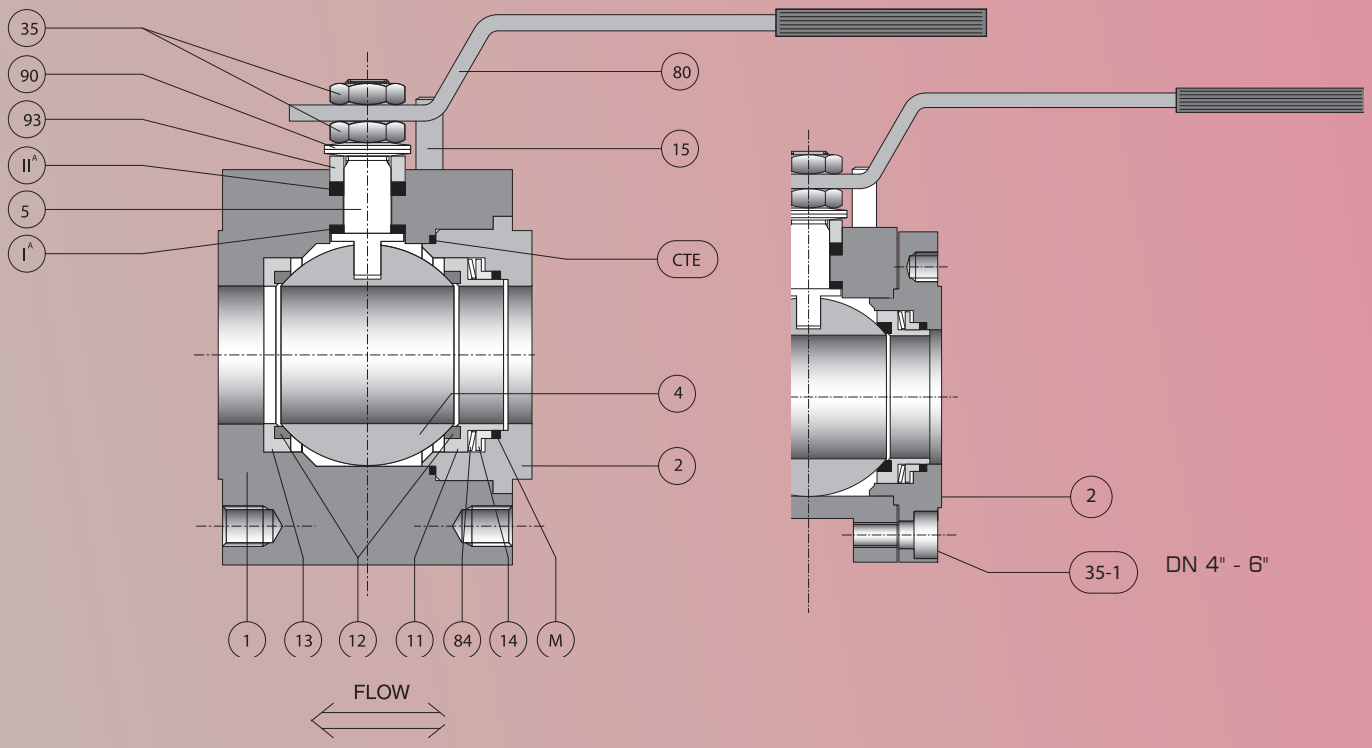
* PN25-40/ANSI 300 RF

[1] É raccomandato riduttore manuale - *Manual gear recommended*

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304SS	304SS	304SS
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	304 S.S.	304 S.S.	304 S.S.
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	UNI 3740 Gr. 8.8	UNI 3740 Gr. 8.8	UNI 3740 Gr. 8.8
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	316 S.S.	316 S.S.	316 S.S.
2	Terminale	*Connector*	A105	A479 Tp.304	A479 Tp.316/A351 CF8M
1	Corpo	*Body*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M

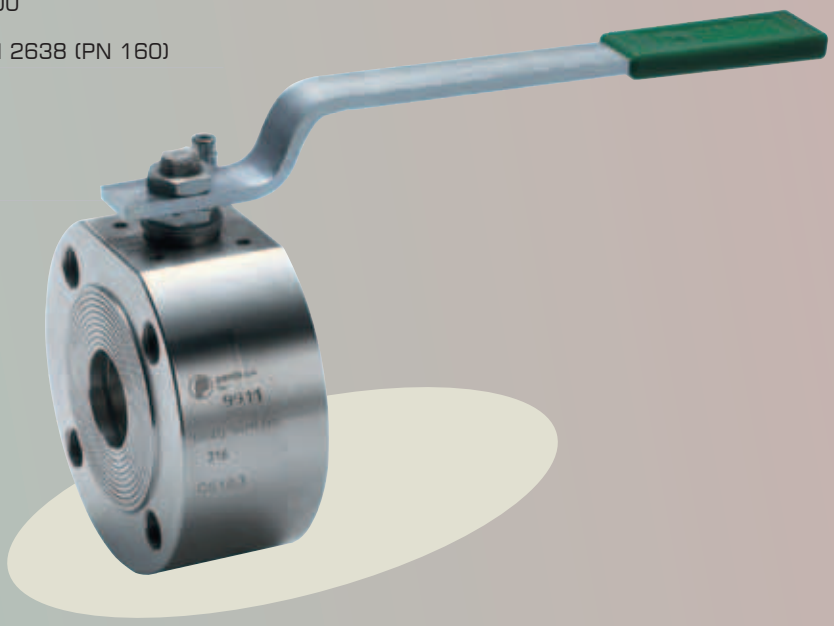
P. No. Parte - *Part Name* **Materiale - *Material***

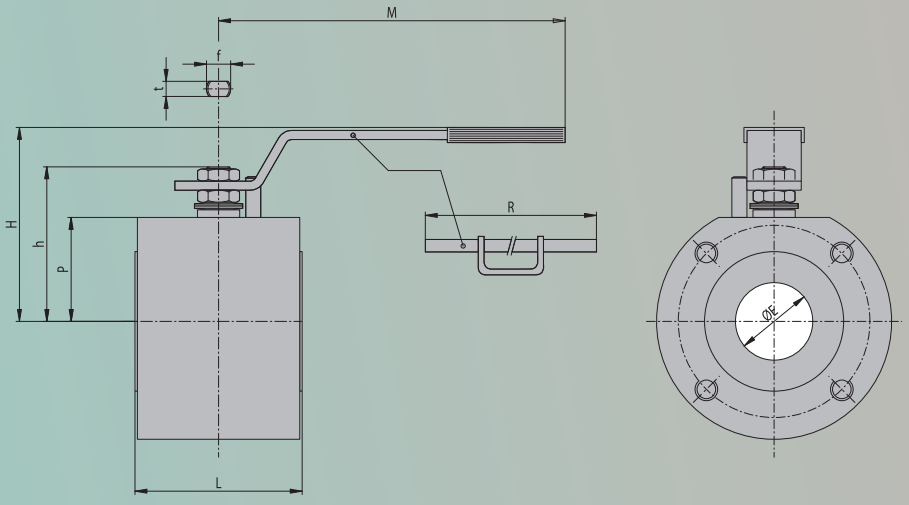
Altri materiali disponibili su richiesta – *Other materials are available on request*

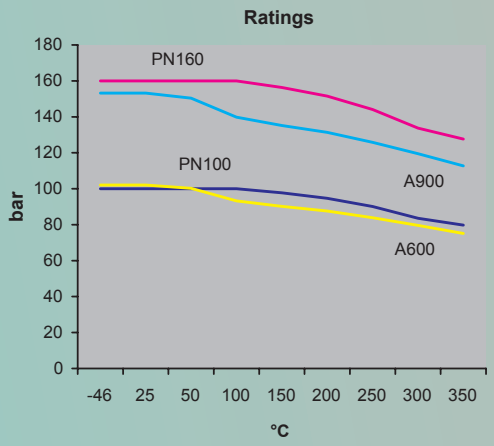
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

BI-DIREZIONALI

Dimensionamento *Design*	ANSI B16.34 / EN 12569 / API 608 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	ANSI B16.5 CL.600 / 900 EN 1092-1 PN 100 DIN 2637 (PN 100) / DIN 2638 (PN 160)
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I







Dimensioni - *outline dimensions*

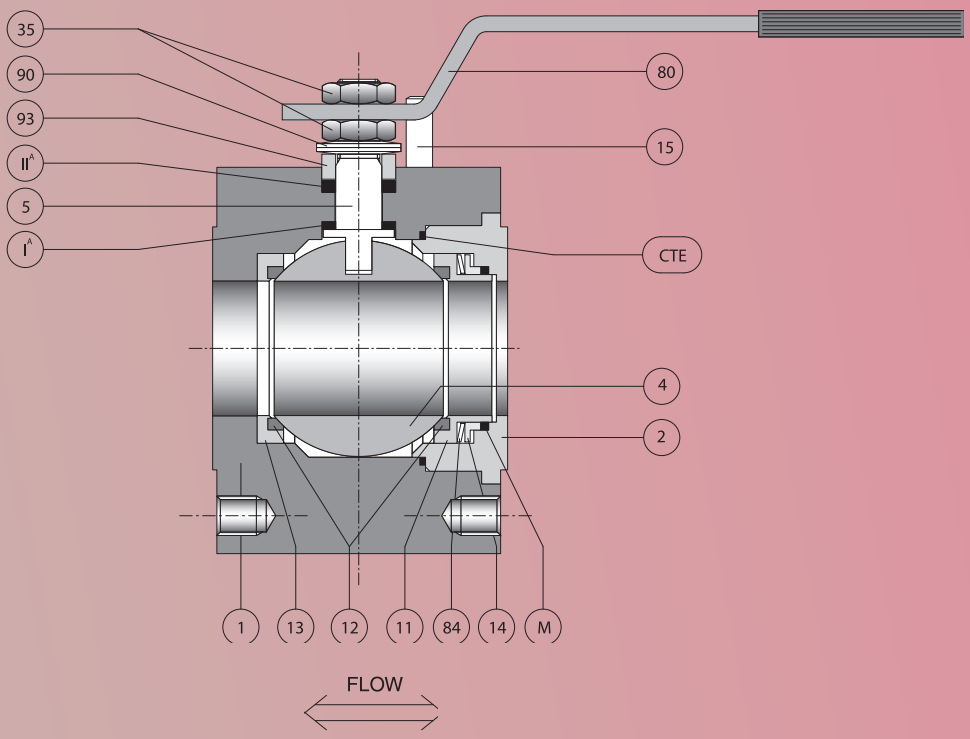
DN	15	20	25	32	40	50	65	80
Ø"	1/2"	3/4"	1"	1¼"	1½"	2"	2½"	3"
ØE	14	19	24	29	38	48	64	76
L	55	60/75*	65/74*	75	85/100*	100	125	150
M	145	145	275	275	380	380	440	440
R	—	—	—	—	—	—	500	500
H	65	68	105	115	127	135	160	180
h	53	55/70*	15	73	105	110	122	142
P	33	36/46*	51	53	65	15	93	98
F/t	10/6	10/6	16/10	16/10	22/14	22/14	30/18	30/18
Kg	2.5	3.5	4.8	6.5	10	13.5	25	40
ISO5211	F03	F03	F05	F05	F07	F07	F10	F10

* PN 160/900RF

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

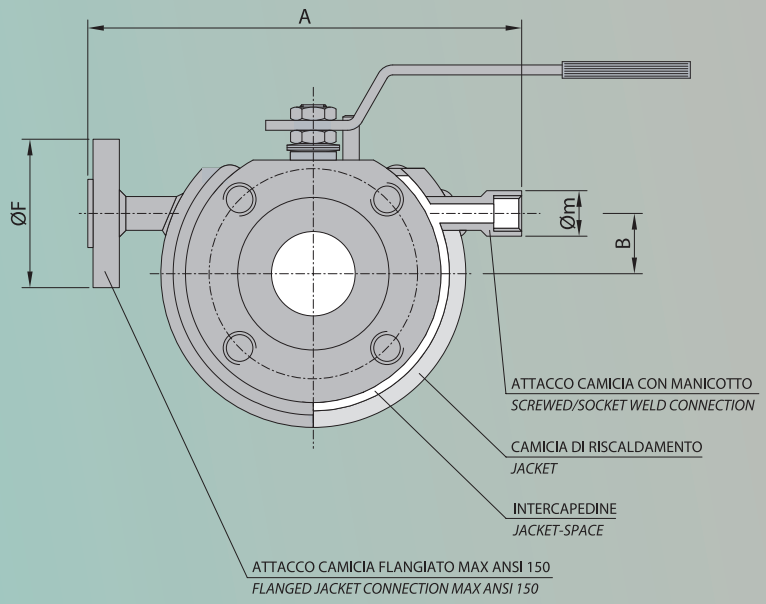
CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S.	304 S.S.
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	UNI 3740 Gr. 8.8	UNI 3740 Gr. 8.8	UNI 3740 Gr. 8.8
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13%Cr. A564 Tp.630	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	316 S.S.	316 S.S.	316 S.S.
2	Terminale	*Connector*	A105	A479 Tp.304	A479 Tp.316/A351 CF8M
1	Corpo	*Body*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M

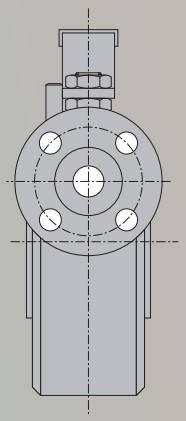
P. No. Parte - *Part Name* **Materiale - *Material***

Altri materiali disponibili su richiesta – *Other materials are available on request*

HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

Dimensionamenti - valvola *Design - valve*	ANSI B16.34 / EN 12569 / API 608 / EN 17292 ASME VIII DIV. 1 / EN 12516-1
Dimensionamenti - camicia *Design - jacket*	ASME VIII DIV. 1
Estremità flangiate *Flanged ends*	ANSI B16.5 CL. 150 / 300 / 600 EN 1092-1 PN 10/16/25/40/100
Attacchi camicia *Jacket connections*	SN / NPT CL. 150 RF PN 10/16
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I



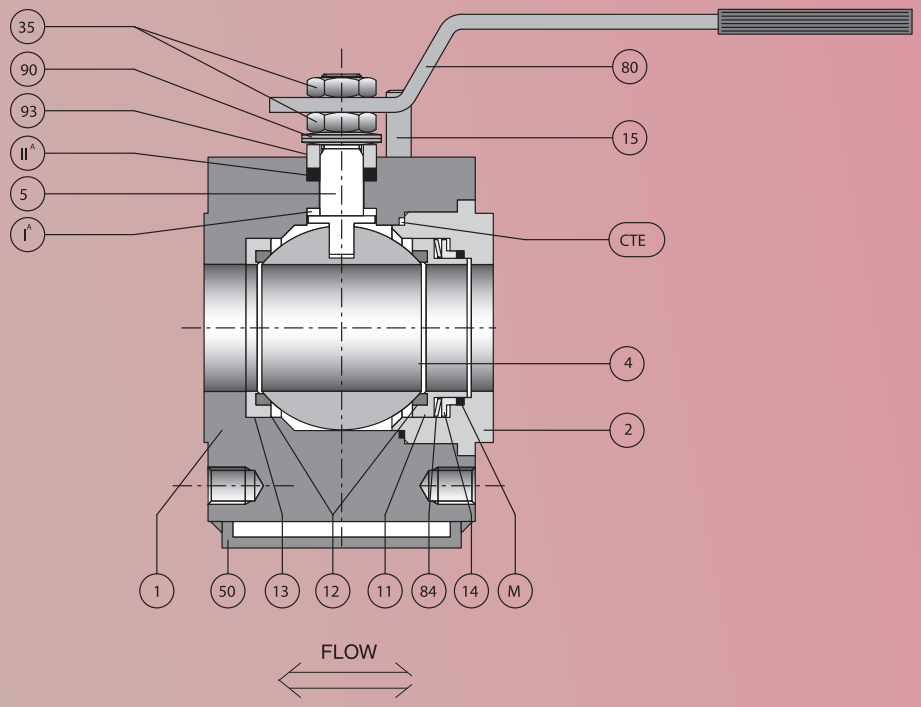


Dimensioni - *outline dimensions*

DN	15	20	25	40	50	65	80	100	150
Ø"	1/2"	3/4"	1"	1½"	2"	2½"	3"	4"	6"
A	160	160	190	230	250	270	300	340	420
B	0	0	0	30	30	45	50	70	95
ØF	DN 15							DN 25	
Øm	Ø ½"							Ø 1"	
Kg	3	3.5	4.5	9	11	20	25	40	80

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI INCAMICIATA
METAL SEATED FLOATING BALL VALVES C/W JACKET

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

CE
97/23/CE "PED"
CAT I

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S.	304 S.S.
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
50	Camicia riscaldamento	Heating jacket	A105	304 S.S.	304 S.S.
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	UNI 3740 Gr. 8.8	UNI 3740 Gr. 8.8	UNI 3740 Gr. 8.8
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	A479 Tp.316	A479 Tp.316	A479 Tp.316
2	Terminale	*Connector*	A105	A479 Tp.304	A479 Tp.316
1	Corpo	*Body*	A105	A479 Tp.304	A479 Tp.316

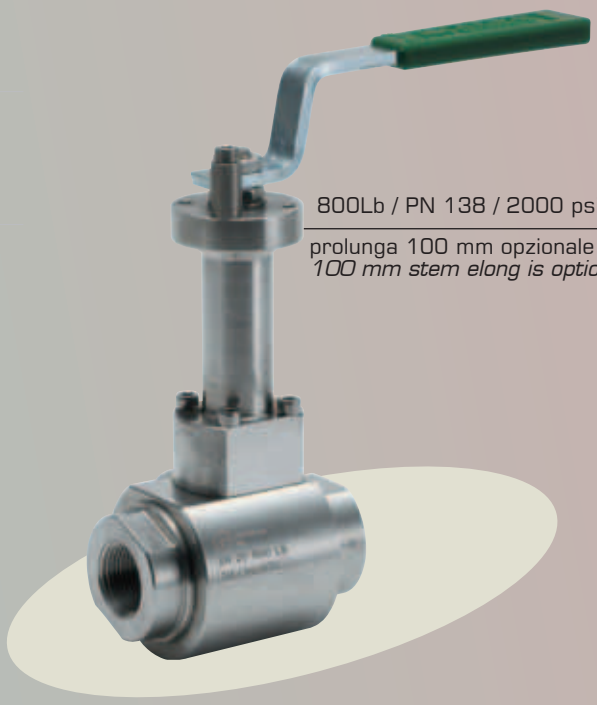
P. No. Parte - *Part Name* **Materiale - *Material***

Altri materiali disponibili su richiesta – *Other materials are available on request*

HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

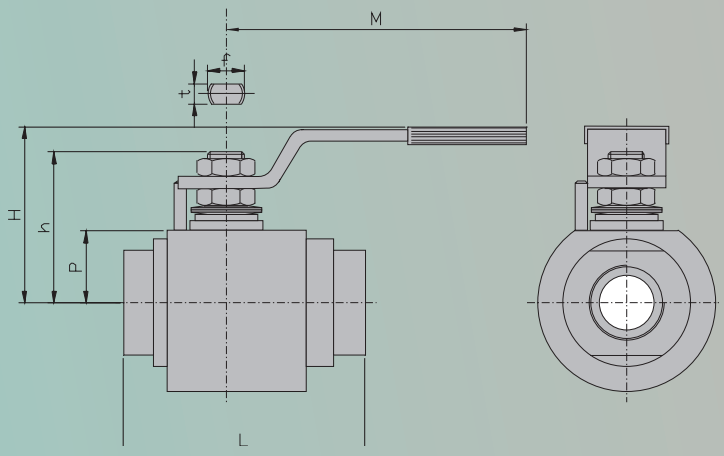
BI-DIREZIONALE

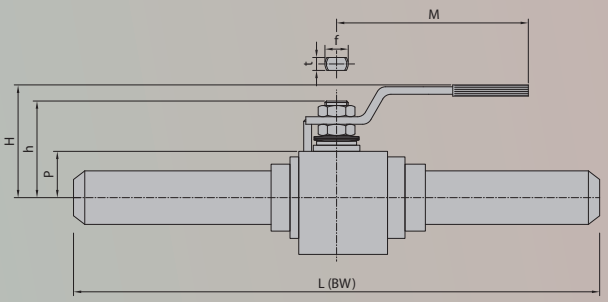
Dimensionamenti *Design*	ANSI B16.34 / EN 17292 / API 608 ASME VIII DIV.1 / EN 12516-1
Estremità *Ends*	NPT ANSI B 1.20.1 SN ANSI B 16.11 BN ANSI B 16.25 (con nippli integrali - *c/n integral nipples*)
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I

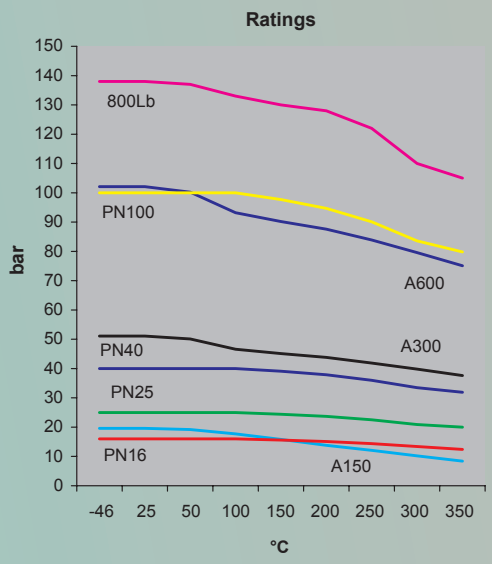


800Lb / PN 138 / 2000 psi

prolunga 100 mm opzionale
100 mm stem elong is optional







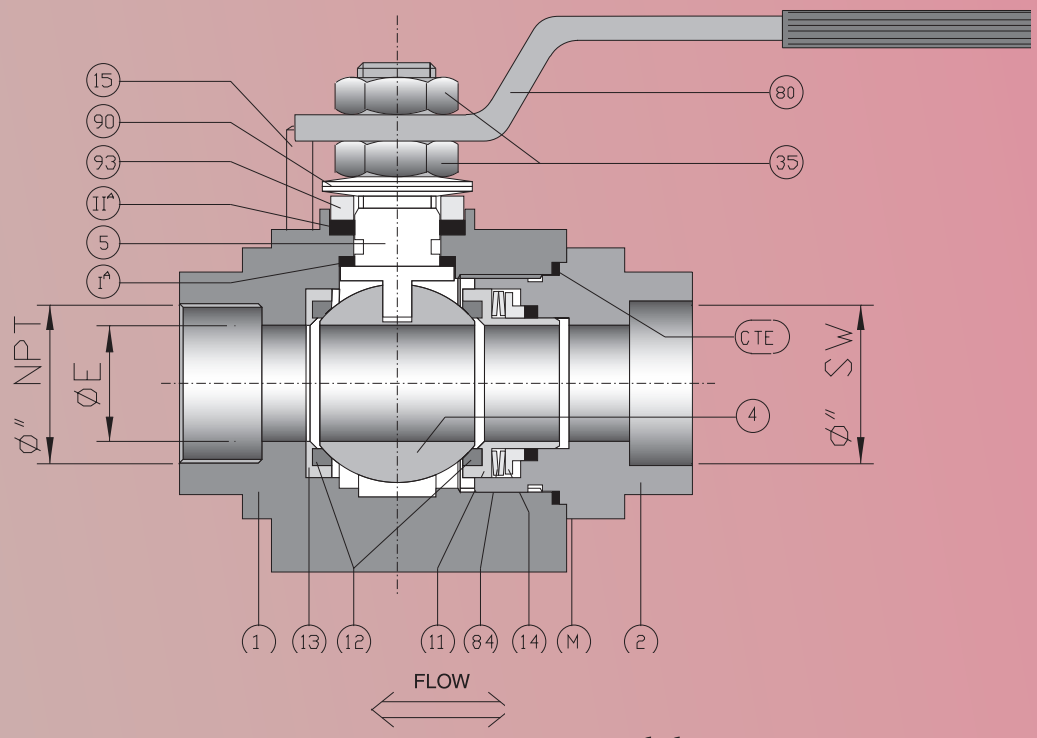
Dimensioni - *outline dimensions*

DN	15	20	25	40	50
Ø"	1/2"	3/4"	1"	1½"	2"
ØE	12.5	19	24	38	51
L(NPT)	80	90	110	130	155
L(SW)	70	85	105	125	140
L(BW)	270	285	305	325	350
ØD	58	64	78	104	138
M	145	145	275	380	380
H	70	75	83	123	120
h	50	53	63	91.5	102
P	24	27	32	42	61
F/t	10/6	10/6	16/10	22/14	22/14
Kg	1.2	1.5	2.5	5.3	11.5
ISO5211	F03	F03	F05	F07	F07

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil
IIA	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil
IA	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S.
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	A479 Tp.316	A479 Tp.316
2	Terminale	*Connector*	A105	A479 Tp.316
1	Corpo	*Body*	A105	A479 Tp.316

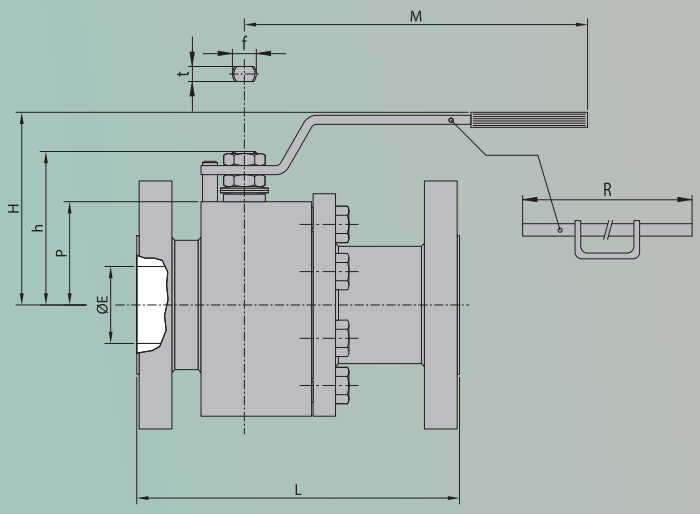
P. No. Parte - *Part Name* **Materiale - *Material***

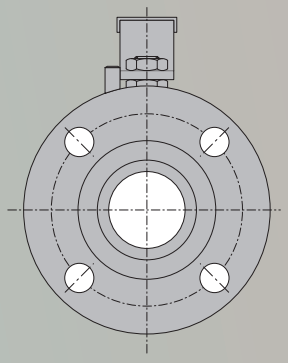
Altri materiali disponibili su richiesta – *Other materials are available on request*

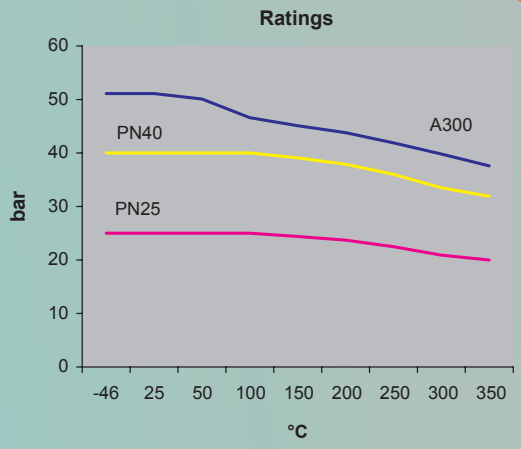
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

BI-DIREZIONALE

Dimensionamenti *Design*	ANSI B16.34 / EN 12569 / API 608 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	ANSI B 16.5 CL.300 EN 1092-1 PN 25 / PN 40 DIN 2634 (PN 25) / 2635 (PN 40)
Estremità BW *BW ends*	ANSI B 16.25
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I







