ferrero

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CERTIFICAZIONE ITALIANA DEI SISTEMI QUALITÀ AZIENDALI
ITALIAN CERTIFICATION OF COMPANY QUALITY SYSTEMS

ICIM

CERTIFICATO n. / CERTIFICATE No 0228/2

SI CERTIFICA CHE IL SISTEMA QUALITÀ DI
WE HEREBY CERTIFY THAT THE QUALITY SYSTEM OPERATED BY

FERRERO RUBINETTERIE S.r.l.

UNITÀ OPERATIVA
OPERATIVE UNIT

Via Dogliani, 84 - 12060 Farigliano (CN)
Italia

È CONFORME ALLA NORMA / IS IN COMPLIANCE WITH THE STANDARD **UNI EN ISO 9001:2000**

PER I SEGUENTI TIPI DI PRODOTTI - PROCESSI - SERVIZI
CONCERNING THE FOLLOWING KINDS OF PRODUCTS - PROCESSES - SERVICES

Progettazione e produzione di valvole per impianti di riscaldamento, valvole a sfera, collettori componibili e raccordi in ottone.

Design and production of valves for heating systems, ball valves, manifolds and brass fittings.

IL PRESENTE CERTIFICATO È SOGGETTO AL RISPETTO DEL REGOLAMENTO PER LA CERTIFICAZIONE DEI SISTEMI QUALITÀ DELLE AZIENDE
THE USE AND THE VALIDITY OF THIS CERTIFICATE SHALL SATISFY THE REQUIREMENTS OF THE RULES FOR THE CERTIFICATION OF COMPANY QUALITY SYSTEMS

Il presente documento annulla e sostituisce il certificato di pari numero emesso in data 31/10/2000.

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SINCERT

THE STORY

1962 the Ferrero Riccardo workshop began operating as a craft mechanical workshop producing heating system valves

1965 the production of the highest quality and in line with demands of foreign countries allows a soon began to export to European countries

1973 start of ball valve production

1985 opening of the new factory of 7.000 m^2 over a surface areas of 35.000 m^2. The company grew to such an extent that it also required a modification of its company status. So that it became FERRERO RUBINETTERIA di R. FERRERO & C. SNC

1994 the production system obtains ISO 9002 certification

2000 opening of second factory of 3.000 m^2 on a surface area of 36.000 m^2

2002 anniversary of 40th year of activity. The share capital company was transformed into FERRERO RUBINETTERIE SRL
ISO 9001 – Vision 2000 certification was obtained

FERRERO RUBINETTERIA, today

- present in 47 countries world-wide.
- export accounting for 90% of production.
- annual output of 4,500,000 pieces

■ The 6 rules of working philosophy

1. attention to the selection of the materials used in the production process, in both the processing and product, in respect of environmental and consumer well-being;
2. production quality
3. product reliability guarantees and the safeguarding of consumer, installer and distributor standards thanks to checks in each production stage with insurance and cover of civil responsibility and risks;
4. continuous development of the range, thanks to the development of new products and improvement in production already available;
5. eye to market evolution;
6. international certification to ensure a "Made in Italy" product of the highest quality.

■ Thanks to its high degree of professionalism, experience and continuous research and modernisation, the production of Ferrero, which is entirely undertaken at the Farigliano factory is of the highest quality.
Ferrero Rubinetteria has been on the market of 40 years and this family run undertaking has succeeded in creating a highly rational and competitive undertaking with an international approach. Thanks to the painstaking care taken in design and in the selection of raw materials, Ferrero production is of the highest quality thanks also to the highly advanced production machinery used, the ongoing investment programme, and the quality checks undertaken in each processing stage, as well as the checks undertaken on products prior to delivery, in fact all Ferrero valves are subjected to pneumatic and hydraulic testing. A working philosophy that ensures that production is in line with all the international standards and certifications, and has led to the company being certified in accordance with ISO 9001: 2000 standards.

Other products non included in this documentation

- 25 bar ball valves
- ball valves with drain cock and outlet tap
- ball valves with three pieces pipe fitting
- ball valves with incorporating check valve
- 40 bar ball valves
- ball valves with ends to braze
- ball bib cocks
- 3 way flow diverter valves
- ball valves with PE-PVC pipe connecting piece
- ball valves to embed
- angle ball valves
- angle ball valves with incorporating check valve
- ball valves for water meter
- mini-ball valves
- ball valves for pumps
- boiler draining ball valve
- universal check valves
- filter for check valves
- gate valves
- ball valves for gas

General remarks as a guide to the present catalogue:

UNI EN…- UNI ISO… the standards followed in construction, as envisaged solely by the Italian certification body.

AISI material classification body

PTFE Polyethafluorethane
NBR nitrile
FKM fluorinate rubber
EPDM Ethylene propylene

Russian certificate

Ukrainian certificate

ACS French sanitary certification

These information provided is for reference purposes only
Ferrero Rubinetteria reserves the right to modify the production without prior notification.

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summary

Radiator heating systems

Premise
A heating system made up of radiators needs a water regulation feature to ensure the best level of thermal performance to meet user needs. The most common procedure to obtain optimum balancing is that of installing lockshield and radiator valves, on the input and output of the heating element

Why use thermostatic valves?
Legal provisions increasingly require the use of systems capable of regulating temperature through the precise calculation of the energy values which take into account the free heat input which may originate from other sources.
Thermostatic valves constitute the most simple and economic method, currently available on the market, for automatic temperature regulation. This all translates into energy savings, environmental respect and savings for the end user.

Operational description
The thermostatic head contains a material which is thermo-sensitive and reacts according to environmental variations. Once the required temperature is set on the thermostatic head, it compares it to the surrounding environmental temperature and adapts to correct the valve opening value.
Once the surrounding environmental temperature exceeds the required number of degrees, the thermo-sensitive material expands and imposes the total or partial closure of the valve, and a consequent reduction in the water flow which circulates inside the radiator. On the other hand, if the atmospheric temperature is below that set, this same material contracts and engages the valve to undertake the necessary degree of opening to permit an increase in the total amount of hot water.
The thermostatic head acts to maintain a constant atmospheric temperature as it also senses the presence of other external heat sources such as solar radiation or heat generated by persons or domestic appliances. This is why it should never be covered by any covering or other furnishings which may reduce its capacity of sensing any environmental temperature changes.

Advantages
If constant temperature is achieved in various environments, with a temperature regulation which may vary from room to room, or from radiator to radiator, it is possible to achieve an annual power saving of up to 20%.

How to select your thermostatic valve

There are three factors relating to the thermostatic valve which have a consequent impact on the system performance

- the proportional band
- the average thermal head
- the differential pressure

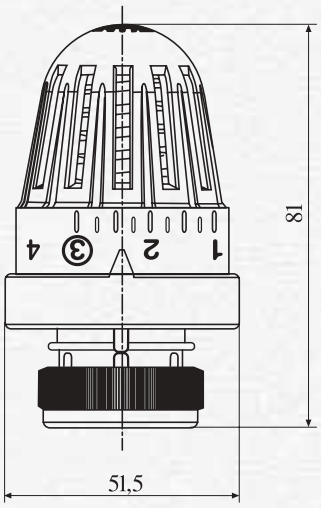
The proportional band - is the room temperature variation necessary to move the obturator from the valve closed to open position set by design. 1°K corresponds to a temperature difference to 1°C.
The wider the band, the greater the amount of water delivered into the radiator, and therefore the greater the yield, but the temperature regulation aspect is less precise. This value is determined solely by the valve.
A compromise value of the proportional band is of 2°K.
The thermal head - is the difference between the temperature on entry into the radiator and on exit, it is determinated by the valve capacity and the radiant surface of the radiator.
The differencial pressure - is the speed of the fluid in the circuit, is the speed of the fluid, and then the quantity that circulates in the circuit. It is determinated by the pumps that circulates it. High fluid speed may also cause noise in the system, often due to choking and expansion within the circuit and in the valves in particular. Differential pressures of 900-1000 mm H2O is usually a value that gives no problems.

Why choose a Ferrero thermostatic valve?

- **Constant temperature regulation.**
- Helps to achieve real **savings in terms of energy and money** while at the same time fully complying the provisions of the law.
- **Eco-friendly feature:** thanks to a carefully regulated use of the available energy resources used in heating.
- **Installation ease:** it requires no plumbing, and can also be used on operating systems which already include a FERRERO thermostatic valve.
- **Temperature locking device** - which prevents the risk of any accidental tampering.
- **Anti-freeze regulation:** the thermostatic head is fitted at a position which impedes the environmental temperature to fall to below 8°C so as to avoid the water in the radiator and piping from freezing.
- **Great thermostat sensitivity:** thanks to the large and contoured slits efficient thermostat ventilation is possible which increases sensitivity to the environmental temperatures.
- **Low hysteresis:** hysteresis is the difference between the valve capacity during the opening and closure stages. EN 215 standards lay down a maximum value of 0.8 K, while our valves have a maximum value of 0.1-0.2 K recorded on article 23.
- **Sturdiness:** is ensures by the specific construction design, and thanks to the quality of the materials used and the thickness of the valve body. The particular shape of the valve bodies has been designed to ensure the greatest possible capacity as well as the careful regulation at smaller capacity levels.
- **Head assembly ease:** simply by tightening the nut on the body manually without requiring any special tools.
- **Quality tests and inspections:** the entire production is subjected to stringent quality tests in accordance with the provisions of ISO 9000. All the valves are individually subjected to a stringent final inspection to test both function and the sealing capacity. For each production lot certain samples are random checked and subjected to functional checks.
- **Ample temperature regulation scope**
- **Maximum temperature lock.**

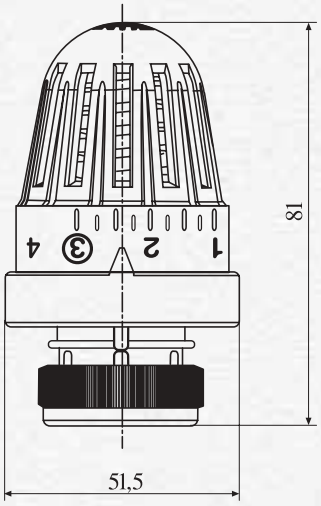
Thermostatic heads

Art. 23 Thermostatic head with liquid sensor



In compliance with EN 215 standard
Working range 8-28°C
Max. water temperature 120°C
Max. working pressure 10 bar (1000 Kpa)
Max. differential pressure 1 bar (100 Kpa)
Hysteresis 0.5k (°C)
Anti-freeze position 8°C

Art. 24 - Thermostatic head with wax sensor



In compliance with EN 215 standard
Working range 8-28°C
Max. water temperature 120°C
Max. working pressure 10 bar (1000 Kpa)
Max. differential pressure 1 bar (100 Kpa)
Hysteresis 0.16k (°C)
Anti-freeze position 8°C

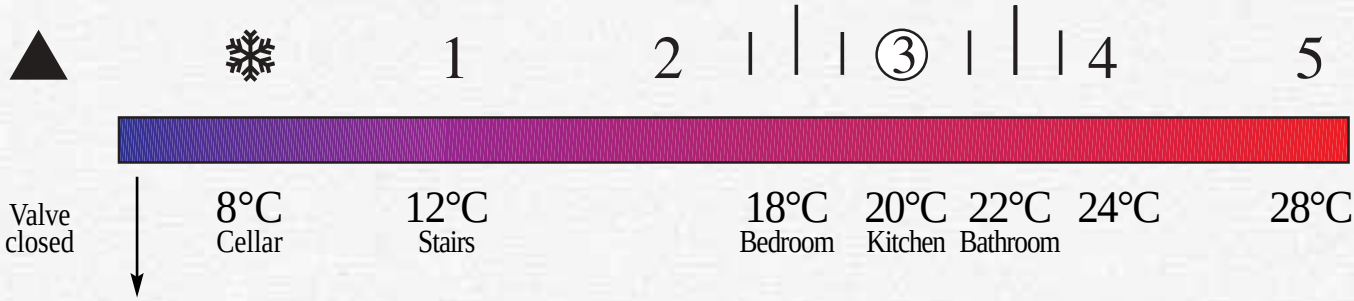
Difference between wax and liquid sensors
Liquid sensors have faster temperature change reaction times, which ensures that the required temperatures are reached faster. It is suited to those places subject to particular temperature variations (bars, restaurants etc) and where there is a continual need to restore the set temperature.

Thermostatic head assembly instructions

Temperature regulation

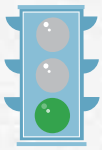
The temperatures indicated below for each room are to be considered as being generalized to achieve a heating value, which also ensures energy savings.

Position

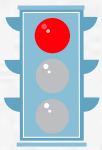


Immediate stop simply by applying greater manual pressure

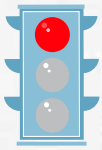
Temperature regulation is possible by rotating the thermostatic head (clockwise-colder, anticlockwise-hotter). The difference between the numbers is of approx. 4°C, while the difference between lines 2 and 3 and between 3 and 4 is of 1°C.
The FERRERO thermostatic head is calibrated in such a way that position 3 corresponds to an environmental temperature of 20°C.



The optimum position of the thermostatic head is horizontal as it improves the thermal exchange with the environment.



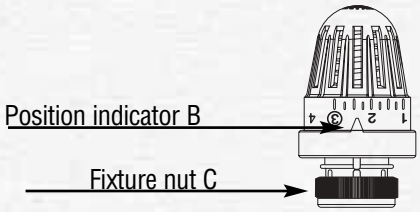
Vertical head positioning does not permit correct valve function.

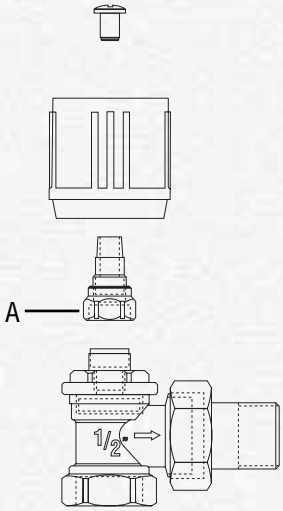


Avoid direct exposure to the sun's rays and to air currents. Make sure that no ornaments, radiator covers or curtains impede free air circulation.

Thermostatic head assembly instructions

- Dismantle the valve hand-wheel
- Unscrew the manual control fixture nut (A) using a spanner of 15 mm.
- Turn the thermostatic head to position no. 5
- Insert the head onto the body rotating only the fixture nut (C) of the head.
- Tighten the thermostatic head on the thread keeping the indicator (B) high rotating only the fixture nut (C) of the head.
- Regulation is possible by rotating the head to a position which corresponds to the desired temperature.





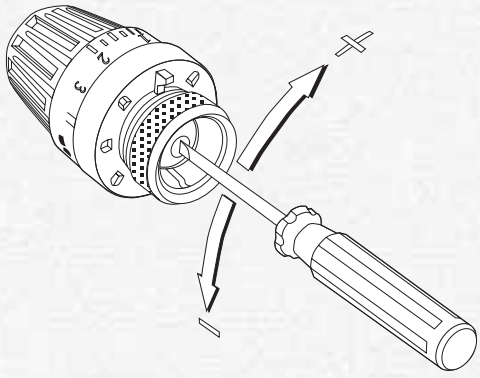
Temperature lock

Temperature locking device to prevent the risk of any accidental tampering. It is engaged by pressing the ring which positions the indicator in one's own direction.

Head calibration

The thermostat is regulated in such a way that position 3, under normal conditions corresponds to an atmospheric temperature of about 20°C. This regulation may not correspond in the event of particular installation conditions and it may therefore be necessary to re-regulate the head. To calibrate the head proceed as follows:

- measure the actual temperature on the thermostat
- rotate the thermostat to position 5 and dismantlet from the body unscrewing the fixture nut.
- using a screwdriver, undertake to tighten the central screw to increase and loosen the screw to reduce the temperature. 1/4 of a turn corresponds to 1°C. In order to avoid excessively influence the anti-freeze position, do not regulate by over 1/4 of a turn.
- re-assemble the head onto the valve.



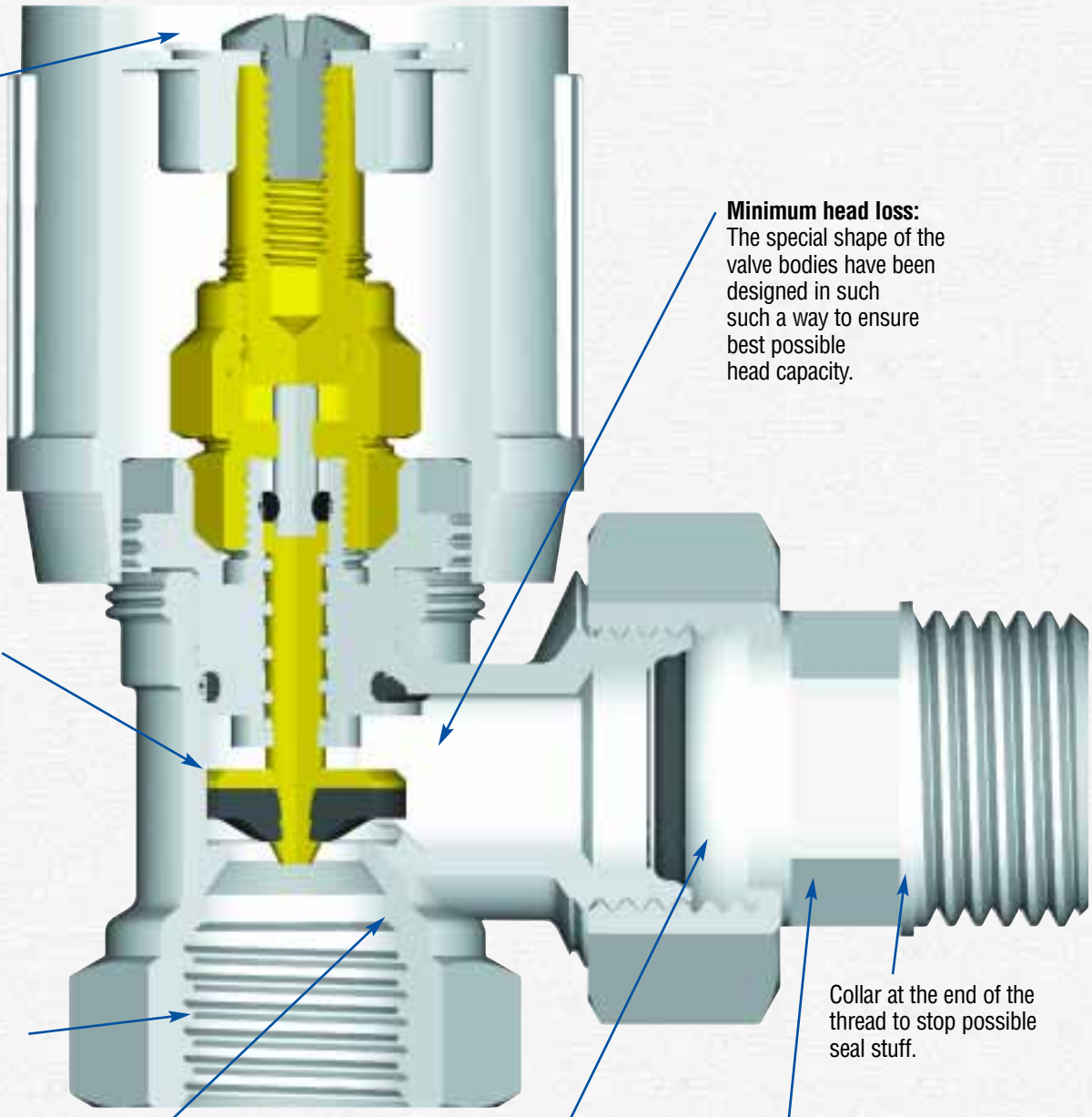
Valve with thermostatic option

Working conditions
Working temperature max 110°C
Working pressure max 16 bar

ABS handwheel with steel reinforce tightly locked on the dial, for maximum strength.

Minimum head loss: The special shape of the valve bodies have been designed in such such a way to ensure best possible head capacity.

Shaped shutter for effective adjustment when the valve is open with low flow rate. **Contoured outlet for a minimum head loss. Minimum noisiness** also at the most reduced regulations.



UNI ISO 228 **threaded connections**

Collar at the end of the thread to stop possible seal stuff.

Tang with hexagonal body to support the spanner

Collar to stop pipe to prevents damage to the seal seat.

Tang with double seal on the head: metal/metal + O Ring
Available also with O Ring on the thread

Valves with thermostatic option

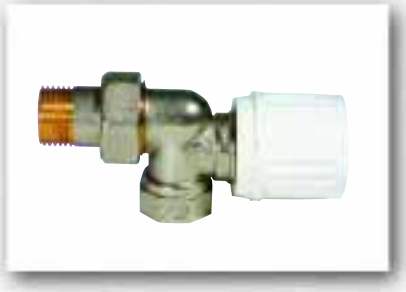
Female threaded connection according to UNI ISO 228

Article 3 – angle valve

Ø	ARTICLE	A	B	C	D	E	F
3/8”	3C3/8”B	49	19	70	38	10	
1/2”	3D1/2”B	52	23	74	38	11	

Article 4 – straight valve

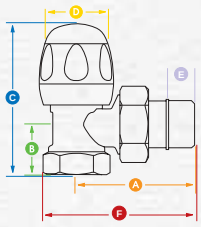
Ø	ARTICLE	A	B	C	D	E	F
3/8”	4C3/8”B	45	22	60	38	10	67
1/2”	4D1/2”B	52	23	59	38	11	75



Article 11 – revesed angle valve

Ø	ARTICLE	A	B	C	D	E	F
1/2”	11D1/2”B	25	48	107	38	11	53

Valves with thermostatic option for unthreaded pipes



Male threaded connection according to UNI ISO 228

Connection to the pipe valves can be connected on different pipes: copper, steel, plastic material and mutilayers pipes. For connection to tubes see fittings on pages 42 –43 – 44- 45.

Article 27 – angle valve

Ø	ARTICLE	A	B	C	D	E	F
3/8”	S 27C3/8”B	49	19	72	38	10	
1/2”	S 27D1/2”B	52	23	74	38	11	
1/2”x18	S 27D1/2”x18B	52	23	74	38	11	

Article 28 – straight valve

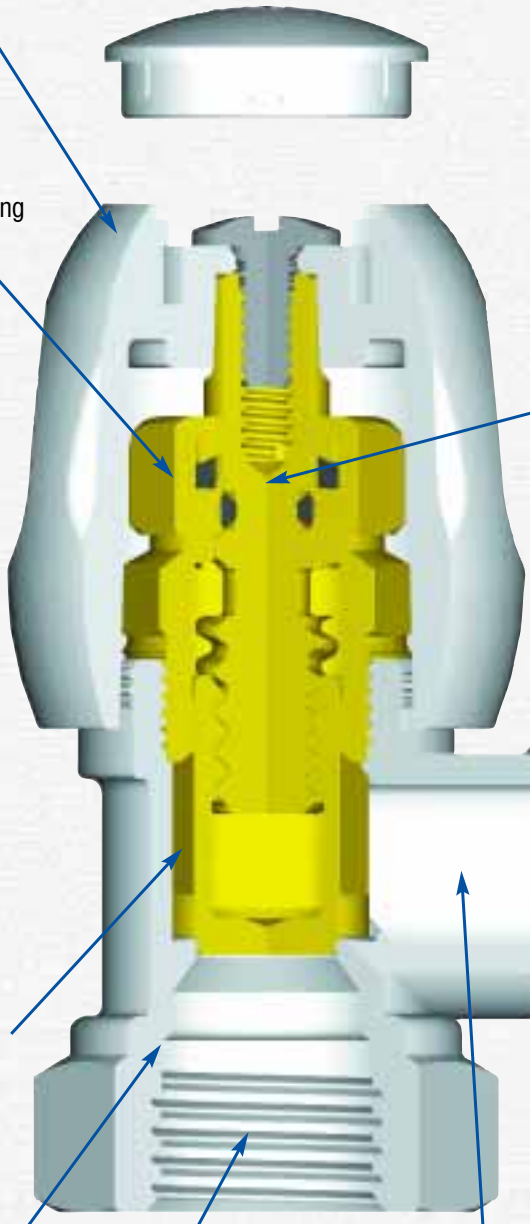
Ø	ARTICLE	A	B	C	D	E	F
3/8”	S 28C3/8”B	53	21	60	38	10	74
1/2”	S 28D1/2”B	53	22	59	38	11	75
1/2”x18	S 28D1/2”x18B	52	23	59	38	11	75

Radiator and lockshield valves with manual control

Working conditions
Working temperature 110°C max
Working pressure 16 bar max

ABS handwheel with steel reinforce, tightly locked on the dial, for maximum strength.

Double stuffing box seal stuffing box made of PTFE with adjustable cap + 1 O-ring



Double regulation valves: double regulation positioned beneath the hand-wheel screw. This permits the shutter closure, without any opening beyond the permitted value. Its concealed position prevents the risk of any tampering.

Tang with exagonal body to support the spanner

Shaped shutter for effective adjustment when the valve is open with low flow rate. Contoured outlet for a minimum head loss. **Minimum noisiness also at the most reduced regulations.**

Tang with double seal on the head: metal/metal + O Ring. Available also with O Ring on the thread

Collar to stop pipe to prevents damage to the seal seat.

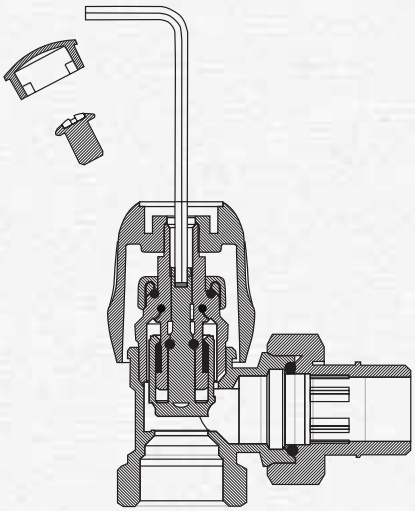
Collar at the end of the thread to stop possible seal stuff.

UNI ISO 228 threaded connections

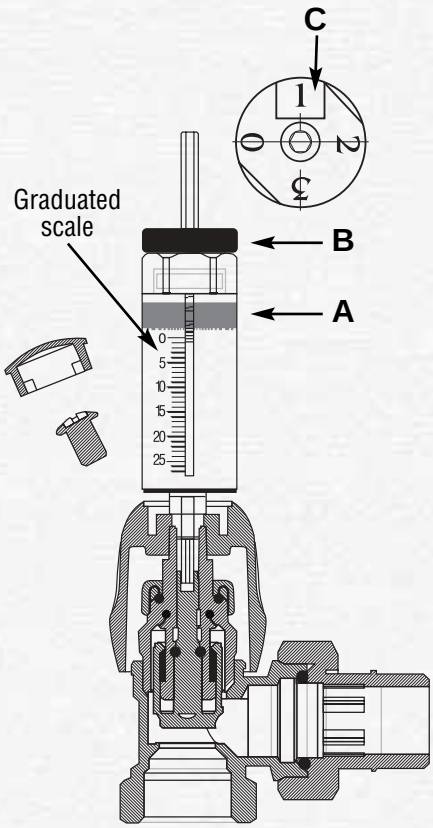
Wide passage for minimum head loss

Instructions for the calibration of the double micrometric regulation

Pre-regulation in order to determine the maximum power to the radiator, to establish the maximum temperature value required for a particular environment, taking into account all the various factors which may affect it.
The double regulation feature makes it possible to limit the maximum valve opening, and to prevent any tampering with set calibration values.



Manual regulation with diagrams
For pre-regulation proceed as follows:
1. close the valve
2. fully tighten the regulation rod, with the aid of a 3 mm allen wrench, the rod is located under the handwheel screw.
3. calibrate as required, by loosening the regulation rod by the numbers of turns as selected on the head loss diagram (the head loss diagrams are available from Ferrero on request, or they may be downloaded from our site www.ferrero-valves.com/en/informazioni/area_download.cfm)



Adjustment using spanner 476
Spanner 476 ensures precise adjustment, if the spanner is used on a pre-regulated valve it is possible to read the valve regulation point, so that it is not necessary to count the number of regulation turns to be made on the valve.
1. By reading the head diagrams it is possible to calculate the number of turns to be used to tighten the internal valve screw (the head loss diagrams are available from Ferrero on request, or they may be downloaded from our site www.ferrero-valves.com/en/informazioni/area_download.cfm)
2. Loosen the hand wheel screw and screw on the spanner in its place until the spanner collar rests against the rod surface.
3. Move the knurled ring B to ensure that the 3 mm hexagonal spanner is inserted on the rod.
4. Turn ring B and check the number of regulation turns on the graduated scale, and the number of quarter turns on the notch of the B ring itself.
5. Once the set value has been reached whilst keeping ring B in position unscrew the hexagonal key and the valve is calibrated.
6. Should the spanner and the valve rod tend to slide during the operation, use a free hand to steady the handle or on the knurling A.

For further details on art. 476 refer to page 22 of the present catalogue.

Valve for threaded pipes

Valves with manual control
Double micrometric regulation
Male/female threaded ends according to UNI ISO 228

Article 1 – angle valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	1C3/8"OTA	49	19	63	33	10	
1/2"	1D1/2"OTA	53	22	67	33	11	
3/4"	1E3/4"OTA	59	23	72	33	13	
1"	1F 1"OTA	69	27	87	46	16	

Article 1 – angle valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	1C3/8"B	49	19	63	33	10	
1/2"	1D1/2"B	53	22	67	33	11	
3/4"	1E3/4"B	59	23	72	33	13	
1"	1F 1"B	69	27	87	46	16	

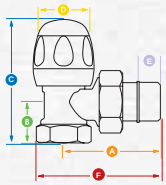
Article 2 – straight valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	2C3/8"OTA	45	22	53	33	10	67
1/2"	2D1/2"OTA	52	23	52	33	11	75
3/4"	2E3/4"OTA	56	26	59	33	13	82
1"	2F 1"OTA	71	31	76	46	16	102

Article 2 – straight valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	2C3/8"B	45	22	53	33	10	67
1/2"	2D1/2"B	52	23	52	33	11	75
3/4"	2E3/4"B	56	26	59	33	13	82
1"	2F 1"B	71	31	76	46	16	102

Valves with manual control
Simple regulation
Male/female threaded ends according to UNI ISO 228



Article 5 – angle valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	5C3/8"OTA	49	19	63	33	10	
1/2"	5D1/2"OTA	53	22	67	33	11	
3/4"	5E3/4"OTA	59	23	72	33	13	

Article 5 – angle valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	5C3/8"B	49	19	63	33	10	
1/2"	5D1/2"B	53	22	67	33	11	
3/4"	5E3/4"B	59	23	72	33	13	

Article 6 – straight valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	6C3/8"OTA	45	22	53	33	10	67
1/2"	6D1/2"OTA	52	23	52	33	11	75
3/4"	6E3/4"OTA	56	26	59	33	13	82

Article 6 straight valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	6C3/8"B	45	22	53	33	10	67
1/2"	6D1/2"B	52	23	52	33	11	75
3/4"	6E3/4"B	56	26	59	33	13	82

Valves for unthreaded pipes

Valves with manual control
Double micrometric regulation
Male/female threaded connection according to UNI ISO 228
Connection to the pipe valves can be connected on different pipes: copper, steel, plastic material and mutilayers pipes. For connection to tubes see fittings on pages 42 –43 – 44- 45.