Dimensioni - *outline dimensions*

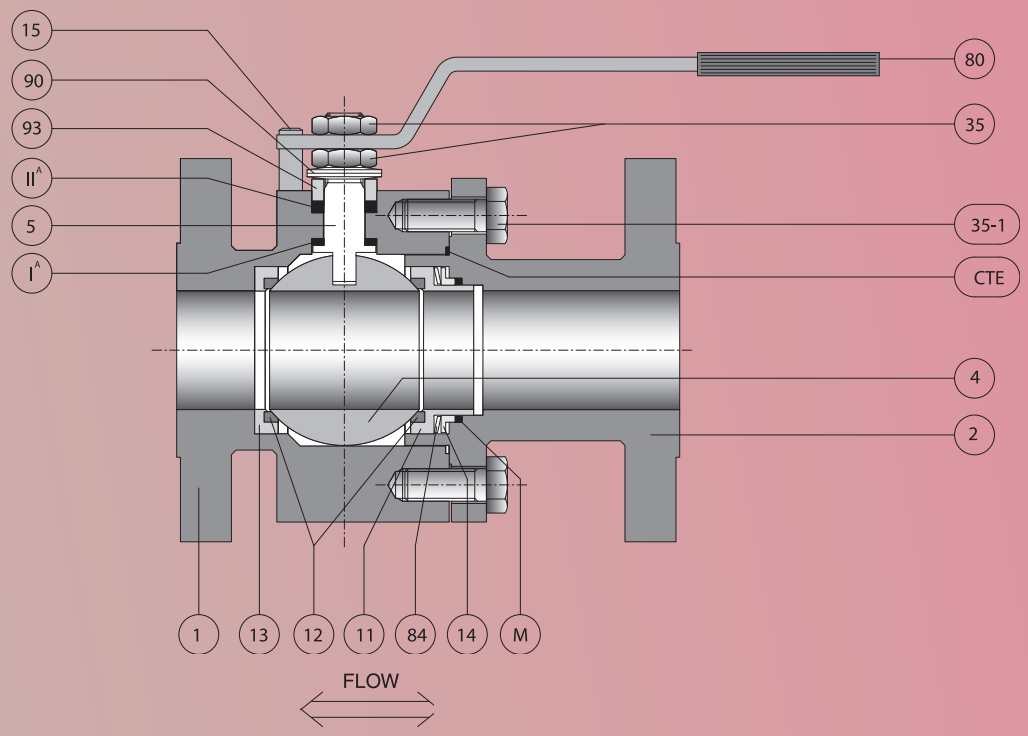
DN	15	20	25	32	40	50	65	80	100	150
Ø"	1/2"	3/4"	1"	1¼"	1½"	2"	2½"	3"	4"	6"
ØE	14	19	24	29	38	51	65	76	102	152
L	140	152	165	178	191	216	241	283	305	403
M	145	145	180	180	275	275	380	380	440	—[1]
R	—	—	—	—	—	—	—	—	500	800
H	64	66	85	90	118	128	139	144	200	265
h	52	55	70	73	96	103	122	128	157	220
P	33	36	43	48	63	68.5	82	88.5	111	153
F/t	10/6	10/6	12/8	12/8	16/10	16/10	22/14	22/14	30/18	45/30
Kg	3	4	6	8	13.5	19	25	40	63	105
ISO5211	F03	F03	F03	F03	F05	F05	F07	F07	F10	F14

[1] É raccomandato riduttore manuale - *Manual gear recommended*

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE 97/23/CE "PED" CAT III

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S.	304 S.S.
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8 A 194 Gr.8	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	316 S.S.	316 S.S.	316 S.S.
2	Terminale	*Connector*	A105 / A216 WBC	A479 Tp.304 / A351 CF8	A479 Tp.316 / A 351 CF8M
1	Corpo	*Body*	A105 / A216 WBC	A479 Tp.304 / A351 CF8	A479 Tp.316 / A 351 CF8M

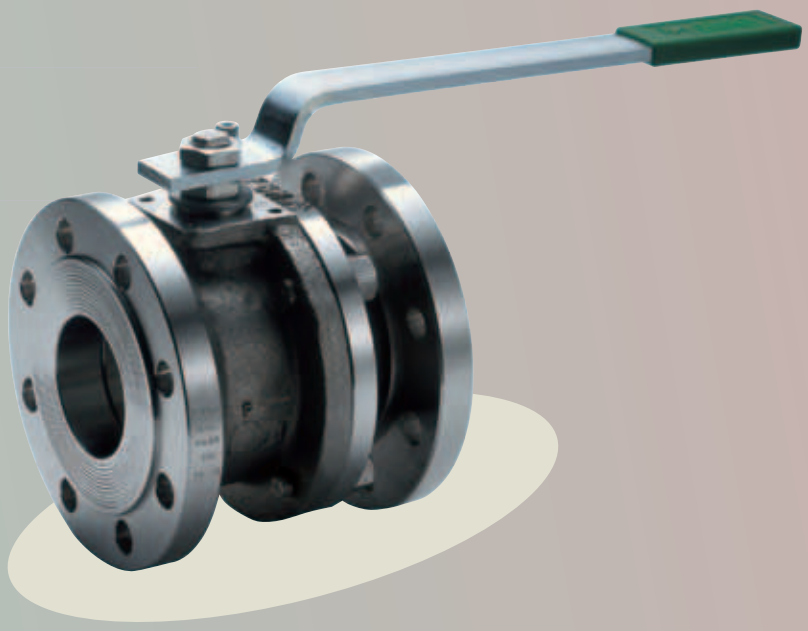
P. No. Parte - *Part Name* **Materiale - *Material***

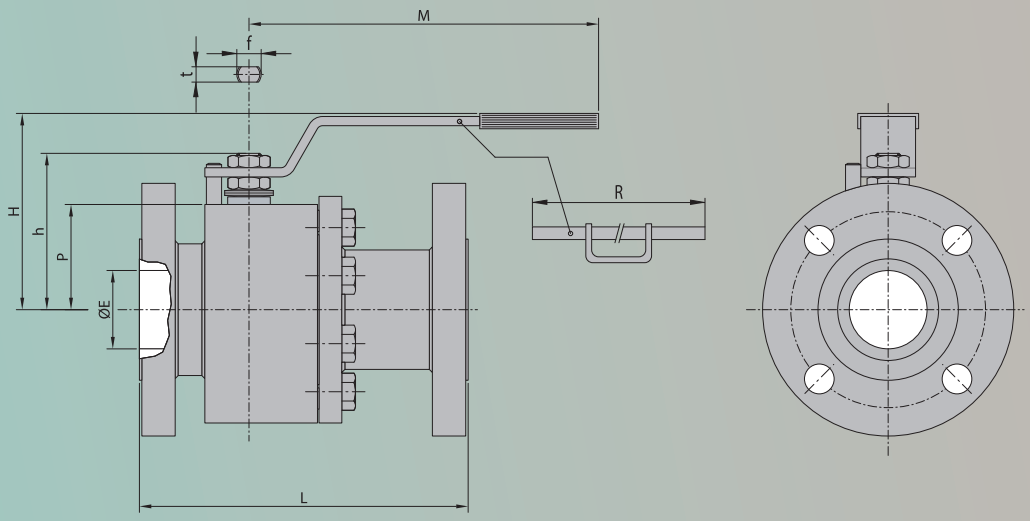
Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

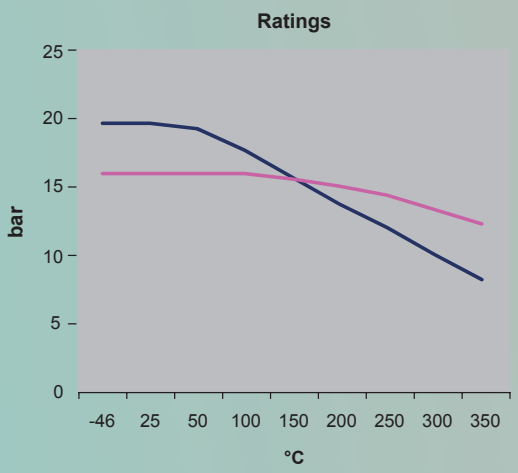
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

BI-DIREZIONALE

Dimensionamenti *Design*	ANSI B16.34 / EN 12569 / API 608 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	ANSI B 16.5 CL.150 EN 1092-1 PN 16 DIN 2633 PN 16
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I







Dimensioni - *outline dimensions*

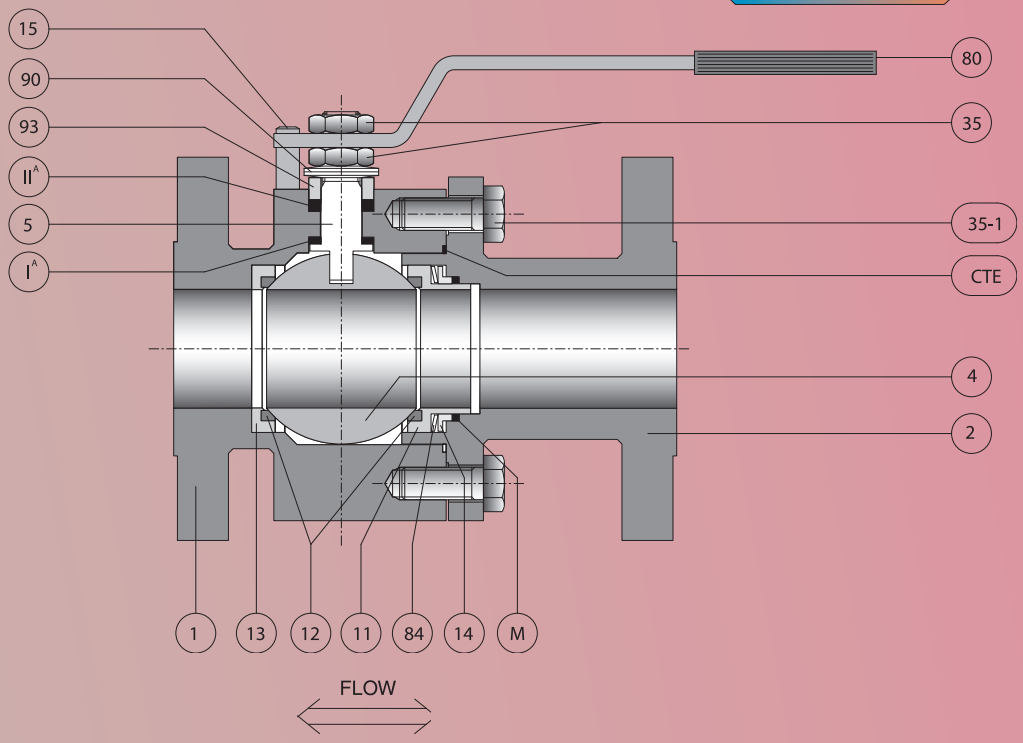
DN	15	20	25	32	40	50	65	80	100	150
Ø"	1/2"	3/4"	1"	1¼"	1½"	2"	2½"	3"	4"	6"
ØE	14	19	24	29	38	51	64	76	102	152
L	108	117	127	140	165	178	190	203	229	394
M	145	145	180	180	275	275	380	380	440	— [1]
R	—	—	—	—	—	—	—	—	500	800
H	64	66	85	90	118	128	139	144	200	265
h	52	55	70	73	96	103	122	128	157	220
P	33	36	43	48	63	68.5	82	88.5	111	153
F/t	10/6	10/6	12/8	12/8	16/10	16/10	22/14	22/14	30/18	45/30
Kg	2.5	3	5.5	7	11	17	22	26	48	71
ISO5211	F03	F03	F03	F03	F05	F05	F07	F07	F10	F14

[1] É raccomandato riduttore manuale - *Manual gear recommended*

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S.	304 S.S.
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	Seat spring	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8 A 194 Gr.8	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	316 S.S.	316 S.S.	316 S.S.
2	Terminale	*Connector*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M
1	Corpo	*Body*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M

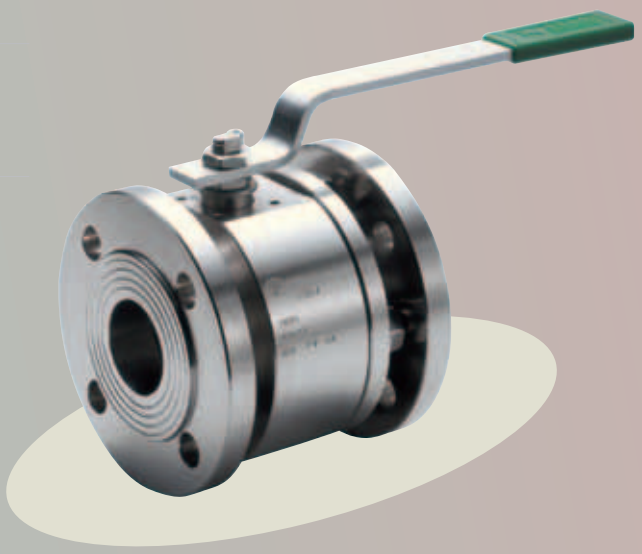
P. No. **Parte - *Part Name*** **Materiale - *Material***

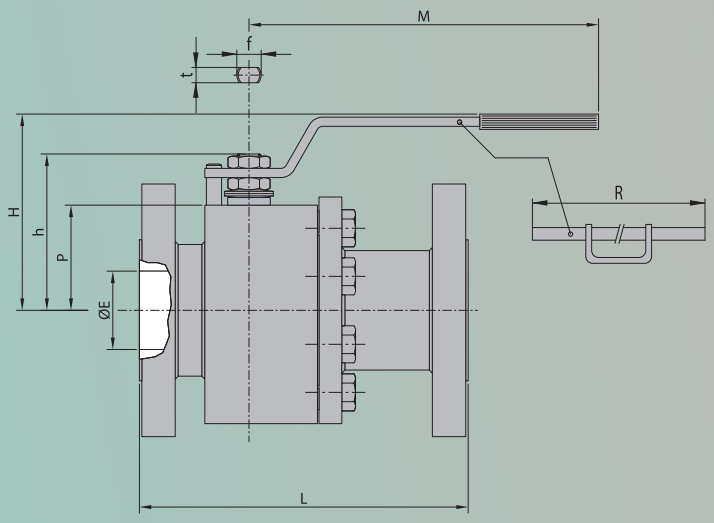
Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

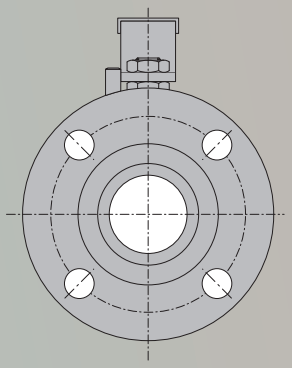
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

BIDIREZIONALE

Dimensionamenti *Design*	EN 12569 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	EN 1092-1 PN 16/PN40 DIN 2633 PN 16/2634 (PN40)
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I



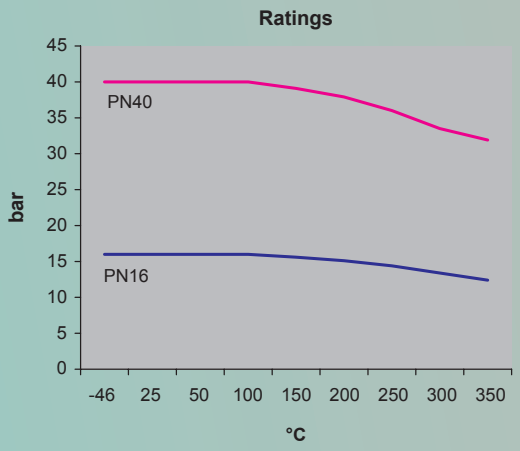




Dimensioni - *outline dimensions*

DN	15	20	25	32	40	50	65	80	100	150
Ø"	1/2"	3/4"	1"	1¼"	1½"	2"	2½"	3"	4"	6"
PN	PN40								PN16	
ØE	14	19	24	29	38	51	65	76	102	152
L	115	120	125	130	140	150	170	180	190	350
DIN3202	F4	F4	F4	F4	F4	F4	F4	F4	F4	F5
M	145	145	180	180	275	275	380	380	440	—(1)
R	—	—	—	—	—	—	—	—	500	800
H	64	66	85	90	118	128	139	144	200	265
h	52	55	70	73	96	103	122	128	157	220
P	33	36	43	48	63	68.5	82	88.5	111	153
F/t	10/6	10/6	12/8	12/8	16/10	16/10	22/14	22/14	30/18	45/30
Kg	2.7	3	5.5	6.8	10.5	15.5	21	25	38	70
ISO5211	F03	F03	F03	F03	F05	F05	F07	F07	F10	F14

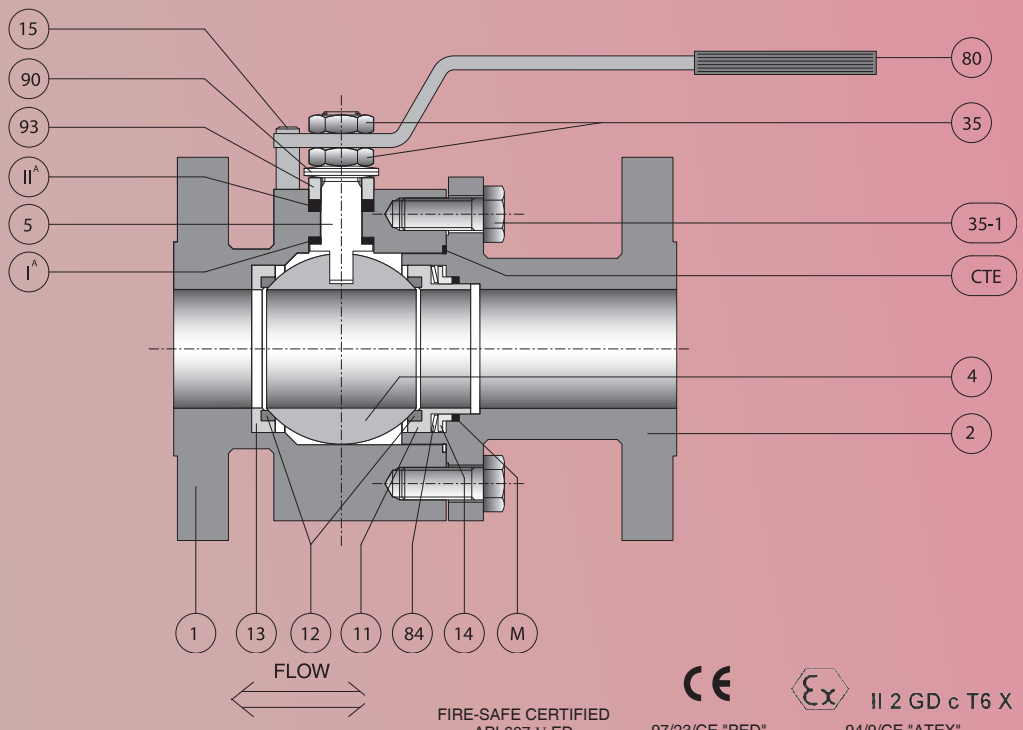
(1) É raccomandato riduttore manuale - *Manual gear recommended*



VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
IIA	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
IA	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S.	304 S.S
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8 A 194 Gr.8	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	316 S.S.	316 S.S.	316 S.S.
2	Terminale	*Connector*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M
1	Corpo	*Body*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M

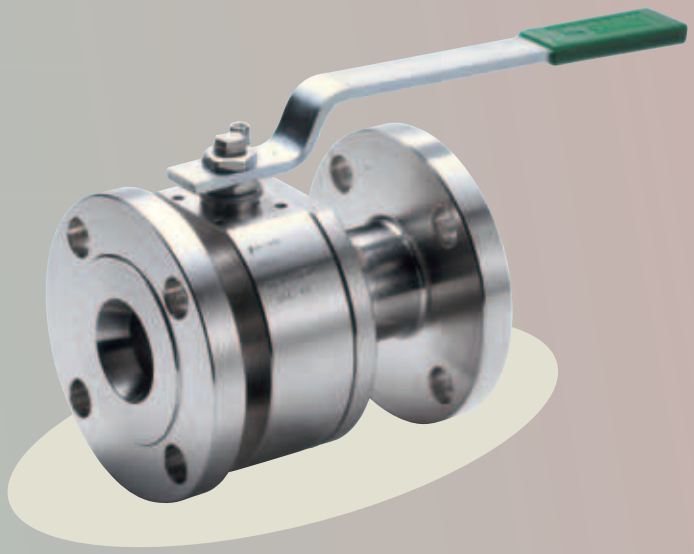
P. No. **Parte - *Part Name*** **Materiale - *Material***

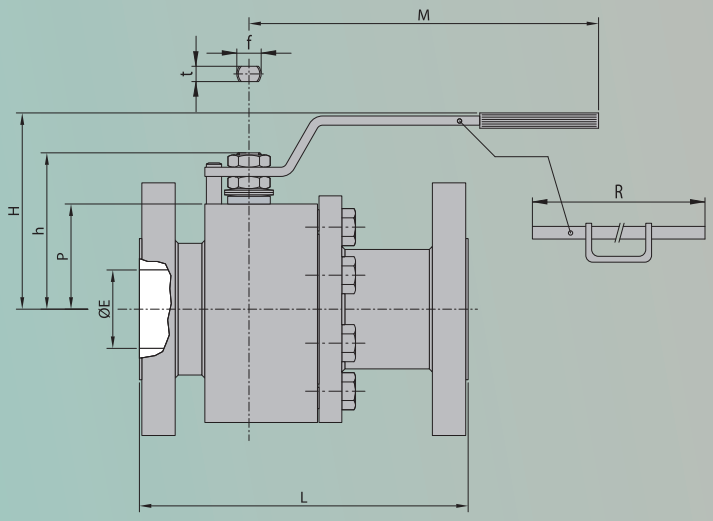
Altri materiali disponibili su richiesta – *Other materials are available on request*

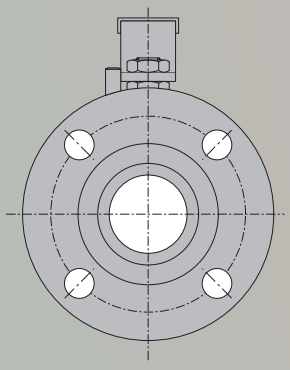
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun)*

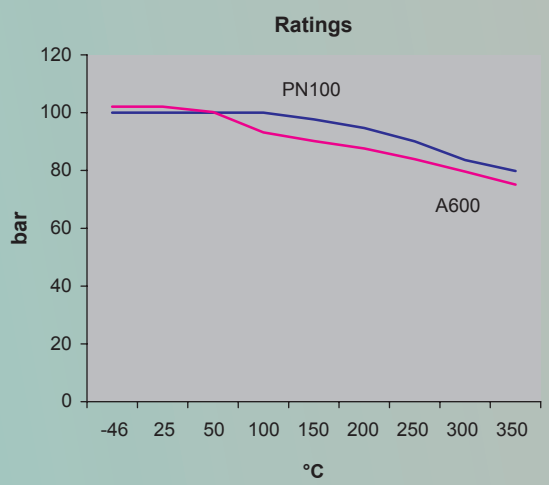
BIDIREZIONALE

Dimensionamenti *Design*	ANSI B16.34/API 608/EN 12569 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	EN 1092-1 PN 100/PN63 DIN 2637 (PN100)/2636 (PN64) ANSI B16.5 CL.600
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I









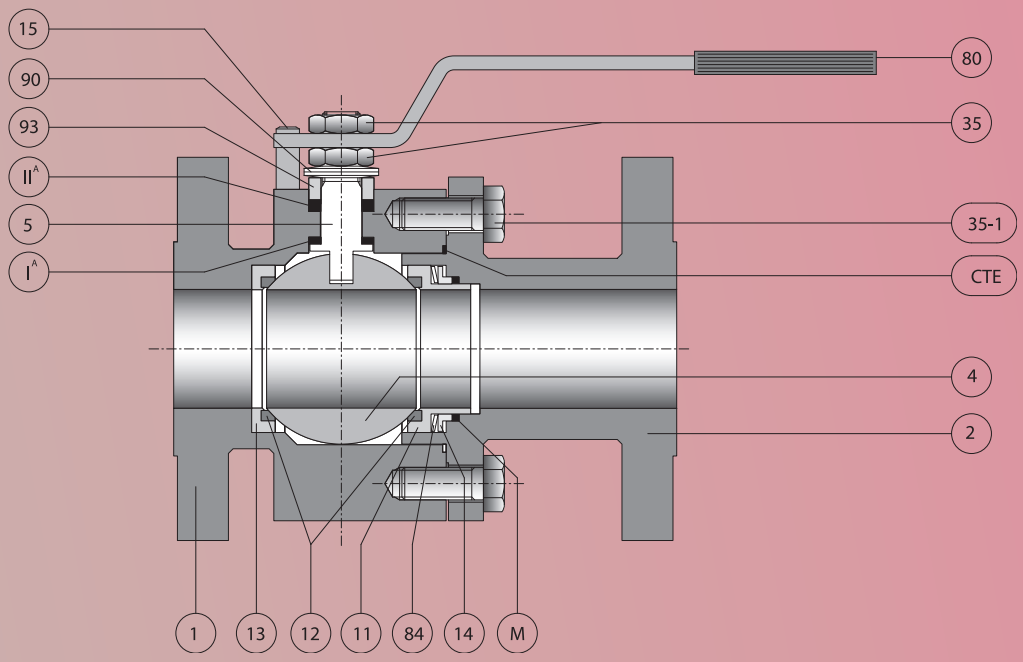
Dimensioni - *outline dimensions*

DN	15	20	25	40	50	65	80
Ø"	1/2"	3/4"	1"	1½"	2"	2½"	3"
ØE	14	19	24	38	51	64	76
L	165	191	216	241	292	330	356
M	145	145	275	380	380	440	440
R	—	—	—	—	—	500	500
H	70	75	101	135	146	180	185
h	52	55	76	105	113	136	141
P	33	36	51	65	75	90	95
F/t	10/6	10/6	16/10	22/14	22/14	30/18	30/18
Kg	7	8.5	10	18.5	25	38	50
ISO5211	F03	F03	F05	F07	F07	F10	F10

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S.	304 S.S.
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8 A 194 Gr.8	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	A479 Tp.316	A479 Tp.316	A479 Tp.316
2	Terminale	*Connector*	A105	A479 Tp.304	A479 Tp.316
1	Corpo	*Body*	A105	A479 Tp.304	A479 Tp.316

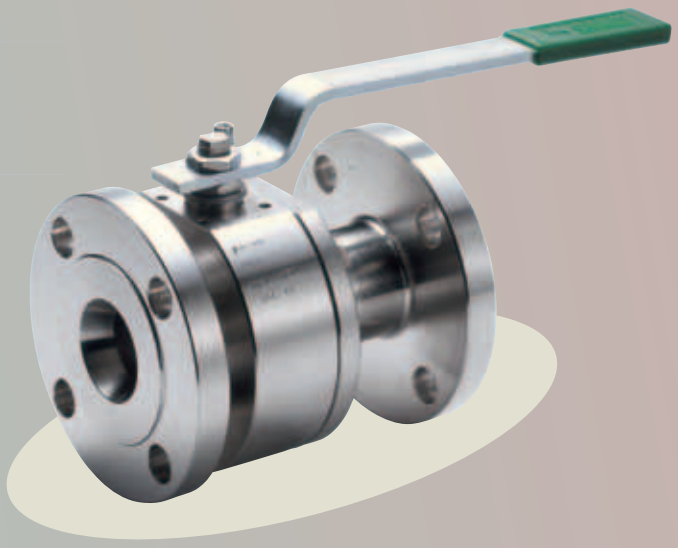
P. No. Parte - *Part Name* **Materiale - *Material***

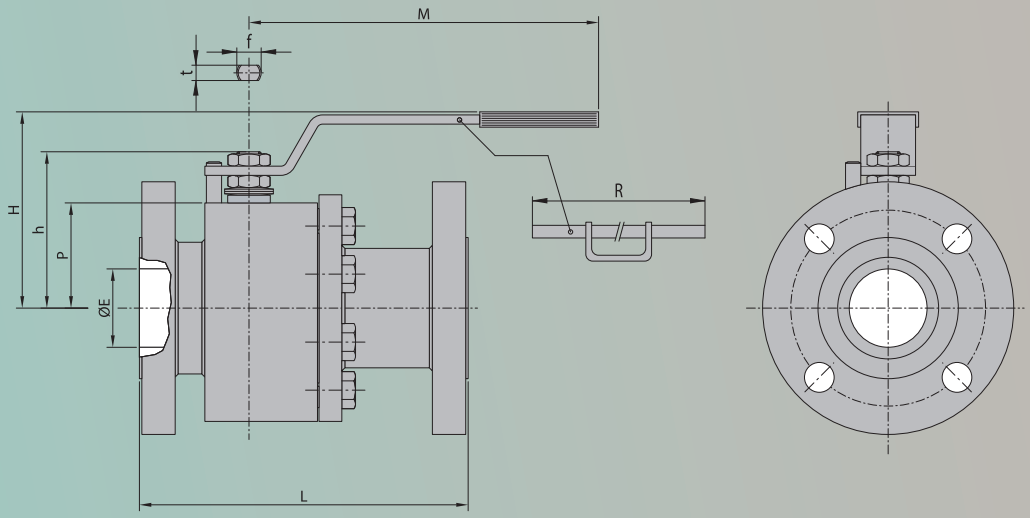
Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

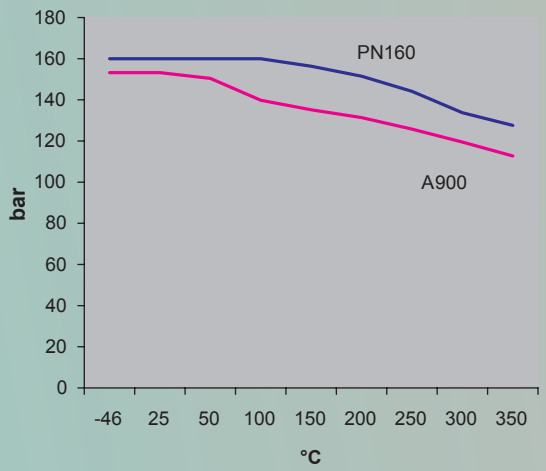
BIDIREZIONALE

Dimensionamenti *Design*	ANSI B16.34/API 608 ASME VIII DIV.1
Estremità flangiate *Flanged ends*	ANSI B16.5 CL.900 DIN 2638 (PN160)
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I