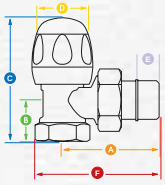
Article 15 – angle valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	S 15C3/8"B	49	21	65	33	10	
1/2"	S 15D1/2"B	52	22	67	33	11	
1/2"x18	S 15D1/2"x18B	52	22	67	33	11	

Article 16 – straight valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	S 16C3/8"B	53	21	53	33	10	74
1/2"	S 16D1/2"B	53	22	52	33	11	75
1/2"x18	S 16D1/2"x18B	52	23	52	33	11	75

Valves with manual control
Simple regulation
Male threaded connection according to UNI ISO 228
Connection to the pipe valves can be connected on different pipes: copper, steel, plastic material and mutilayers pipes. For connection to tubes see fittings on pages 42 –43 – 44- 45.



Article 17 – angle valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	S 17C3/8"B	49	21	65	33	10	
1/2"	S 17D1/2"B	52	22	67	33	11	
1/2"x18	S 17D1/2"x18B	52	22	67	33	11	

Article 18 – straight valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	S 18C3/8"B	53	21	53	33	10	74
1/2"	S 18D1/2"B	53	22	52	33	11	75
1/2"x18	S 18D1/2"x18B	52	23	52	33	11	75

Valve for threaded pipes – export range

Valves with manual control
Simple regulation
Male/female threaded connections according to UNI ISO 228
Tightness on the obturator with O Ring in EPDM
Working temperature from –10°C up to +110°C
Tightness on the tang with O Ring on the head
Handwheel in nylon (plastic) to embed

Article 161 – angle valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
1/2"	161D1/2"OTB	53	22	72	35	11	

Article 161 – angle valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
1/2"	161D1/2"B	53	22	72	35	11	

Article 162 – straight valve – yellow brass

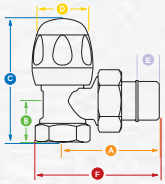
Ø	ARTICLE	A	B	C	D	E	F
1/2"	162D1/2"OTB	52	22	59	35	11	74

Article 162 – straight valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
1/2"	162D1/2"B	52	22	59	35	11	74

Valve for unthreaded pipes – export range

Valves with manual control
Simple regulation
Male threaded connections according to UNI ISO 228
Tightness on the obturator with O Ring in EPDM
Working temperature from –10°C up to +110°C
Tightness on the tang with O Ring on the head
Handwheel in nylon (plastic) to embed
Connection to the pipe: valves can be connected on different pipes: copper, steel, plastic material and mutilayers pipes. For connection to tubes see fittings on pages 42 –43 – 44- 45.



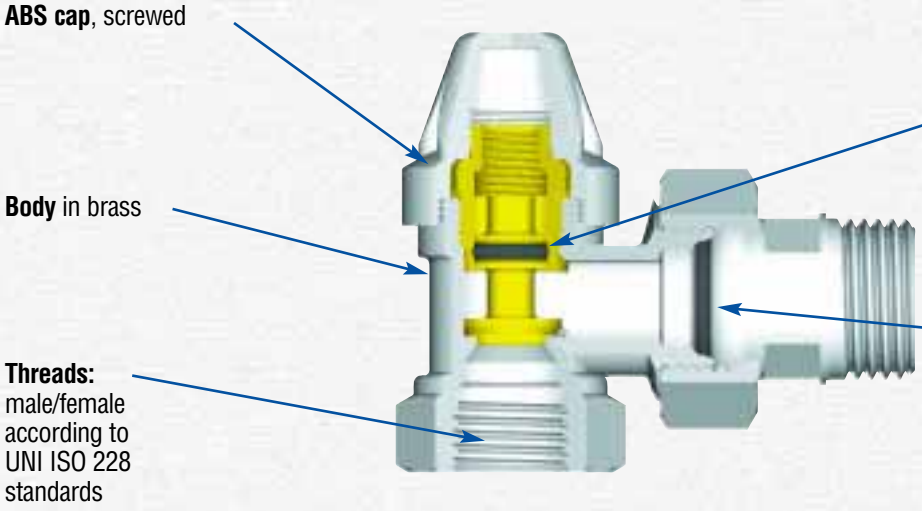
Article 165 – angle valve – nickel-plated brass

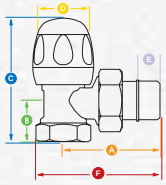
Ø	ARTICLE	A	B	C	D	E	F
1/2"	S165D1/2"B	53	22	72	35	11	
1/2"x18	S165D1/2"x18B	53	22	72	35	11	

Article 166 – straight valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
1/2"	S166D1/2"B	52	22	59	35	11	74
1/2"x18	S166D1/2"x18B	52	22	59	35	11	74

Lockshield valves for threaded pipes





Double micrometric regulation

Working temperature from –10°C up to +110°C

Lockshield adjustment by a 6 mm allen spanner to enter on the internal hexagon placed under the cap

Note: article 7 and article 8 ø 1" available till run out of stock

Article 7 – angle lockshield valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	7C3/8"OTA	49	19	53	28	10	
1/2"	7D1/2"OTA	53	22	57	28	11	
3/4"	7E3/4"OTA	59	23	62	28	13	
1"	7F 1"OT	71	29	32	45	16	

Article 7 – angle lockshield valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	7C3/8"B	49	19	53	28	10	
1/2"	7D1/2"B	53	22	57	28	11	
3/4"	7E3/4"B	59	23	62	28	13	
1"	7F 1"	71	29	32	45	16	

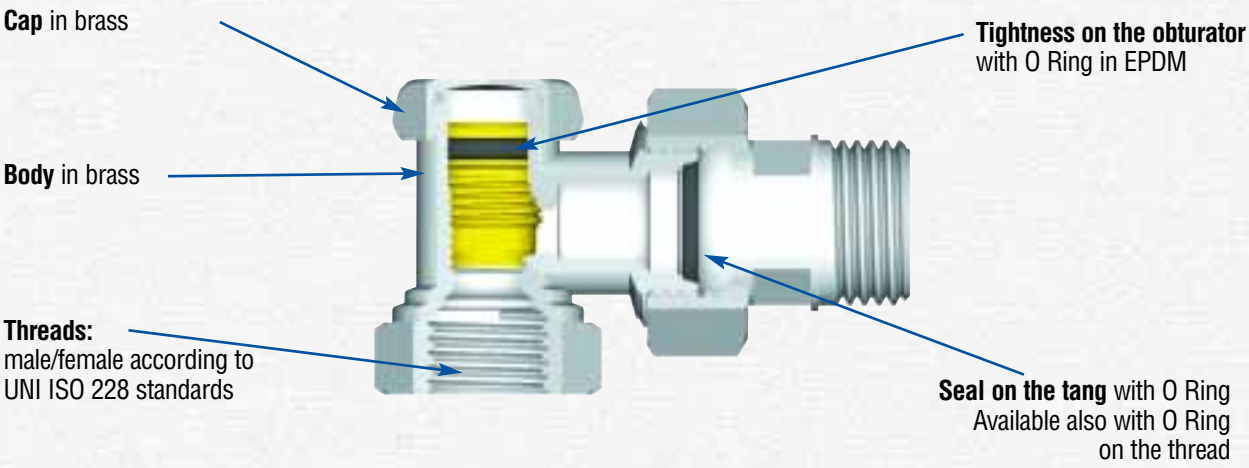
Article 8 – straight lockshield valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	8C3/8"OTA	45	22	43	28	10	67
1/2"	8D1/2"OTA	52	23	42	28	11	75
3/4"	8E3/4"OTA	56	26	48	28	13	82
1"	8F 1"OT	72	33	54	32	16	105

Article 8 – straight lockshield valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	8C3/8"B	45	22	43	28	10	67
1/2"	8D1/2"B	52	23	42	28	11	75
3/4"	8E3/4"B	56	26	48	28	13	82
1"	8F 1"	72	33	54	32	16	105

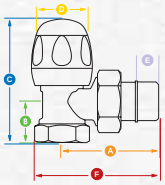
Lockshield valves for threaded pipes



Micrometric regulation

Working temperature from –10°C up to +110°C

Lockshield adjustment by a 6 mm allen spanner for 3/8" - 8 mm for 1/2" - 10 mm for 3/4" to enter on the internal hexagon placed under the cap



Article 21 - angle lockshield valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	21C3/8"OT	44	18	37	21	10	
1/2"	21D1/2"OT	51	22	39	24	11	
3/4"	21E3/4"OT	56	23	47	28	13	

Article 21 – angle lockshield valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	21C3/8"	44	18	37	21	10	
1/2"	21D1/2"	51	22	39	24	11	
3/4"	21E3/4"	56	23	47	28	13	

Article 22- straight lockshield valve – yellow brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	22C3/8"OT	45	19	23	21	10	64
1/2"	22D1/2"OT	51	23	29	24	11	74
3/4"	22E3/4"OT	60	23	34	28	13	83

Article 22 – straight lockshield valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	22C3/8"	45	19	23	21	10	64
1/2"	22D1/2"	51	23	29	24	11	74
3/4"	22E3/4"	60	23	34	28	13	83

Lockshield valves for unthreaded pipes

Double micrometric regulation
Male/female threads according to UNI ISO 228 standards
Tightness on the obturator with O Ring in EPDM
Working temperature from – 10°C up to + 110°C
Tightness on the tang with O Ring on the head
Cap in ABS (plastic) screwed
Connection to the pipe valves can be connected on different pipes: copper, steel, plastic material and mutilayers pipes. For connection to tubes see fittings on pages 42 –43 – 44- 45.

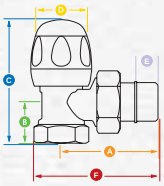
Article 19 – angle lockshield valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	S 19C3/8"B	49	21	55	28	10	
1/2"	S 19D1/2"B	52	22	57	28	11	
1/2"x18	S 19D12"x18B	52	22	57	28	11	

Article 20 – straight lockshield valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
3/8"	S 20C3/8"B	53	21	43	28	10	74
1/2"	S 20D1/2"B	53	22	42	28	11	75
1/2"x18	S 20D1/2"x18B	52	23	42	28	11	75

Micrometric regulation
Male/female threads according to UNI ISO 228 standards
Tightness on the obturator with O Ring in EPDM
Working temperature from – 10°C up to + 110°C
Tightness on the tang with O Ring on the head
Cap in brass
Connection to the pipe valves can be connected on different pipes: copper, steel, plastic material and mutilayers pipes. For connection to tubes see fittings on pages 42 –43 – 44- 45.



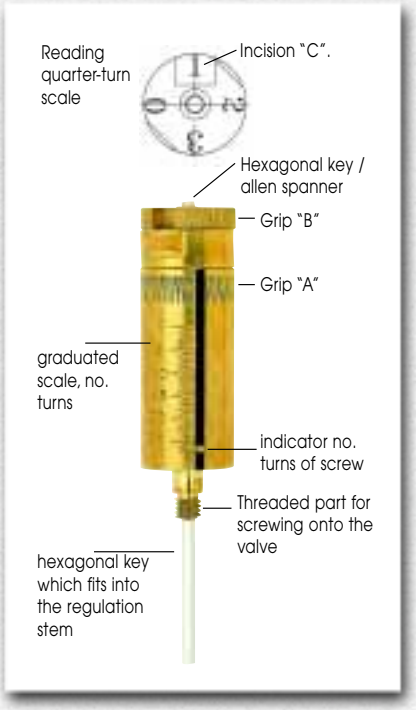
Article 25 – angle lockshield valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
1/2"	S 25D1/2"	53	22	39	24	11	
1/2"x18	S 25D1/2"x18	53	22	39	24	11	

Article 26 – straight lockshield valve – nickel-plated brass

Ø	ARTICLE	A	B	C	D	E	F
1/2"	S 26D1/2"	51	23	26	24	11	74
1/2"x18	S 26D1/2"x18	51	23	26	24	11	74

Key for adjustment of micrometric regulation



Article 476

Keeps off the no. of the regulation turns to make on the valve and can read the calibration value of a valve already calibrated.

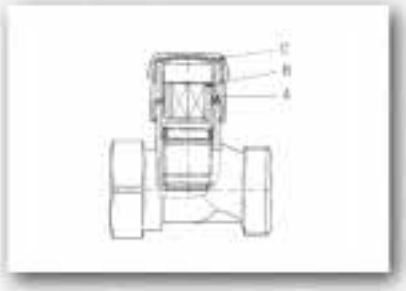
Calibration procedure:

It is possible to find out the number of turns with which the internal valve screw is to be tightened by reference to the head capacity/loss diagrams (the head loss diagrams may be requested directly from Ferrero or downloaded from the site www.ferrero-valves.com/en/informazioni/area_download.cfm). Unscrew the hand wheel screw and screw on the spanner in its place until the spanner stop comes to rest on the surface of the valve rod. Move the knurled grip "B"in order to ensure that the 3 mm allen spanner is inserted into the road. Turn grip "B" and check on the graduated scale of the spanner the number of regulation turns and check the quarters of a turn on the notch of the same "B" grip. Once the pre-set value has been obtained, keep the grip "B" in position and loosen the rod spanner. The valve is now calibrated. In the event that during the operation the spanner and the valve rod tend to slip, secure them by placing your free hand on the knurling "A".

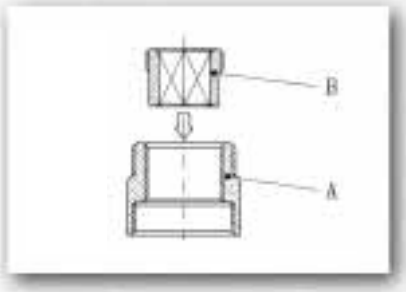
Suitable for the following articles:
Art. 1-2-S15-S16 valves for radiators with double micrometric regulation feature.
Art. S 29-S32 – S 38 – S39 4-way valves for one-pipe systems.
Art.112 column base valve
As well as ensuring a precise regulation, if the spanner is placed on a pre-regulated valve, it is also possible to read the point of valve regulation on the same.

Double regulation for lockshield valves (patented)

Once the lockshield has been calibrated the double regulator can be fixed in the setting position so that the lockshield valve can be closed completely but only opens as far as the calibration position.
As not all the lockshield valve need calibration ad usually do not need to be closed, Ferrero designed a simple item that screwed onto the head of our items no. 21-22-25-26, transforms them into a double regulation lockshields.