Ratings



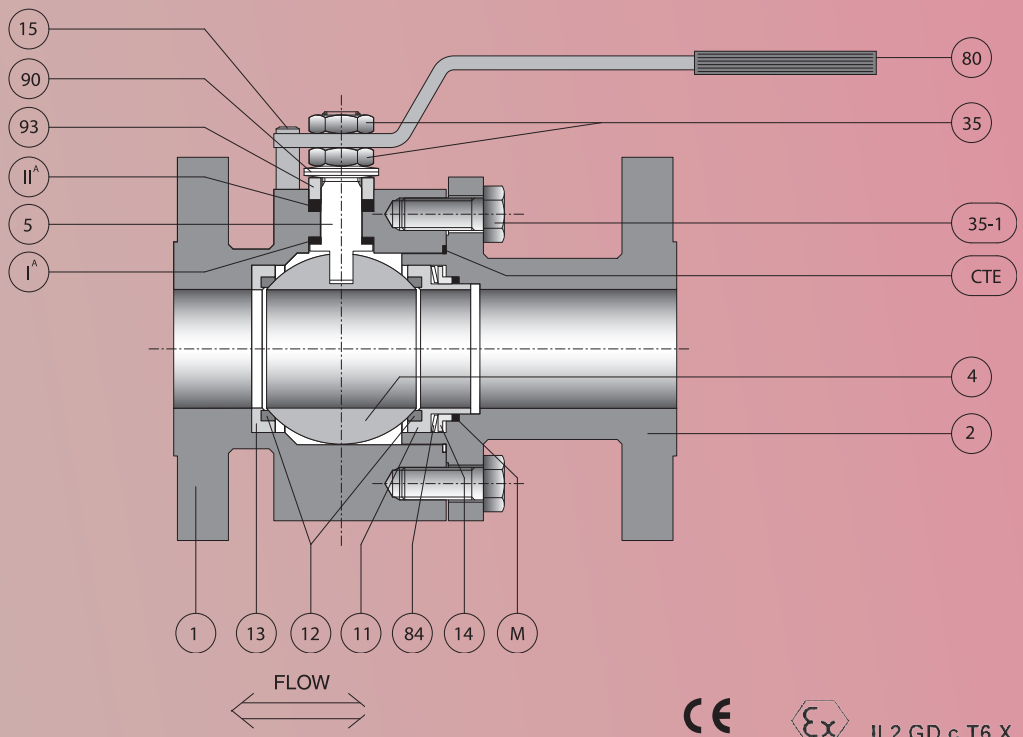
Dimensioni - *outline dimensions*

DN	15	20	25	40	50
Ø"	1/2"	3/4"	1"	1½"	2"
ØE	13	17	22	35	47
LRF	216	229	254	305	368
LRTJ	216	229	254	305	371
M	275	275	275	380	380
H	101	101	101	135	146
h	75	75	76	105	105
P	48	55	48	65	80
F/t	16/10	16/10	16/10	22/14	22/14
Kg	8.5	10	12	22	30
ISO5211	F05	F05	F05	F07	F07

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil
IIA	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil
IA	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S.
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UN 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE	PENTAFITE
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	A182 F51	A182 F51
2	Terminale	*Connector*	A105	A479 Tp.316
1	Corpo	*Body*	A105	A479 Tp.316

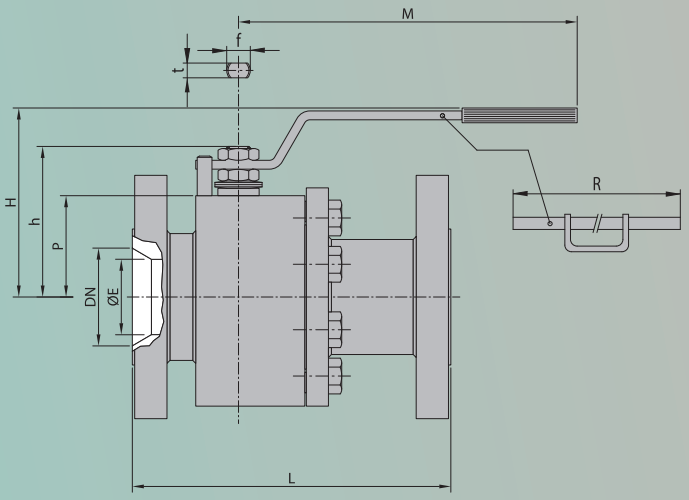
P. No. **Parte - *Part Name*** **Materiale - *Material***

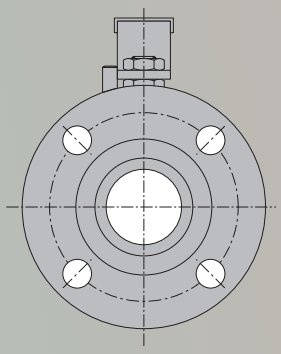
Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

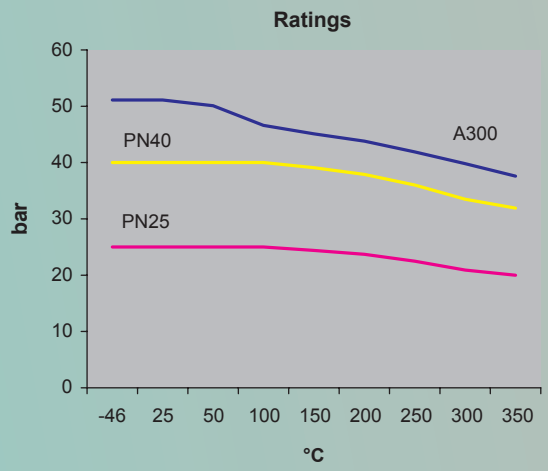
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

BIDIREZIONALE

Dimensionamenti *Design*	ANSI B16.34 / EN 12569 / API 608 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	ANSI B 16.5 CL.300 EN 1092-1 PN 25 / PN 40 DIN 2634 (PN 25) / 2635 (PN 40)
Estremità BW *BW ends*	ANSI B 16.25
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I







Dimensioni - *outline dimensions*

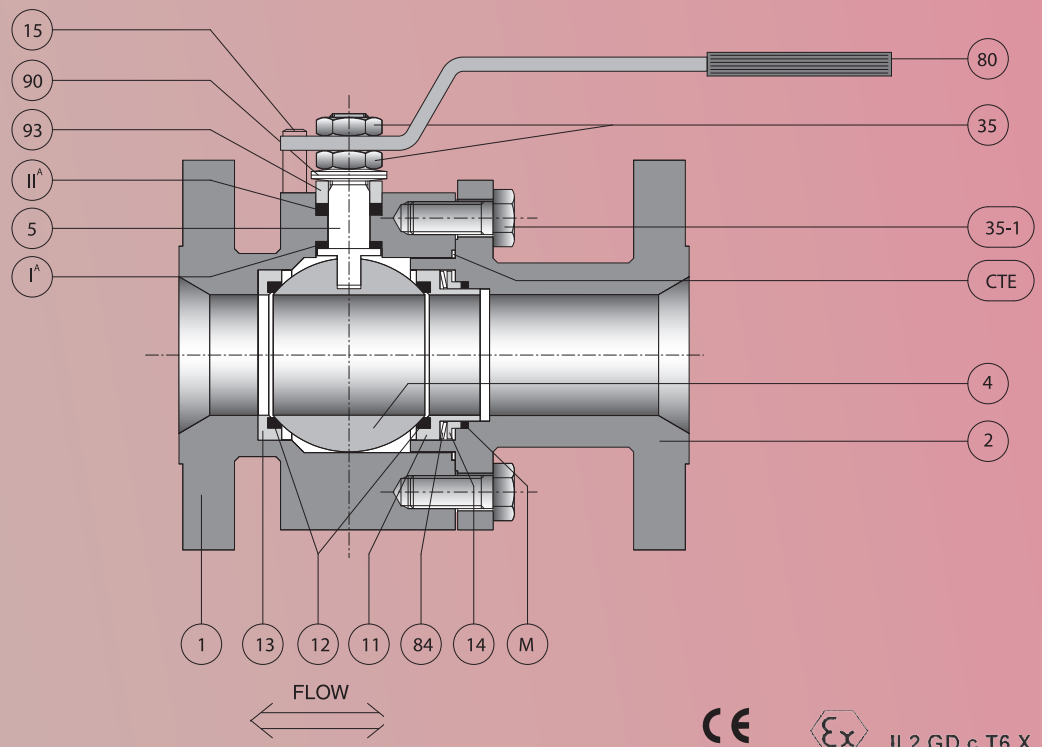
DN	50	65	80	100	150	200
Ø"	2"	2½"	3"	4"	6"	8"
ØE	38	51	64	76	102	152
L	216	241	283	305	403	419
M	275	275	380	380	440	-(1)
R	-	-	-	500	800	
H	118	126	139	144	212	-
h	96	103	122	128	158	220
P	63	68.5	82	88.5	111	153
F/t	16/10	16/10	22/14	22/14	30/18	45/30
Kg	18.5	22.5	32	45	70	105
ISO5211	F05	F05	F07	F07	F10	F14

(1) É raccomandato riduttore manuale - *Manual gear recommended*

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE 97/23/CE "PED" CAT III

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
IIA	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
IA	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S	304 S.S
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8 A 194 Gr.8	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	316 S.S	316 S.S	316 S.S
2	Terminale	*Connector*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M
1	Corpo	*Body*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M

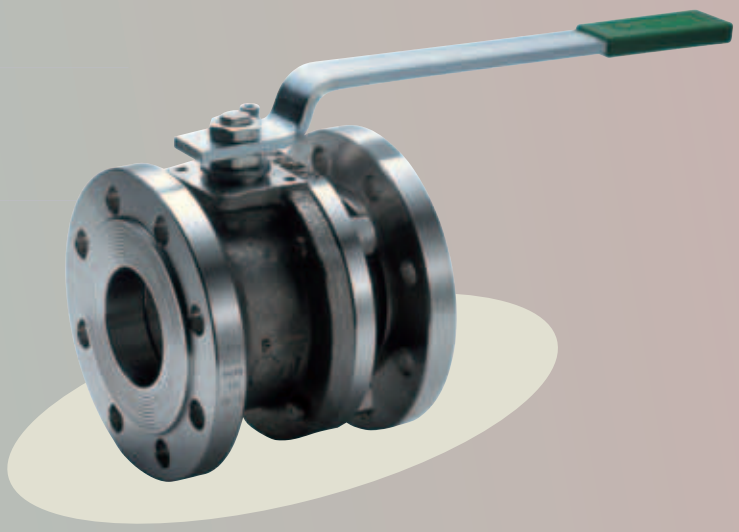
P. No. **Parte - *Part Name*** **Materiale - *Material***

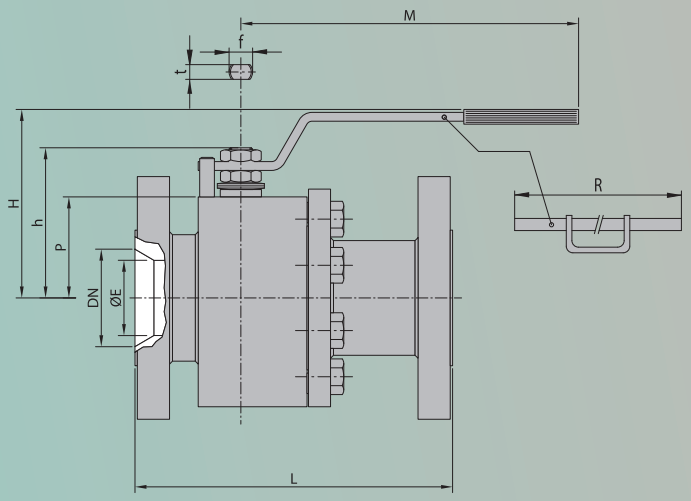
Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

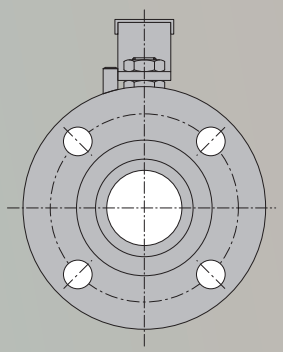
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

BIDIREZIONALE

Dimensionamenti *Design*	ANSI B16.34 / EN 12569 / API 608 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	ANSI B 16.5 CL.150 EN 1092-1 PN 16 DIN 2633 PN 16
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I







Dimensioni - *outline dimensions*

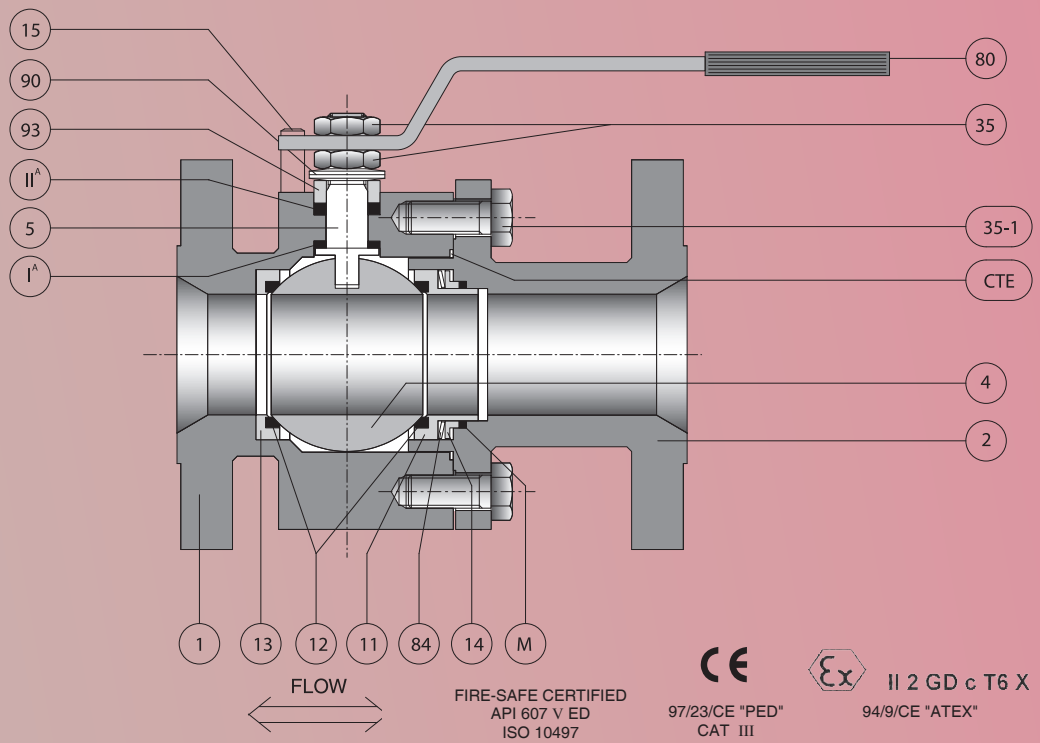
DN	50	65	80	100	125	150	200
Ø"	2"	2½"	3"	4"	5"	6"	8"
ØE	38	51	64	76	102	102	152
L	178	190	203	229	254	267	292
M	275	275	380	380	440	440	-[1]
R	-	-	-	-	500	500	800
H	118	126	139	144	212	212	-
h	96	103	122	128	158	158	220
P	63	68.5	82	88,5	111	111	153
F/t	16/10	16/10	22/14	22/14	30/18	30/18	45/30
Kg	13	17	26	34	38	43	68
ISO5211	F05	F05	F07	F07	F10	F10	F14

[1] É raccomandato riduttore manuale - *Manual gear recommended*

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S.	304 S.S	304 S.S
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8 A 194 Gr.8	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	A479 Tp.316	A479 Tp.316/A351 CF8	A479 Tp.316/A351 CF8M
2	Terminale	*Connector*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M
1	Corpo	*Body*	A105/A216 WCB	A479 Tp.304/A351 CF8	A479 Tp.316/A351 CF8M

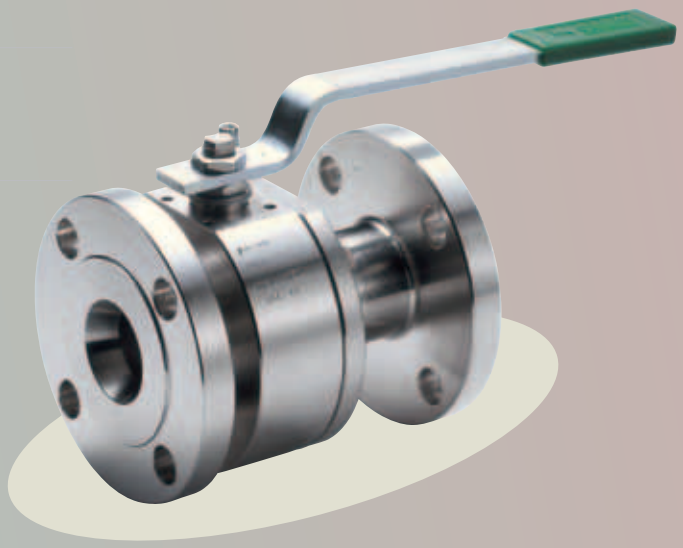
P. No. **Parte - *Part Name*** **Materiale - *Material***

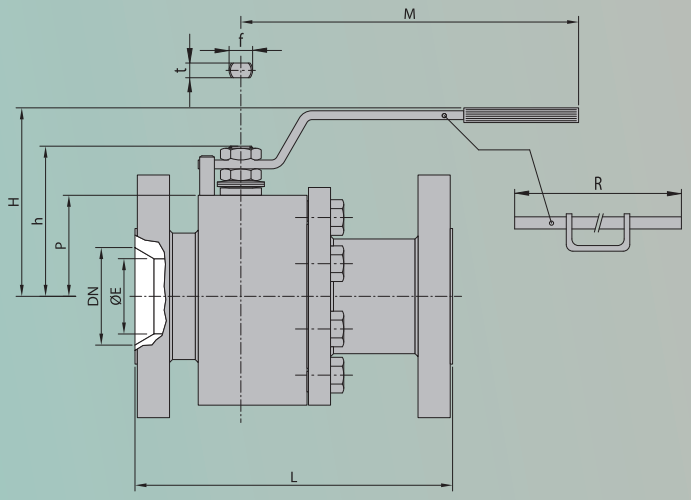
Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

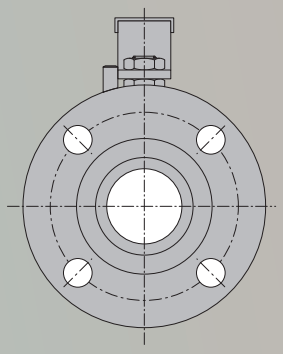
HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

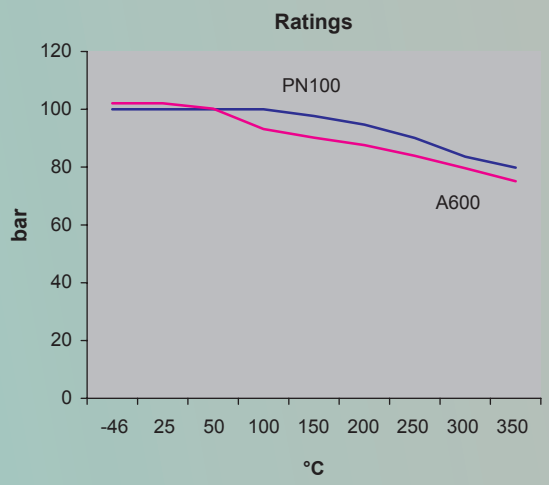
BIDIREZIONALE

Dimensionamenti *Design*	ANSI B16.34/API 608/EN 12569 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	EN 1092-1 PN 100/PN63 DIN 2637 (PN100)/2636 (PN64) ANSI B16.5 CL.600
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I









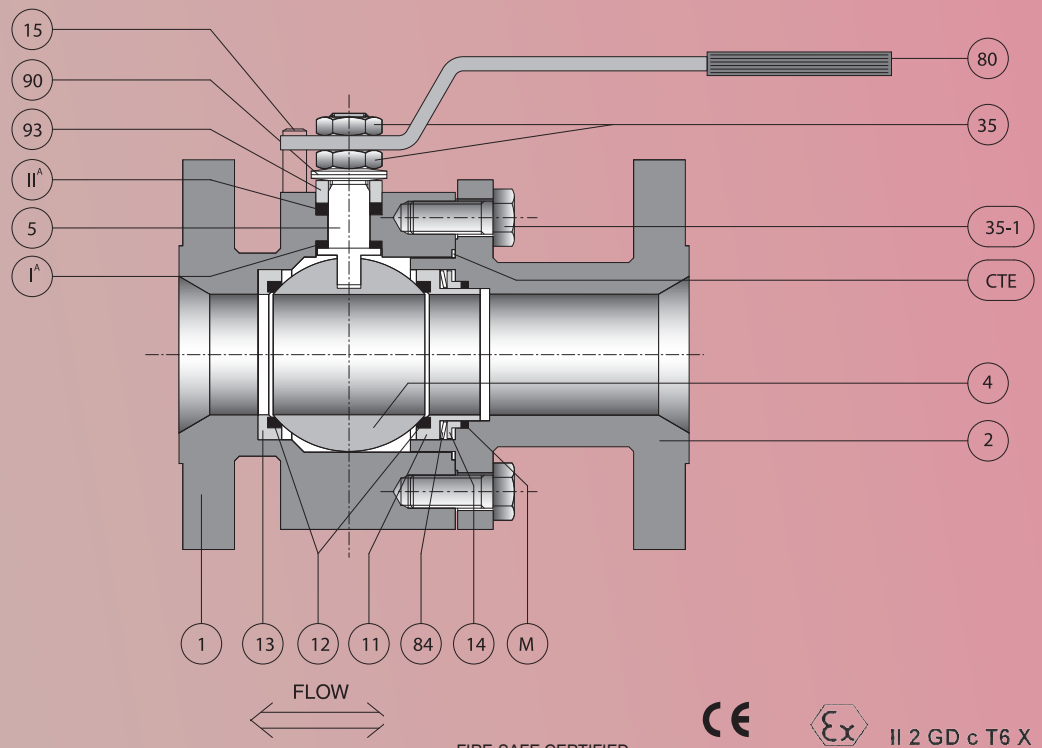
Dimensioni - *outline dimensions*

DN	50	65	80	100
Ø"	2"	2½"	3"	4"
ØE	38	51	51	76
L	292	330	356	432
M	380	380	380	440
R	-	-	-	500
H	135	146	146	185
h	104	115	115	141
P	65	75	75	95
F/t	22/14	22/14	22/14	30/18
Kg	22	33	38	65
ISO5211	F07	F07	F07	F10

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil	Grafoil
II^A	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil	Grafoil
I^A	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S	304 S.S	304 S.S
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070	Fe37 UNI 7070
35-1	Bulloneria Corpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8 A 194 Gr.8	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE	PENTAFITE	PENTAFITE
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316	A479 Tp.316.
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	A479 Tp.316	A479 Tp.316	A479 Tp.316
2	Terminale	*Connector*	A105	A479 Tp.304	A479 Tp.316
1	Corpo	*Body*	A105	A479 Tp.304	A479 Tp.316

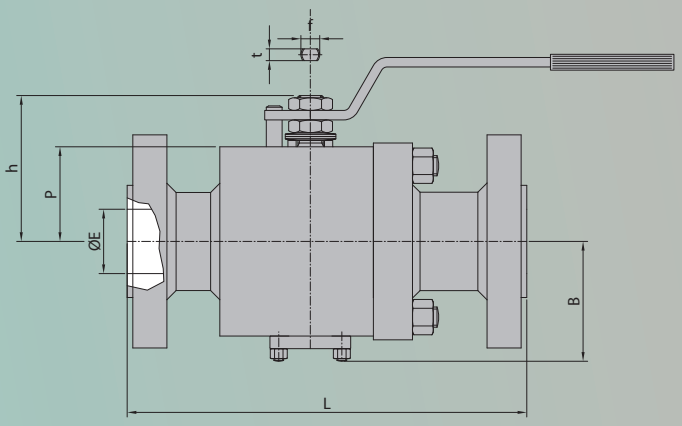
P. No. **Parte - *Part Name*** **Materiale - *Material***

Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

BIDIREZIONALE
DOUBLE BLOCK AND BLEED
SCARICO AUTOMATICO DEL CORPO

Dimensionamenti *Design*	ANSI B16.34/API 608/EN 12569 / EN 17292 ASME VIII DIV.1 / EN 12516-1
Estremità flangiate *Flanged ends*	ANSI B16.5 CL.150/300/600/900/1500 EN 1092-1 PN 10/16/25/40/63/100 DIN 2632/2633/2634/2635/2636/2637/2638



Dimensioni - *outline dimensions*

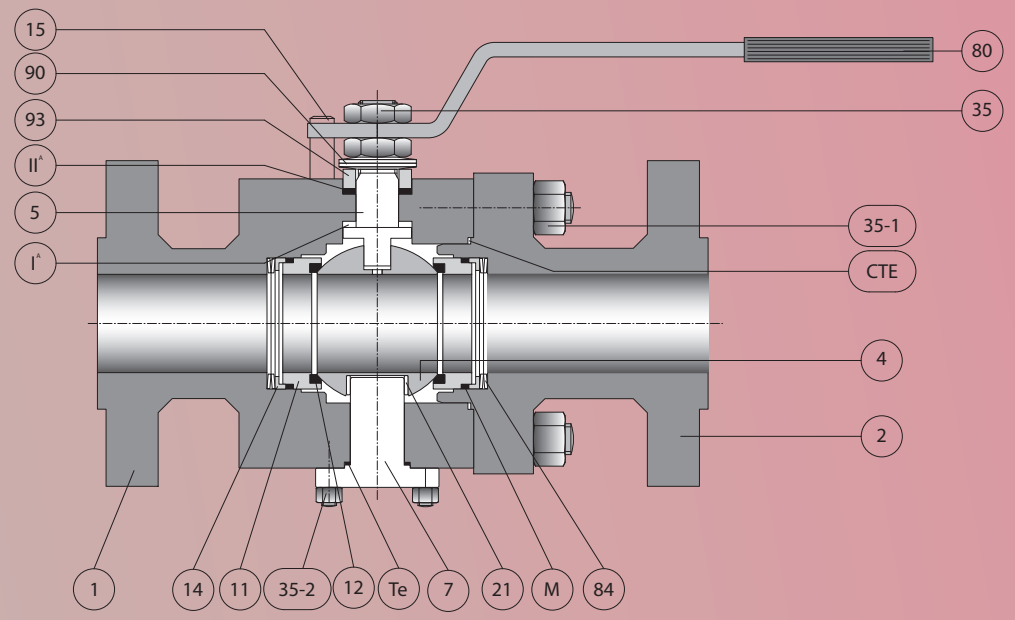
	DN	15	20	25	40	50	80	100	150	
	Ø	1/2"	3/4"	1"	1½"	2"	3"	4"	6"RB	
	ØE	14	19	24	38	51	76	102	152	
Cl.150	L	140	152	165	191	178	203	229	394	PN10-16
	h	82	82	83	96	103	128	157	157	
	P	48	48	50	63	69	89	111	111	
	B	73	73	68	81	87	114	125	125	
	F/t	16/10	16/10	16/10	16/10	16/10	22/14	30/18	30/18	
	ISO 5211	F05	F05	F05	F05	F05	F07	F10	F10	
Cl.300	L	140	152	165	191	216	283	305	403	PN25-40
	h	82	82	83	96	103	128	180	180	
	P	48	48	50	63	69	89	114	114	
	B	73	73	68	81	87	114	125	125	
	F/t	16/10	16/10	16/10	16/10	16/10	22/14	45/30	45/30	
	ISO 5211	F05	F05	F05	F05	F05	F07	F14	F14	
Cl.600	L	165	191	216	241	292	356	432	559	PN64-100
	h	82	82	83	104	112	143	199	199	
	P	48	48	50	65	75	95	124	124	
	B	73	73	68	83	95	115	159	159	
	F/t	16/10	16/10	16/10	22/14	22/14	30/18	45/30	45/30	
	ISO 5211	F05	F05	F05	F07	F07	F10	F14[1]	F14[1]	
Cl.900	L	216	229	254	305	268				PN160
	h	79	79	79	104	116				
	P	55	55	55	65	75				
	B	73	73	73	98	100				
	F/t	16/10	16/10	16/10	22/14	22/14				
	ISO 5211	F05	F05	F05	F07	F07				
Cl.1500	L	216	229	254						PN250
	h	79	79	79						
	P	55	55	55						
	B	73	73	73						
	F/t	16/10	16/10	16/10						
	ISO 5211	F05	F05	F05						

[1] Raccomandato Riduttore Manuale – *Manual Gear recommended*

VALVOLE A SFERA VINCOLATA A SEGGI METALLICI
TRUNNION MOUNTED METAL SEATED BALL VALVES

BI-DIRECTIONAL
DOUBLE BLOCKED AND BLEED
AUTOMATIC BODY CAVITY RELIEF

-46 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FLOW

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

Te	Guarn. Corpo/Coperchio	*Body Cover gasket*	Grafoil	Grafoil
CTe	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil
IIA	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil
IA	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 s.s.	304 s.s.
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070
35-2	BulloneriaCorpo/Coperchio	*Body/Cover Bolts*	A193 B7 A194 Gr.2H	A193 B8M A194 Gr.Gr.8M
35-1	BulloneriaCorpo/Terminale	*Body/Connector Bolts*	A193 B7 A194 Gr.2H	A193 B8M A194 Gr.Gr.8M
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.
21	Bussola Strisciamento	*Trunnion Bearing*	DU/BM	DU/BM
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316
13	Cassetto Corpo	*Body seat holder*	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE / ST6 / WC / CRC	PENTAFITE / ST6 / WC / CRC
11	Cassetto Terminale	*Connector seat holder*	A479 Tp.316	A479 Tp.316.
6	Coperchio Inferiore	*Lower Cover*	A105	
5	Stelo	*Stem*	420 s.s.A564 Tp.630(17/4PH)	A564 Tp.630(17/4PH)
-	Riporto Sfera	*Ball coating*	HTC / HCR / ST6 / WC / CRC	HTC / HCR / ST6 / WC / CRC
4	Sfera	*Ball*	316 s.s.	316 s.s.
2	Terminale	*Connector*	A105	A479 Tp.316
1	Corpo	*Body*	A105	A479 Tp.316

P. No. **Parte - *Part Name*** **Materiale - *Material***

Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

Accessori AP
AP accessories

Leva prolunga SIP per linee coibentate
SIP lever elongation for insulated piping sistems

Riduttore - *Manual gear*

Prolunga stelo - *Stem elongation*

Attuatori pneumatici semplice o doppio effetto
Single or double acting actuators

Attuatori Elettrici e Idraulici
Electric and Hydraulic Actuators

penta s.r.l.