Function The "double regulator" is composed of two pieces, the extension A and internal ring nut B. To install, take off the lockschield cap C and screw on the extension A. Screw the ring nut B with an hexagonal allen key till it touches the shutter fixing the position. Close the lockshield without moving the screw nut B. Re-place the cap C onto A. The shutter can be fully closed and opened to the calibrated position where it is blocked by the screw nut B.



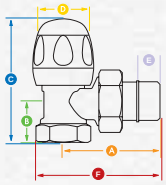
Article 474 – yellow brass

FOR VALVES Ø	ARTICLE	KEY Ø
3/8"	474C3/8"OT	8
1/2"	474D1/2"OT	10

Note: available in nickel-plated brass on request.

Valves with end to be brazed

Valves with manual control
Micrometric regulation
Body in brass
Male threads according to UNI ISO 228 standards
Tightness on the tang with O Ring in EPDM
Working temperature from –10°C up to +110°C
Tightness on the tang with O Ring on the head



Article 467 – angle valve

Ø	ARTICLE	A	B	C	D	E	F
3/8”x12	467C3/8”x12B	49	20	65	33	10	
1/2”x15	467D1/2”x15B	52	22	67	33	11	

Article 468 – straight valve

Ø	ARTICLE	A	B	C	D	E	F
3/8”x12	468C3/8”x12B				33	10	
1/2”x15	468D1/2”x15B				33	11	

Article 469 – angle lockshield valve

Ø	ARTICLE	A	B	C	D	E	F
3/8”x12	469C3/8”x12B	49	20	54	28	10	
1/2”x15	469D1/2”x15B	52	22	57	28	11	

Article 470 – straight lockshield valve

Ø	ARTICLE	A	B	C	D	E	F
3/8”x12	470C3/8”x12B				28	10	
1/2”x15	470D1/2”x15B				28	11	

Brazing instructions

- Cut the pipe in a perperdicular way to his lenght.
- Reclean the pipe with a metal brush.
- Remove the valve obturator. Do not braze the assembled valve. The O-ring seals will not resist high brazing temperatures.
- Apply the deoxidizer to the pipe before inserting it into the valve seat
- Turn the flame towards the external part of the valve.
- Complete the brazing in a short period of time (max 40 seconds).

4 way valves for monotube system

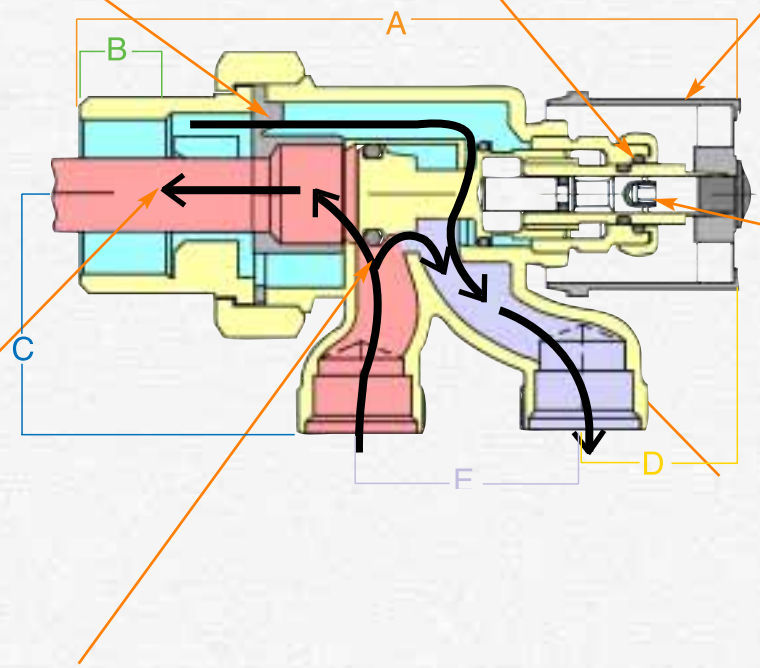
Working conditions

Working temperature 110°C max

Working pressure 16 bar max

The double flat seal position the tang in line with the internal probe, so that no part of the tang fits inside the valve.
Advantage: The radiator can be transversally dismounted without any risk of damaging the internal probe

Double seal: P.T.F.E. packing gland with adjusting nut + 1 O Ring



Steel reinforced ABS handwheel on the dial, fitted tightly on to the stem for maximum strength.

Adjustment screw concealed beneath the handwheel screw (only the fitter knows its position) to prevent tampering.
The valve can be adjusted and accurately regulate with the aid of a 3 mm hexagonal allen spanner or with the spanner of regulation (see on page 22) and load loss diagramm, the amount of fluid to be supplied to the radiator and to be deviated into the next radiator. Once it is set, the valve may be closed at any time but not opened over the set position. The head loss diagrams are available directly from the www.ferrerovalves.com/en/informazioni/area_download.cfm

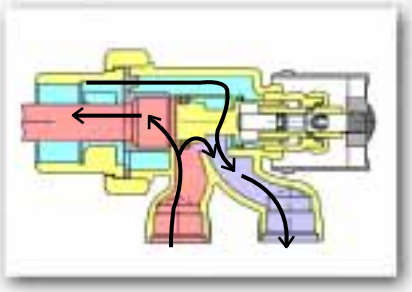
Metal internal probe, for greater strength to the heat and resistance

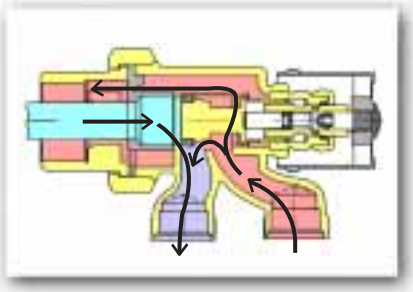
The opening or the closing of the valve does not change the circuit which remains permanently balanced. When the valve is closed the water only flows into the bypass and is deviated into the next radiator but with a slightly loss of charge higher to balance the increase of temperature.
The arrows indicate the direction of the flow, which can be inverted as highlighted in the below pictures The flow through the two pipe connectors Ø 15 -18 mm can be reversed. Possible pipe connections are shown on pages 42-43-44-45.

Installation notes

Flow direction

The valves do not have any arrows indicating the flow direction on the body as water entry and exit points may be switched over as required.
Important: This rule does not apply should one wish to use the valve as a thermostat. See instructions on page 28.





4-way valves for monotube systems

Manual regulation with diagrams.
For pre-regulation proceed as follows:
1. Remove the hand wheel screw
2. Tighten the valve
3. Fully tighten the rod located under the handwheel with the aid of a 3 mm allen spanner without forcing it.
4. Undertake the required calibration by loosening the calibration rod by the number of turns indicated on the head loss diagram. The charge loss diagrams are available directly from www.ferrero-valves.com/en/informazioni/area_download.cfm).

Regulation may also be effected using spanner article 476. See further details on page 22 and calibration instructions on page 15.

Head loss diagram

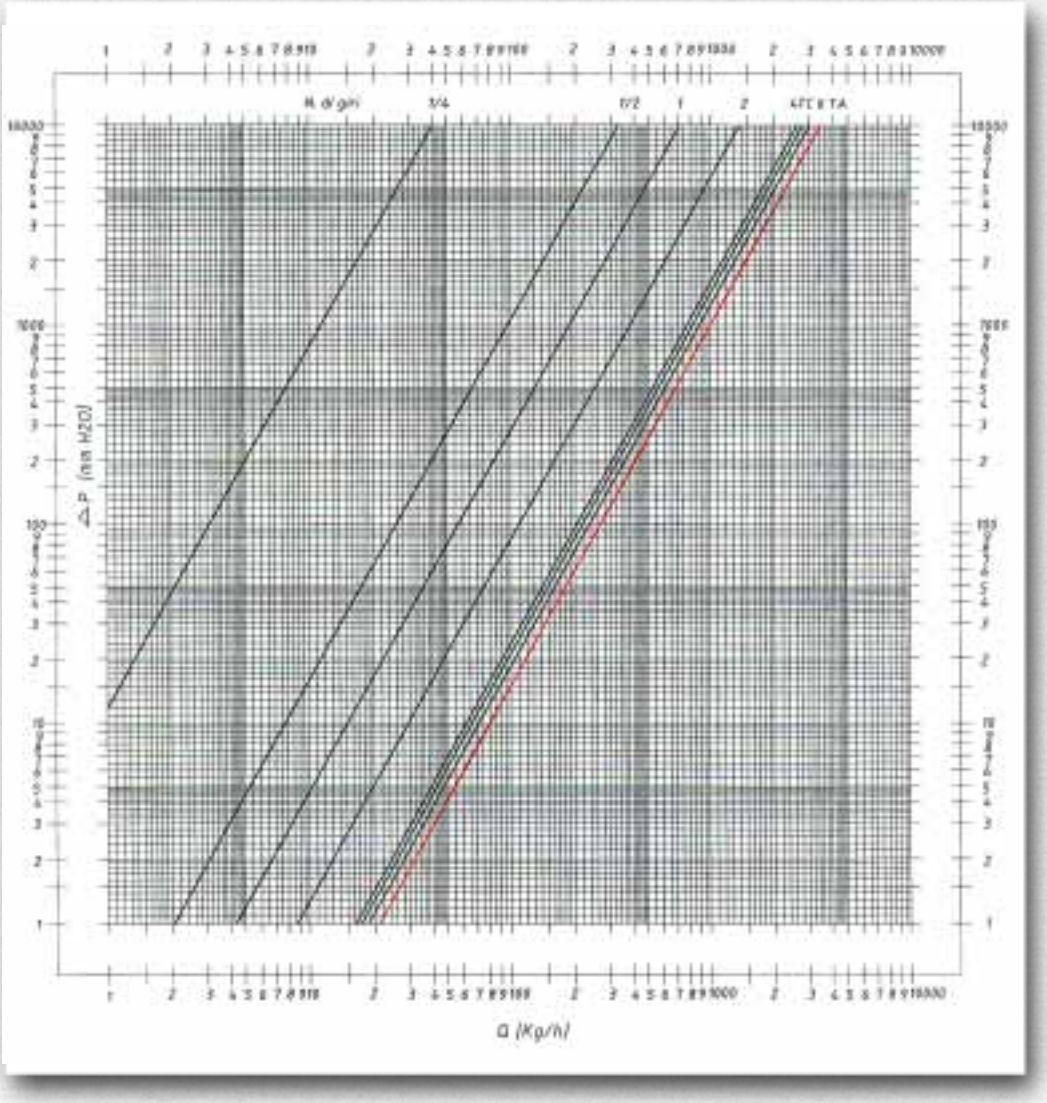


Diagram symbols key:
TC - Fully closed
TA - Fully open

Important: At the time of going to press of the present catalogue article 32 a was under modification. The diagram may therefore not correspond. Please ask for further details.

The red line represents the charge loss of the valve mounted on the radiator, measured on the valve input and output points.
The black lines correspond to the head loss of the water circulating inside the radiator. Their purpose is to be able to calculate the valve pre-regulation so that only the necessary quantity of fluid is allowed into the radiator, the remainder being deviated to the subsequent radiator.
This facilitates the job of the engineer who is therefore given the greatest calculation scope and can exploit the system capacity to the fullest extent, thereby reducing the thermal jump between radiators, therefore making it possible to connect a greater number of heating elements. It also simplifies the job of the installer, and any subsequent adjustments will be simple and easy to undertake.

4 way valves for monotube system

Inclined head valve
Double micrometric regulation
Male threaded connections according to UNI ISO 228
Inclined head for greater manoeuvre ease in embedded places (i.e. under a window opening). The valve is short and the total length is not longer than the first pipe.
Connection to the pipe: valve can be connected on different pipes: copper, steel, plastic material and mutilayers pipes.
For connection to tubes see fittings on pages 42 –43 – 44- 45.

Article 29

Ø	ARTICLE	A	B	C	D	E	F
1/2"	S 29D1/2"	114	11	29	14	42	
3/4"	S 29E3/4"	117	13	29	14	42	
1"	S 29F 1"	121	14	29	14	42	

Straight valve suitable for slim radiators.
Double micrometric regulation
Male threaded connections according to UNI ISO 228
Connection to the pipe: valve can be connected on different pipes: copper, steel, plastic material and mutilayers pipes.
For connection to tubes see fittings on pages 42 –43 – 44- 45.

Article 32 - Article 34

Ø	ARTICLE	A	B	C	D	E	F
1/2"	S 32D1/2"	122	11	42	32	42	
3/4"	S 32E3/4"	123	13	42	32	42	
1"	S 32F 1"	127	12	42	32	42	
NEW 1/2"	S 34D1/2"	115		42	34	42	

Valve with connections for wall outlets
Double micrometric regulation
Male threaded connection according to UNI ISO 228
Connection to the pipe: valve can be connected on different pipes: copper, steel, plastic material and mutilayers pipes.
For connection to tubes see fittings on pages 42 –43 – 44- 45.

Article 38

Ø	ARTICLE	A	B	C	D	E	F
1/2"	S 38	113	11	43	36	42	

Valve with connections for floor outlets
Double micrometric regulation
Male threaded connections according to UNI ISO 228
Connection to the pipe: valve can be connected on different pipes: copper, steel, plastic material and mutilayers pipes.
For connection to tubes see fittings on pages 42 -43 - 44 - 45.