P40

MODELLO / *MODEL*

P40

ALFA VALVOLE s.r.l.

TÜV SÜD

CE 97/23/CE "PED"

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Il modello P40 utilizza la configurazione seggi della serie SAT per garantire la massima affidabilità e durata della tenuta della valvola con le alte pressioni.
La tenuta stelo deriva dalla versione semplificata impiegata nella serie AP per semplificare le attività di manutenzione.
Come in tutti i prodotti Penta sono disponibili anche per la serie P40 le sedi in PENTAFITE così come quelle ottenute tramite riporti duri.
Tutte le valvole sono predisposte con foratura ISO 5211 per il montaggio attuatori.

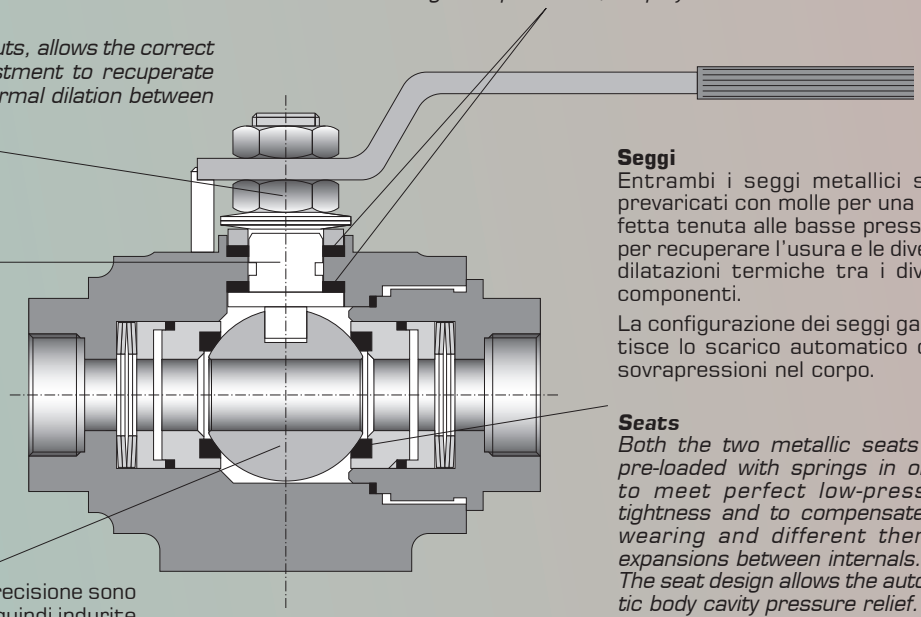
The P40 model *uses the SAT serie unique seat design to guarantee the best reliability and long-term tightness against high pressures.*
Stem seal is coming from the simplified version used in the AP serie to simplify maintenance activities.
As like as all Penta production PENTAFITE seats are available on P40 together with hard coated ones.
All valves are provided with ISO 5211 top drilling.

Guarnizioni
Sono utilizzate esclusivamente guarnizioni in Grafoil® resistenti alle alte temperature; nessun materiale polimerico è impiegato.

Gasket
Only Grafoil® gaskets are used, inherently resistant to high temperatures; no polymers are used.

Tenuta stelo
Il sistema a doppia molla e dadi di serraggio consente di fornire il corretto precarico alle tenute stelo, di recuperare usure e differenziali di dilatazione tra stelo e corpo.

Stem tightness
The double spring system with loading nuts, allows the correct stem gasket pre-loading and the adjustment to recuperate wearing and clearance for different thermal dilation between stem and body.



Stelo
Gli steli sono 100% sovradimensionati rispetto alla coppia attesa al max. DP di rating.

Stem
Stem are 100% oversized against expected torque at max. rated DP.

Seggi
Entrambi i seggi metallici sono prevaricati con molle per una perfetta tenuta alle basse pressioni, per recuperare l'usura e le diverse dilatazioni termiche tra i diversi componenti.
La configurazione dei seggi garantisce lo scarico automatico delle sovrapressioni nel corpo.

Seats
Both the two metallic seats are pre-loaded with springs in order to meet perfect low-pressure tightness and to compensate life wearing and different thermal expansions between internals.
The seat design allows the automatic body cavity pressure relief.

Sfera
Sfere rettificate ad alta precisione sono prodotte internamente e quindi indurite superficialmente con riporti a tecnologia avanzata.

Ball
Very high precision grounded balls are produced inside and then hard coated with most advanced system.

INTERVALLO DI PRODUZIONE
PRODUCTION RANGE

CLASSI - *PRESSURE CLASSES*				
ANSI B 16.34	900		1500	
PN	160		250	
	F	T	F	T
Modelli *Models* / DN	P40		P40	
½"				
¾"				
1"				

F = Sfera flottante - *Floating ball*
Sfera vincolata - *Trunnion mounted ball*

METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

MATERIALI DISPONIBILI PER I SEGGI - *AVAILABLE SEAT MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service Limits*
S01	**SILVER PENTAFITE** (Nickel + Graphite)	120 HB	-100°C / +780°C (-148°F / +1436°F)	ANSI 150 – 1500 PN 10 - 250	For clean services both liquid or gas. For use with **HTC, HTCN, HCR, WC, CRC, ST6** ball coated
R01	**RED PENTAFITE** (Cu + Graphite)	100 HB	-100°C / +500°C (-148°F / +932°F)	ANSI 150 – 600 PN 10 - 100	For clean servicesboth liquid or gas. Lower friction factors in dry gas or steam service. For use with **HTC, HTCN, HCR, ST6** ball coated
WC	**CARBURO DI TUNGSTENO** *Tungsten Carbide Coat* *(Detonation Gun/HVOF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected. For use with WC ball coat
ST6	**STELLITE Gr.6** *(Detonation Gun/HVOF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry gas or steam services.For use with **WC, CRC** ball coat

MATERIALI DISPONIBILI PER RIVESTIMENTO SFERE - *AVAILABLE BALL COATING MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service Limits*
HTC	**NITRURI DI TITANIO** *Titanium Nitride* (PVD)	2500 HV	-100°C / +600°C (-148°F / +1112°F)	ANSI 150 – 600 PN 10 - 100	For clean services both liquid or gas. For gas and steam up to 180°C
HTCN	**CARBO-NITRURI DI TITANIO** *Carbo-Titanium Nitride* (PVD)	3500 HV	-100°C / +400°C (-148°F / +752°F)	ANSI 150 – 1500 PN 10 - 250	For liquid or gas services with small presence of solids. For gas and steam up to 180°C
HCR	**NITRURI DI CROMO** *Chrome- Nitride* (PVD)	3000 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 1500 PN 10 - 250	For clean services both liquid or gas. Best on oxidizing services
WC	**CARBURO DI TUNGSTENO** *Tungsten Carbide* *(Detonation Gun/HVOF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 1500 PN 10 - 250	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected.
CRC	**CARBURO DI CROMO** *Chrome Carbide* *(Detonation Gun/HVOF)*	800 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 1500 PN 10 - 250	For liquid or gas services with small presence of solids. Not suitable when small presence of caustic soda is expected.
ST6	**STELLITE GR.6** *(Detonation Gun/HVOF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 1500 PN 10 - 250	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry or steam services.

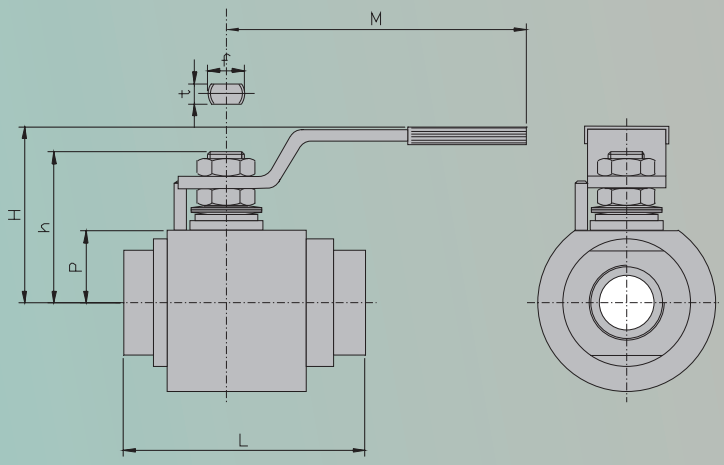
GRADO DI TENUTA - *TIGHTNESS*

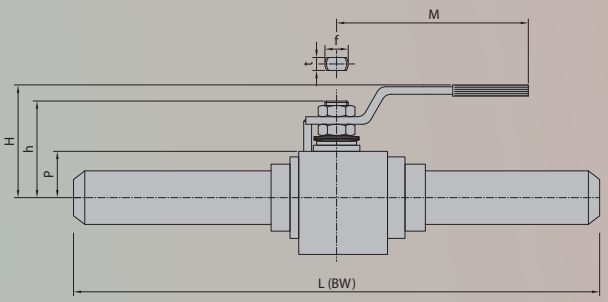
Tutte le valvole PENTA modello P40 sono collaudate per verificarne la TENUTA PERFETTA (perdita zero alla prova idraulica dei seggi secondo ANSI B16.34 e a 6 bar con aria).

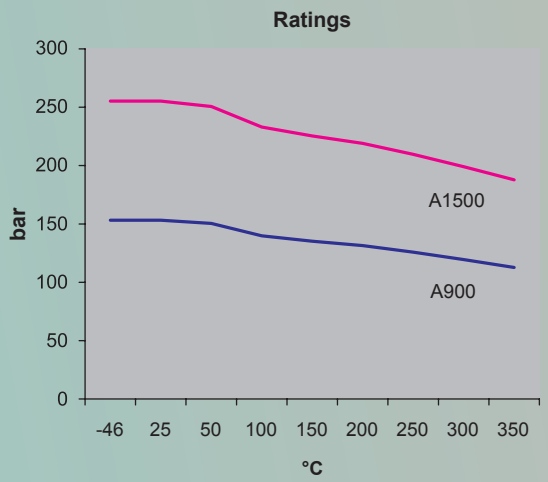
All PENTA valves P40 model are tested to verify their BUBBLE TIGHTNESS (no visible leakage during hydraulic seat test according to ANSI B 16.34 and during low pressure air seats test at 100 psi)

BIDIREZIONALE

Dimensionamenti *Design*	ANSI B16.34/API 608 CL.1500 EN 12516-1
Estremità flangiate *Flanged ends*	NPT ANSI B1.20.1 SN ANSI B16.11 BN ANSI B16.25 (CON NIPPLI INTEGRALI C/W INTEGRAL NIPPLES)
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I







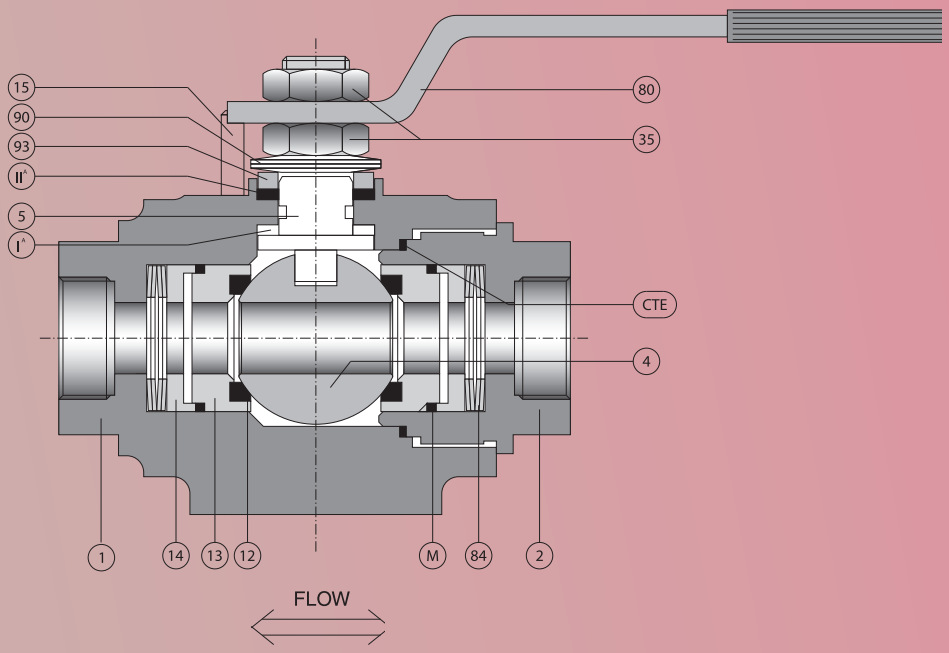
Dimensioni - *outline dimensions*

DN	15	20	25
Ø"	1/2"	3/4"	1"
ØE	13	17	22
L	130	130	160
LBW	270	270	305
h	64	68	86
P	34	34	41
H	92	96	102
F/t	16/10	16/10	22/14
ISO 5211	F05	F05	F07

VALVOLE A SFERA FLOTTANTE A SEGGI METALLICI
METAL SEATED FLOATING BALL VALVES

BI-DIRECTIONAL

-100 °C +400 °C



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

FIRE-SAFE CERTIFIED
API 607 V ED
ISO 10497

CE
97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Materiali base - *base materials*

CTE	Guarn. Corpo/Terminale	*Body connector gasket*	Grafoil	Grafoil
M	Guarn. Retroseggio	*Backseat gasket*	Grafoil	Grafoil
II^{A}	Guarnizione Secondaria	*Secondary Stem seal*	Grafoil	Grafoil
I^{A}	Guarnizione Primaria	*Primary stem seal*	Grafoil	Grafoil
93	Premi Baderna	*Gland*	304 S.S	304 S.S
90	Molle Stelo	*Stem spring*	UNS S30100	UNS S30100
84	Molle Seggio	*Seat spring*	UNS S30100	UNS S30100
80	Leva	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070
35	Dadi Stelo	*Nut*	304 S.S.	304 S.S.
15	Fermo Leva	*Lever stopper*	Gr. 8.8 UNI 3740	Gr. 8.8 UNI 3740
14	Premigrafoil	*Compression ring*	A479 Tp.316	A479 Tp.316
13	Cassetto	*Body seat holder*	A479 Tp.316	A479 Tp.316
12	Seggio	*Seat*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
5	Stelo	*Stem*	13% Cr. A564 Tp.630 (17/4PH)	A564 Tp.630 (17/4PH)
-	Riporto Sfera	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	Sfera	*Ball*	A479 Tp.316	A479 Tp.316
2	Terminale	*Connector*	A105	A479 Tp.304
1	Corpo	*Body*	A105	A479 Tp.304

P. No. **Parte - *Part Name*** **Materiale - *Material***

Altri materiali disponibili su richiesta – *Other materials are available on request*
Altre estremità disponibili su richiesta – *Other end connections available on request*

HTC = Nitruri di Titanio *(Titanium Nitrides)*; HCR = Nitruri di Cromo *(Chrome Nitrides)*; ST6 = Stellite 6 *Detonation Gun/HVOF*
WC = Carburi di Tungsteno *(Tungsten Carbides Detonation Gun/HVOF)*; CRC = Carburi di Cromo *(Chrome Carbides Detonation Gun/HVOF)*

Leva prolunga SIP per linee coibentate
SIP lever elongation for insulated piping sistems

Riduttore - *Manual gear*

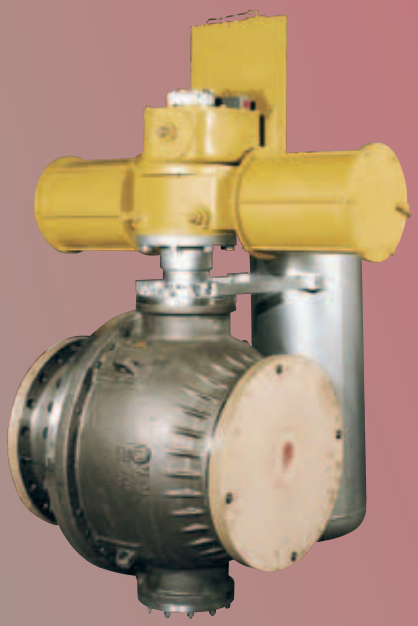
Prolunga stelo - *Stem elongation*

Attuatori pneumatici semplice o doppio effetto
Single or double acting actuators

Attuatori Elettrici e Idraulici
Electric and Hydraulic Actuators

penta s.r.l.

SAT



MODELLO / *MODEL*

SAT

ALFA VALVOLE s.r.l.

TÜV SÜD

CE 97/23/CE "PED"

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Il modello SAT è la tipologia costruttiva PENTA che meglio si adatta al più ampio spettro di impieghi. La filosofia progettuale ha avuto come primo obiettivo il raggiungimento della massima affidabilità, mediante la realizzazione di soluzioni tecniche che ancora oggi non trovano riscontro sul mercato

Come tutta la produzione PENTA le valvole serie SAT sono progettate per essere equipaggiate con seggi metallici in PENTAFITE permettendo la realizzazione di valvole a seggi metallici con PERDITA ZERO per servizi con temperature di esercizio continuo fino a 780°C (1436°F) o pressioni fino a 720 bar.

Le caratteristiche elasto-plastiche della PENTAFITE e la costruzione interamente bullonata permettono facili interventi di manutenzione, non necessitando di lavoro di adattamento tra sedi di ricambio e sfere.

Sono inoltre disponibili sedi con riporto superficiale in materiali duri.

Le valvole SAT sono disponibili con sfera flottante o con sfera Trunnion mounted, con passaggio ridotto o passaggio pieno e sono tutte provviste di scarico automatico delle sovrapressioni nelle cavità del corpo.

The SAT model *is the best design of PENTA to solve the widest range of uses. The main aim in its design philosophy is to achieve the highest reliability using advanced solutions that still has no equal on the market.*

Like all PENTA production, SAT valves are equipped with metallic seats in PENTAFITE to allow the manufacturing of metal seated ball valves with absolutely ZERO LEAKAGE suitable for a wide range of services with working temperatures up to 780°C (1436°F) in continuous operation or 720 barg pressure.

The typical elastic properties of PENTAFITE seats and the fully bolted construction allow an easy maintenance without necessity of additional lapping of the seats against the ball.

Hard coated seats are also available.

SAT valves are available with floating or Trunnion mounted ball, with reduced bore or full bore and all valves are provided with automatic body cavity pressure relief arrangement.

Dimensionamenti *Design*	ANSI B16.34 / API 608 / API 6D / ISO 14313 / EN12569 / EN17292 ASME VIII Div.1 / EN 12516-1
Estremità* *Valve Ends*	Flangiate ANSI B16.5 / EN 1092-1 / DIN *Flanged* A saldare ANSI B16.5 *Butt weld*
Collaudo *Testing*	ANSI B16.104 API 598 EN 12266-I ISO 5208 BS 6755-I

* Altre estremità disponibili a richiesta.
Other end connections are available on request.

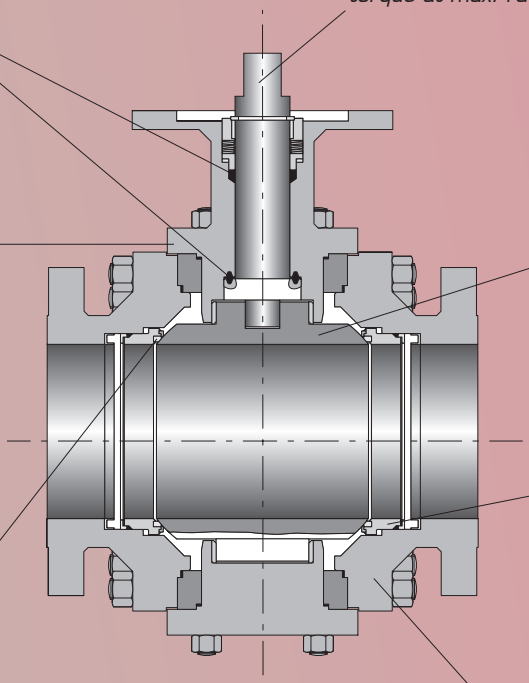
PRINCIPALI CARATTERISTICHE - *MAIN FEATURES*

Tenuta stelo
Tenuta stelo di progetto unico (brevettato). La molla posta all'estremità superiore dello stelo fornisce il precarico per la tenuta alle basse pressioni, recupera usura e giochi dovuti a dilatazioni differenziali tra stelo e coperchio.

Stem tightness
Unique stem seal design (patented). The spring placed at stem top gives the contact load for low pressure tightness and the adjustment for wearing and clearance for different dilatation between stem and cover.

Stelo
Gli steli sono 100% sovradimensionati rispetto alla coppia attesa al max. DP di rating.

Stem
Stem are 100% oversized against expected torque at max. rated DP.



Sfera
Sfere rettificate ad alta precisione sono prodotte internamente e quindi indurite superficialmente con riporti a tecnologia avanzata.

Ball
Very high precision grounded balls are produced inside and then hard coated with most advanced system.

Coperchio superiore
Tutte le valvole SAT sono dotate di un coperchio superiore bullonato per una rapida sostituzione del gruppo stelo/guarnizioni.

Upper cover
All SAT valves are provided with bolted upper cover for quick and easy stem assembly maintenance.

Guarnizioni retroseggio
La guarnizione retroseggio in Grafoil ha una sezione brevettata che permette lo scarico automatico della pressione all'interno del corpo valvola.

Backseat gasket
The patented cross-section of the backseat Grafoil gasket allows the automatic body cavity relief.

Seggi
Le sedi metalliche sono precaricate con molle in entrambi i lati della valvola, anche nella versione flottante, per una completa bi-direzionalità.

Seats
Metallic seats are loaded with springs on both valve side, also for floating ball construction, for a full bi-directionality.

Flange – Bulloneria
Tutti gli accoppiamenti flangiati sono dimensionati secondo ASME VIII Div. 1.

Bolting and Flanges
All flanges connections are designed according to ASME VIII Div. 1

MATERIALI DISPONIBILI PER I SEGGI - *AVAILABLE SEAT MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service limits*
PTFE	**PTFE**		-200°C / +200°C (-328°F / +392°F)	ANSI 150 – 1500 PN 10 - 250	For cryogenic services.
S01	**SILVER PENTAFITE** (Nickel + Graphite)		120 HB-100°C / +780°C (-148°F / +1436°F)	ANSI 150 – 2500 PN 10 - 420	For clean services both liquid or gas. For use with **HTC, HTCN, HCR, WC, CRC, ST6** ball coated
R01	**RED PENTAFITE** (Cu + Graphite)	100 HB	-100°C / +500°C (-148°F / +932°F)	ANSI 150 – 600 PN 10 - 100	For clean services both liquid or gas. Lower friction factors in dry gas or steam service. For use with **HTC, HTCN, HCR, ST6** ball coated
B01	**BLACK PENTAFITE** (Carbon + Graphite)	80 HB	Amb. / +400°C (Amb. / +752°F)	ANSI 150 – 300 PN 10 - 40	For low pressure specific services where **S01** and **R01** cannot be used due to corrosion problems. A ball coat is not strictly necessary and should be evaluated time to time
WC	**CARBURO DI TUNGSTENO** *Tungsten Carbide Coat* *(Detonation Gun/HVDF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with high presence of solids. Not suitable whensmall presence of caustic soda is expected. For use with **WC** ball coat
CRC	**CARBURO DI CROMO** *Chrome Carbide* *(Detonation Gun)*	800 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with small presence of solids. Not suitable when small presence of caustic soda is expected.
ST6	**STELLITE Gr.6** *(Detonation Gun/HVDF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry gas or steam services. For use with **WC, CRC** ball coat

MATERIALI DISPONIBILI PER RIVESTIMENTO SFERE - *AVAILABLE COATING BALL MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service limits*
HTC	**NITRURI DI TITANIO** *Titanium Nitride* (PVD)	2500 HV	-100°C / +600°C (-148°F / +1112°F)	ANSI 150 – 600 PN 10 - 100	For clean services both liquid or gas. For gas and steam up to 180°C
HTCN	**CARBO-NITRURI DI TITANIO** Carbo-Titanium Nitride (PVD)	3500 HV	-100°C / +400°C (-148°F / +752°F)	ANSI 150 – 2500 PN 10 - 420	For liquid or gas services with small presence of solids. For gas and steam up to 180°C
HCR	**NITRURI DI CROMO** Chrome- Nitride (PVD)	3000 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 2500 PN 10 - 420	For clean services both liquid or gas. Best on oxidizing services
WC	**CARBURO DI TUNGSTENO** Tungsten Carbide *(Detonation Gun/HVDF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 2500 PN 10 - 420	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected
CRC	**CARBURO DI CROMO** Chrome Carbide *(Detonation Gun/HVDF)*	800 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 2500 PN 10 - 420	For liquid or gas services with small presence of solids. Not suitable when small presence of caustic soda is expected.
ST6	**STELLITE GR.6** *(Detonation Gun/HVDF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 2500 PN 10 - 420	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry or steam services.

GRADO DI TENUTA - *TIGHTNESS*

Tutte le valvole PENTA modello SAT sono collaudate per verificarne la TENUTA PERFETTA (perdita zero alla prova idraulica dei seggi secondo ANSI B16.34 e a 6 bar con aria).
All PENTA valves SAT model are tested to verify their BUBBLE TIGHTNESS (no visible leakage during hydraulic seat test according to ANSI B 16.34 and during low pressure air seats test at 100 psi).

INTERVALLO DI PRODUZIONE - *PRODUCTION RANGE*

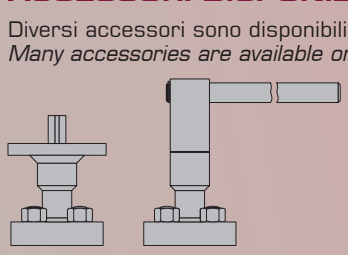
CLASSI - *PRESSURE CLASSES*

ANSI B 16.34	150		300		600		900		1500		2500	
PN	16 - 25		40 - 50		64 - 100		150		250		420	
Diametri Nominali *Nominal diameter*	F	T	F	T	F	T	F	T	F	T	F	T
½"												
¾"												
1"												
1½"												
2"												
3"												
4"												
6"												
8"												
10"												
12"												
14"												
16"												
18"												
20"												
22"												
24"												

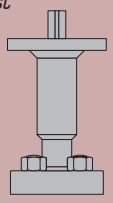
F = Sfera flottante - *Floating ball*
T = Sfera vincolata - *Trunnion mounted ball*

ACCESSORI DISPONIBILI - *AVAILABLE ACCESSORIES*

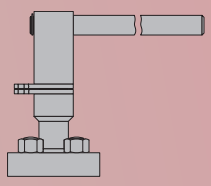
Diversi accessori sono disponibili a richiesta
Many accessories are available on request



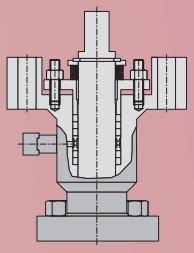
Coperchio con flangia o leva
Cover with flange or lever



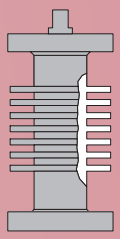
Coperchio allungato per alta temperatura
Clongated cover for high temperatures



locking device



Coperchio con baderna
Cover with packing



Coperchio alettato
Finned cover

OPERATORI DISPONIBILI - *AVAILABLE OPERATORS*

- Riduttori manuali
- Attuatori pneumatici a semplice o doppio effetto
- Attuatori elettrici
- Attuatori idraulici

- *Manual gears*
- *Single or double acting pneumatic actuators*
- *Electric actuator*
- *Hydraulic actuators*

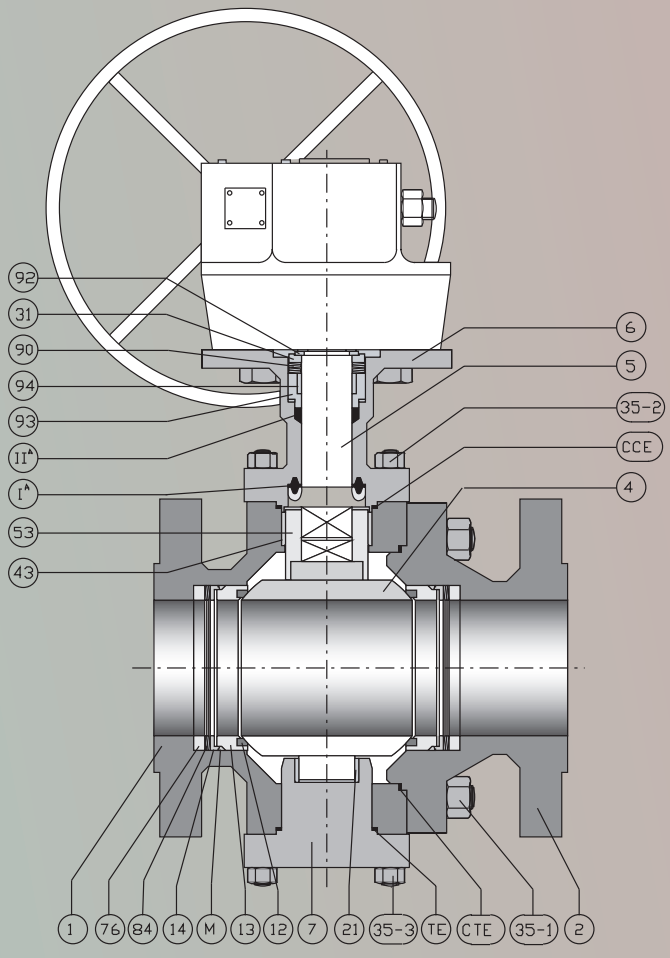
-100 °C +720 °C

Materiali base - *base materials*

TE	*Lower cover gasket*	Grafoil	Grafoil
CCE	*Upper cover gasket*	Grafoil	Grafoil
CTE	*Body-Connector gasket*	Grafoil	Grafoil
M	*Seat gasket*	Grafoil	Grafoil
II[A]	*Secondary stem seal*	Grafoil	Grafoil
I[A]	*Primary stem seal*	Grafoil	Grafoil
94	*Stem plain bearing*	DU	DU
93	*Gland*	316 s.s.	316 s.s.
92	*Stem retaining ring*	316 s.s.	316 s.s.
90	*Stem spring*	AISI 301	X750
84	*Seat spring*	AISI 301	AISI 301
76	*Distance*	316 s.s.	316 s.s.
53	*Coupling*	316 s.s.	316 s.s.
43	*Stem gland*	DU or BM	DU or BM
35-3	*Lower cover Bolts*	B7 / 2H	B8 / Gr.8
35-2	*Upper cover Bolts*	B7 / 2H	B8 / Gr.8
35-1	*Body/Connector Bolts*	B7 / 2H	B8 / Gr.8
21	*Trunnion plain bearing*	DU or BM	DU or BM
14	*Compression ring*	316 s.s.	316 s.s.
13	*Seat holder*	316 s.s.	316 s.s.
12	*Seat insert*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
7	*Lower cover*	A105	316 s.s.
6	*Upper cover*	A105	316 s.s.
5	*Stem*	410 s.s.	316 s.s.
-	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	*Ball*	316 s.s.	316 s.s.
2	*Body Connector*	A105	316 s.s.
1	*Body*	A105	316 s.s.

P. No.	**Parte - *Part Name***	**Materiale - *Material***

Tipica Valvola SAT Trunnion
Typical SAT with Trunnion mounted ball



TA-LUFT APPROVED (CON PROLUNGA 100 MM) C/W 100 MM STEM ELONGATION

CE 97/23/CE "PED" CAT III

Ex II 2 GD c T6 X 94/9/CE "ATEX"

FLOW

Le valvole possono essere realizzate in qualsiasi materiale in accordo ai requisiti del Committente purchè in barre, barre o anelli fucinati e forgiati
Valves can be manufactured in all materials according Customer requirements when available in form of bars, forged bars or rings

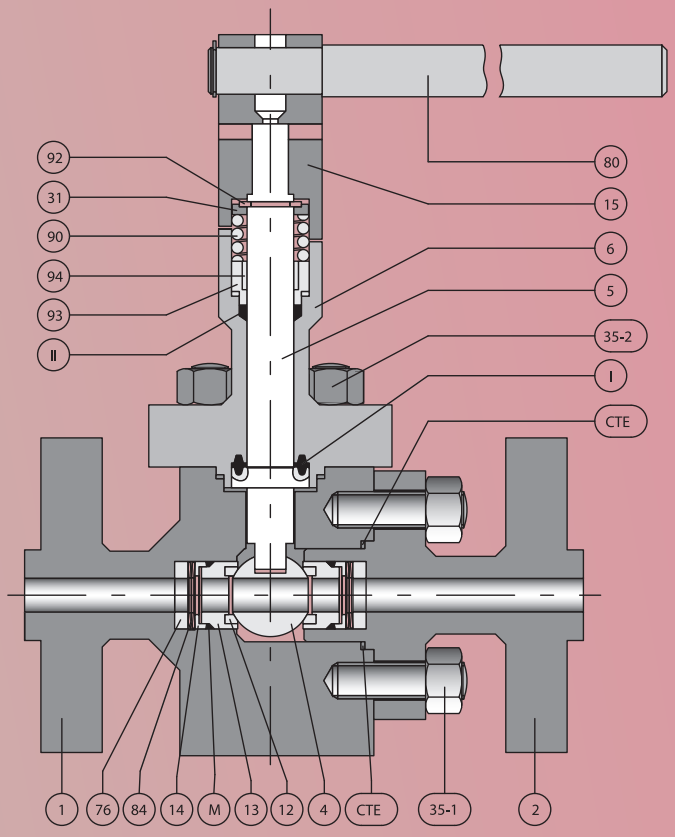
-100 °C +720 °C

Materiali base - *base materials*

CCE	*Upper cover gasket*	Grafoil	Grafoil
CTE	*Body-Connector gasket*	Grafoil	Grafoil
M	*Seat gasket*	Grafoil	Grafoil
II[A]	*Secondary stem seal*	Grafoil	Grafoil
I[A]	*Primary stem seal*	Grafoil	Grafoil
94	*Stem plain bearing*	DU	DU
93	*Gland*	316 s.s.	316 s.s.
92	*Stem retaining ring*	316 s.s.	316 s.s.
90	*Stem spring*	AISI 301	AISI 301
84	*Seat spring*	AISI 301	X750
80	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070
76	*Distance*	316 s.s.	316 s.s.
35-2	*Upper cover Bolts*	B7 / 2H	B8 / Gr.8
35-1	*Body/Connector Bolts*	B7 / 2H	B8 / Gr.8
31	*Stem spring comp. ring*	316 s.s.	316 s.s.
15	*Wrench head*	A105	316 s.s.
14	*Compression ring*	316 s.s.	316 s.s.
13	*Seat holder*	316 s.s.	316 s.s.
12	*Seat insert*	PENTAFITE ST6 WC/CRC	PENTAFITE ST6 WC/CRC
6	*Upper cover*	A105	316 s.s.
5	*Stem*	410 s.s.	316 s.s.
-	*Ball coating*	HTC/HCR ST6 WC/CRC	HTC/HCR ST6 WC/CRC
4	*Ball*	316 s.s.	316 s.s.
2	*Body Connector*	A105	316 s.s.
1	*Body*	A105	316 s.s.

P. No. Parte - *Part Name* **Materiale - *Material***

Tipica Valvola SAT a sfera flottante
Typical SAT with floating ball



TA-LUFT APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

CE 97/23/CE "PED" CAT III

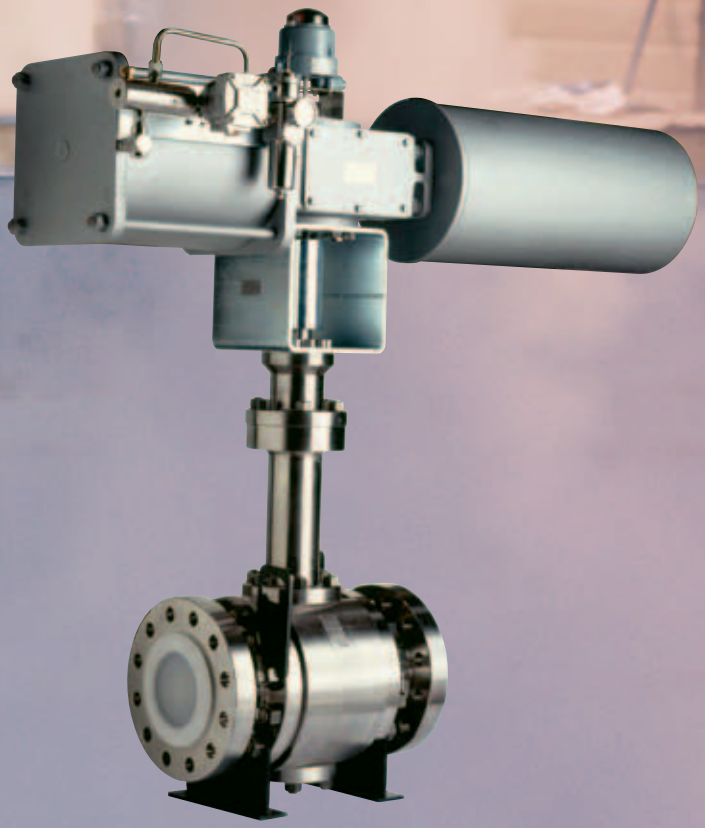
Ex II 2 GD c T6 X 94/9/CE "ATEX"

Le valvole possono essere realizzate in qualsiasi materiale in accordo ai requisiti del Committente purchè in barre, barre o anelli fucinati e forgiati
Valves can be manufactured in all materials according Customer requirements when available in form of bars, forged bars or rings


servovalve

penta s.r.l.

SAT CRIO



MODELLO / *MODEL*

SAT CRIO

ALFA VALVOLE s.r.l.

TÜV SÜD

CE 97/23/CE "PED"

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Il modello SAT crio è l'evoluzione della costruzione SAT verso la bassa temperatura.
La filosofia progettuale contiene soluzioni tecniche uniche sul mercato, tutte tese al raggiungimento della massima affidabilità così come dimostrato dagli eccezionali risultati ottenuti con le innumerevoli applicazioni sul campo.
Come tutta la produzione PENTA le valvole serie SAT crio sono progettate per essere equipaggiate con seggi metallici in PENTAFITE (fino a –100°C) o in materiali polimerici per temperature inferiori, permettendo la realizzazione di valvole con PERDITA ZERO.
Le valvole SAT crio sono disponibili con sfera flottante o con sfera Trunnion mounted, con passaggio ridotto o passaggio pieno e sono tutte provviste di scarico automatico delle sovrapressioni nelle cavità del corpo oltre che di prolunga criogenica dello stelo di manovra.

The SAT crio model *is the extension of the SAT model down to the low temperature.*
The design philosophy involve unique technical solutions to meet the bet reliability as many field applications have demonstrated.
Like all PENTA production, SAT crio valves are equipped with metallic seats in PENTAFITE (down to —100°C max.) or with polymeric seats for lower working temperature, resulting ball valves with absolutely ZERO LEAKAGE.
SAT crio valves are available with floating or Trunnion mounted ball, with reduced bore or full bore and all valves are provided with automatic body cavity pressure relief arrangement as like as cryogenic stem elongation.

Dimensionamenti *Design*	B16.34 / API 608 / BS 6364 / EN1626 ASME VIII Div. 1 / EN 12516-1
Estremità* *Valve ends*	flangiate ANSI B16.5 / EN 1092-1 / DIN *Flanged* A saldare ANSI B16.25 *Butt weld*
Collaudo *Testing*	ANSI B16.104 / API 598 API 598 EN 12266-1 ISO 5208 BS 6755-1

* Altre estremità disponibili a richiesta.
Other end connections are available on request.

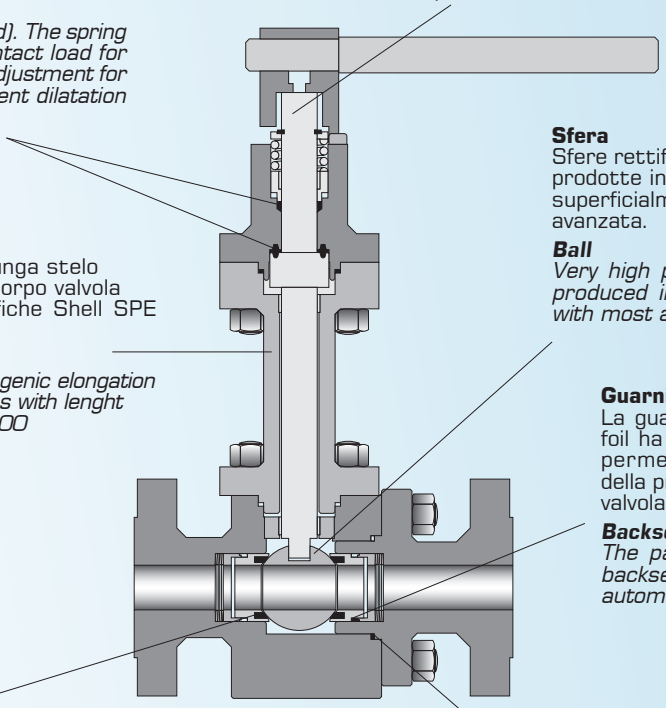
PRINCIPALI CARATTERISTICHE - *MAIN FEATURES*

Tenuta stelo
Tenuta stelo di progetto unico (brevettato). La molla posta all'estremità superiore dello stelo fornisce il precarico per la tenuta alle basse pressioni, recupera usura e giochi dovuti a dilatazioni differenziali tra stelo e coperchio.

Stem tightness
Unique stem seal design (patented). The spring placed at stem top gives the contact load for low pressure tightness and the adjustment for wearing and clearance for different dilatation between stem and cover.

Stelo
Gli steli sono 100% sovradimensionati rispetto alla coppia attesa al max. DP di rating.

Stem
Stem are 100% oversized against expected torque at max. rated DP.



Sfera
Sfere rettificate ad alta precisione sono prodotte internamente e quindi indurite superficialmente con riporti a tecnologia avanzata.

Ball
Very high precision grounded balls are produced inside and then hard coated with most advanced system.

Prolunga Criogenia
Tutte le valvole sono dotate di prolunga stelo con cavità in comunicazione con il corpo valvola di lunghezza in accordo alle specifiche Shell SPE 77/100

Cryogenic Vapour Space
All valves are provided with stem cryogenic elongation communicating with valve body cavities with lenght in accordance with SHELL SPE 77/100

Guarnizioni retroseggio
La guarnizione retroseggio in Grafoil ha una sezione brevettata che permette lo scarico automatico della pressione all'interno del corpo valvola.

Backseat gasket
The patented cross-section of the backseat Grafoil gasket allows the automatic body cavity relief.

Seggi
I seggi metallici o polimerici sono precaricati con molle su entrambi i lati della valvola, anche nella versione a sfera flottante, per una completa bi-direzionalità e per lo scarico automatico delle sovrapressioni nel corpo.

Seats
Metallic or polimeric seats are loaded with springs on both Valve sides, also in floating ball construction for a full Bi-directionality and automatic body cavities relief.

Guarnizioni
Tutte le guarnizioni sono realizzate in Grafite espansa per garantire la loro inalterabilità a qualsiasi temperatura

Gaskets
All gaskets are made in Expanded Graphite for their Unalterability against any temperature conditions

MATERIALI DISPONIBILI PER I SEGGI - *AVAILABLE SEAT MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service limits*
PTFE	**PTFE**		-200°C / +200°C (-328°F / +392°F)	ANSI 150 – 1500 PN 10 - 150	For cryogenic services, all temperatures.
PEEK	**PoliEter EterKetone**		-100°C / +240°C (-148°F / +464°F)	ANSI 150 – 1500 PN 10 - 250	For cryogenic services,down to -100°C only,with high pressures
S01	**SILVER PENTAFITE** (Nickel + Graphite)	120 HB	-100°C / +780°C (-148°F / +1436°F)	ANSI 150 – 600 PN 10 - 100	For cryogenic services, down to -100°C only

MATERIALI DISPONIBILI PER RIVESTIMENTO SFERE - *AVAILABLE COATING BALL MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service limits*
HTC	**NITRURI DI TITANIO** *Titanium Nitride* (PVD)	2500 HV	-200°C / +600°C (-148°F / +1112°F)	ANSI 150 – 600 PN 10 - 100	For clean services both liquid or gas. For gas and steam up to 180°C
HCR	**NITRURI DI CROMO** Chrome- Nitride (PVD)	3000 HV	-100°C / +780°C (-148°F / +1112°F)	ANSI 150 – 300 PN 10 - 100	For clean services both liquid or gas. Best on oxidizing services

GRADO DI TENUTA - *TIGHTNESS*

Tutte le valvole PENTA modello SAT Crio sono collaudate per verificarne la TENUTA PERFETTA (perdita zero alla prova idraulica dei seggi secondo ANSI B16.34 e a 6 bar con aria).
All PENTA valves SAT Crio model are tested to verify their BUBBLE TIGHTNESS (no visible leakage during hydraulic seat test according to ANSI B 16.34 and during low pressure air seats test at 100 psi).

PROLUNGA CRIOGENICA STELO – *STEM CRYOGENIC ELONGATION*

DN	15-25	40-50	80-100	150
Lunghezza prolunga Stelo (mm) *Stem Vapour lenght*	200	250	300	350

Tutte le valvole PENTA modello SAT sono collaudate per verificarne la TENUTA PERFETTA (perdita zero alla prova idraulica dei seggi secondo ANSI B16.34 e a 6 bar con aria).
All PENTA valves SAT model are tested to verify their BUBBLE TIGHTNESS (no visible leakage during hydraulic seat test according to ANSI B 16.34 and during low pressure air seats test at 100 psi).

INTERVALLO DI PRODUZIONE - *PRODUCTION RANGE*

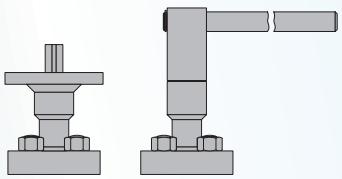
CLASSI - *PRESSURE CLASSES*

ANSI B 16.34	150		300		600		900		1500	
PN	16 - 25		40 - 50		64 - 100		150		250	
Diametri Nominali *Nominal diameter*	F	T	F	T	F	T	F	T	F	T
½"	■		■		■		■		■	
¾"	■		■		■		■		■	
1"	■		■		■		■		■	
1½"	■		■		■			■		■
2"	■	■	■	■	■	■		■		■
3"	■	■	■	■	■	■				
4"	■	■	■	■		■				
6"	■	■	■	■		■				
8"	■	■	■	■		■				

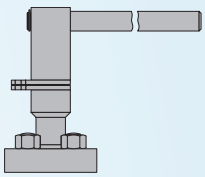
F = Sfera flottante - *Floating ball*
T = Sfera vincolata - *Trunnion mounted ball*

ACCESSORI DISPONIBILI - *AVAILABLE ACCESSORIES*

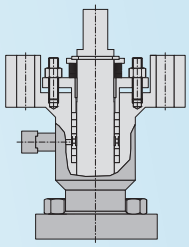
Diversi accessori sono disponibili a richiesta
Many accessories are available on request



Coperchio con flangia o leva
Cover with flange or lever



locking device



Coperchio con baderna
Cover with packing

OPERATORI DISPONIBILI - *AVAILABLE OPERATORS*

- Riduttori manuali
- Attuatori pneumatici a semplice o doppio effetto
- Attuatori elettrici
- Attuatori idraulici

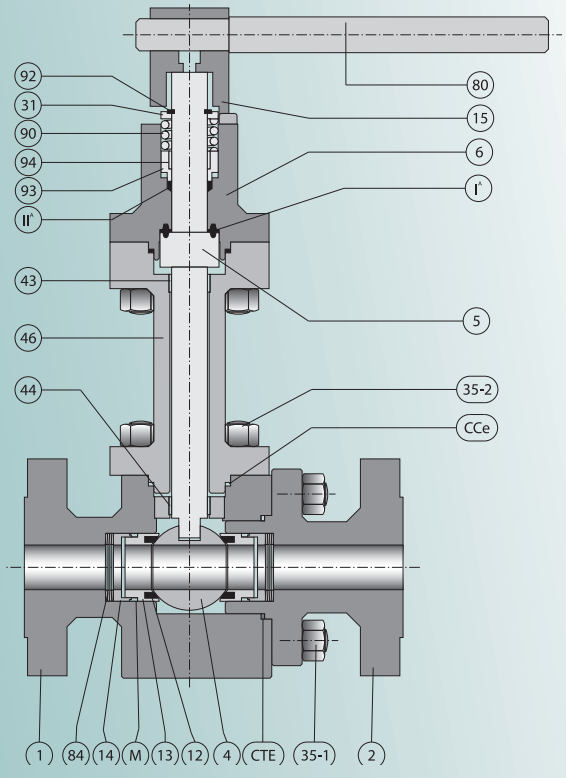
- *Manual gears*
- *Single or double acting pneumatic actuators*
- *Electric actuator*
- *Hydraulic actuators*

-196 °C +200 °C

Materiali base - *base materials*

CCe	*Body Cover gasket*	Grafoil	Grafoil
CTe	*Body Connector gasket*	Grafoil	Grafoil
M	*Backseat gasket*	Grafoil	Grafoil
II^{A}	*Secondary Stem seal*	Grafoil	Grafoil
I^{A}	*Primary stem seal*	Grafoil	Grafoil
93	*Gland*	304 s.s.	304 s.s.
92	*Stop Ring*	304 s.s.	304 s.s.
90	*Stem spring*	UNS S30100	UNS S30100
84	*Seat spring*	UNS S30100	UNS S30100
80	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070
46	*Cryogenic Elongation*	A479 Tp.304	A479 Tp.316
44	*Lower Stem Bearing*	DU	DU
43	*Upper Stem Bearing*	DU	DU
35-2	*Cover Boltings*	B8 / Gr.8	B8M / Gr.8M
35-1	*Body Boiltings*	B8 / Gr.8	B8M / Gr.8M
31	*Stem Spring Ring*	304 s.s.	304 s.s.
15	*Wrench*	A479 Tp.304	A479 Tp.316
14	*Compression ring*	A479 Tp.316	A479 Tp.316
13	*Seat holder*	A479 Tp.316	A479 Tp.316
12	*Seat*	PENTAFITE PTFE PEEK	PENTAFITE PTFE PEEK
5	*Stem*	A479 Tp.316 Duplex s.s. UNS S31803	A479 Tp.316 Duplex s.s. UNS S31803
-	*Ball coating*	-- / HTC / HCR	-- / HTC / HCR
4	*Ball*	A479 Tp.316 Duplex s.s. UNS S31803	A479 Tp.316 Duplex s.s. UNS S31803
2	*Connector*	A479 Tp.304	A479 Tp.316
1	*Body*	A479 Tp.304	A479 Tp.316
P. No.	**Parte - *Part Name***	**Materiale - *Material***	

Tipica Valvola Crio Flottante
Typical SAT Crio with Floating Ball



TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

CE 97/23/CE "PED" CAT III

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Le valvole possono essere realizzate in qualsiasi materiale in accordo ai requisiti del Committente purchè in barre, barre o anelli fucinati e forgiati
Valves can be manufactured in all materials according Customer requirements when available in form of bars, forged bars or rings

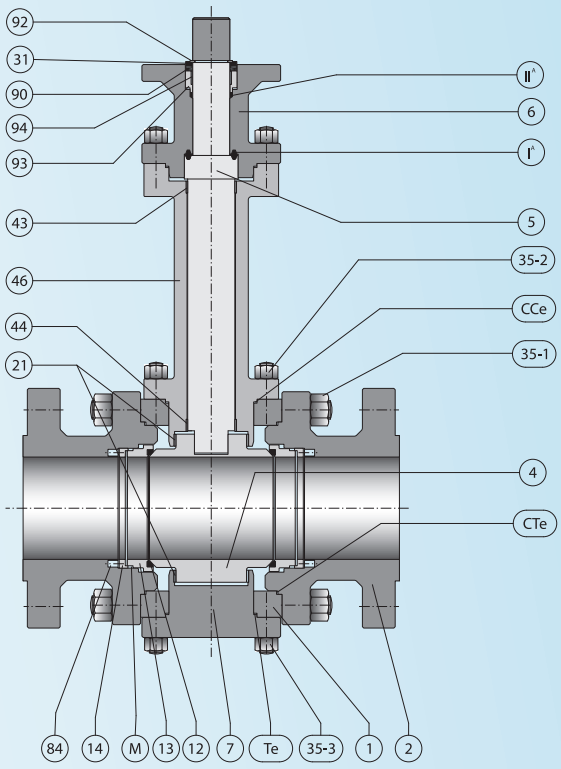
-196 °C +200 °C

Materiali base - *base materials*

Te	*Body Cover gasket*	Grafoil	Grafoil
CCe	*Body Cover gasket*	Grafoil	Grafoil
CTe	*Body Connector gasket*	Grafoil	Grafoil
M	*Backseat gasket*	Grafoil	Grafoil
IA	*Secondary Stem seal*	Grafoil	Grafoil
IA	*Primary stem seal*	Grafoil	Grafoil
93	*Gland*	304 s.s.	304 s.s.
92	*Stop Ring*	304 s.s.	304 s.s
90	*Stem spring*	UNS S30100	UNS S30100
84	*Seat spring*	UNS S30100	UNS S30100
80	*Handle*	Fe37 UNI 7070	Fe37 UNI 7070
46	*Cryogenic Elongation*	A479 Tp.304	A479 Tp.316
44	*Lower Stem Bearing*	DU	DU
43	*Upper Stem Bearing*	DU	DU
35-3	*Cover Boltings*	B8 / Gr.8	B8M / Gr.8M
35-2	*Cover Boltings*	B8 / Gr.8	B8M / Gr.8M
35-1	*Body Boiltings*	B8 / Gr.8	B8M / Gr.8M
31	*Stem Spring Ring*	304 s.s.	304 s.s.
21	*Ball Bearings*	DU	DU
15	*Wrench*	A479 Tp.304	A479 Tp.316
14	*Compression ring*	A479 Tp.316	A479 Tp.316
13	*Seat holder*	A479 Tp.316	A479 Tp.316
12	*Seat*	PENTAFITE PTFE PEEK	PENTAFITE PTFE PEEK
7	*Lower Cover*	A479 Tp.304	A479 Tp.316
5	*Stem*	A479 Tp.316 Duplex s.s. UNS S31803	A479 Tp.316 Duplex s.s. UNS S31803
-	*Ball coating*	-- / HTC / HCR	-- / HTC / HCR
4	*Ball*	A479 Tp.316 Duplex s.s. UNS S31803	A479 Tp.316 Duplex s.s. UNS S31803
2	*Connector*	A479 Tp.304	A479 Tp.316
1	*Body*	A479 Tp.304	A479 Tp.316

P. No. Parte - *Part Name* **Materiale - *Material***

Tipica valvola SAT Crio Trunnion
Typical SAT Crio with Trunnion Ball

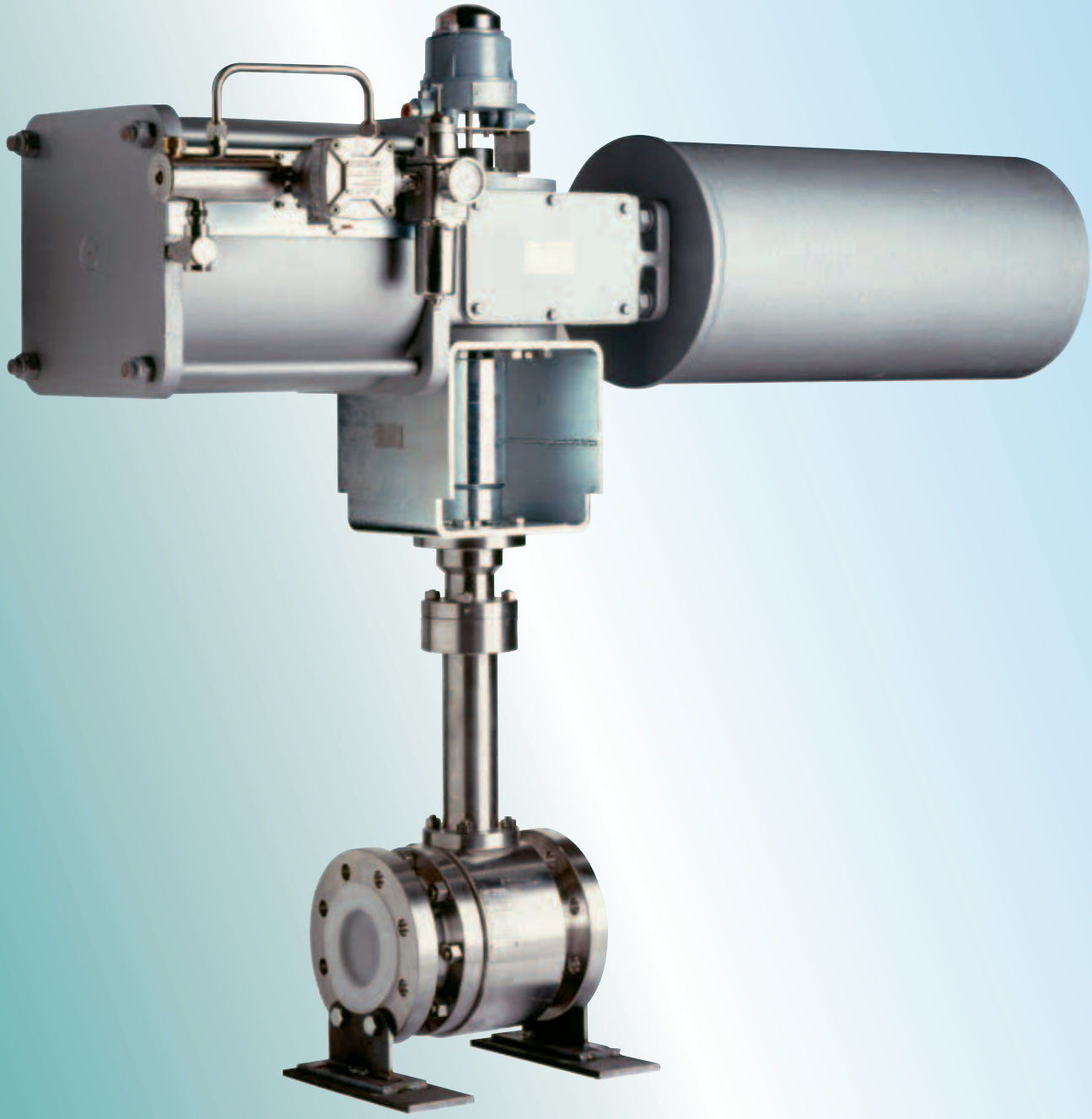


TA-LUFT
APPROVED
(CON PROLUNGA 100 MM)
C/W 100 MM STEM ELONGATION

CE 97/23/CE "PED"
CAT III

Ex II 2 GD c T6 X
94/9/CE "ATEX"

Le valvole possono essere realizzate in qualsiasi materiale in accordo ai requisiti del Committente purchè in barre, barre o anelli fucinati e forgiati
Valves can be manufactured in all materials according Customer requirements when available in form of bars, forged bars or rings



penta s.r.l.