Article 39

Ø	ARTICLE	A	B	C	D	E	F
1/2"	S 39	113	11	46	36	42	

4-way valves for monotube systems

Article 31

Note connection for article 29 and article 32 (old model)

Nickel plated brass
Insert diam ø 14 mm for intenal 13 in brass
Ogive in PTFE
Nut " 1/2" x 15 in brass
Probe diam. 15 in steel
Nut diam.1 threaded 11/4" in brass
Seal rubber

Article 31

Ø	ARTICLE	DESCRIPTION
1/2"	31D1/2"F	M/F bend for installation with thermostatic valve
1/2"	31D1/2"M	M/M bend for direct radiator connection

Article 33

Note connection for article 34 (new model)

Article 33

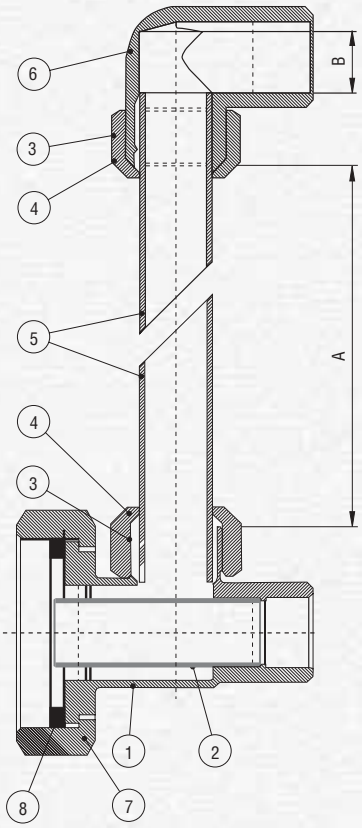
Ø	ARTICLE	DESCRIPTION
1/2"	33D1/2"F	M/F bend for installation with thermostatic valve
1/2"	33D1/2"M	M/M bend for direct radiator connection

Nickel plated brass
Insert diam 11 for interior 10 in brass
Ogive in PTFE
Nut 1/2" x 15 in brass
Probe diam. 15 in steel
Nut diam.1/2 threaded 3/4" in brass
Seal rubber

4-way valves for monotube systems

Assembly instructions

- Screw the two connections 1 and 6 onto the radiator
- Measure the distance between the two threaded ends of the two connections (value A)
- Cut the pipe so that it is 24 mm longer than the given value A (± 0.2 mm)
- Incline the elbow connection
- Insert the ogives and the nuts onto the pipe
- Insert pipe 5 onto the bend right to the end
- Re-align elbow connection 6 with connection 1
- Push the pipe until it rests against the stop of connection 1
- Tighten the nuts

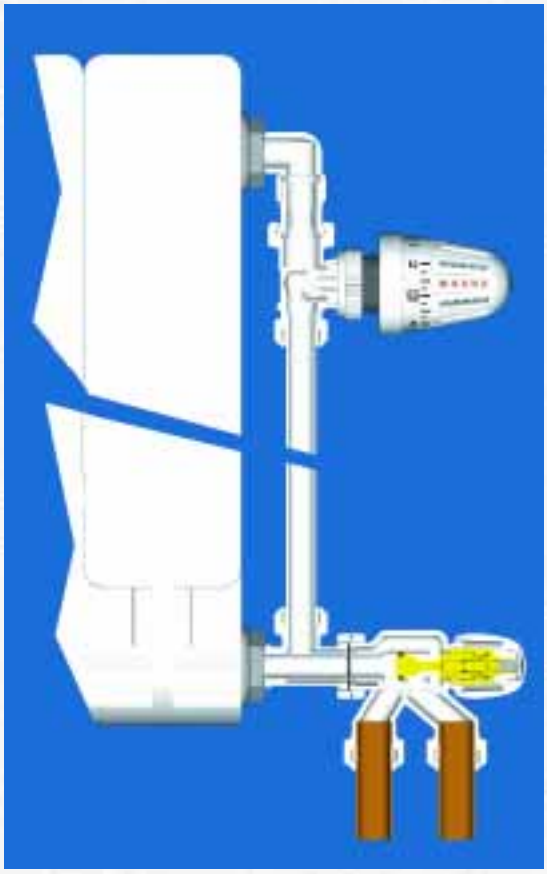


Thermostatic 4-way valves

Advantages

- Efficient temperature regulation
- Precise flow pre-regulation: the double regulation action of the 4-way valves makes it possible to regulate and set the maximum amount of liquid that may circulate in the radiator and to deviate the remainder to the by-pass.
- Possibility of actually closing the 4-way valve and to dismantle the radiator while the system is actually operating, simply by closing and without altering the function of the subsequent radiators.
- Manual closure is independent of thermostatic closure.
- The wide passage of the 4-way valves ensure large capacity making it possible to connect a larger number of radiators.
- The thermostatic heads directly assembled onto the 4-way valves, due to their low position, often only centimetres from ground level, and sometimes in a corner, often makes it difficult to ensure efficient temperature regulation. While the thermostatic valve inserted from above, as illustrated here at the side, automatically regulates the environmental temperature, thereby resolving any regulation defects arising from the valve position.

The valve to be inserted in article S 28 diam. 1/2". The external probe is of 15 mm diam. (See page 13 of the present catalogue).



Accessories for 4 way valve

Chromed steel external probes

ARTICLE	DESCRIPTION
C540/600/15AC	External probes Ø 15 Lenght 600 mm
C540/900/15AC	External probes Ø 15 Lenght 900 mm

Article 123 – wall plate for 4 way valves

ARTICLE	DESCRIPTION
123	In plastic ABS, available with outlet for pipes Ø 12-14-15-16-18

Gasket Ø 12-14-18 to connect the tang to the 4 way valves item 29 and 32

ARTICLE	DESCRIPTION
R306	For valves art. 29D. 1/2"-3/4"-1"
R305	For valves art. 32D. 1/2"-3/4"-1"

Gasket in rubber to connect the tang to the 4 way valves item 34

ARTICLE	DESCRIPTION
R612	For valves art. 34D1/2"

Tangs with flat head for 4 way valves item 29 and 32

Ø	ARTICLE
1/2"	R505
3/4"	R511
1"	R502

Elbow connection for item 39 completed of 2 nuts ø 15 and 2 brass olive ø 15

Ø	ARTICLE
	Z394V

Air vent valve

Working pressure 10 bar
Working temperature from –10°c to +110°C
Body made of brass
Threading male thread in accordance with UNI ISO 228 standard
Float made of polypropylene
Thread seal with O ring made of NBR
Available made of yellow or nickel plated brass

The air vent valve is used principally in heating systems to discharge air pockets. A certain amount of air always being dissolved in water. On heating the water the air is released, the greater the amount the greater the temperature reached. This process, especially in boilers, gives rise to air bubbles which accompany the water as it circulates around the piping to reach the heating elements.

It has the following disadvantages:

- Hot water regulation is considerably impeded due to the formation of air pockets in particular parts of the system
- Reduced performance: stagnating air pockets in radiators or in other heating elements in general, prevent regular heat dispersion.
- Creates system imbalance: the irregular circulation of hot water creates an imbalance in the system which results in an uneven heat dispersion into the various environments
- Noise levels: circulating water containing air pockets, causes turbulence which makes the system noisy.
- Corrosion of the system: the presence of air, due to the effect of the oxygen that it contains, tends to cause corrosion on the metal parts of the system
- Boilers and radiators are particularly subject to this, and it serves to cause early wear.
- Air exhaust appliances also need to be applied to heating systems with a collector distribution system.

Functions
The function is the result of vertical float movement. When the air inside the system enters into the valve, the float descends and opens the shutter element from which the air is released thrust out by the water. When the water rises into the valve body it pushes the float upwards, thereby closing the air exit passage, thereby preventing the water from escaping.
The valve closes automatically after air discharge thanks to a plastic float which has a specific weight inferior to that of water.

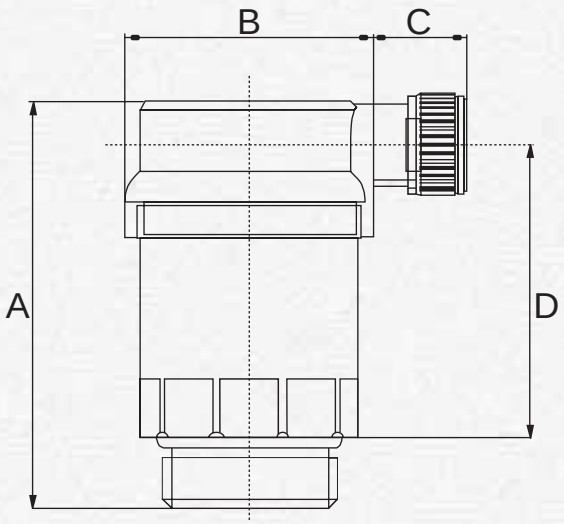
Installation
In view of the vertical shift of the float, the valve must always be installed in a vertical position.

Precautions
It is usually mounted with the on/off valve art. 85 positioned below, to permit the checking and replacement of the same, whilst maintaining the system in operation. Art. 85 in fact acts to automatically close the water flow when the air vent valve is dismantled.

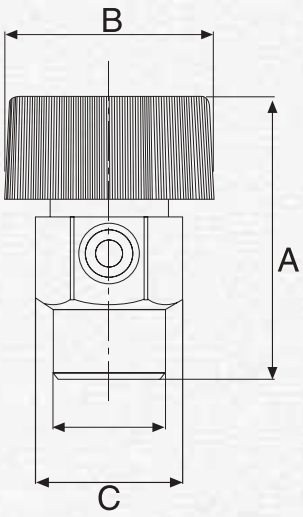
Article 80 – yellow brass

Ø	ARTICLE	A	B	C	D
1/4”	80B1/4”G	49	30	12	35
3/8”	80C3/8”G	49	30	12	35
1/2”	80D1/2”G	49	30	12	35

Note: on request available also in nickel-plated brass



Air vent valve with manual control



Hand wheel and shutter made of Hostaform
Working pressure max. 10 bar
Working temperature max. 110°C
Versions with PTFE ring on thread
Without ring on thread

Article 81- With PTFE ring on thread

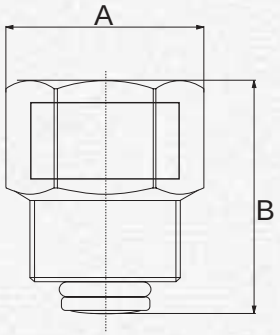
Ø	ARTICLE	A	B	C
1/4"	81B1/4"TFB	26	18	13
3/8"	81C3/8"TFB	26	18	17
1/2"	81D1/2"TFB	26	18	21

Article 81- Without ring on thread

Ø	ARTICLE	A	B	C
1/8"	81A1/8"B	24	18	11
1/4"	81B1/4"B	25	18	13
3/8"	81C3/8"B	25	18	17
1/2"	81D1/2"B	25	18	21

Automatic shut off adaptor valve

It is usually mounted below the automatic air vent valve, so as to permit the checking or the replacement of art. 80 whilst maintaining the system in operation. Article 85 in fact automatically shuts off the water flow on the dismantling of the air vent valve.



Body made of brass. Nickel plated version available on request
Sealing O-RING in NBR
Shut of element made of polyethylene
Working pressure max 10 bar
Working pressure max. 110°C

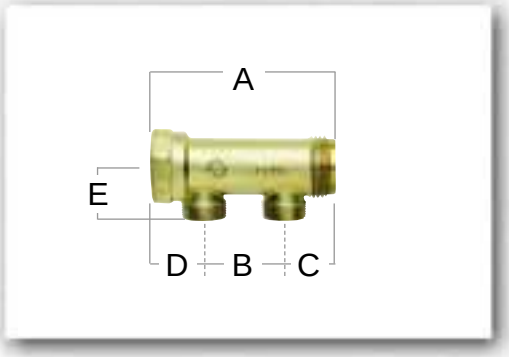
Article 85 – yellow brass

Ø	ARTICLE	A	B	C
3/8"	85C3/8"OT	19	25	
1/2"	85D1/2"OT	23	25	

Assembling manifolds

for water distribution for sanitary and heating purposes

Nominal pressure 10 bar
Working temperature 110°C
Passage diameter DN25
Manifold body made of brass EN 12165 CW 617N
Nickel plated brass version available on request
Thread in accordance with standard UNI ISO 228
Connection to the pipe manifold can be connected on different pipes: copper, steel, plastic material and mutilayers pipes. For connection to tubes see fittings on pages 42 –43 – 44- 45.



Article 35: with two branches, male or female

Ø	ARTICLE	A	B	C	D	E	F
3/4"x1/2"M	35E3/4"x1/2GM	89	42	24	23	26	
1"x1/2"M	35F 1"x1/2GM	100	42	30	28	33	
1"x24M	35F 1"xT18GM	100	42	30	28	33	
1"x1/2"F	35F 1"x1/2GF	100	42	30	28	33	
11/4"x1/2"M	35G11/4"x1/2GM	108	42	33	33	41	
11/4"x24M	35G11/4"xT18GM	108	42	33	33	41	
11/4"x1/2"F	35G11/4"x1/2GF	108	42	33	33	41	

Article 36: with three branches, male or female

Ø	ARTICLE	A	B	C	D	E	F
3/4"x1/2"M	36E3/4"x1/2GM	131	42	24	23	26	
1"x1/2"M	36F 1"x1/2GM	142	42	30	28	33	
1"x24M	36F 1"xT18GM	142	42	30	28	33	
1"x1/2"F	36F 1"x1/2"GF	142	42	30	28	33	
11/4"x1/2"M	36G11/4"x1/2GM	150	42	33	33	41	
11/4"x24M	36G11/4"xT18GM	150	42	33	33	41	
11/4"x1/2"F	36G11/4"x1/2GF	150	42	33	33	41	

Article 40: with four branches, male or female

Ø	ARTICLE	A	B	C	D	E	F
1"x1/2"M	40F 1"x1/2GM	184	42	30	28	33	
1"x24M	40F 1"xT18GM	184	42	30	28	33	
1"x1/2"F	40F 1"x1/2GF	184	42	30	28	33	

Article 41: with five branches, male or female

Ø	ARTICLE	A	B	C	D	E	F
1"x1/2"M	41F 1"x1/2GM	226	41	30	28	33	
1"x24M	41F 1"xT18GM	226	42	30	28	33	
1"x1/2"F	41F 1"x1/2GF	226	42	30	28	33	

Assembling manifolds

Manifolds with incorporated regulation valves for underfloor heating system purposes

Nominal pressure 10 bar
Working temperature 110°C
Passage diameter DN25
Manifold body made of brass UNI EN 12165 CW 617 N
Thread in accordance with standard UNI ISO 228
Hand wheel made of high resistance plastic material

Article 44: backflow manifold with incorporated valve with manual regulation

Article 44 - yellow brass

Ø	ARTICLE	A	B	C	D	E	F
1"x1/2"M	44F 1"x1/2GMB	100	42	30	28	55	
1"x24M	44F 1"xT18GMB	100	42	30	28	55	
1"x1/2"F	44F 1"x1/2GFB	100	42	30	28	55	

Article 44 - nickel plated brass

Ø	ARTICLE	A	B	C	D	E	F
1"x1/2"M	44F 1"x1/2CMB	100	42	30	28	55	
1"x24M	44F 1"xT18CMB	100	42	30	28	55	
1"x1/2"F	44F 1"x1/2CFB	100	42	30	28	55	

Article 45: delivery manifold with incorporated double regulation lockshield

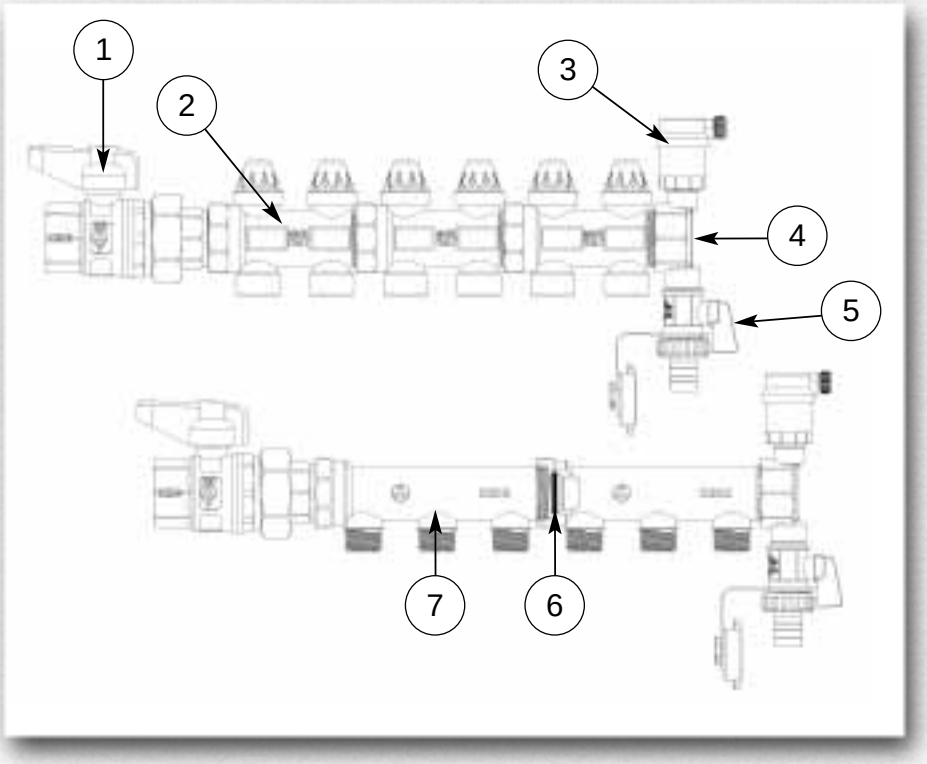
Article 45 - yellow brass

Ø	ARTICLE	A	B	C	D	E	F
1"x1/2"M	45F 1"x1/2GMB	100	42	30	28	44	
1"x24M	45F 1"xT18GMB	100	42	30	28	44	
1"x1/2"F	45F 1"x1/2GFB	100	42	30	28	44	

Article 45 - nickel plated brass

Ø	ARTICLE	A	B	C	D	E	F
1"x1/2"M	45F 1"x1/2CMB	100	42	30	28	44	
1"x24M	45F 1"xT18CMB	100	42	30	28	44	
1"x1/2"F	45F 1"x1/2CFB	100	42	30	28	44	

Advantages of assembling manifolds

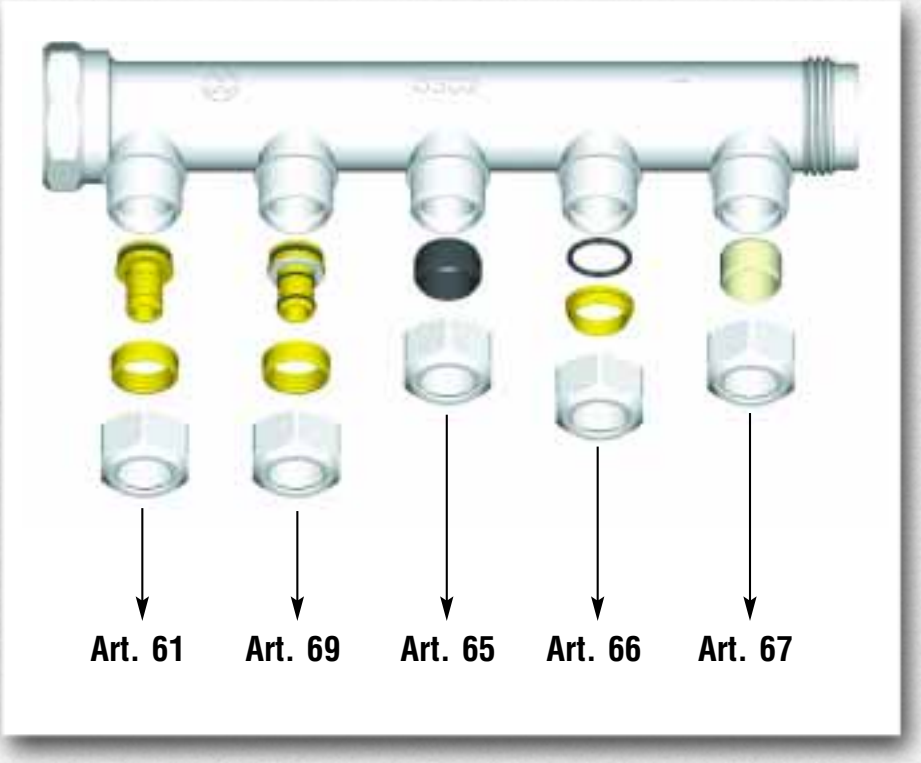


1. It is able to satisfy the user requirements in a fast and simple manner.
2. The sealing between the two manifolds is guaranteed by a NBR O-ring positioned on the non-threaded edge (see page 35)
3. Installation ease: no special tool is needed to assemble the manifolds
4. Fast installation, which translates into reduced dead times.

LEGEND
1. Valves article 462
2. Manifold article 45
3. Air vent valves article 80
4. Cap article 94
5. Draining ball valve article 454
6. O Ring for manifolds union
7. Manifold article 36

Pipe connection accessories

See pages 42-43-44-45 of the present catalogue



Manifold accessories

Note: made of yellow brass. Nickel plated brass version available on request.

Article 13 - UNI ISO 228 male threaded cap, complete with PTFE seal

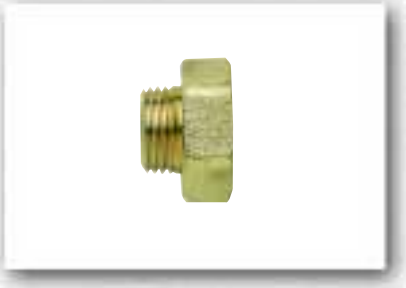
CODE	DESCRIPTION
13B1/4"OT	1/4"
13C3/8"OT	3/8"
13D1/2"OT	1/2"

Article 91- female threaded caps, UNI ISO 228

CODE	DESCRIPTION
91C3/8"FOT	3/8"
91D1/2"FOT	1/2"
91E3/4"FOT	3/4"
91F1"FOT	1"
91G11/4"FOT	11/4"

"O" Ring for insertion on the manifold heads for interconnection or to obtain the required number of derivations

CODE	DESCRIPTION
CMS21	x Ø 3/4
CMS122	x Ø 1"
CMS128	x Ø 11/4"



Article 92- female/male threaded reduction UNI ISO 228

CODE	DESCRIPTION
92E3/4"x1/2x15G	3/4"Fx1/2"M
92F 1"x1/2x15G	1"Fx1/2"M
92F 1"x24x18G	1"FxØ24M

Article 93 - female threaded caps, for the insertion of the air vent valve at the end of the manifolds

CODE	DESCRIPTION
93F 1"Fx1/4C	nickel plated brass thread diameter 1" with side branch diam.1/4"
93F 1"Fx1/4G	yellow brass thread diameter 1" with side branch diam.1/4"

Article 94 - UNI ISO 228 female threaded cap with two outlets: 1/4" for shut off valve and 3/8" for the draining ball valve

CODE	DESCRIPTION
94F 1"x3/8x1/4C	nickel plated brass thread diameter 1" with side branch diam. 3/8" and 1/4"
94F 1"x3/8x1/4G	yellow brass thread diameter 1" with side branch diam. 3/8" and 1/4"

Manifold wall box

Assembling inspection box

Casing made of polypropylene – in white colour

Lid made of knock-proof polystyrene

Internal support elements made of nylon

Manifold wall box

CODE	DESCRIPTION
37/32PL	260x320x95 mm containing up to 4 outlets
37/40PL	260x400x95 mm containing up to 6 outlets
37/50PL	260x500x95 mm containing up to 8 outlets

Note in calculating the overall dimensions the presence of the manifold has also been taken into account, as well as valve article 462, cap article 94 and the valve article 454

Universal adaptability
The box is suitable for any kind of manifold of 1" or 3/4". Traditional types of manifolds may be installed thanks to the "strap" closure feature

Practicality and completeness
Complete with all the accessories necessary to meet any kind of assembly needs, any kind of manifold model can be inserted in the box at any time, thanks to its complete support and accessory fittings. So that there is never any risk of any "missing" screws or parts, which then need to be purchased separately.

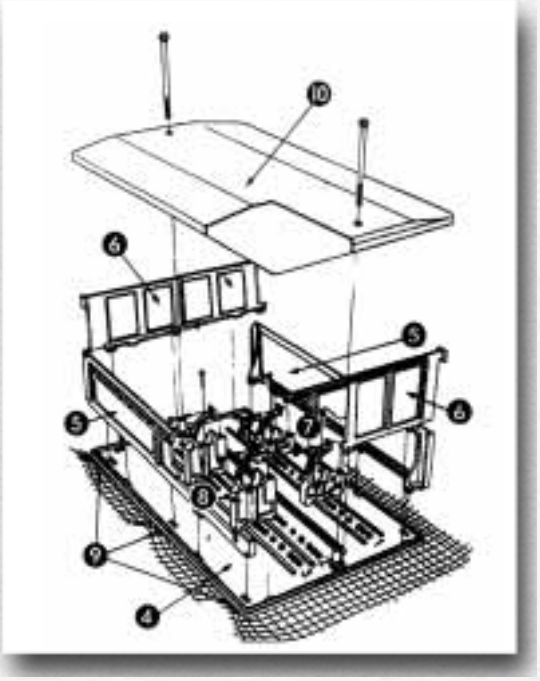
Eco-friendly feature
The box is made according to the most stringent European standards, using 100% recyclable materials.

Dimensions
Small in size but extensive in terms of performance
The box has been specifically designed for assembly, and it permits a 67% warehouse space saving, as it occupies about a third of the space of a traditional box. Which makes for greater handling ease, and transportation cost saving.

Versatility
Thanks to the length of the fixture screws and the particular shape of the lid, it is possible to compensate for any possible positioning errors inside the box. There are numerous hook elements positioned around its edge for easy fitting to the plaster base netting.

Assembly instructions

1. Rest the bottom (4) on a flat surface.
2. Firstly assemble the long sides (5)
3. Then insert the short sides (6) (see the drawing at the side)
4. The lower supports (7) are to be fixed to the top rail (1)
5. The upper supports (8) are to be fixed to the top rail (3)
6. Both the supports are to be fixed using 4 x 14 oval-headed screw
7. The manifolds are then assembled and fixed by tightening the support straps using the 4X 23 cylindrical head screws (the screw length makes it possible to secure both 3/4" and 1" manifolds)
8. The hooks (9) make it possible to secure the plaster base netting, which may be added to the pack.
9. The box is closed with a lid (10) secured with the relative screws, the length of which permits compensation for any insertion errors.



Ball valve and accessories

For further details refer to the documentation entitled “Ball valves for various fluids”

Article 462 - Ball valve with male fitting

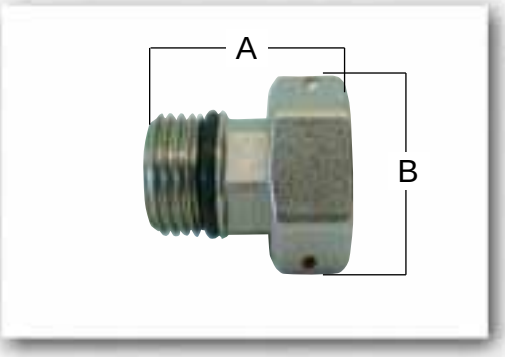
Ø	ARTICLE	A	B	C	D	KV
1/2”	462D1/2”C2R	75	15	39	31	14
3/4”	462E3/4”C2R	86	20	42	31	31
1”	462F 1”C2R	103	25	53	43	45

Article 454 - Ball valve complete with hose-holder and cap fixed to the body

Ø	ARTICLE	A	B	C	D	KV
3/8” x 3/4”	454C3/8”MAN	68	10	31	22	5
1/2” x 3/4”	454D1/2”MAN	68	10	31	22	5

Fitting with free nut

Thread in accordance with UNI ISO 228 standard
Body made of yellow brass
Nut with two holes for lead sealing
Sealing 1 NBR O-ring on the thread
Flat head tang for the seal (not included)



Article 46

Ø	ARTICLE	A	B
1/2”x3/4”	46D1/2”x3/4	33	33

Column base valve

For the balancing of the columns of the central heating and water distribution systems

PN20

Threaded connections UNI ISO 228

Max. working temperature -10°C + 110°C

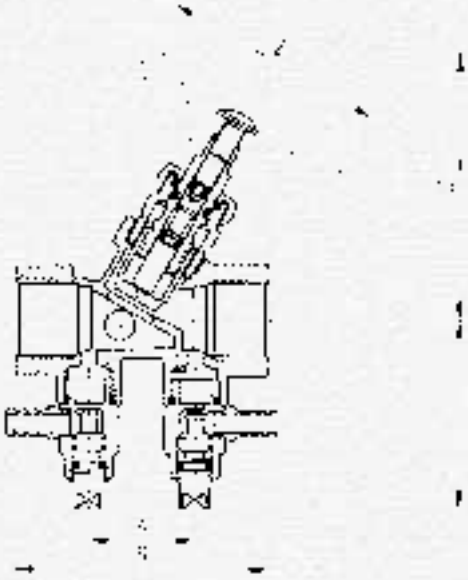
Body made of UNI EN 12165 CW617N yellow sandblasted brass

Double seal PTFE gland + OR

Hand wheel in aluminium

Flap perforated for lead sealing on the body

Branches 2 lateral and 2 vertical to the hand-wheel



Micrometric regulation screw located beneath the hand-wheel screw. It has been positioned in this way to prevent any tampering.

The valve comes complete with the following accessories:

- no. 2 plugs with seals for the lateral connections which act principally to discharge the column, or for the fixture of relative instruments (gauges etc)
- no. 2 cocks art. 109 with diam. 7 mm connections to connect the flexible piping of the differential gauges for valve calibration. These cocks may also be used for eventual system drainage.

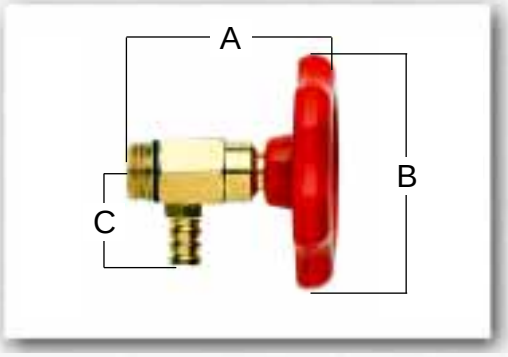
The valve may be calibrated in three ways:

1. With the system in operation connect the flexible probes of a differential gauge, of any brand, to the ends of the two cocks. Then tighten the valve until the pre-established charge loss is obtained. Loosen the hand-wheel screw using a 3 mm Allen wrench, fully tighten the internal rod screw.
   Re-screw the hand-wheel screw. The valve is calibrated, so that it can be closed, but not opened over the fixed value.
2. Use the head capacity/loss diagrams
   (The head loss diagrams can be directly obtained from Ferrero, or downloaded from the website www.ferrero-valves.com/en/informazioni/area_download.cfm). Close the valve and refer to the diagram for the number of turns for the tightening of the internal rod screw. Check that the screw inside the stem is fully loosened against the stop towards the hand-wheel, and then tighten, by the number of turns as indicated on the diagram. Re-tighten the hand wheel screw.
3. Use art. 476. For further details refer to pag.22. For regulation refer to page 15 “Regulation instructions”

Article 112

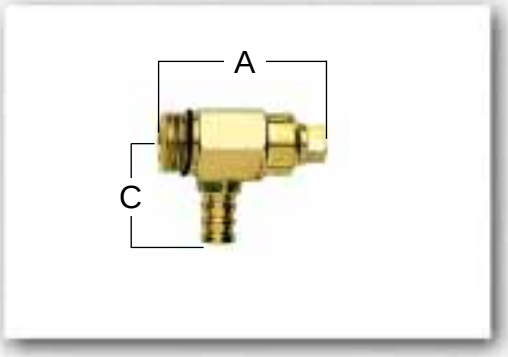
Ø	ARTICLE	A	B	C	D	E	F
1/2”	112D1/2”	28	62	43	69	60	
3/4”	112E3/4”	28	66	45	72	60	
1”	112F 1”	33	80	49	82	60	
11/4”	112G11/4”	42	91	54	93	75	
11/2”	112H11/2”	45	97	59	98	75	
2”	112I 2”	57	125	62	114	75	

Accessories for column base valves



Article 108 - Drainage cock with hand-wheel ø 1/4" has 1 ORing in rubber inserted on the threaded end

Ø	ARTICLE	A	B	C	D	E	F
1/4"	108B1/4"	44	50	21			



Article 109 - Drainage cock diam. 1/4" with 1 rubber ORing inserted on the threaded end

Ø	ARTICLE	A	B	C	D	E	F
1/4"	109B1/4"	32		21			
3/8"	109C3/8"	32		21			

Three-piece fittings

Article 9 - angle fitting with conical seal on the body. Tang thread UNI ISO 228. Spherical head tang + OR

CODE	DESCRIPTION	CODE	DESCRIPTION
9C3/8"OT	yellow brass	9C3/8"	nickel plated brass
9D1/2OT	yellow brass	9D1/2"	nickel plated brass
9E3/4"OT	yellow brass	9E3/4"	nickel plated brass
9F 1"OT	yellow brass	9F 1"	nickel plated brass

Article 9/P- angle fitting. Flat headed tang and rubber seal. Tang thread UNI ISO 7

CODE	DESCRIPTION	CODE	DESCRIPTION
9C3/8"POT	yellow brass	9C3/8"P	nickel plated brass
9D1/2POT	yellow brass	9D1/2"P	nickel plated brass
9E3/4"POT	yellow brass	9E3/4"P	nickel plated brass
9F 1"POT	yellow brass	9F 1"P	nickel plated brass

Article 10 - straight fitting with conical seal on body. Tang thread UNI ISO 228. Spherical head tang + OR

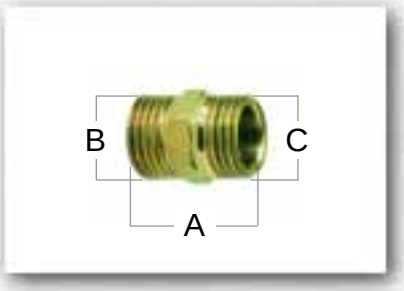
CODE	DESCRIPTION	CODE	DESCRIPTION
10C3/8"OT	yellow brass	10C3/8"	nickel plated brass
10D1/2OT	yellow brass	10D1/2"	nickel plated brass
10E3/4"OT	yellow brass	10E3/4"	nickel plated brass
10F 1"OT	yellow brass	10F 1"	nickel plated brass

Article 10/P- straight fitting. Flat head tang and rubber seal. Tang thread UNI ISO 7

CODE	DESCRIPTION	CODE	DESCRIPTION
10C3/8"POT	yellow brass	10C3/8"P	nickel plated brass
10D1/2POT	yellow brass	10D1/2"P	nickel plated brass
10E3/4"POT	yellow brass	10E3/4"P	nickel plated brass
10F 1"POT	yellow brass	10F 1"P	nickel plated brass

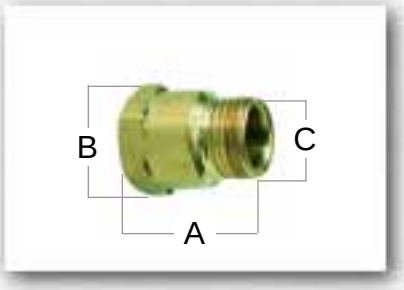
Threaded fittings

In brass in accordance with standard UNI EN 12165 – alloy CW617N
Thread in accordance with standard UNI ISO 228
Pipe connection the fittings may be installed on different types of pipe: of either copper, steel plastic material or multi-layer.
For connection select the fitting type on pag.42-43-44-45 in the present catalogue



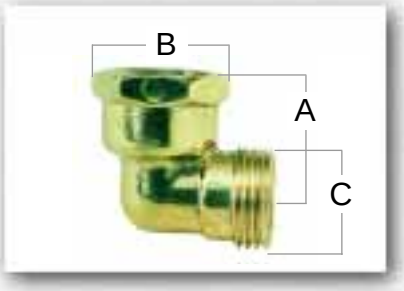
Article 50 - Male/male straight thread

Ø	ARTICLE	A	B	C	D	E	F
3/8"x3/8"	50	26	3/8"	3/8"			
3/8"x1/2"	50	25	3/8"	1/2"			
1/2"x1/2"	50	27	1/2"	1/2"			
1/2"x24	50	27	1/2"	24			



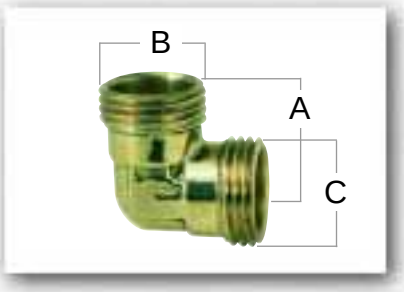
Article 51 - Male/female straight thread

Ø	ARTICLE	A	B	C	D	E	F
1/2"x1/2"	51	29	1/2"	1/2"			



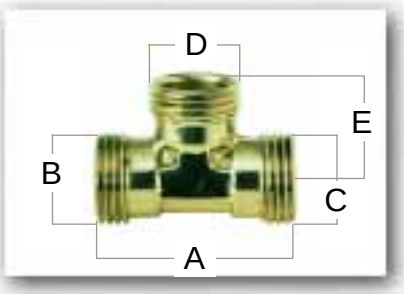
Article 52 - Male/female angle thread

Ø	ARTICLE	A	B	C	D	E	F
1/2"x1/2"	52	25	1/2"	1/2"			



Article 53 - Male /male angle thread

Ø	ARTICLE	A	B	C	D	E	F
1/2"x1/2"	53	21	1/2"	1/2"			



Article 54 - Male/male/male T thread

Ø	ARTICLE	A	B	C	D	E	F
1/2"x1/2"x1/2"	54	44	1/2"	1/2"	1/2"	22	

Plastic pipe fittings

Maximum working pressure 16 bar

Temperature limit from -10°C to + 110°C

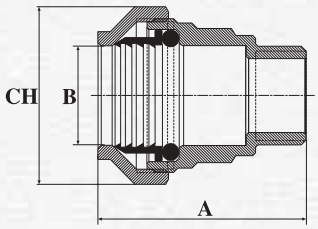
Hydraulic testing at 25 bar

The fitting is suitable for use with PE and PVC piping, for water and non-aggressive liquid distribution.
With the (compulsory) addition of reinforcement article 512 it is also suitable for the distribution systems of certain gases.

Body made of brass in accordance with UNI EN 12165 standard.

O ring made of NBR

Features: the brass ogive ensures a more secure and rigid fixture than that possible using standard plastic rings. The ring is sectioned in a slanting direction to guarantee sturdy fixture along the entire pipe surface. The cap nut covers and protects the entire joint thereby ensuring that no earth or foreign bodies can enter and block the thread



Article 507 - Fitting for "PVC-PE" on one side, male threaded connection UNI ISO 228 on the other side

CODE	Ø	A	B	CH
507D1/2"G20	1/2"x20	42	20	35
507E3/4"G25	3/4"x25	46	25	40
507F1"G32	1"x32	53	33	49
507G11/4"G40	11/4"x40	64	41	61
507H11/2"G50	11/2"x50	75	51	73

Article 506 - Fitting for "PVC-PE" on one side, female threaded connection UNI ISO 228 on the other side

CODE	Ø	A	B	CH
506D1/2"G20	1/2"x20	41	20	35
506E3/4"G25	3/4"x25	46	25	39
506F1"G32	1"x32	52	33	49
506G11/4"G40	11/4"x40	63	41	61
506H11/2"G50	11/2"x50	74	51	73

Assembly instructions

1. Cut the pipe in a perpendicular manner, then remove any burrs or sharp edges causes by the cut.
2. Loosen the nut. DO NOT DISMANTLE THE FITTING (drawing 1).
3. Securely insert the plastic pipe
4. Tighten the nut

- should it be necessary to completely dismantle the fitting, ensure that this operation is undertaken in a clean environment, or in any event try and prevent any dirt, sand or fibers from damaging the fitting, which will jeopardize the seal potential. Avoid pressing or damaging the brass ring or scratching the sealing O-ring. Note: do not overturn the sealing ring, the conical side must press against the nut cone (drawing 2).
- Should it be necessary to reinforce the plastic pipe, it is possible to insert the reinforcement element article 512.

Note: to facilitate the assembly, the pipe must not be excessively oval in form

DRAWING 1

DRAWING 2

Article 512: brass inserts for the reinforcement of the plastic pipe

Ø	ARTICLE
20x3,3	512D20-3,3
25x3,3	512E25-3,3
32x3,5	512F32-3,5
40x3,7	512G40-3,7
50x4,6	512H50-4,6

Plastic pipe fittings

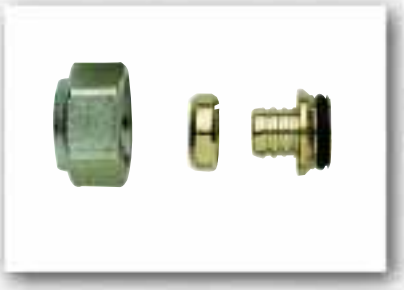
Max. working pressure 16 bar
Limit temperature from -10 to +110°C
Hydraulic testing at 25 bar
The fitting is suitable for use with PE or PVC pipes for water and non-aggressive liquid distribution systems.
Brass body in accordance with standard UNI EN 12165
Article 61 - O ring in NBR

Article 62 - Fitting with UNI ISO 228 male thread. Complete with nut and cut brass ogive

CODE	Ø nut thread	Ø external pipe mm	Ø internal pipe mm
62D1/2"x15x10C	1/2"	15	10
62D1/2"x15x11C	1/2"	15	11
62D1/2"x16x12C	1/2"	16	12
62D1/2"x18x13C	1/2"	18	13
62D1/2"x18x14C	1/2"	18	14
62D1/2"x20x15C	1/2"	20	15
62D1/2"x20x16C	1/2"	20	16

Article 63 - Fitting with female UNI ISO 228 thread. Complete with nut and cut brass ogive

CODE	Ø nut thread	Ø external pipe mm	Ø internal pipe mm
63D1/2"x12x8C	1/2"	12	8
63D1/2"x15x10C	1/2"	15	10
63D1/2"x15x11C	1/2"	15	11
63D1/2"x16x12C	1/2"	16	12
63D1/2"x18x13C	1/2"	18	13
63D1/2"x18x14C	1/2"	18	14
63D1/2"x20x15C	1/2"	20	15
63D1/2"x20x16C	1/2"	20	16



Article 61- for the connection of our valves to the plastic pipes.
Consisting of 3 piece: an internal probe with 1 "O" R, a cut ogive and a nut

CODE	Ø nut thread	Ø external pipe mm	Ø internal pipe mm
61D1/2"x12x8C	1/2"	12	8
61D1/2"x12x10C	1/2"	12	10
61D1/2"x15x10C	1/2"	15	10
61D1/2"x15x11C	1/2"	15	11
61D1/2"x16x12C	1/2"	16	12
61D1/2"x16x13C	1/2"	16	13
61D24x14x10C	24	14	10
61D24x15x10C	24	15	10
61D24x16x12C	24	16	12
61D24x18x13C	24	18	13
61D24X18X14C	24	18	14

Installation instructions

1. Cut the pipe in a perpendicular manner, then remove any burrs or sharp edges due to the cut.
2. Insert the nut and the ogive on the pipe, followed by the fitting.
3. Tighten the nut by hand.
4. Tighten further using a wrench by a further turn of the thread.

Note: to facilitate assembly, the pipe must not be excessively oval in form.

Multi-layer pipe fittings

Max. working pressure 16 bar
Limit temperature from -10 to + 110°C
Hydraulic testing at 25 bar
Body in brass in accordance with UNI EN 12165 standard
O ring in NBR
Brass/aluminium isolation ring in PFTE

Article 70 - Fitting with male UNI ISO 228 thread. Complete with nut and ogive in brass, isolation ring and O ring mounted on the internal probe

CODE	Ø nut thread	Ø external pipe mm	Ø internal pipe mm
70D1/2"x16x12C	1/2"	16	12
70D1/2"x20x16C	1/2"	20	16

Article 71 - Fitting with female UNI ISO 228 thread. Complete with brass nut and ogive, isolation ring and O ring mounted on the internal probe

CODE	Ø nut thread	Ø external pipe mm	Ø internal pipe mm
71D1/2"x16x12C	1/2"	16	12
71D1/2"x20x16C	1/2"	20	16

Article 69 - Fitting for the connection of our valves to multi-layer piping, Consisting of three parts: internal probe with O Ring and isolation ring, a cut ogive and nut

CODE	Ø nut thread	Ø external pipe mm	Ø internal pipe mm
69D1/2"x14x10C	1/2"	14	10
69D1/2"x16x12C	1/2"	16	12
69D24x14x10C	24	14	10
69D24x16x12C	24	16	12
69D24x18x14C	24	18	14

Installation instructions

1. Cut the pipe in a perpendicular manner, then remove any burrs or sharp edges as the result of the cut.
2. Insert the nut and ogive on the pipe. Ensure that the white isolation ring is present on the pipe.
3. Tighten the screw by hand.
4. Further tighten using a wrench by a maximum of one thread turn

Accessories for copper pipe connection

Coupling consisting in nut and ogive made of EPDM
Working temperature: from –10° to +110°c
Features: the rubber ensures perfect sealing capacity even in the event of imperfect installations, such as on pipes that are not perfectly aligned to the radiator, or damaged piping

Article 65

CODE	Ø nut thread	Ø external pipe mm
65D1/2"x12C	1/2"	12
65D1/2"x15C	1/2"	15
65D24x12C	24	12
65D24x14C	24	14
65D24x15C	24	15
65D24x16C	24	16

Connection consisting of nut, plus brass ogive for sturdy pipe fixture as well as a rubber "O" ring in NBR to ensure hydraulic seal.
Working temperature: from –10° to +110°c.
Should the pipe be of reduced section in relation to the chamber a brass reduction element will be added to guide the pipe, the smoothed internal part needs to be inserted towards the exterior, that is, towards the "O" R.
Features; the rubber "O" R ensures good sealing potential even on pipes that are not well aligned to the radiator or damaged. The brass ogive ensures sturdy fixture to the metallic pipe.

Article 66

CODE	ø nut thread	Ø external pipe mm
66D1/2"x10C	1/2"	10
66D1/2"x12C	1/2"	12
66D1/2"x14C	1/2"	14
66D1/2"x15C	1/2"	15
66D24x12C	24	12
66D24x14C	24	14
66D24x15C	24	15
66D24x16C	24	16
66D24x18C	24	18

Accessories for copper pipe connection

Coupling consisting in nut and ogive made of “P.T.F.E.”
Features: the P.T.F.E ogive resists even high temperatures from between –30°C and + 150°C. Due to its reduced ductility it is not suited for use on installations on which imperfections are present, such as pipes that are not aligned with the radiator or damaged pipes. In such cases Ferrero will not accept responsibility in the event of any leakage, or should it be necessary to go back and re-tighten the nut again

Article 67

CODE	Ø nut thread	Ø external pipe mm
67C3/8”x10C	3/8”	10
67D1/2”x10C	1/2”	10
67D1/2”x12C	1/2”	12
67D1/2”x14C	1/2”	14
67D1/2”x15C	1/2”	15
67D1/2”x16C	1/2”	16
67D24x12C	24	12
67D24x14C	24	14
67D24x15C	24	15
67D24x16C	24	16
67D24x18C	24	18

Installation instructions

1. Cut the pipe in a perpendicular manner, then remove any burrs or sharp corners as the result of the cut.
2. Insert the nut and ogive on the pipe.
3. Manually tighten the nut.
4. Use a spanner to tighten further by a maximum of one thread turn.

Heating valve spare parts

Nuts

CODE	DESCRIPTION
R69	female thread diam.1/2” for 3/8” diam. valve
R70	female thread diam.3/4” for 1/2” diam. valve
R71	female thread diam.1” for 3/4” diam. valve
R72	female thread diam. 11/4” for 1” diam. valve

Spherical head tang with O Ring inserted on the head, UNI ISO 228 thread (UNI ISO 7 on request)

CODE	Ø
R2854/10R	3/8”
R2319/10R	1/2”
R2853/10R	3/4”
R77/10R	1”

Spherical head tang with O Ring inserted on the head and O Ring on the UNI ISO 228 thread (ISO 7 on request)

CODE	Ø
R2854	3/8”
R2319	1/2”
R2853	3/4”

Radiator valve hand-wheels

CODE	DESCRIPTION
R460	for articles 5-6 Ø 3/8”-3/4” - art. 17-18-467-468 Ø 3/8”-1/2”
R710	for articles 1-2-15-16 Ø 3/8”-3/4” - art. 38-39
R716	for articles 1-2 Ø 1”
R94	for articles 29-32 Ø 1/2”-1” - art. 3-4-27-28
R18	for articles 161-162-165-166 Ø 3/8” -1/2”
R67	for articles 7-8-19-20-469-470 Ø 3/8” - 3/4”

Radiator valve screws

CODE	DESCRIPTION
R453	for handwheel R460
R722	for handwheel R710-R716-R94

List of fluids compatible

	BRASS	PTFE	NBR	EPDM	FKM
Acetic acid, glacial	4	1	2	2	4
Acetic anhydride	X	1	4	2	4
Acetone	1	1	4	1	4
Acetylene	3	1	1	1	1
Aluminium chloride	4	1	1	1	1
Aluminium sulphate	4	1	1	1	1
Ammonia, high temperature	4	4	4	2	4
Ammonium chloride	4	1	1	1	X
Ammonium hydroxide concentrated	4	1	4	1	3
Ammonium nitrate	4	1	1	1	X
Ammonium sulphate	4	1	1	1	4
Amyl alcohol	1	1	2	1	2
Aniline	3	1	4	2	3
Asphalt	1	1	2	4	1
Barium chloride	3	1	1	1	1
Barium hydroxide, baryta	2	1	1	1	1
Beer	2	1	1	1	1
Benzoic acid	1	1	4	4	1
Benzol or benzene	1	1	4	4	1
Borax	1	1	2	1	1
Boric acid	2	1	1	1	1
Bromine anhydrous	1	1	4	4	1
Bromine wet	4	1	4	4	1
Butane	1	1	1	4	1
Butyl alcohol	1	1	1	2	1
Calcium chloride	3	1	1	1	1
Calcium hydroxide	2	1	1	1	1
Calcium hypochlorite	4	1	2	1	1
Carbolic acid, phenol	4	1	4	2	1
Carbon tetrachloride wet	3	1	2	4	1
Castor oil	1	1	1	2	1
Chloroform	1	1	4	4	1
Chromic acid 50%	4	1	4	2	1
Citric acid	3	1	1	1	1
Copper chloride	4	1	1	1	1
Copper sulphate	4	1	1	1	1
Cottonseed oil	2	1	1	3	1
Creosote	2	1	1	4	1
Ethyl alcohol	1	1	1	1	3
Ethylene glycol	2	1	1	1	1
Ferric chloride	4	1	1	1	1
Fluorine high temperature	4	4	1	1	2
Formaldehyde,	2	1	3	2	4
Freon 13, 13b, 14, 114	1	1	1	1	1
Gelatine	1	1	1	1	1
Glucose	1	1	1	1	1
Hydrobromic acid	4	1	4	1	1
Hydrocabon	1	1	1	4	1
Hydrochloric acid concentrated	4	1	4	3	1
Hydrocyanic acid wet	4	1	2	1	1
Hydrofluoric acid 65% cold	4	4	3	1	1
Hydrofluoric acid 65% hot	4	4	4	4	3
Hydrogen peroxide	3	1	2	1	1
Lactic acid cold	3	1	1	1	1

	BRASS	PTFE	NBR	EPDM	FKM
Linseed oil	2	1	1	3	1
Magnesium chloride	3	1	1	1	1
Magnesium hydroxide	2	1	2	1	1
Magnesium sulphate	2	1	1	1	1
Mercury	4	1	1	1	1
Methyl alcohol	1	1	1	1	4
Milk	2	1	1	1	1
Naphtha	2	1	2	4	1
Nickel chloride	4	1	1	1	1
Nickel sulphate	4	1	1	1	1
Nitric acid RFNA	4	1	4	4	2
Oleic acid	3	1	3	4	2
Oxalic acid	4	1	2	1	1
Oxigen cold	1	1	2	1	1
Paint thinner	1	1	4	4	2
Palmitic acid	3	1	1	2	1
Petrol, gasoline	1	1	1	4	1
Phosphoric acid concentrated	4	1	4	2	1
Pickle	4	1	4	3	2
Picric acid, trinitrophenol	4	1	1	1	1
Potassium chloride	4	1	1	1	1
Potassium cyanide	4	1	1	1	1
Potassium dichromate	4	1	1	1	1
Potassium sulphate	2	1	1	1	1
Sea water	3	1	1	1	X
Sodium bicarbonate	2	1	1	1	1
Sodium bisulphate	3	1	1	1	1
Sodium carbonate	2	1	1	1	1
Sodium chloride	4	1	1	1	1
Sodium cyanide	4	1	1	1	X
Sodium hypochlorite	4	1	2	2	1
Sodium melted	x	4	x	x	x
Sodium nitrate	4	1	2	1	X
Sodium phosphate	2	1	1	1	1
Sodium silicate	2	1	1	1	1
Sodium sulphate	2	1	1	1	1
Sodium sulphide	3	1	1	1	1
Sodium thiosulphate	3	1	2	1	1
Steam	3	1	4	1	4
Stearic acid	3	1	2	2	X
Sulphur solid	1	1	4	4	1
Sulphuric acid 3 M	4	1	4	2	1
Sulphuric acid concentrated	4	1	4	4	1
Sulphurous acid	4	1	2	2	1
Tannic acid	1	1	1	1	1
Tartaric acid	2	1	1	2	1
Toluol	1	1	4	4	1
Trichloroacetic acid	4	1	2	2	3
Trichloroethylene anhydrous	1	1	3	4	1
Turpentine	1	1	1	4	1
Vinegar	4	1	2	1	1
Zinc chloride	4	1	1	1	1
Zinc sulphate	4	1	1	1	1

LEGENDA

1 EXCELLENT • **2** GOOD • **3** UNSUITABLE • **4** NOT RECCOMENDED - INCOMPATIBLE • **X** BEHAVIOUR UNKNOWN

This list has been prepared in order to help in the selection of our products most compatible.The information is for reference purposed only. Particular attention must be paid to the temperature, pressure and chemical concentrations before finalizing choice of product.

Some coefficient of conversion

• PRESSURE

FROM	TO	DIVIDE BY
TO	FROM	MULTIPLY
bar	psi	0,0689
bar	atm	1,01325
bar	Kg/cm	0,9807

1 bar = 10^5 Pa = 1,0197 Kg/cm^2 = 14,503 psi

• LENGHT

FROM	TO	DIVIDE BY
TO	FROM	MULTIPLY
mm	inches (in)	25,4
cm	inches (in)	2,54
m	feet (ft)	0,3048
m	yards	0,9144
Km	miles	1,6093

• SPEED

FROM	TO	DIVIDE BY
TO	FROM	MULTIPLY BY
m/s	feet/min	0,00508

• TEMPERATURE

FROM	TO	
TO	FROM	
°C	°F	(°C x 1,8)+ 32= °F
°F	°C	(°F - 32)x 0,56=°C

• CAPACITY

FROM	TO	DIVIDE BY
TO	FROM	MULTIPLY BY
m^3/h	Us gallons/min	0,2271
m^3/h	cu ft/min	1,699

• FORCE

FROM	TO	DIVIDE BY
TO	FROM	MULTIPLY BY
N	lbf	4,448

• TORSION

FROM	TO	DIVIDE BY
TO	FROM	MULTIPLY BY
Nm	ftlb	1,36

• WEIGHT

FROM	TO	DIVIDE BY
TO	FROM	MULTIPLY BY
g	Ounces (oz)	28,349
Kg	Pounds (lb)	0,453

Thread dimensional tables

THREAD UNI ISO 228 STANDARD, THREAD FOR PIPES WITH CONNECTION WITHOUT SEAL ON THE THREAD

INTERNAL OR EXTERNAL CYLINDRICAL THREAD

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Diameters			Tolerance on the pitch diameter					Tolerance on the core diameter		Tolerance on the major diameter	
							INTERNAL THREAD		EXTERNAL THREAD			INTERNAL THREAD		EXTERNAL THREAD	
Thread initial	Number of thread in 25,4 mm.	Pitch mm.	Thread depth	External	Medium	Core	Lower displac. shifting mm.	Superior displacement mm.	Scostamento inf. classe A mm.	Lower displacement class A mm.	Superior displacement mm.	Lower displacement mm.	Superior displacement mm.	Lower displacement mm.	Superior displacement mm.
1/8”	28	0,907	0,581	9,728	9,147	8,566	0	+ 0,107	- 0,107	- 0,214	0	0	+ 0,282	- 0,214	0
1/4”	19	1,337	0,856	13,157	12,301	11,445	0	+ 0,125	- 0,125	- 0,250	0	0	+ 0,445	- 0,250	0
3/8”	19	1,337	0,856	16,662	15,806	14,950	0	+ 0,125	- 0,125	- 0,250	0	0	+ 0,445	- 0,250	0
1/2”	14	1,814	1,162	20,955	19,793	18,631	0	+ 0,142	- 0,142	- 0,284	0	0	+ 0,541	- 0,284	0
3/4”	14	1,814	1,162	26,441	25,279	24,117	0	+ 0,142	- 0,142	- 0,284	0	0	+ 0,541	- 0,284	0
1”	11	2,309	1,479	33,249	31,770	30,291	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0
11/4”	11	2,309	1,479	41,910	40,431	38,952	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0
11/2”	11	2,309	1,479	47,803	46,324	44,845	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0
2”	11	2,309	1,479	59,614	58,135	56,656	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0
21/2”	11	2,309	1,479	75,184	73,705	72,226	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0
3”	11	2,309	1,479	87,884	86,405	84,926	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0
4”	11	2,309	1,479	113,03	111,55	110,07	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0

THREAD UNI ISO 7 STANDARD, THREAD FOR PIPES WITH CONNECTION WITH SEAL ON THE THREAD

INTERNAL THREAD CYLINDRICAL OR TAPERED, EXTERNAL ALWAYS TAPERED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Base dimensions in the measure plean			Distance between start thread and mesure plan			Threaded useful length of the tube at least equal to			Measure plan position on the internal thread			Connection tolerance	
					EXTERNAL THREAD						INTERNAL THREAD				
Thread initial	Number of thread in 25,4 mm	External	Medium	Core	Nominal dimensions mm.	Tollerance +/- mm.	Tollerance thread number +/-	For nominal length mm.	For max. length mm.	For min. length mm.	mm. +/-	Plitch number	Useful thread length	Tolerance mm.	Tolerance pitch number
1/8”	28	9,728	9,147	8,566	4,0	0,9	1	6,5	7,4	5,6	1,1	1,25	7,4	2,5	2,75
1/4”	19	13,157	12,301	11,445	6,0	1,3	1	9,7	11,0	8,4	1,7	1,25	11,0	3,7	2,75
3/8”	19	16,662	15,806	14,950	6,4	1,3	1	10,1	11,4	8,8	1,7	1,25	11,4	3,7	2,75
1/2”	14	20,955	19,793	18,631	8,2	1,8	1	13,2	15	11,4	2,3	1,25	15	5,0	2,75
3/4”	14	26,441	25,279	24,117	9,5	1,8	1	14,5	16,3	12,7	2,3	1,25	16,3	5,0	2,75
1”	11	33,249	31,770	30,291	10,4	2,3	1	16,8	19,1	14,5	2,9	1,25	19,1	6,4	2,75
11/4”	11	41,910	40,431	38,952	12,7	2,3	1	19,1	21,4	16,8	2,9	1,25	21,4	6,4	2,75
11/2”	11	47,803	46,324	44,845	12,7	2,3	1	19,1	21,4	16,8	2,9	1,25	21,4	6,4	2,75
2”	11	59,614	58,135	56,656	15,9	2,3	1	23,4	25,7	21,1	2,9	1,25	25,7	7,5	3,25
21/2”	11	75,184	73,705	72,226	17,5	3,5	1,5	26,7	30,2	23,2	3,5	1,5	30,2	9,2	4
3”	11	87,884	86,405	84,926	20,6	3,5	1,5	29,8	33,3	26,3	3,5	1,5	33,3	9,2	4
4”	11	113,03	111,55	110,072	25,4	3,5	1,5	35,8	39,3	32,3	3,5	1,5	39,3	10,4	4,5

TAPERED AMERICAN THREAD, NPT STANDARD

1	2	3	4	5	6	7	8
		EXTERNAL THREAD			INTERNAL THREAD		
Thread initial	External	External diameter measured at the start thread	Medium diameter measured at the start thread	Useful thread length	Core diameter measured at the start thread	Medium diameter measured at the start thread	Useful thread length
1/8”	27	9,985	9,233	6,703	8,737	9,489	6,925
1/4”	18	13,254	12,126	10,206	11,359	12,487	10,019
3/8”	18	16,673	15,545	10,358	14,798	15,926	10,329
1/2”	14	20,715	19,264	13,556	18,321	19,772	13,570
3/4”	14	26,030	24,579	13,861	23,666	25,117	14,053
1”	11,5	32,592	30,826	17,343	29,694	31,461	16,787
11/4”	11,5	41,317	39,551	17,953	38,450	40,218	17,295
11/2”	11,5	47,387	45,621	18,377	44,520	46,287	17,295
2”	11,5	59,399	57,633	19,215	56,558	58,325	17,701
21/2”	8	71,616	69,076	28,892	67,619	70,159	23,673
3”	8	87,392	84,852	30,480	83,528	86,068	25,806
4”	8	112,633	110,093	33,020	108,892	111,433	27,788

Notes

COD. 0704/IN

ferrero

Ferrero Rubinetteria srl
Via Dogliani, 84 - 12060 Farigliano (Cn) Italia
Tel. +39 0173 74 60 01 Fax +39 0173 76 405
E-mail info@ferrero-valves.com
Http:// www.ferrero-valves.com