SAT 3

MODELLO / *MODEL*

SAT 3

ALFA® VALVOLE s.r.l.

TÜV SÜD

CE 97/23/CE "PED"

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Il modello SAT3 è una evoluzione della tipologia costruttiva SAT1 mediante l'inserimento di due anelli (chiamati raschiatori) all'interno ed all'esterno dei seggi.

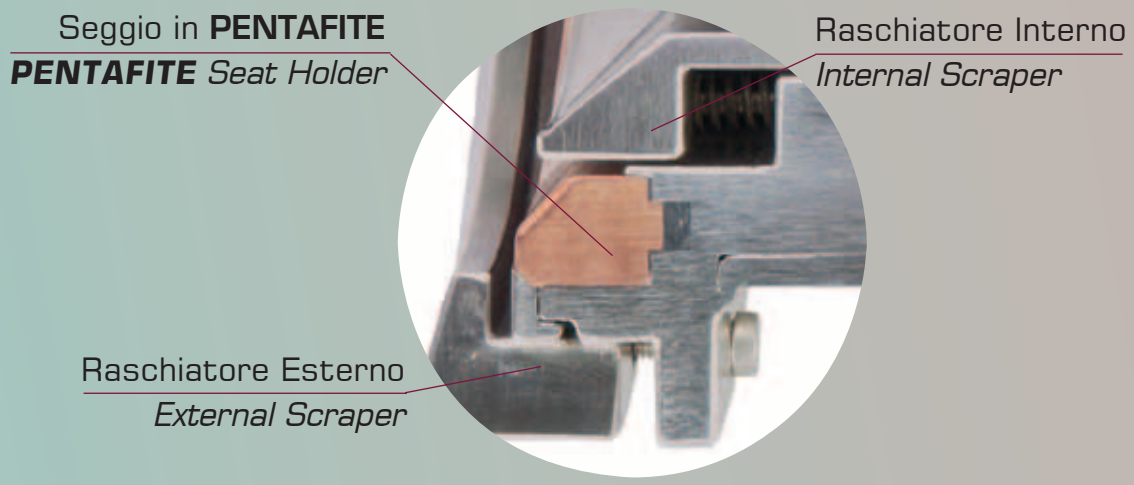
Gli anelli raschiatori hanno il compito di:

- pulire la superficie della sfera durante la manovra
- proteggere i seggi dalla azione abrasiva delle parti solide contenute nel fluido
- evitare l'incunearsi di tali parti solide tra seggio e sfera che provocherebbero il bloccaggio della valvola.
- ridurre la quantità di sporco che può depositarsi nella cavità del corpo valvola.

The SAT3 model *is an evolution of the SAT with the insertion of two rings (called Scraper Rings) inside and outside the seats.*

The Scraper Rings have to:

- *clean ball surface during valve operation*
- *protect the seats from abrasion by fluid solid content*
- *avoid wedging in of solids between seat and ball surface cause of valve blocking*
- *reduce dirt can fill body cavity*



Come tutta la produzione PENTA le valvole della serie SAT3 sono progettate per essere equipaggiate con seggi metallici in PENTAFITE permettendo la realizzazione di valvole a sfera a tenuta metallica con **PERDITA ZERO** per servizi con temperature di esercizio continuo fino a 700°C.

Le particolari caratteristiche elasto-plastiche del materiale dei seggi PENTAFITE e la costruzione interamente bullonata permettono facili interventi di manutenzione, non necessitando di lavoro di adattamento tra sedi di ricambio e sfere.

Le valvole modello SAT3 sono disponibili in due versioni:

- Bi-direzionali, sia a sfera flottante o Trunnion mounted
- Monodirezionali, a sfera Trunnion mounted per montaggio con asse della tubazione verticale.

In questo caso le cavità del corpo sono lavorate in modo da favorire il drenaggio automatico ed evitare la sedimentazione del fluido all'interno della valvola.

Like all PENTA production, valves of SAT3 series are equipped with metallic seats in PENTAFITE that allow the manufacturing of metal seated ball valves with Bubble tight (no leakage) suitable for a wide range of services with working temperatures up to 700°C.

The typical elastic properties of PENTAFITE seats and the fully bolted construction, allow an easy maintenance without necessity of additional lapping of the spare seats against the ball,

The SAT3 model is available in two version:

- *Bi-directional, both with floating ball or trunnion mounted*
- *Uni-directional, trunnion mounted ball for applications where pipe axis is vertical.*

In this case body cavity is machined to obtain a complete body cavity draining avoiding fluid deposit inside the valve (best for bottom tank valves).

METAL SEATED BALL VALVES

-100 °C +400 °C

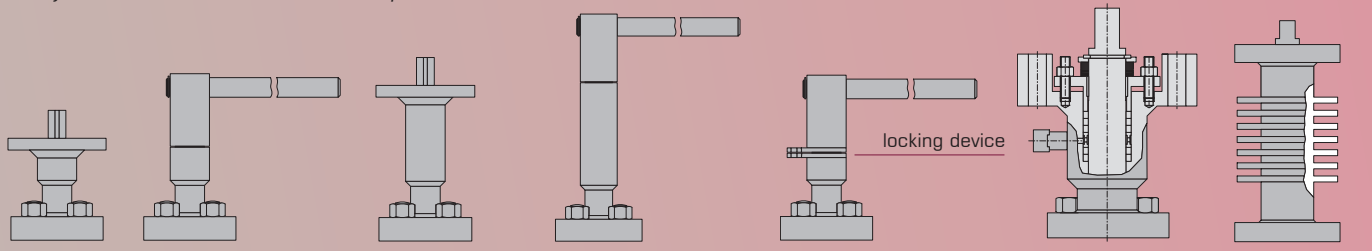
INTERVALLO DI PRODUZIONE - *PRODUCTION RANGE*

CLASSE - *PRESSURE CLASS*						
ANSI B 16.34	150		300		600	
PN	16 - 25		40 - 50		64 - 100	
Diametri Nominali *Nominal diameter*	F	T	F	T	F	T
½"						
¾"						
1"						
1½"						
2"						
3"						
4"						
6"						

F = Sfera flottante - *Floating ball*
T = Sfera vincolata - *Trunnion mounted ball*

ACCESSORI DISPONIBILI - *AVAILABLE ACCESSORIES*

Diversi accessori sono disponibili a richiesta
Many accessories are available on request



Coperchio con flangia o leva
Cover with flange or lever

Coperchio allungato per alta temperatura
Clongated cover for high temperatures

Coperchio allungato per servizi criogenici
Elongated cover for cryogenic services

Body cavity filler

Coperchio con baderna
Cover with packing

Coperchio alettato
Finned cover

OPERATORI DISPONIBILI - *AVAILABLE OPERATORS*

- Riduttori manuali
- Attuatori pneumatici a semplice o doppio effetto
- Attuatori elettrici
- Attuatori idraulici

- *Manual gears*
- *Single or double acting pneumatic actuators*
- *Electric actuator*
- *Hydraulic actuators*

MATERIALI DISPONIBILI PER I SEGGI - *AVAILABLE SEAT MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service Limits*
S01	**SILVER PENTAFITE** (Nickel + Graphite)	120 HB	-100°C / +780°C (148°F+1436°F)	ANSI 150 – 2500 PN10 - 420	For clean services both liquid or gas. For use with **HTC, HTCN, HCR, WC, CRC, ST6** ball coated
R01	**RED PENTAFITE** (Cu + Graphite)	100 HB	-100°C / +500°C (-148°F / +932°F)	ANSI 150 – 600 PN 10 - 100	For clean services both liquid or gas. Lower friction factors in dry gas or steam service. For use with **HTC, HTCN, HCR, ST6** ball coated
B01	**BLACK PENTAFITE** (Carbon + Graphite)	80 HB	Amb. / +400°C (Amb. / +752°F)	ANSI 150 – 300 PN 10 - 40	For low pressure specific services where **S01** and **R01** cannot be used due to corrosion problems. A ball coat is not strictly necessary and should be evaluated time to time
WC	**CARBURO DI TUNGSTENO** *Tungsten Carbide Coat* *(Detonation Gun/HVOF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected. For use with WC ball coat
CRC	**CARBURO DI CROMO** *Chrome Carbide* *(Detonation Gun)*	800 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with small presence of solids. Not suitable when small presence of caustic soda is expected.
ST6	**STELLITE Gr.6** *(Detonation Gun/HVOF)*	1000 HV	Amb. / +250°C (Amb. / +302°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry gas or steam services. For use with **WC, CRC** ball coat
PEEK	**PoliEter EterKetone**		-100°C / +240°C (-148°F / +464°F)	ANSI 150 – 1500 PN 10 - 100	For cryogenic services,down to -100°C only,with high pressures

MATERIALI DISPONIBILI PER RIVESTIMENTO SFERE - *AVAILABLE BALL COATING MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service Limits*
WC	**CARBURO DI TUNGSTENO** Tungsten Carbide *(Detonation Gun/HVOF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 2500 PN 10 - 420	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected.
CRC	**CARBURO DI CROMO** Chrome Carbide *(Detonation Gun/HVOF)*	800 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 2500 PN 10 - 420	For liquid or gas services with small presence of solids. Not suitable when small presence of caustic soda is expected.
ST6	**STELLITE GR.6** *(Detonation Gun/HVOF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 2500 PN 10 - 420	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry or steam services.

GRADO DI TENUTA - *TIGHTNESS*

Tutte le valvole PENTA modello SAT 3 sono collaudate per verificarne la TENUTA PERFETTA (perdita zero alla prova idraulica dei seggi secondo ANSI B16.34 e a 6 bar con aria).

All PENTA valves SAT 3 model are tested to verify their BUBBLE TIGHTNESS (no visible leakage during hydraulic seat test according to ANSI B 16.34 and during low pressure air seats test at 100 psi)

penta s.r.l.

MODELLO / *MODEL*

MULTIPORT

MULTIPORT

ALFA VALVOLE s.r.l.

TÜV SÜD

CE 97/23/CE "PED"

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Basandosi su una costruzione con sfera vincolata, (Trunnion mounted) PENTA realizza valvole a sfera a sedi metalliche a 3 vie, con passaggio a L oppure a T. Queste valvole usufruiscono di soluzioni tecniche uniche tipiche dei modelli SAT, che ancora oggi non trovano eguali nel mercato delle valvole.

Basing on a trunnion mounted ball construction, PENTA can manufacture a range of 3-way metal seated ball valves, with "L" port or "T" port. The advanced solutions typical for SAT model are used on these valves that still has no equal on the market at present.

Come tutta la produzione PENTA le valvole serie MULTIPORT sono progettate per essere equipaggiate con seggi metallici in PENTAFITE permettendo la realizzazione di valvole a seggi metallici con PERDITA ZERO per servizi con temperature di esercizio continuo da -100°C a -400°C.

Like all PENTA production, MULTIPORT valves are equipped with metallic seats in PENTAFITE to allow the manufacturing of metal seated ball valves with absolutely ZERO LEAKAGE suitable for a wide range of services with working temperatures from -100°C a -400°C.

Le caratteristiche elasto-plastiche della PENTAFITE e la costruzione interamente bullonata permettono facili interventi di manutenzione, non necessitando di lavoro di adattamento tra sedi di ricambio e sfere.

The typical elastic properties of PENTAFITE seats and the fully bolted construction allow an easy maintenance without necessity of additional lapping of the seats against the ball.

Tutte le valvole Multiport sono equipaggiate con sfere Trunnion mounted e con seggi indipendenti su ogni via precaricati con molle.

All valves Multiport model are equipped with Trunnion mounted ball and with independent spring loaded seats on each way .

Dimensionamenti *Design*	ANSI B16.34 / API 608 / EN12569 / EN17292 ASME VIII Div.1 / EN 12516-1
Estremità* *Valve ends*	Flangiate ANSI B16.5 / EN 1092-1 / DIN *Flanged* A saldare ANSI B16.25 *Butt weld*
Collaudo *Testing*	ANSI B16.104 / API 598 API 598 EN 12266-1 ISO 5208 BS 6755-1

* Altre estremità disponibili a richiesta.
Other end connections are available on request.

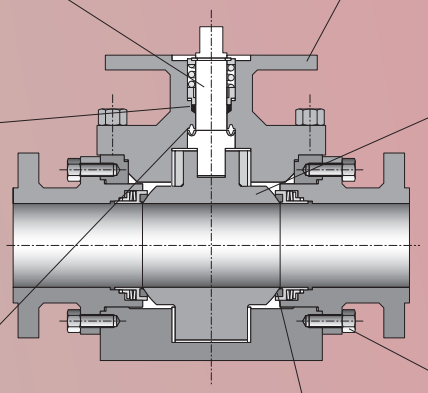
METAL SEATED BALL VALVES

Coperchio superiore
Tutte le valvole 3 VIE sono dotate di un coperchio superiore bullonato per una rapida sostituzione del gruppo stelo/guarnizioni.

Upper cover
All 3 WAY valves are provided with bolted upper cover for quick and easy stem assembly maintenance.

Stelo
Gli steli sono 100% sovradimensionati rispetto alla coppia attesa al max. DP di rating.

Stem
Stem are 100% oversized against expected torque at max. rated DP.



Sfera
Sfere rettificate ad alta precisione sono prodotte internamente e quindi indurite superficialmente con riporti a tecnologia avanzata. Tutte le sfere sono "trunnion mounted" per evitare carichi laterali alle sedi di tenuta.

Ball
Very high precision grounded balls are produced inside and then hard coated with most advanced system. All balls are "trunnion mounted" in order to avoid lateral load against the seats.

Guarnizioni
Sono utilizzate esclusivamente guarnizioni in Grafoil® resistenti alle alte temperature; nessun materiale polimerico è impiegato.

Gasket
Only Grafoil® gasket are used, inherently resistant to high temperatures; no polymers are used.

Flange – Bulloneria
Tutti gli accoppiamenti flangiati sono dimensionati secondo ASME VIII Div. 1.

Bolting and Flanges
All flanges connections are designed according to ASME VIII Div. 1

Tenuta stelo
Tenuta stelo di progetto unico (brevettato). La molla posta all'estremità superiore dello stelo fornisce il precarico per la tenuta alle basse pressioni, recupera usura e giochi dovuti a dilatazioni differenziali tra stelo e coperchio.

Stem tightness
Unique stem seal design (patented). The spring placed at stem top gives the contact load for low pressure tightness and the adjustment for wearing and clearance for different dilatation between stem and cover.

Seggi
Ogni via è predisposta con sede di tenuta indipendente. Le sedi metalliche sono precaricate con molle in entrambi i lati della valvola, anche nella versione flottante, per una completa bi-direzionalità.

Seats
Every way is predisposed with independent seat. Metallic seats are loaded with springs on both valve side, also for floating ball construction, for a full bi-directionality.

MATERIALI DISPONIBILI PER I SEGGI - *AVAILABLE SEAT MATERIAL*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service Limits*
S01	**SILVER PENTAFITE** (Nickel + Graphite)	120 HB	-100°C / +780°C (-148°F / +1436°F)	ANSI 150 – 600 PN 10 - 100	For clean services both liquid or gas. For use with **HTC, HTCN, HCR, WC, CRC, ST6** ball coated
R01	**RED PENTAFITE** (Cu + Graphite)	100 HB	-100°C / +500°C (-148°F / +932°F)	ANSI 150 – 600 PN 10 - 100	For clean servicesboth liquid or gas. Lower friction factors in dry gas or steam service. For use with **HTC, HTCN, HCR, ST6** ball coated
B01	**BLACK PENTAFITE** (Carbon + Graphite)	80 HB	Amb. / +400°C (Amb. / +752°F)	ANSI 150 – 300 PN 10 - 40	For low pressure specific services where **S01** and **R01** cannot be used due to corrosion problems. A ball coat is not strictly necessary and should be evaluated time to time
WC	**CARBURO DI TUNGSTENO** *Tungsten Carbide Coat* *(Detonation Gun/HVOF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 300 PN 10 - 40	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected. For use with WC ball coat
ST6	**STELLITE Gr.6** *(Detonation Gun/HVOF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 300 PN 10 - 40	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry gas or steam services.For use with **WC, CRC** ball coat
PK1	**PEEK** *(Polietheretherketone)*		-100°C. / +240°C (-148°F / +464°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with high frequency of valve operation.

MATERIALI DISPONIBILI PER RIVESTIMENTO SFERE - *AVAILABLE BALL COATING MATERIALS*

Codice *Code*	Materiale *Material*	Durezza *Hardness*	Temperature di lavoro *Working temperature*	Pressioni di lavoro *Working pressure*	Servizio *Service Limits*
HTC	**NITRURI DI TITANIO** *Titanium Nitride* (PVD)	2500 HV	-100°C / +600°C (-148°F / +1112°F)	ANSI 150 – 600 PN 10 - 100	For clean services both liquid or gas. For gas and steam up to 180°C
HTCN	**CARBO-NITRURI DI TITANIO** Carbo-Titanium Nitride (PVD)	3500 HV	-100°C / +400°C (-148°F / +752°F)	ANSI 150 – 600 PN 10 - 100	For liquid or gas services with small presence of solids. For gas and steam up to 180°C
HCR	**NITRURI DI CROMO** Chrome- Nitride (PVD)	3000 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 300 PN 10 - 40	For clean services both liquid or gas. Best on oxidizing services
WC	**CARBURO DI TUNGSTENO** Tungsten Carbide *(Detonation Gun/HVOF)*	1100 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 300 PN 10 - 40	For liquid or gas services with high presence of solids. Not suitable when small presence of caustic soda is expected.
CRC	**CARBURO DI CROMO** Chrome Carbide *(Detonation Gun/HVOF)*	800 HV	Amb. / +750°C (Amb. / +1382°F)	ANSI 150 – 300 PN 10 - 40	For liquid or gas services with small presence of solids. Not suitable when small presence of caustic soda is expected.
ST6	**STELLITE GR.6** *(Detonation Gun/HVOF)*	1000 HV	Amb. / +350°C (Amb. / +662°F)	ANSI 150 – 300 PN 10 - 40	For liquid or gas services with small presence of solids. Suitable when small presence of caustic soda is expected. Best on dry or steam services.

GRADO DI TENUTA - *TIGHTNESS*

Tutte le valvole PENTA modello MULTIPORT sono collaudate per verificarne la TENUTA PERFETTA (perdita zero alla prova idraulica dei seggi secondo ANSI B16.34 e a 6 bar con aria).

All PENTA valves MULTIPORT model are tested to verify their BUBBLE TIGHTNESS (no visible leakage during hydraulic seat test according to ANSI B 16.34 and during low pressure air seats test at 100 psi)

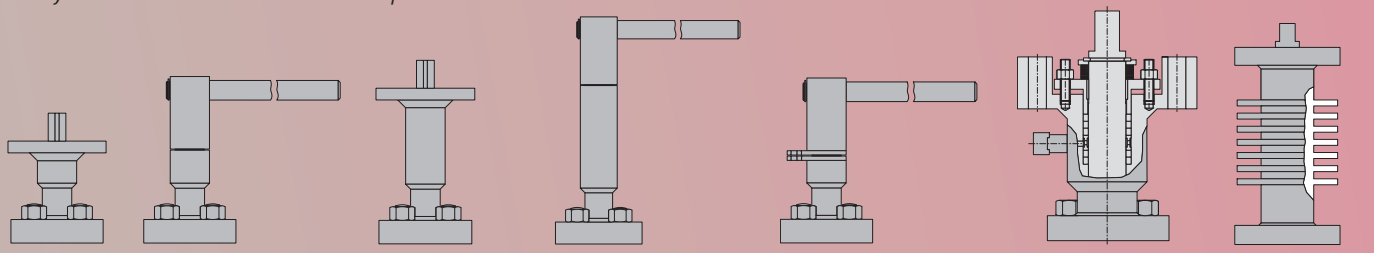
INTERVALLO DI PRODUZIONE - *PRODUCTION RANGE*

CLASSE - *PRESSURE CLASS*			
ANSI B 16.34	150	300	600
PN	16 - 25	40 - 50	64 - 100
Diametri Nominali *Nominal diameter*	T	T	T
½"			
¾"			
1"			
1½"			
2"			
3"			
4"			
6"			
8" Red Port			

T = Sfera vincolata - *Trunnion mounted ball*

ACCESSORI DISPONIBILI - *AVAILABLE ACCESSORIES*

Diversi accessori sono disponibili a richiesta
Many accessories are available on request



Coperchio con flangia o leva
Cover with flange or lever

Coperchio allungato per alta temperatura
Clongated cover for high temperatures

Coperchio allungato per servizi criogenici
Elongated cover for cryogenic services

Locking device

Coperchio con baderna
Cover with packing

Coperchio alettato
Finned cover

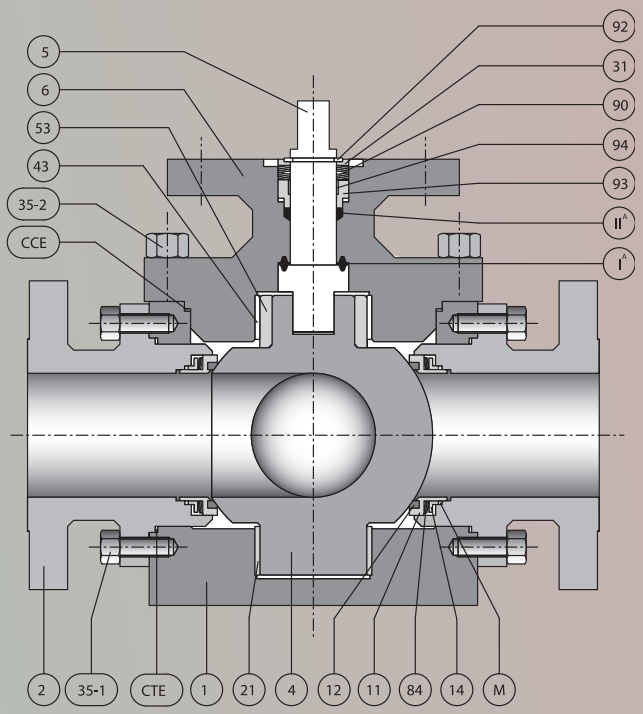
OPERATORI DISPONIBILI - *AVAILABLE OPERATORS*

- Riduttori manuali
- Attuatori pneumatici a semplice o doppio effetto
- Attuatori elettrici
- Attuatori idraulici

- *Manual gears*
- *Single or double acting pneumatic actuators*
- *Electric actuator*
- *Hydraulic actuators*

-100 °C +400 °C

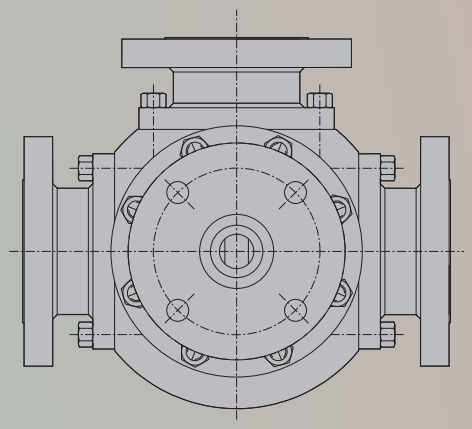
Tipica Valvola 3-VIE 90° Trunnion
Typical 3WAY 90° - Trunnion

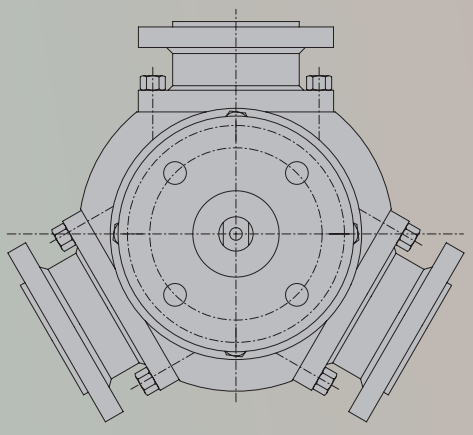


Componenti - *Valve parts*

CCE	Guarniz. Coperchio Sup.	*Upper cover gasket*
CTE	Guarniz. Corpo/Terminale	*Body-Connector gasket*
M	Guarnizione Seggio	*Seat gasket*
II^A	Guarnizione Secondaria	*Secondary stem seal*
I^A	Guarnizione Primaria	*Primary stem seal*
94	Bussola Stelo	*Stem plain bearing*
93	Premi Baderna	*Gland*
92	Fermo Anello Stelo	*Stem retaining ring*
90	Molle Stelo	*Stem spring*
84	Molle Seggio	*Seat spring*
53	Manicotto	*Coupling*
43	Bussola Manicotto	*Coupling plain bearing*
35-2	Tiranti Coperchio superiore	*Upper cover Bolts*
35-1	Tiranti Corpo/Terminale	*Body/Connector Bolts*
31	Anello premi molla Stelo	*Stem spring compression ring*
21	Bussola Trunnion	*Trunnion plain bearing*
14	Premigrafoil	Compression ring
13	Cassetto Corpo	*Seat holder*
12	Seggio	*Seat*
6	Coperchio superiore	*Upper cover*
5	Stelo	*Stem*
4	Sfera	*Ball*
2	Terminale	*Body Connector*
1	Corpo	*Body*

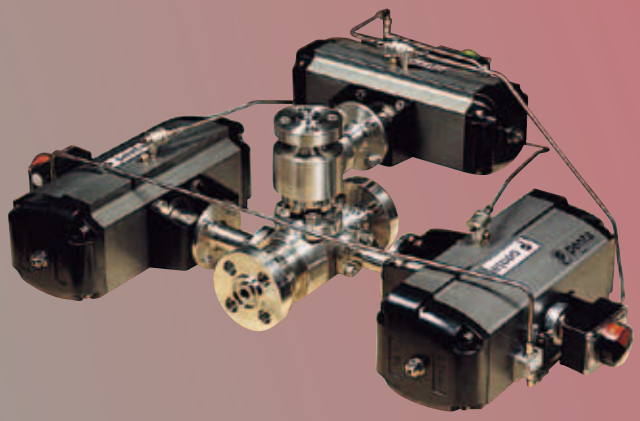
P. No. **Parte - *Part Name***





Le valvole possono essere realizzate in qualsiasi materiale in accordo ai requisiti del Committente purchè in barre, barre o anelli fucinati e forgiati
Valves can be manufactured in all materials according Customer requirements when available in form of bars, forged bars or rings

penta s.r.l.



PROGETTI SPECIALI / *SPECIAL DESIGNS*

ALFA VALVOLE s.r.l.

TÜV SÜD

CE 97/23/CE "PED"

Ex II 2 GD c T6 X 94/9/CE "ATEX"

PROGETTI SPECIALI

Sulla base della tecnologia sviluppata negli anni, PENTA è in grado di progettare valvole a sfera speciali a seggi metallici per un intervallo di condizioni di esercizio estremamente ampio: da -200°C fino a 780°C.

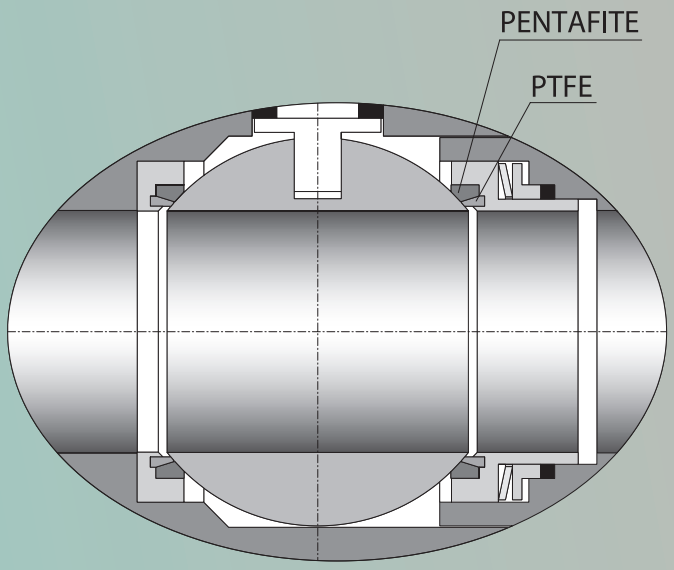
Come tutta la produzione Penta, anche le valvole speciali sono progettate per essere equipaggiate con seggi metallici in PENTAFITE, permettendo così di ottenere valvole a seggi metallici con **PERDITA ZERO** nelle condizioni più estreme.

Le caratteristiche elasto-plastiche del materiale PENTAFITE, permettono facili interventi di manutenzione, senza necessità di lavoro di adattamento tra sedi di ricambio e sfere.

Basing on property technologies developed in years of activity in the fluid handling, PENTA is able to design special ball valves for a wide range of working conditions: from -200°C up to 780°C.

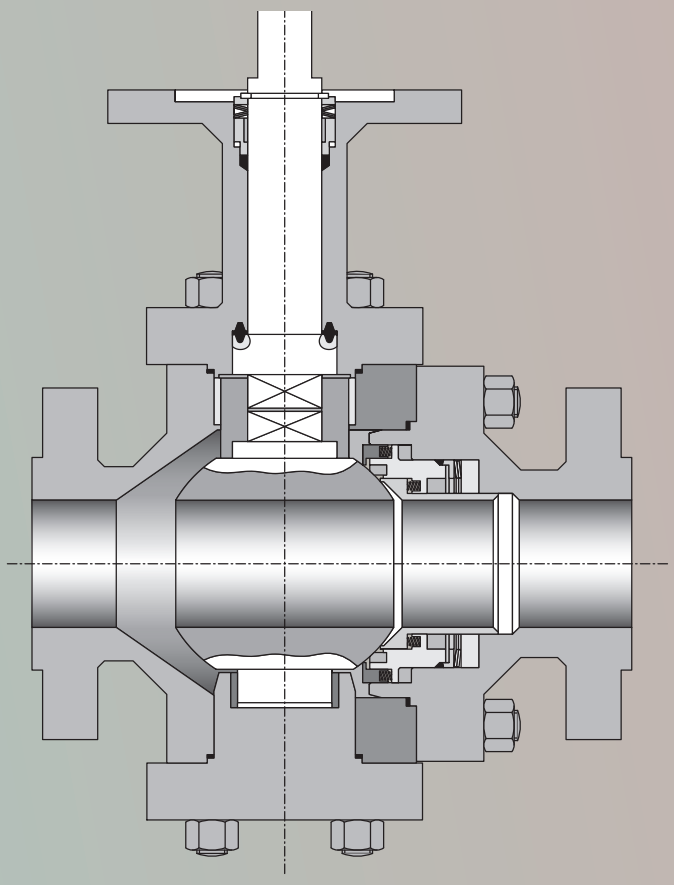
Like all PENTA production range, also SPECIAL valves are equipped with metallic seats in PENTAFITE allowing to obtain bubble tight metal seated ball valves with absolutely ZERO LEAKAGE with no additional lapping of seats against ball.

The typical elastic properties of PENTAFITE seats allow an easy maintenance without necessity of additional lapping of the seats against the ball.



Seggio con labbro interno di pulizia

Seat arrangement with internal scraping ring

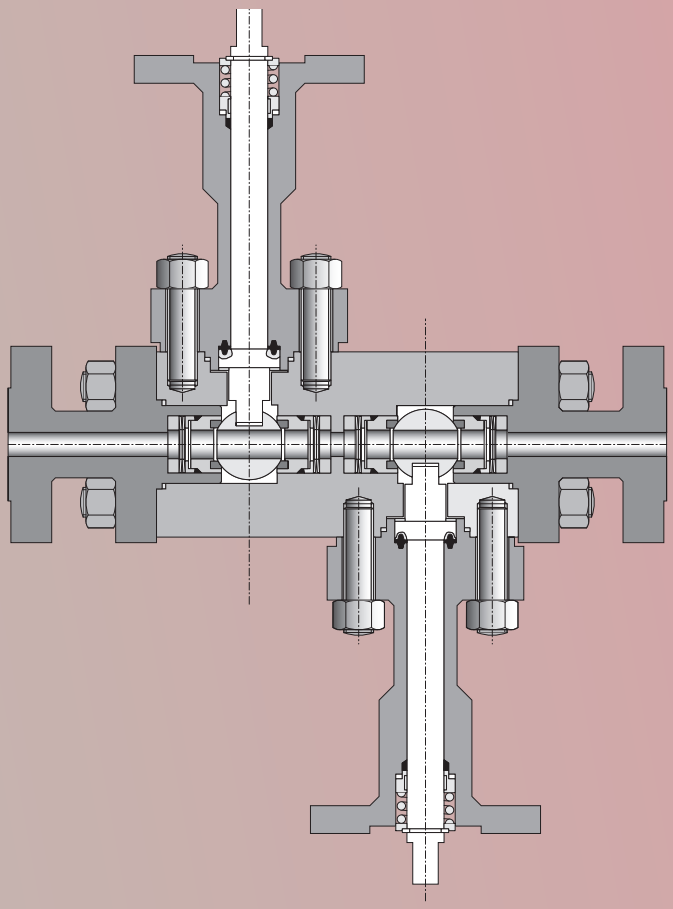


Valvola con anelli raschiatori ad una sede con sfera trunnion

One seat with scrapers and trunnion mounted ball

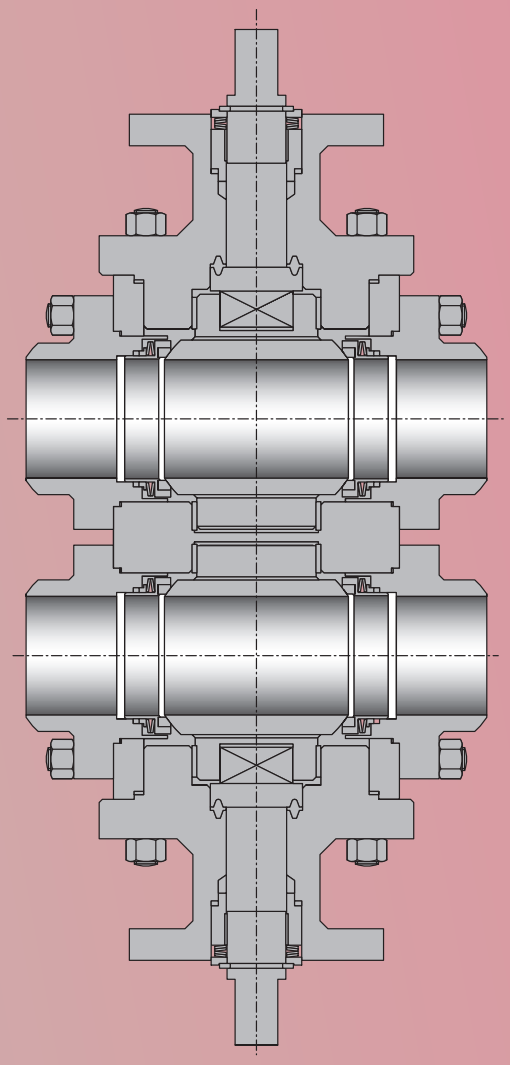
Special designs

-196 °C +720 °C



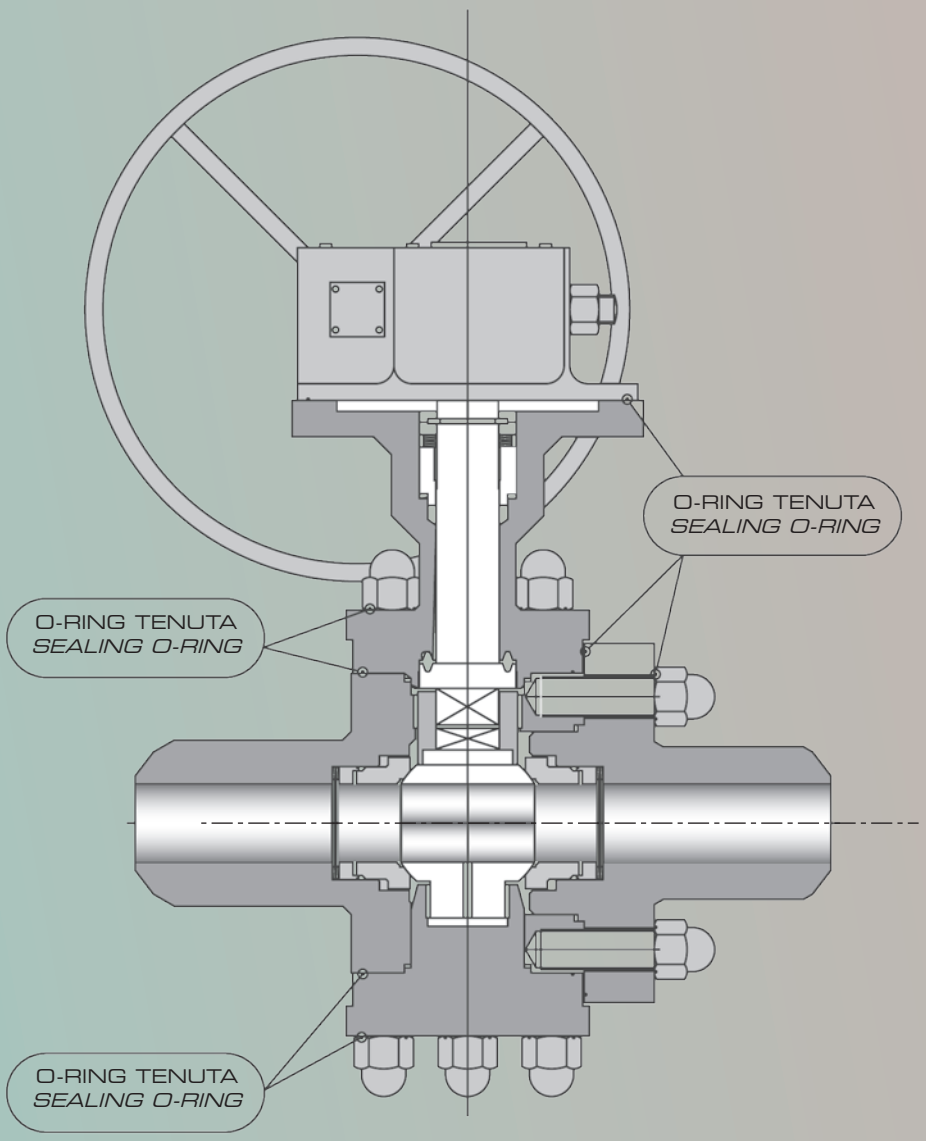
Sistema valvola a doppia sfera
con drenaggio intermedio

Double block and bleed system (two balls)



Valvole a due sfere accoppiate
con o senza unico operatore

*Double block construction with
or without unique operator*



Valvole sottomarine (non di profondità)
Subsea valves (not for deep see applications)

penta s.r.l.

LISTA REFERENZE / *REFERENCE LIST*

ALFA VALVOLE s.r.l.

TÜV SÜD

CE 97/23/CE "PED"

Ex II 2 GD c T6 X 94/9/CE "ATEX"

Pos.	Servizio *Service Conditions*	Temp. *(°C)*	Press. *(bar)*	Tipo valvola *Valve size and Model*	Classe *Class*	Cliente *Client*
1	**ACETILENE** *ACETYLENE*			da ½" a 2" *from ½" to 2"*	300	ERIKS (NL)
2	**ACIDO ISOFTALICO** **con 30% parti solide in H2O e H2** *ISOFTALIC ACID* *with 30% solid parts in H2o and H2*	275	60	DN 3" - SAT3	900	SISAS S.p.A. Milano
3	**ACIDO SOLFIDRICO** *SULPHYDRIC ACID*			1½" - 4"	150	AGIP PETROLI Sannazzaro de' Burgundi (PV)
4	**ACIDO SOLFORICO, ACETICO,** **FURFURILICO, FORMICO + SILICE** **(1 manovra ogni min.)** *SULPHURIC ACID, ACETIC, FURFURILIC,* *FORMIC VAPOUR + SILICA* *(1 operation per min.)*	300	15	2" 8" SAT3	300 300	CAPURRO SpA Lecce
5	**ACQUA** *WATER*	AMB.	25	1"	300	E.N.E.L. - Centrale S.GILLA
6	**ACQUA** *WATER*		500	1" / 1½"	4500	MIDIS S.Donato Milanese (MI)
7	**ACQUA** *WATER*	0 / 110	2,2 - 5	DN 1" - AP20P	150	ASEKO OY Masala FINLAND
8	**ACQUA** *WATER*	50	60	DN ½" e 2" - AP606-	PN 100	ASEKO OY Masala FINLAND
9	**ACQUA** *WATER*	-38/+275	80	DN 3/4" e 1" - AP606-	600	GROVE DRESSER ITALIA Voghera (PV)
10	**ACQUA DI MARE** *SEA WATER*	120		3" sandwich	150	E.N.E.L. Porto Scuso (CA)
11	**ACQUA DEMINERALIZZATA** *WATER (DEMINERALIZED)*	350	110	2" / 2½"	1500	C.C.R. EURATOM Ispra (VA)
12	**ACQUA DEMINERALIZZATA** *WATER (DEMINERALIZED)*	350	200	46 mm	2500	C.C.R. EURATOM Ispra (VA)
13	**ACQUA DEMINERALIZZATA** **+ IDRAZINA PH 9** *WATER (DEMIN.) + HYDRAZINE PH 9*	311		10"	1500	C.I.S.E - CENTRO INFORMAZIONI STUDI ESPERIENZE Segrate (MI)
14	**ACQUA + FOSFATI** *WATER + PHOSPHATES*		110	½"	800	E.N.E.L. Porto Marghera (VE)
	ACQUA + GLICOLE *WATER + GLYCOL*	85 - 150	5 - 8	DN 3" - AP64	150	ASEKO OY Masala FINLAND
	ACQUA + GLICOLE *WATER + GLYCOL*	AMB	6	2"	150	S.T.C. Bergamo
	ACQUA + GLICOLE *WATER + GLYCOL*	90	80	ODYM 1/2"	800	ABL AUTOMAZIONE
	ACQUA + IDRAZINA *WATER + HYDRAZINE*	180		da ½" a 10" *from ½" to 10"*	300	AZIENDA SERVIZI MUNICIPALIZZATI Brescia
	ACQUA + OLIO *WATER + OIL*			2"	300	ASEKO OY HELSINKY (SF)
	ACQUA / VAPORE *WATER / STEAM*	310	100	da ½" a 4" *from ½" to 4"*	1500	S.I.E.T. Piacenza
15	**ACQUA + VAPORE + UO2** *WATER + STEAM + UO2*			4" (tempo di manovra / operation in 0,7 sec.)	1500 SPECIAL	C.C.R. EURATOM Ispra (VA)
16	**ACQUA SURRISCALDATA** *WATER (SUPERHEATED)*	160	10	da 1" a 4" - 3 vie *from 1" to 4" - 3 way*	1500	BREDA NARDI COSTRUZIONI AEREONAUTICHE
17	**ACQUA SURRISCALDATA** *WATER (SUPERHEATED)*	185	255	3"	1500	E.N.E.L. Ostiglia (MN)
	ACQUA SURRISCALDATA *WATER (SUPERHEATED)*	271	90	DN 3" - SAT	900	ALFA VALVOLE S.r.l. Casorezzo (MI)
	ACQUA SURRISCALDATA *WATER (SUPERHEATED)*		180/200	DN 1/2" - SAT	1500	ENEL Ostiglia Ostiglia (MN)
18	**ACRILONITRILE** *ACRYLONITRILE*			da 2" a 4" - seggi integrali *from 2" to 4" - cavity filler*	300	ENICHEM ANIC Ravenna

Reference list

Pos.	Servizio *Service Conditions*	Temp. *(°C)*	Press. *(bar)*	Tipo valvola *Valve size and Model*	Classe *Class*	Cliente *Client*
19	**ADESIVO** *ADHESIVE*	350	40	DN2" AP11NB	PN40	NAR SPA Legnaro (PD)
20	**ALCHILAZIONE GPL ACIDO HF - NH3** *GPL (ALKYLATION) ACID HF - NH3*			da ½" a 4" *from ½" to 4"*	300	AGIP PETROLI Sannazzaro de' Burgundi (PV)
21	**ALDEIDI + H2** *ALDEHYDE + H2*	400	70	DN 1/2" - SAT	900	CONDEA AUGUSTA Augusta (SR)
22	**AMMINA RICCA** *RICH AMINE*	115	97	DN14" SAT	900	MOTOR OIL HELLAS GREECE
23	**AMMONIACA** *AMMONIA*	-33		da ½" a 20" *from ½" to 20"*	300	ENICHEM ANIC Manfredonia (FG)
24	**ANIDRIDE FTALICA** *AIR*	240		DN 3" - W3 SATJ-AE	PN 16	LONZA SPA S.Giovanni Valdarno (AR)
25	**AMMONIACA LIQUIDA** *LIQUID AMMONIA*	-18 / 65	20	DN3" - DN6" SAT	300	PETRO CHINA DAQING OIL FIELD Methyl Alchohol Plant Ammonia Tech.Revamping PEOPLE'S REP. OF CHINA
26	**ANIDRIDE MALEICA** *ANHYDRIDE*		10	DN 2" - AP 103-	150	EXXON CHEMICAL MEDITERRANEA Vado Ligure (SV)
27	**ARGON LIQUIDO** *LIQUID ARGON*	-200	20	da 1" a 3" SAT CRIO *from 1" to 3"*	300	P.G.C. Salerno
28	**ARIA** *AIR*	50	8,5	DN 2" - AP64	150	ASEKO OY Masala FINLAND
29	**ARIA** *AIR*	400	15	da 1" a 4" *from 1" to 4"*	300	FIAT ENGINEERING
30	**ARIA CALDA** *AIR (HOT)*	300	12	1" - 2"	300	TERRUZZI Milano
31	**ARIA CALDA** *AIR (HOT)*	460	28	DN 2" - 4" - SAT-	600	ABB KENT TAYLOR S.p.A.
32	**ARIA N2, HC, HS, VAPORE** *AIR N2, HC, HS, STEAM*	300	12	4" - 3 vie *4" - 3 way*	300	BP AMBURGO
33	**ASFALTO LIQUIDO** *ASPHALT (LIQUID)*	400	6	da 1" a 4" *from 1" to 4"*	300	SHELL AMSTERDAM
34	**AZOTO / IDROGENO** *NITROGEN / HYDROGEN*	320	6	da 1" a 3/ 4" *from 1" to 3/4"*	300	HUMIDRYER ITALIANA Novara
35	**AZOTO + ARIA** *NITROGEN + AIR*	50	8,5	DN 2" - AP64	150	ASEKO OY Masala FINLAND
36	**AZOTO** *NITROGEN*	35/150	38	DN 6" - SAT	300	INTERVALVE PTY LTD. RivoniaSandton RSA
37	**AZOTO** *NITROGEN*	400	23	DN 1" - AP 60 -	300	PALL ITALIA SRL Milano
38	**AZOTO LIQUIDO** *LIQUID NITROGEN*	-200	1,5	da 1" a 3" SAT CRIO *from 1" to 3"*	300	S.O.L. Piombino (LI)
39	**AZOTO + OSSIGENO + ARGON** *NITROGEN + OXIGEN + ARGON*	-196	10	DN3" / DN4" - SAT crio -	PN40	CHEMGAS Brindisi
40	**BENZENE E CUMENE** *BENZENE AND CUMENE*	300	2	DN1.1/2"	150	ARKEMA SRL Spinetta Marengo (AL)
41	**BENZINA - FUEL GAS** *GASOLINE - FUEL GAS*	Amb.	6	DN 1" - AP606	600	AGIP PETROLI P.to Marghera (VE)
42	**BENZINA - FUEL OIL** *GASOLINE - FUEL OIL*	130		da 1½" a 6" *from 1½" to 6"*	300	AMOCO ITALIA Cremona
43	**BENZINA - FUEL OIL** *GASOLINE - FUEL OIL*	140	14	DN 1" - AP606	600	AGIP PETROLI P.to Marghera (VE)
44	**BENZINA** *GASOLINE*	200	11,7	SAT - 6"	300	AGIP PETROLI P.to Marghera (VE)
45	**BENZINA** *GASOLINE*	200	11,7	DN 10" - SAT APT3	300	AGIP PETROLI P.to Marghera (VE)
46	**BENZINA** *GASOLINE*	180	14	DN 8" - SAT	300	AGIP PETROLI P.to Marghera (VE)

Pos.	Servizio *Service Conditions*	Temp. *(°C)*	Press. *(bar)*	Tipo valvola *Valve size and Model*	Classe *Class*	Cliente *Client*
47	**BITUME** *BITUMEN*	240	5,4	DN 3/4" - SAT	600	AGIP PETROLI Sannazzaro de' Burgundi (PV)
48	**CAFFE'** *COFFEE EXTRACT*	180	25	1"	300	THERMOMESS Milano
49	**CARBONE + CALCARE + AZOTO** *COAL/FLUX LIMESTONE + NITROGEN*	500	11	6" SAT3	300	ENEL C.R.T.N. Pisa
50	**CARBONE + CALCARE** *COAL LIMESTONE*	400		4" SAT3	150	ENIRICERCHE Pisa
51	**CATALIZZATORE** *CATALYST*	300	63	2" rb a ½" *2" rb to ½"*	600	DOW CHEMICAL
52	**CATALIZZATORE** *CATALYST*	400/700	atm.	DN 4"-6" - SAT3	300	AGIP PETROLI Priolo (SR)
53	**CATALIZZATORE** *CATALYST*	400/700	atm.	DN 1 1/2" - 4" - SAT3	300	AGIP PETROLI Priolo (SR)
54	**CATALIZZATORE** *CATALYST*	20/700	1 - 5	DN 1" - SAT	150	ASEKO OY Masala FINLAND
55	**CATALIZZATORE FRESCO** *FRESH CATALYST*	480	2	DN 3/4" - SAT	300	AGIP PETROLI Sannazzaro de' Burgundi (PV)
56	**CATALIZZATORE + ARIA** *CATALYST + AIR*	700	5	2"	600	AGIP PETROLI Sannazzaro de' Burgundi (PV)
57	**CATALIZZATORE + ARIA** *CATALYST + AIR*	Amb.	4	DN 6" - AP64	150	LG BALL VALVES LTD. Walsall, West Midlands GB
58	**CATALIZZATORE FRESCO + AZOTO** **(1 manovra ogni 20 sec.)** *CATALYST FRESH + NITROGEN* *(1 operation every 20 sec.)*	343	4	2" SAT3	300	AGIP PETROLI Sannazzaro de' Burgundi (PV)
59	**CATALIZZATORE FRESCO + IDROGENO** *CATALYST FRESH + HYDROGEN*	343	4	2"	300	AGIP PETROLI Sannazzaro de' Burgundi (PV)
60	**CATALIZZATORI IN GAS DI COMBUSTIONE** *CATALYST IN FUEL GAS*	714		2"	300	AMOCO
61	**CATALIZZATORE SOLIDO** *SOLID CATALYST*	450	6	DN 4" 6" e 10"- APT3-	150 300	LONZA SPA Ravenna
62	**CATRAME** *TAR*	300	10	DN 3" e 4" - AP68-	PN 16	J.S. COCK A/S Oslo - NORWAY
63	**CENERE** *ASH*	250	12	2"	150	ENIRICERCHE
64	**CLOROPRENE** *CHLOROPRENE*	120		da 2" a 4" - seggi integrali *from 2" to 4" - integral seats*	300	ENICHEM ANIC Ravenna
65	**CLORURO DI VINILE** *VINYL CHLORIDE*	120		da 2" a 4" - seggi integrali *from 2" to 4" - integral seats*	300	ENICHEM ANIC Ravenna
66	**CO** *CO*	300	10	1"	300	TERNI INDUSTRIE CHIMICHE
67	**CO2** *CO2*		160	DN 3/4" 1.1/2" - AP10HP	PN160	VENTIL BV
68	**COLLE** *GLUE*	300		DN 3" - AP68 DN 2" - AP10N	PN16 PN16	FILLATTICE SPA Monza (MI)
69	**CWS** *CWS*	160	24	1½"	300	E.N.E.L.- Centrale S.GILLA
70	**DESOLVENTIZZAZIONE FDS** *DESOLVENTIZATION FDS*			10"	150	SAMOR Casalpusterlengo
71	**DIAMANTI** *DIAMOND STONES*	Amb.	Grav.	DN 4" - 3WY -	PN 16	METMAR South Africa
72	**ESANO** *HEXANE*	AMB.		da 3/4" a 2" *from 3/4" to 2"*	300	HUMIDRYER ITALIANA Novara
73	**ETANO** *ETHANE*	-91	21,5	DN6" SAT crio	300	CHINA PETROLEUM - LANZHOU ETHYLENE PROJECT PEOPLE'S REP. OF CHINA

Reference list

Pos.	Servizio *Service Conditions*	Temp. *(°C)*	Press. *(bar)*	Tipo valvola *Valve size and Model*	Classe *Class*	Cliente *Client*
74	**ETILENE** *ETHYLENE*	-101/+66	22	DN4" SAT crio	300	CHINA PETROLEUM - LANZHOU ETHYLENE PROJECT PEOPLE'S REP. OF CHINA
75	**ETILENE LIQUIDO** *LIQUID ETHYLENE*	-104	12	DN3" and Dn4" - SAT crio	300	INNOVENE SOLVAY Rosignano Solvay (LI)
76	**FANGHIGLIA** *SLURRY*	320	160	DN ½" e 1" - SAT3 -	PN 250	PLASTINOX AG Allschwil - Switzerland
77	**FLUORO + HF** *FLUORINE + HF*	250	4	DN 2" - AP10NB	150	HUMIDRYER ITALIANA Novara
78	**FLUORURATI** *FLUORINE*	300	1	DN 1" - 3WL-	300	AUSIMONT S.p.a. Spinetta Marengo (AL)
79	**FREON** *FREON*	-15 / +50	7 / 20	1" - 1½"	300	MOSSREF - MOSSEL BAY OFFSHORE PROJ. SOUTH AFRICA
80	**FUMI** *EXHAUST GAS*	150/350		DN 1"-2" - AP10N -	150	SDI AUTOM. IND.LE Milano
81	**FUMI** *EXHAUST GAS*	350		DN 2" - AP64 -	150	ENEL S.p.A. Brindisi
82	**GAS** *GAS*	850	12	1½" - 2"	2500	ENIRICERCHE
83	**GAS** *GAS*	450	100	7,7 mm / 10 mm / 14 mm / 20 mm / 25 mm	1500	SHELL RESEARCH LABORATORIUM AMSTERDAM
84	**GAS** *GAS*	-196		3/4"	900	SHELL U.K.
85	**GAS** *GAS*	-85/+349		da ½" a 3" *from ½" to 3"*	900	STONE & WEBSTER
86	**GAS** *GAS*	50	5 - 6	DN 1/2" - AP20P	150	ASEKO OY Masala FINLAND
87	**GAS** *GAS*	320	75	DN 1.1/2" - SAT	600	INTERNATIONAL BALL VALVES LTD Suffolk ENGLAND
88	**GAS** *GAS*	50	130	DN 4" - SAT-	1500	ALFA VALVOLE Srl Casorezzo (MI)
89	**GAS** *GAS*	400	1	DN ½" e 1.1/4" - AP 64-	150	CISE SPA Milano
90	**GAS** *GAS*	550	30	DN 3" - AP 64-	150	ELETTROFLUID SRL Milano
91	**GAS** *GAS*	316	31	DN 1½" - AP 606-	600	KITZ CORPORATION Barcelona -Spain
92	**GAS COMBUSTIBILE** *FUEL GAS*	46	10	DN3"	150	KHARTOUM REFINERY COMANY SUDAN
93	**GAS SOUR** *SOUR GAS*	100		DN1.1/2" and DN2" AP10NU	150	CHEVRON TEXACO Singapore
94	**GAS INERTE** *INERT GAS*	100		DN 1.1/2" - AP64 -	150	TORMENE Due Carrare (PD)
95	**GAS + H2S** *GAS + H2S*	60	7	3/4"	800	AGIP PETROLI Sannazzaro de' Burgundi (PV)
96	**GAS + H2S** *GAS + H2S*	65	3,4	DN 1.1/2" - AP606 -	600	AGIP PETROLI P.to Marghera (VE)
97	**GAS + H2S +H2O** *GAS + H2S + H2O*	-47/+200	30	DN 2" - AP60	300	AVA Ratingen GERMANY
98	**GAS CALDI** *HOT GAS*	450	33	3/4"	800	E.N.E.L. Brindisi
99	**GAS DI ALTOFORNO** *BLAST FURNACE GAS*	250/500	Atm	DN 14"x10" - APT3	PN 10	ALFA VALVOLE Srl Casorezzo (MI)
100	**GAS DI COMBUSTIONE** *EXHAUST GAS*	-20/+77	41,4	3" - 3 vie *3" - 3 way*	300	GROVE ITALIA Voghera
101	**GAS DI COMBUSTIONE + CENERI + OLIO** *EXHAUST GAS + ASH + OIL*	450	1,3	3/4" SAT3	150	E.N.E.L. Brindisi

Pos.	Servizio *Service Conditions*	Temp. *(°C)*	Press. *(bar)*	Tipo valvola *Valve size and Model*	Classe *Class*	Cliente *Client*
102	**GAS DI COMBUSTIONE + CENERI** *EXHAUST GAS + ASH*	850 700	12	3/4" - 1½" - 2" SAT3 1" - 2" SAT3	600 150	ENIRICERCHE ENI Research Laboratory
103	**GAS DI SCARICO** *EXHAUST GAS*	450		1"	150	PNEUMATICA INDUSTRIALE
104	**GAS DI TORCIA** *FLARE GAS*	370	43	DN1"	600	PETRO CHINA DAQING OIL FIELD Methyl Alchohol Plant Ammonia Tech.Revamping PEOPLE'S REP. OF CHINA
105	**GAS / POLVERE** *GAS / ASH*	650		½"	300	I.E.A.
106	**GASOLIO** *DIESEL OIL*	300	3 - 16	DN ½" - AP20P	150	ASEKO OY Masala FINLAND
107	**GASOLIO** *GASOIL*	306	100	DN10" SAT	1500	MOTOR OIL HELLAS GREECE
108	**GLICOLE** *GLYCOL*	300		DN 1.1/2" - AP60	PN 40	PRINCO SRL Parre (BG)
109	**GLICOLE** *GLYCOL*	50	3	DN 1" - AP64	150	ALFA VALVOLE Srl Casorezzo (MI)
110	**GLICOLE CONDENSATE** *GLYCOL CONDENSATE*	-65	290 Psi	8"	600	BRITISH GAS CORPORATION UK
111	**GRASSI ACIDI** *ACID GREASES*	180	1	DN50 / 80 / 100 - AP10NU	PN 16	MATERIA HNOS SACIF ARGENTINA
112	**GREGGIO** *OIL*	200	5,8	DN 14" - APT3 -	150	AGIP PETROLI P.to Marghera (VE)
113	**HC + H2S** *HC + H2S*	150	14	DN 3" - AP64 -	150	AGIP PETROLI P.to Marghera (VE)
114	**H2** *H2*	Amb.	50	DN 4" - APT2	PN 100	ALFA VALVOLE Srl Casorezzo (MI)
115	**H2 + H2S** *H2 + H2S*	60	30	DN 2" - AP60	300	AGIP PETROLI P.to Marghera (VE)
116	**H2 + HCL** *H2 + HCL*	60	28	DN 2" - AP60	300	AGIP PETROLI P.to Marghera (VE)
117	**H2O** **(50.000 / 70.000 manovre anno)** *WATER* *(50.000 / 70.000 operation per year)*	20	150	4"	1500	ARMATUR TECKNIK LINKOPING (SW)
118	**H2O DI ALIMENTO** *FEED WATER*	185	120	3"	900	E.N.E.L. Ostiglia (MN)
119	**H2O DI ALIMENTO** *FEED WATER*	271	90	3"	900	FINCANTIERI
120	**H2O DI ALIMENTO TURBINA** *FEED WATER*			1" - 1½"		E.N.E.L. Brescia
121	**H2O VAPORE +** **H2O SOLFORATO + NH3** *H2O STEAM + H2O SULPHURATED + NH3*	140		da 1½" a 6" *from 1½" to 6"*	150	AGIP PETROLI Sannazzaro de' Burgundi (PV)
122	**H2S + CLORURI** *WET H2S + CHLORIDE*	135		2"		BRITISH PETROLEUM INTERNAT.
123	**H2S+CO2+H2O+SO2+S2+H2+CO** *H2S+CO2+H2O+SO2+S2+H2+CO*	320	0,5	DN 1" -2" - AP11N -	PN16	MAPOL SPOL S.R.O. Praga (Rep. Ceca)
124	**IDROCARBURI + H2S** *HYDROCARBONS + WET H2S*	450		4"	300	SASOL SOUTH AFRICA
125	**IDROCARBURI** *HYDROCARBONS*	-100	505	3/4" - 1½"	API 10000	MARATHON OIL
126	**IDROCARBURI** *HYDROCARBONS*	-101/+82	20	DN6" SAT crio	300	CHINA PETROLEUM - LANZHOU ETHYLENE PROJECT PEOPLE'S REP. OF CHINA
127	**IDROCARBURI** *HYDROCARBONS*	300	10	1"	150	TECHNOVALVE B.V.

Reference list

Pos.	Servizio *Service Conditions*	Temp. *(°C)*	Press. *(bar)*	Tipo valvola *Valve size and Model*	Classe *Class*	Cliente *Client*
128	**IDROCARBURI** *HYDROCARBONS*	500	20	½"	800	ATS
129	**IDROCARBURI** *HYDROCARBONS*	250	208	9 mm		ENGIMAT
130	**IDROCARBURI** *HYDROCARBONS*	400	74	6" - 3 vie *6" - 3 way*	600	ENICHEM ANIC
131	**IDROCARBURI** *HYDROCARBONS*	424	6,4	coppie 6"-3 vie comando simultaneo *6" - 3 way* *change over unit*	300	MEDITERRANEA SpA MILAZZO
132	**IDROCARBURI** *HYDROCARBONS*	180	184	4"	1500	SHELL NORTH CORMORANT PLATFORM
133	**IDROCARBURI** *HYDROCARBONS*			da 6" a 14" *from 6" to 14"*	1500	MARATHON OIL
134	**IDROCARBURI LIQUIDI** *HYDROCARBONS LIQUID*	0 / 110	2 - 5	DN 2" - AP60	300	ASEKO OY Masala FINLAND
135	**IDROCARBURI LIQUIDI** *HYDROCARBONS LIQUID*	0 / 110	7 - 16	DN 1" - AP20P	150	ASEKO OY Masala FINLAND
136	**IDROCARBURI LIQUIDI** *HYDROCARBONS LIQUID*	-120/+170	4	da 1½" a 2" *from 1½" to 2"*	300	MOSSEL BAY - ONSHORE PROJECT SOUTH AFRICA
137	**IDROCARBURI + ACQUA** *HYDROCARBONS + WATER*	400	83	½" - 3/4"	1500	E.G.P.C. PETROBEL EGITTO
138	**IDROCARBURI** *HYDROCARBONS*			*from OD 38 to OD 48* DN 15	API 5000 PN250	NORSKE NYDRO BRAGE PROJECT
139	**IDROCARBURI + CARBONE (parti)** *HYDROCARBONS + COAL PARTICLES*	650	3,5	1" SAT3	300	DOW CHEMICAL
140	**IDROCARBURI** *HYDROCARBONS*	110	17	1" 2" AP20P	800 150	ASEKO OY HELSINKY (SF)
141	**IDROCARBURI + BENZOLO** *HYDROCARBONS +BENZOL*	-47/+120	7	DN 2" - AP64	150	AVA RATINGEN - GERMANY
142	**IDROCARBURI + CH4 + N2** *HYDROCARBONS +CH4 + N2*	-47/+120	87	DN 2" - AP606	600	AVA RATINGEN - GERMANY
143	**IDROCARBURI +CH4+N2+C2H4+C3H8** *HYDROCARBONS +CH4+N2+C2H4+C3H8*	-105		DN 6" - SAT CRIO	150	AVA RATINGEN - GERMANY
144	**IDROCARBURI +CH4+C2H6+HC+C2** *HYDROCARBONS +CH4+C2H6+HC+C2*	-70		DN 6" - SAT CRIO	300	AVA RATINGEN - GERMANY
145	**IDROGENO** *HYDROGEN*	20	200	3/4" - 1½"		FIRMANI Genova
146	**IDROGENO** *HYDROGEN*	150°F	3256 PSIG	2" - 4" - 6" D.B. & B.	1500	PETRO-CANADA LAKE ONTARIO
147	**IDROGENO** *HYDROGEN*	300	100	DN 1" - SAT	PN250	SIEKMANN & CO GMBH Dortmund (Germany)
148	**IDROGENO** *HYDROGEN*	120		DN 8" - SAT	150	RAFFINERIA DI MILAZZO SPA Milazzo (ME)
149	**IDROGENO** *HYDROGEN*	60	120	DN 1½" - SAT	900	VIRGO ENGINEERS LTD India
150	**IDROGENO** *HYDROGEN*	-184		DN1" / 2" / 6" - SAT crio	150	MTBE MALESIA
151	**IDROGENO** *HYDROGEN*	-170/+66	48	DN6" DN3" SAT crio	600	CHINA PETROLEUM - LANZHOU ETHYLENE PROJECT CHINA
152	**IDROGENO + ALDEIDI** *HYDROGEN + ALDEYDE*	400	69,5	½"	900	ENICHEM AUGUSTA AUGUSTA
153	**IDROGENO + H2S** *HYDROGEN + H2S*	50/70	56	6" - 8" 4" - 6" - 8"	300 600	AGIP PETROLI TARANTO
154	**IDROGENO + PARAFFINA** *HYDROGEN + PARAFFIN*	550	7	½"	300	ENICHEM AUGUSTA AUGUSTA
155	**IDROSSIDO DI SODIO** *SODIUM AQUEOUS HYDROXIDE*			1"	600	TROUVAY & CAUVIN

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156	**INCHIOSTRI SPORCHI ED ABRASIVI** *DIRT AND ABRASIVE INK*	300	3	DN4" AP10NU	PN16	FLUIDOMATIC SRL Cazzago San Martino (BS)
157	**ISOBUTENE - ETILENE** *ISOBUTEEN + ETHYLENE*	150	55	DN 1" - 3WAY-Y -	600	TRANSMARK S.A. SCHOTEN (Antwerp) BELGIUM
158	**KEROSENE** *KEROSENE*	250		1½" - 2"	1500	LUCAS AEROSPACE
159	**LATTICI CARBOSSILATI** *CARBOXILATE LATEX*	120		da 2" a 6" - seggi integrali *from 2" to 6" - integral seats*	300	ENICHEM ANIC Ravenna
160	**LETTO FLUIDO PRESSURIZZATO BOLLENTE** *PRESSURIZED BOILED FLUID BED*		12	6"	300	ENIRICERCHE S. Donato Mi. (MI)
161	**LPG** *LPG*	AMB.		2"	300	AGIP PETROLI Sannazzaro de' Burgundi (PV)
162	**METANO** *METHANE*	260	220	DN 1/2" e 3/4" - AP20P	800 Lb	TOMASO FERRARIO1885 SNC Bologna
163	**METANOLO** *METHANOL ALCOHOL*	50	290 PSI	8"	600	BRITISH GAS CORPORATION
164	**METIONINA** *METHIONINE*			2" (valvola sperimentale) *2" (experimental valve)*	150	ENICHEM ANIC S. Donato Mi. (MI)
165	**MISCELA ACQUA/CARBONE** *COAL/WATER SLURRY*	200	25	3" SAT3	300	ENEL C.R.T.N. Pisa
166	**MISCELA ACQUA/CARBONE** *COAL/WATER SLURRY*	200	25	1"	800	C.I.S.E. Segrate (MI)
167	**MISCELA DI GAS** *GAS SLURRY*	360	40	2"	300	IMPIANTI SISTEMA GEL Milano
168	**MONOSSIDO DI CARBONIO** *CARBON MONOXIDE*	300	9	1"	300	HUMIDRYER ITALIANA Novara
169	**NAFTA** *NAPHTHA*	145/220	220/840 KPA	½" - 1" 2" - 3" - 4" - 6"	800 150	ASEKO OY HELSINKY (SF)
170	**NATURAL GAS** *NATURAL GAS*	-50/+80		1½"	API 10000	AGIP GAS
171	**NATURAL GAS** *NATURAL GAS*	-46/+55	230	6"	900	TOTAL OIL MARINE
172	**NATURAL GAS** *NATURAL GAS*	-50		12" - 18"	900	BRITISH GAS CORPORATION
173	**NEROFUMO DI GAS** *CARBON BLACK*	450		4"	300	PHILLIPS CARBON BLACK ITALIANA - Ravenna
174	**OLIGOMERO** *OLIGOMER*	285	10	DN 2" AP11N	PN40	ITALPET PREFORME SPA Verbania Pallanza (NO)
175	**OLIO** *OIL*	205	217	DN 12" - APT3 -	150	AGIP PETROLI P.to Marghera (VE)
176	**OLIO + ALLUMINA** *OIL + ALUMINA*	300	10	DN 1" - SAT3 DN 1" - AP60	PN 40 PN 40	CISE SPA Segrate (MI)
177	**OLIO AROMATICO** *AROMATIC OIL*	300	25	1" - 3 vie *1" - 3 way*	600	PHILLIPS CARBON BLACK ITALIANA - Ravenna
178	**OLIO COMBUSTIBILE** *FUEL (BLENDED OIL)*	130	15	1"	300	E.N.E.L.- Centrale S.GILLA
179	**OLIO COMBUSTIBILE** *FUEL (BLENDED OIL)*	150	30	DN 4" - AP60 -	300	AGIP PETROLI Priolo (SR)
180	**OLIO DIATERMICO** *DIATHERMIC OIL*	220	250	½" - 1"	2500	DIEFFE Cesano Boscone (MI)
181	**OLIO DIATERMICO** *THERMAL OIL*	350		da ½" a 2" - 4 vie *from ½" to 2" - 4 way*	150	COMTEA SpA Carate Brianza
182	**OLIO DIATERMICO** *THERMAL OIL*	350	6	DN 2" - 3WAY-Y	PN 40	AKZO NOBEL Arese (MI)
183	**OLIO DIATERMICO** *THERMAL OIL*	290	5	DN 2" - AP64	150	RACCORVENETA Marghera (VE)
184	**OLIO DIATERMICO** *THERMAL OIL*	300	3	DN 2" - AP10NU DN 3" - AP60	PN 40 PN 40	AGIP PETROLI Marghera (VE)

Reference list

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185	**OLIO DIATERMICO** *THERMAL OIL*	350	6	DN 2" - 3WY- DN 3" - AP60	PN 40 PN 40	AKZO NOBEL Arese (MI)
186	**OLIO DIATERMICO** *THERMAL OIL*	280/400	6	DN 3" - AP 60-	PN 40	TECNOSERVICE SNC Oriago (VE)
187	**OLIO TERMICO SHELLSOL** *SHELLSOL THERMIC OIL*	160	5	DN4"	PN16	TRANSMARK NV BELGIUM
188	**OLIO VEGETALE** *VEGETABLE OIL*	220	0,2	DN 3" e 4"- AP10NB	PN 16	ANDREOTTI IMPIANTI SPA Sesto Fiorentino (FI)
189	**OLIO VEGETALE** *VEGETABLE OIL*	200	vacuum	DN 4"- AP10NB	PN 16	FERRERO SPA Alba (CN)
190	**OSSIDI DI ALLUMINIO** *ALUMINIUM OXIDE*	650	2755 KPA	3"	600	FLEXITALLIC GASKETS AFRICA LTD
191	**OSSIDO DI CARBONIO** *CARBON OXIDE*	300	10	1"	300	HUMIDRYER ITALIANA Novara
192	**OSSIDO DI ETILENE** *ETHYLENE OXIDE*	180	0 / 9	DN 2" AP11NB	PN40	FLUIDOMATIC SRL Cazzago San Martino (BS)
193	**OSSIGENO LIQUIDO** *OXYGEN (LIQUID)*	-200	1,5	da 1" a 3" SAT CRIO *from 1" to 3"*	300	P.G.C. Salerno
194	**OSSIGENO LIQUIDO** *OXYGEN (LIQUID)*	-200	36	da 2" a 4" SAT CRIO *from 2" to 4"*	300	S.O.L. Piombino (LI)
195	**PETROLIO** *CRUDE OIL*	180		1"		BITUMOIL Milano
196	**PLASTICHE FUSE** *PLASTICS (MOLTEN)*	350		2"	150	I.C.I. PLASTICS DIVISION
197	**POLIMERI** *POLYMER*	320	6	1½" - 3 vie incamiciate - flang. 2" fluido in camicia: vapore a 60 bar *1½" - 3 way jacketed - flang. 2"* *medium in jacket: steam at 60 bar*	600	ENICHEM FIBRE Pisticci
198	**POLIMERI** *POLYMER*	380	10	2" - 3 vie incamiciate - flang. 4" Fluido in camicia: vapore a 320°/70 bar *2" - 3 way jacketed - flang. 4"* *In jacket: steam at 320°/70 bar*	600	ENICHEM FIBRE Pisticci
199	**POLIPROPILENE** *POLYPROPYLENE*			3" - 3 vie	600	TECNIMONT Milano
200	**POLIPROPILENE** *POLYPROPYLENE*			3/4" - 4"	300	AGIP PETROLI Sannazzaro de' Burgundi (PV)
201	**POLIPROPILENE** *POLYPROPYLENE*	380		1" - 3" - 6" / 3 vie	150	SASOL
202	**POLIPROPILENE** *POLYPROPYLENE*			1"	600	I.P.V. Ltd South Africa
203	**POLIPROPILENE** *POLYPROPYLENE*	200	25	3" da ½" a 4" jacketed	150 150	EXXON CHEMICAL Rotterdam (NL)
204	**POLIPROPILENE** *POLYPROPYLENE*	-48	60	DN 1/2" e 1" - AP 606-	600	OY KONWELL AB Helsinki - Finland
205	**POLVERINO DI CARBONE FINO** *FINE COAL DUST*	170	50	2"	600	INDUSTRIALE CHIMICA Srl
206	**PROPANO GASSOSO** *PROPANE GAS*			6"	300	VISCOLUBE ITALIANA Pieve Fissiraga
207	**PROPANO + PROPILENE** *PROPANE + PROPYLENE*			3"	300	TECHINT SPLITTER PLANT
208	**PROPENE** *PROPENE*	100	25	DN 2" - 3WT-	300	AHF INDUSTRIES Singapore
209	**PROPILENE** *PROPILENE*	-105		DN2" - SAT crio -	300	INNOVENE SOLVAY Rosignano Sovay (LI)
210	**RESIDUI DI SODIO** *SODIUM SLURRIES*	330		da ½" a 6" *from ½" to 6"*	600	FLUOR

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211	**RESIDUO VACUUM** *THERMALLY CRACKED VACUUM RESIDUE*	455		1"	600	TEXACO
212	**RESIDUO VACUUM** *THERMALLY CRACKED VACUUM RESIDUE*	430	44.5	3/4" - 6" - 8"	600	AGIP PETROLI Sannazzaro de' Burgundi (PV)
213	**RESIDUO VACUUM** *VACUUM BTM*	415	3,5	DN10" SAT	300	MOTOR OIL HELLAS GREECE
214	**RESINE IDROCARBURICHE** *HYDROCARBON RESINS*	350	22	*½" wb jacketed*	600	ENICHEM ANIC S.Donato Milanese (MI)
215	**RIGENERAZIONE CONTINUA U.O.P. CON IDROGENO** *U.O.P. CONTINUOUS REGENERATION WITH HYDROGEN*	350		da 2" a 6" *from 2" to 6"*	800	AGIP PETROLI Sannazzaro de' Burgundi (PV)
216	**SALI PER TRATTAMENTI TERMICI** *SALTS (HEAT TREATMENTS)*	480	2	3"	300	I.C.I. MOND DIVISION
217	**SHELL CRIO TEST** *SHELL CRIO TEST*	-196		DN2" - SAT crio -	600	KITZ CORPORATION OF JAPAN JAPAN
218	**SODIOAMMIDE LIQUIDO** *SODIUM AMMIDE (LIQUID)*	400		2"	150	I.C.I. MOND DIVISION
219	**SOSPENSIONE DI POLIETILENE CON ISOBUTANO** *POLYTHENE SUSPENSION WITH ISOBUTANE*	150	45	DN25 - SAT	PN100	INNOVENE SOLVAY Rosignano Solvay (LI)
220	**SPHERILENE + GAS DI PROCESSO** *SPHERILENE + PROCESSING GAS*	180	28	DN 2" - W1	300	MONTELL ITALIA Ferrara
221	**STIRENE (crudo)** *STYRENE (crude)*	50	6	da ½" a 2" - seggi integrali *from ½" to 2" - integral seats*	150	DOW CHEMICAL THE NETHERLANDS
222	**TETRACLORURO DI CARBONIO** *CARBON TETRACHLORIDE (CCl4)*	585	18	3/4"	600	AGIP PETROLI Porto Marghera (VE)
223	**TRICLOROETANO** *TRICHLOROETHANE*	280		da 2" a 6" - seggi integrali *from 2" to 6" - integral seats*	300	ENICHEM ANIC Ravenna
224	**UREA** *UREA PLANT*			1" - 6"	2500	TECHNIPETROL SOMALIA
225	**VAPORE** *STEAM*	420	35	DN4" SAT	900	KHARTOUM REFINERY COMANY SUDAN
226	**VAPORE** *STEAM*	300	15	½" - 1" - 1½"	300	E.N.E.L. - Centrale S.GILLA
227	**VAPORE** *STEAM*	300	30	1"	300	PHILLIPS CARBON BLACK ITALIANA - Ravenna
228	**VAPORE** *STEAM*	400	160	3/4"	1500	C.I.S.E. Segrate (MI)
229	**VAPORE** *STEAM*	350	155	3"	1500	C.I.S.E. Segrate (MI)
230	**VAPORE** *STEAM*	126	2,5	1½"	150	DOW LEPETIT Fombio (MI)
231	**VAPORE** *STEAM*	280	5 / 6	3/4"	150	ACETATI Srl Verbania (CO)
232	**VAPORE** *STEAM*	310	100	da ½" a 4" *from ½" to 4"*	1500	SIET (Impianto SPES) Piacenza
233	**VAPORE** *STEAM*	139	3,5	DN 2" - AP64 -	150	ASEKO OY Helsinki
234	**VAPORE** *STEAM*	225		DN 1" - AP60 -	300	TORMENE Due Carrare (PD)
235	**VAPORE** *STEAM*	270	60	DN 4" - SAT1 -	PN100	LONZA SPA S.Giovanni Valdarno (AR)
236	**VAPORE** *STEAM*	370	15,2	DN 3" - AP60 -	300	AGIP PETROLI P.to Marghera (VE)

Reference list

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237	**VAPORE** *STEAM*	300	15,2	DN 6" - SAT -	300	AGIP PETROLI P.to Marghera (VE)
238	**VAPORE** *STEAM*	400	3,5	DN 12" - SAT APT3 -	150	AGIP PETROLI P.to Marghera (VE)
239	**VAPORE** *STEAM*	288	73	DN 2" - AP10HP -	PN160	CMB S.p.A. Pomezia (Roma)
240	**VAPORE** *STEAM*	300	11	DN 2" - AP68 -	PN16	AVA MBH Ratingen (Germany)
241	**VAPORE** *STEAM*	370	50	DN 6" - SAT	600	EURALLUMINA Porto Scuso (CA)
242	**VAPORE** *STEAM*	370	35	DN 2" - SAT -	300	ABB COMBUSTION ENGINEERING Milano
243	**VAPORE** *STEAM*	288	80	DN ½" e 1" - AP10HP -	600	CMB S.p.A. Pomezia (Roma)
244	**VAPORE** *STEAM*	200	18	DN 1 ½" - AP60 -	PN 40	AKZO NOBEL CHEMICALS SPA Arese (MI)
245	**VAPORE** *STEAM*	280	5	DN 1" - SAT -	PN 16	ACETATI SPA Verbania
246	**VAPORE** *STEAM*	255	17	DN 12" - SAT -	300	DRESSER ITALIA Casavatore (NA)
247	**VAPORE** *STEAM*	220	6	DN 1" - AP20P -	6000psi	ALFA VALVOLE Casorezzo (MI)
248	**VAPORE** *STEAM*	230	25	DN 1" - SAT -	300	VIRGO ENGINEERS LTD India
249	**VAPORE (Spillamento campioni)** *STEAM (Sampling)*	270	180	½"	1500	E.N.E.L. Ostiglia (MN)
250	**VAPORE (tempo di manovra 2 sec)** *STEAM (operation in 2 sec)*	370	50	6" - By-pass turbina *6" - Turbine by-pass*	600	EUROALLUMINA Porto Scuso (CA)
251	**VAPORE SATURO** *STEAM*	211	20	da ½" a 3" *from ½" to 3"*	600	FABBRICA ADESIVI RESINE Milano
252	**VAPORE SURRISCALDATO** *STEAM (SUPERHEATED)*	480	45	da ½" a 3" *from ½" to 3"*	600	FABBRICA ADESIVI RESINE Milano
253	**VAPORE SURRISCALDATO** *STEAM (SUPERHEATED)*	420	145	½" - 3/4" - 1"	1500	E.N.E.L.- Centrale OSTIGLIA
254	**VAPORE + RISO SOFFIATO** *STEAM + PUFFED RICE*	180	15	DN 6" - AP10 -	150	R.I.S.A. Srl Rozzano (MI)
255	**VAPORE + TDI + DCB** *STEAM + TDI + DCB*	320	30	da 1½" a 3" *from 1½" to 3"*	300	MONTEDISON DIPI FOMBIO
256	**VAPORE + H2S + AMMONIACA** *STEAM + H2S + AMMONIA*	80/120	3	2" - 4" - 6"	150	AGIP PETROLI Sannazzaro de' Burgundi (PV)
257	**VAPORE + SODA** *STEAM + SODA*	247	40	DN 1 ½" - SAT -	300 600	EURALLUMINA Porto Scuso (CA)
258	**VAPORI DI OLIO DIATERMICO** *VAPOUR OF HEAT OIL*	320		2"	150	I.C.I. MOND DIVISION
259	**ZOLFO** *SULPHUR*	300		2" - 3"	300	F.C.C. COMPLEX UNGHERIA
260	**ZOLFO FUSO** *SULPHUR (MOLTEN)*	400	2	1" - 2" incamiciate *1" - 2" jacketed*	150	I.S.A.B. Priolo Gargallo (SR)
261	**ZOLFO FUSO** *SULPHUR (MOLTEN)*	140		DN 1½" -2"-3"-4" incamiciate -W1J- *DN 1½" -2"-3"-4" jacketed -W1J-*	150	INFINEUM ITALIA SRL Vado Ligure (SV)
262	**ZOLFO FUSO +** **GAS DI PROCESSO IN NM3 + HR** *SULPHUR (MOLTEN) +* *PROCESS GAS IN NM3 + HR*	750	6	2" incamiciate *2" jacketed*	300	I.S.A.B. Priolo Gargallo (SR)

NOTE: