

ITALIAN GENUINE PARTS

PERFECT DOWN TO THE LAST DETAIL

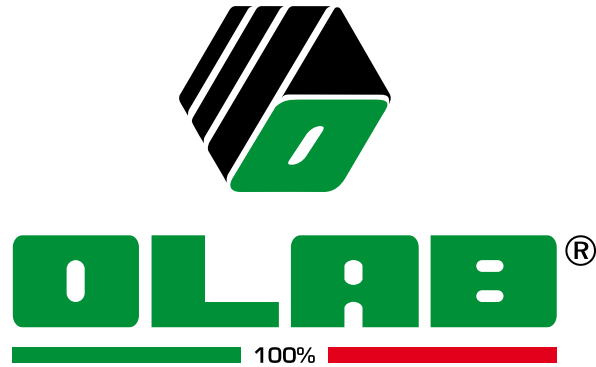


**OLAR®**



GENERAL CATALOG - EDITION **2014**

FLUIDS CONTROL SYSTEMS



#### **IMPORTANT!**

#### **LEGAL NOTE FOR CATALOGUE CONSULTATION**

All technical information provided in this catalogue are simply indicative.

They are the result of laboratory tests carried out under specific conditions that do not cover the entire case history of the real conditions of use. On the basis of these considerations, the performances described here are liable to be considerably changed depending on the different conditions of use or assembly of the product onto the final equipment and plants.

Therefore, we suggest the users should always subject the product to preliminary tests by simulating its real conditions of use.

#### **WARRANTY PERIOD OF THE PRODUCT: 12 MONTHS**



**DURING ITS THIRTY-YEAR HISTORY, MARKED BY CONTINUAL GROWTH AND ONGOING IMPROVEMENTS, OLAB HAS CARVED OUT A NICHE FOR ITSELF IN THE SOLENOID VALVES AND FITTINGS SECTOR.**



Alberto and Cesare Bottura

Passion, determination and faith in its own methods have carried the company successfully into the third millennium, establishing it as one of the soundest organisations in the industry. Each objective achieved by OLAB has always been viewed as a basis on which to consolidate and refine not only the company's products, but also its way of dealing with work management, the creation of a deep-rooted corporate culture, staff training, customer satisfaction, and environmental impact.

### COMPLIANCE WITH STANDARDS

Activities directed at 'total quality', in addition to close relationships with company suppliers and customers, have made it possible to put special focus on updated standards over the years, and continually adapt company products to these standards. An example of such activity is verifying that the requirements set out by directives 97/23/EEC (PED) and 2002/95/EEC (RoHS) have been satisfied.

With regard to the first directive, various products have been endorsed for use on pressure containers under certain demanding operating conditions, whereas the design and production process for these devices is constantly monitored by TÜV SÜD via annual inspections. In particular, combined PED+DVGW certification has been issued for some models of solenoid valves, endorsing their use as category IV safety devices with group 1 hazardous fluids.

With regard to the second directive, not only does OLAB monitor its suppliers closely, the company also wanted to go further than directive requirements (i.e. self-certification relating to the compliance of company products with RoHS requirements), and compliance of the three main product families (solenoid valves, safety caps and vibration pumps) with the RoHS directive has been verified by a third accreditation body (the food and packaging materials section at the CSI laboratories in the IMQ Group).

### CERTIFICATIONS OBTAINED BY OLAB





OLAB's new premises in Torbole Casaglia (Brescia)

## BUSINESS EXPANSION

Last year OLAB started to harvest the fruits of intense research and development activity, and benefit from significant investments made in 2005 within the framework of a development plan to consolidate the company's presence in markets other than those deemed as the conventional, well-established markets for solenoid valves and fittings for small hydraulic and pneumatic circuits.

This resulted in the completion of the 18000 series range of indirect control elastomer membrane solenoid valves with BSPP female threaded inlet/outlet ports for fluid cut-off, where the 2-way normally-closed versions have been flanked with 2-way normally-open versions. With the availability of ports ranging from 3/8" NPT to 2" NPT and feedthrough aperture from Ø 0.45" to Ø1.97", these solenoid valves are mainly designed for plant installations, ranging from boiler water filling to irrigation systems, and wherever a high flow rate is required compared to direct control solenoid valves.

The 14000 series range of self-priming vibration pumps was completed in 2006. They are built using standard solenoid valve technology, with reduced dimensions thanks to the use of 0.87" coils, and are particularly suitable for transferring fluids from a tank or collection point to another tank or discharge point. Furthermore, a European patent covering various construction solutions incorporated in the pumps was registered for this family of products.

Lastly, OLAB's most important new feature for 2006 must not be forgotten.

Thanks to an in-depth knowledge of the increasingly demanding application requirements for solenoid valves and lengthy experience acquired in this field, the company launched an internal project in 2005 concerning two families of encapsulated coils for solenoid valves – 0.87" and 1.18". These can be constructed in both a threaded

## COIL PRODUCTION LINE





lug version for connection via the DIN43650 standard connector, and a version without a threaded lug. These coils, which feature special technical solutions aimed at optimising performance (especially at high temperature), a careful choice of materials and accurate final testing, are currently constructed by OLAB using a fully automated overmoulding and winding production line, housed in a dedicated production unit.

The new production unit is OLAB's pride and joy, the only one of its kind in Italy and among one of the most innovative ones in the world, showcasing the company as a reliable OEM supplying individual coils.

All the coils made by OLAB are in class H, with class 200 wire, and incorporated with pure technopolymers, which means they contain no recycled materials. They undergo two electrical insulation tests – an in-process test immediately after overmoulding of the casing, so at a high temperature, to determine the hot behaviour of the plastic, and a post-process test at ambient temperature 24 hours later, to determine its behaviour once the material has settled.

#### AMBITIOUS AIMS

Although the concept of perfection can only be expressed in absolute and abstract terms, OLAB continues to seek improvements and set itself other ambitious targets. As a result, the company has already invested heavily in 2013 in technology to improve the already excellent quality of its products and increase its competitive edge.

Three new metalworking systems have already been designed and developed for the company.

There is also news on the fittings front, with the addition of a new product line to the already extensive range of brass and stainless steel fittings for pneumatic, hydraulic, chemical and industrial applications.

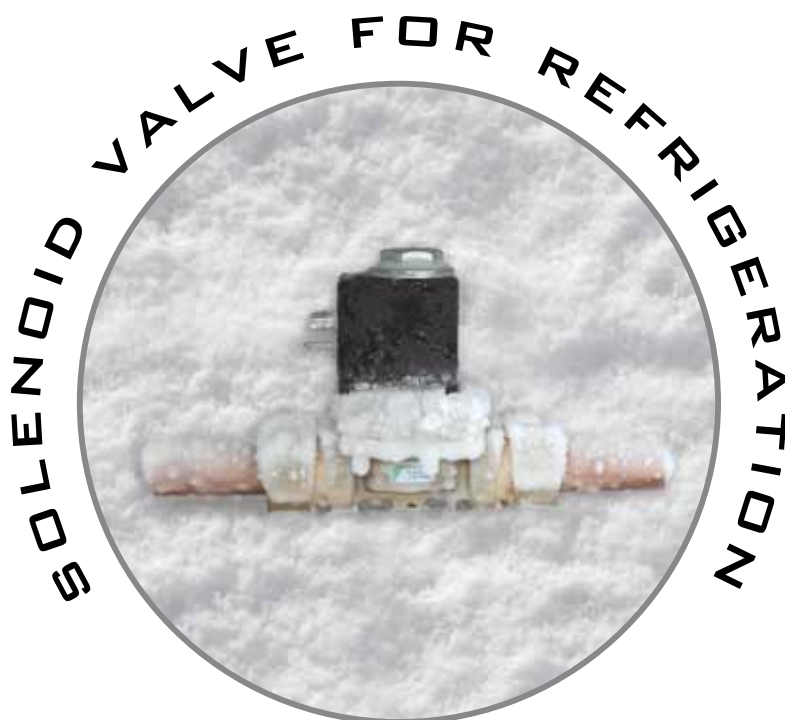
OLAB STAND



PRECISION & RELIABILITY MADE IN ITALY



**OLAB®**





**OLAB®**







## COMPONENTS FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS



SOLENOID VALVES FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS	36000 SERIES	Pg. 13
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BALL VALVES FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS	37000-CS SERIES	Pg. 28



## COMPONENTS FOR REFRIGERATION SYSTEMS WITH TRADITIONAL CONNECTIONS



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## FITTINGS FOR REFRIGERATION SYSTEMS



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## TRADITIONAL SYSTEM

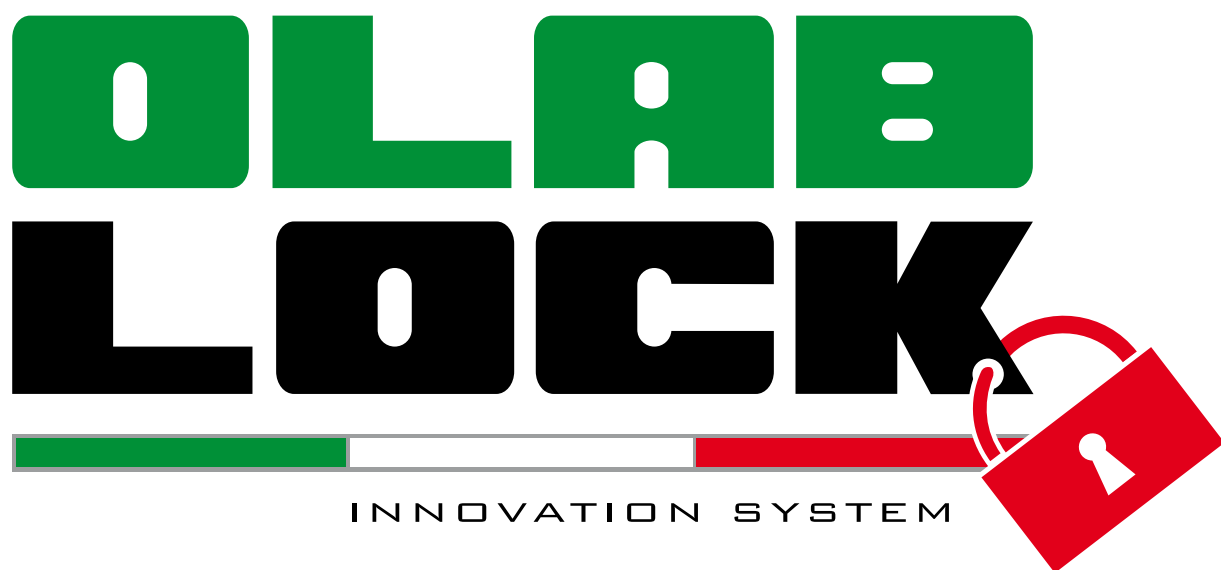


## INNOVATION SYSTEM

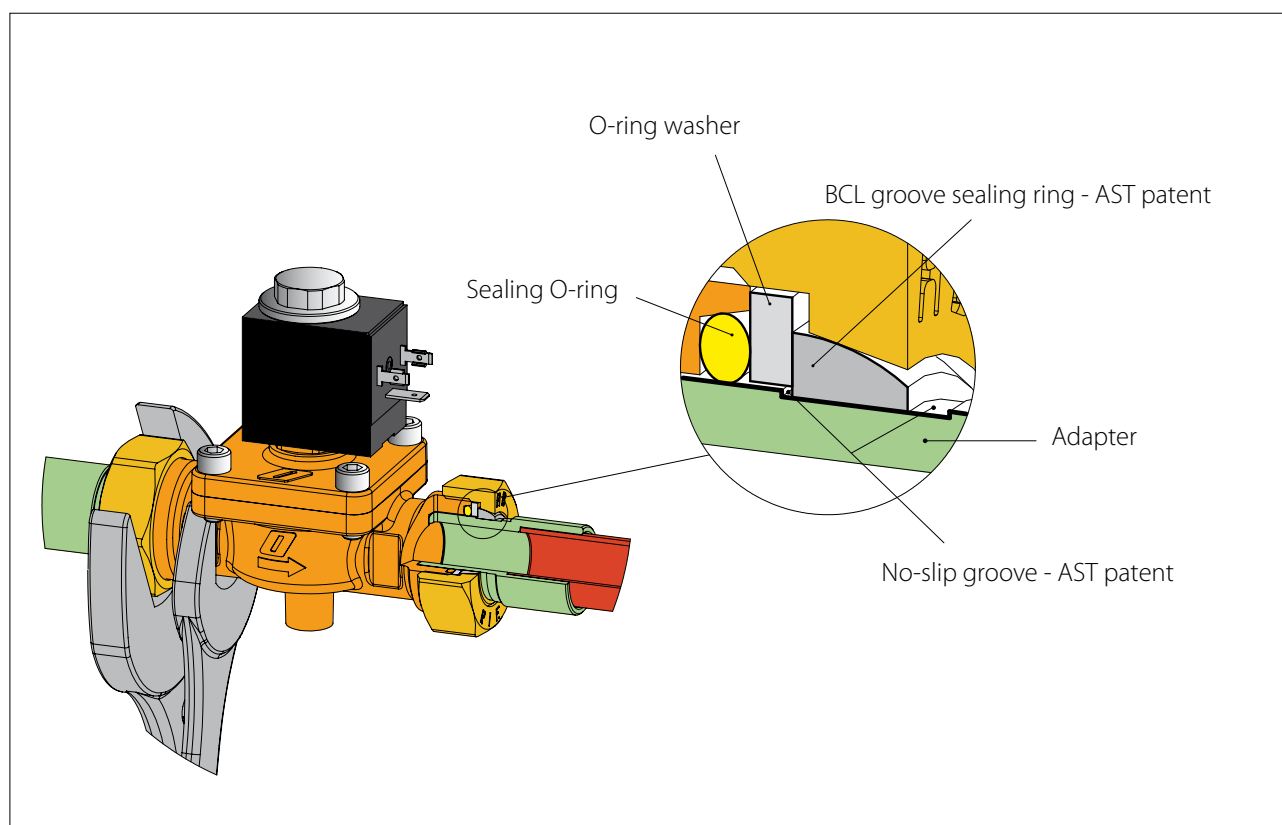


- BECAUSE IT'S SAFE
- BECAUSE IT'S RELIABLE
- BECAUSE IT'S INNOVATIVE





**COMPONENTS  
FOR REFRIGERATION SYSTEMS  
WITH OLABLOCK  
CONNECTIONS**



Bearing in mind its experience with the manufacture of solenoid valves and fittings, the R&D department of OLAB has developed a strongly innovative connection system for refrigeration plants.

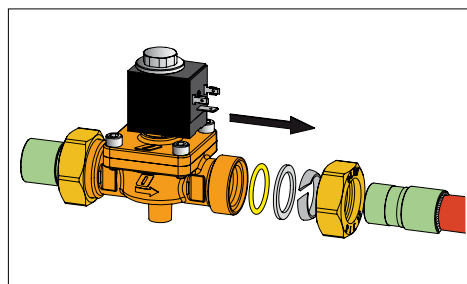


This system, which is **LOW-COST AND SAFE** compared to other systems presently on the market, can be applied to all connection points of refrigeration systems.

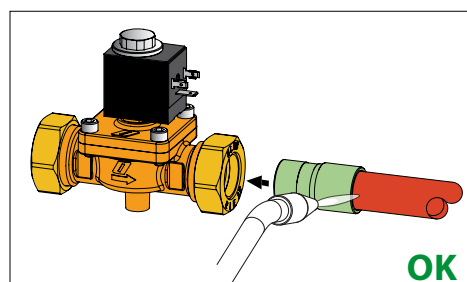


## FIVE GOOD REASONS WHY YOU SHOULD USE OLABLOCK

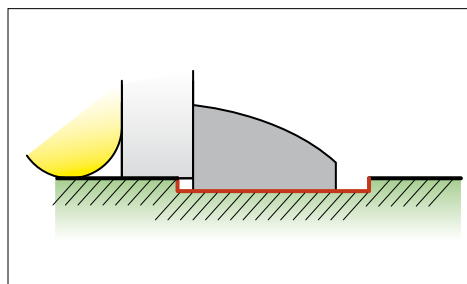
- 1.** Because it's **EASY** to use. Components can be easily assembled and disassembled.



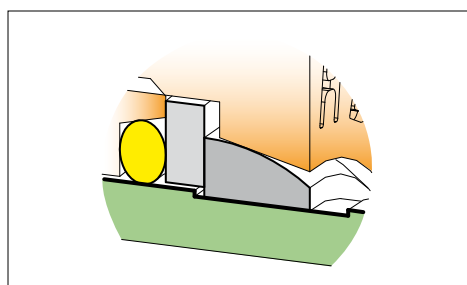
- 2.** Because it's **SAFE**.  
Welding operations are carried out under safety conditions and NOT directly on the component.



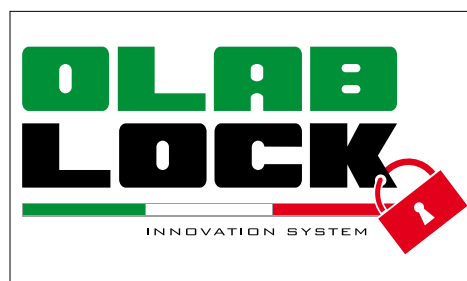
- 3.** Because it's **RELIABLE**.  
The AST patented device of OLABLOCK prevents pressure pipe slipping even with vibrations.



- 4.** Because of its **FULL SEALING CAPACITY**,  
which is ensured by a special gasket made of a compound expressly developed for these systems.



- 5.** Because it's **INNOVATIVE**.  
It is the right solution to all problems encountered during welding of traditional components.

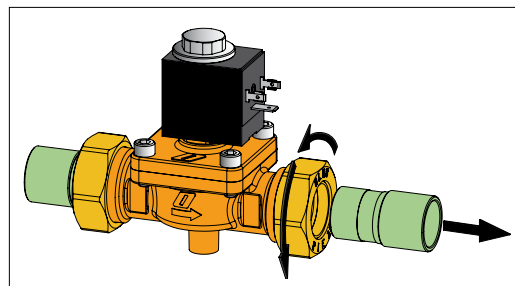




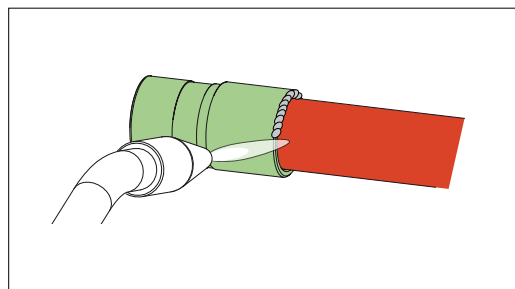
## CONNECTION INSTRUCTIONS

### SEQUENCE POSITION:

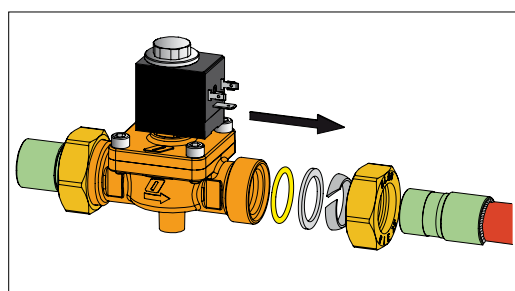
- a.** Loose OLABLOCK sealing nut and keep the adapter out.



- b.** Braze the pipe to the adapter.

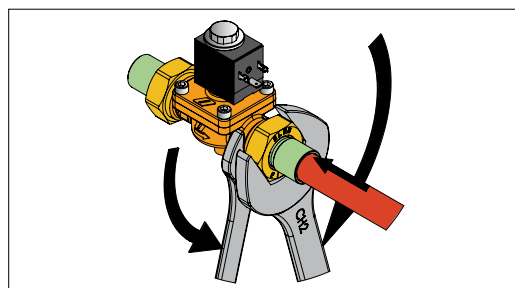


- c.** Remove from the valve all the components of OLABLOCK system and put them on the adapter respecting the given sequence.



- d.** Insert the complete adapter into the valve and tighten according to the correct torque wrench setting exercising a small force to keep it in its seat.

Nut wrench [in]	Torque wrench setting [lbf·ft]
0,827	26
0,945	33
1,181	37
1,654	66
1,890	88





## 36000 SERIES

### SOLENOID VALVES FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS

#### USE:

The solenoid valves of 36000 series are designed to be installed on refrigeration and air-conditioning systems using refrigerants of group II (Part Number 9, par. 2.2 of Directive 97/23/EC with reference to directive 67/548/EEC). Group II include all refrigerants classified as A1 in annex E of EN 378-1:2008 standard.

#### OPERATION:

The valves of 36000, 36100 and 36200 series are two-way normally closed valves with OLABLOCK connection system.

#### CONSTRUCTION:

The main construction components of the solenoid valves of the 36000 series are:

- Hot-forged brass body EN12165 - CW617N
- AISI303 stainless steel sleeve
- Ferritic stainless steel for cores
- AISI 302 stainless steel spring
- Outside neoprene sealing gaskets
- PTFE seat sealing gasket
- Austenitic stainless steel for clamping screws between cover and body

OLABLOCK connection system includes:

- Hot-forged brass nut EN 12165 - CW617N
- BCL ring, brass washer and adapter EN12164 - CW614N
- Sealing O-ring made of HNBR (temperature range  $-49^{\circ}\text{F} \div 302^{\circ}\text{F}$ ).

All the coils are class H with winding made of enameled copper wire with insulation class 356°F.

The outer casing is made of resin with dielectric properties that provide an effective waterproof insulation.

The coil is always provided with two O-rings at the upper and lower ends that protect the device from humidity.

Coils are designed for continuous operation.

#### INSTALLATION:

Solenoid valves can be installed anywhere in the system provided that the cooling capacity of all different models is taken into account. The device must be installed ensuring that the refrigerant flows in the direction shown by the arrows on the valve body. All models of this series can be mounted in all positions except for the one with a coil turned downwards. Before connecting the device make sure the operating data shown on the coil correspond to those on the system.



## 36000 SERIES STRENGTH POINTS



36000 SERIES

OLABLOCK

The cup which fixes the coil to the body valve is screwed on a thread on the top of the sleeve, in order to grant easy and correct assembly. There is no need of auxiliary components.

### INNOVATION & SOLUTION

Sleeve made up of stainless steel rod, which offers a better resistance to the most severe applications.



The fixed core is locked by rolling process, which assures mechanical deformation of the sleeve, without discontinuity points which could generate cracking.





## SOLENOID VALVES FOR REFRIGERATION SYSTEMS



P R O F E S S I O N A L

## ORDERING CODE FOR SOLENOID VALVES 36000 SERIES

Family	-	Connections	-	Welding pocket size	-	Orifice diameter	-	Coil	-	Specials			
36020	-	T	-	01	-	2.2	-	E	-	1			
36010	N.C. direct action without coil		T	OLABLOCK with ODF connection		01	1/4 in	E	220/230VAC 50/60Hz 21VA cUL	Coils 30000BHPF series	1	With fixing bracket	
36110	N.C. pilot-controlled diaphragm without coil			02	3/8 in	2.5	Ø2,5 mm Ø0,098 in		F		24VAC 50/60Hz 21VA cUL	2	HNBR O-rings
36210	N.C. pilot-controlled diaphragm with flanged cover and without coil			03	1/2 in	3.0	Ø3,0 mm Ø0,118 in		G		110/120VAC 50/60Hz 21VA cUL		
36020	N.C. direct action with connector			04	5/8 in	6.5	Ø6,5 mm Ø0,255 in		H		240VAC 50/60Hz 21VA cUL		
36120	N.C. pilot-controlled diaphragm with connector			05	3/4 in	12.5	Ø12,5 mm Ø0,490 in		I		12Vdc 24W		
36220	N.C. pilot-controlled diaphragm with flanged cover and connector			06	7/8 in	16.5	Ø16,5 mm Ø0,650 in		L		24Vdc 24W		
				07	1 in	25.5	Ø25,5 mm Ø1 in						
				08	1.1/8 in								
				09	1.3/8 in								
				10	1.5/8 in								
				11	5/16 in								
			M10	10 mm	0,394 in								
			M12	12 mm	0,472 in								
			M16	16 mm	0,630 in								
			M22	22 mm	0,866 in								
			M35	35 mm	1,378 in								
			M42	42 mm	1,653 in								

Different voltages available upon request

EXAMPLE 36020-T-02-3.0-E

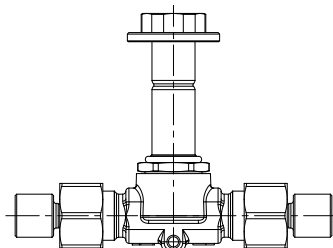
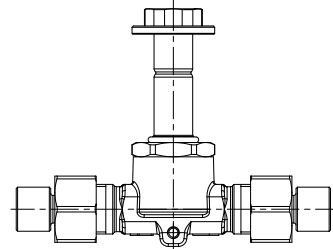
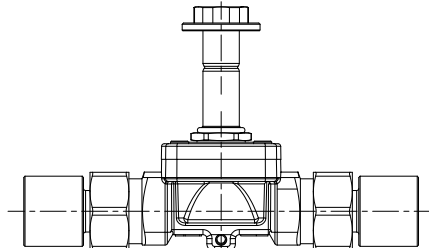
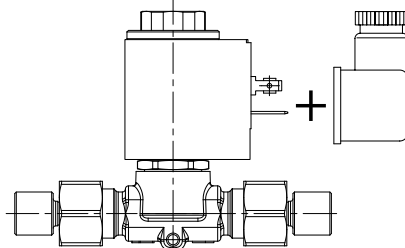
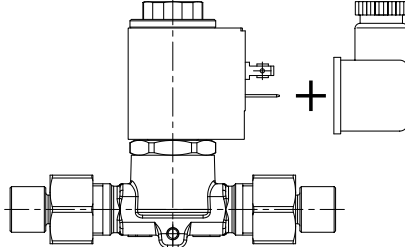
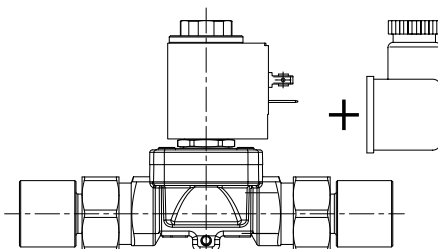
2-way normally closed direct action solenoid valve, connections OLABLOCK with ODF Ø3/8 in, orifice diameter Ø0,118 in and 220/230V 50/60Hz 21VA coil with connector



# GENERAL CHARACTERISTICS 36000 SERIES

36000 SERIES

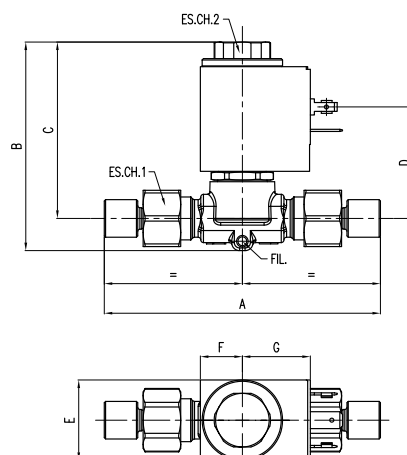
OLABLOCK

SOLENOID VALVES WITHOUT COIL	Working principle	Code	Connections		Cv	PS [psi]	Differential opening pressure [psi]			TS [°F]					
			Ø [in]	Ø [mm]			min	MOPD		Min	Max				
								AC	DC						
Direct acting		36010-T-01-2.2	1/4		0,17	652	0	305	275	-31	230				
		36010-T-01-2.5	1/4		0,20										
		36010-T-01-3.0	1/4		0,27										
		36010-T-02-3.0	3/8												
		36010-T-M10-3.0	0,394	10											
Diaphragm pilot operated		36110-T-02-6.5	3/8		0,93	652	0,72	305	275	-31	230				
		36110-T-M10-6.5	0,394	10											
		36110-T-M12-6.5	0,472	12											
		36110-T-03-6.5	1/2												
Diaphragm pilot operated with flange		36210-T-M12-12.5	0,472	12	2,56	652	0,72	305	260	-31	230				
		36210-T-03-12.5	1/2												
		36210-T-04-12.5	5/8	16									3,02		
		36210-T-06-12.5	7/8	22											
		36210-T-04-16.5	5/8	16									4,42	188	
		36210-T-05-16.5	3/4										5,58		
		36210-T-06-16.5	7/8	22									6,63		
		36210-T-08-16.5	1.1/8										11,62		
		36210-T-08-25.5	1.1/8												
	36210-T-09-25.5	1.3/8		275											
SOLENOID VALVES WITH COIL	Direct acting		36020-T-01-2.2-A	1/4		0,17	652	0	305	275	-31	230			
			36020-T-01-2.5-A	1/4		0,20									
			36020-T-01-3.0-A	1/4		0,27									
			36020-T-02-3.0-A	3/8											
			36020-T-M10-3.0-A	0,394	10										
	Diaphragm pilot operated		36120-T-02-6.5-A	3/8		0,93	652	0,72	305	275	-31	230			
			36120-T-M10-6.5-A	0,394	10										
			36120-T-M12-6.5-A	0,472	12										
			36120-T-03-6.5-A	1/2											
	Diaphragm pilot operated with flange		36220-T-M12-12.5-A	0,472	12	2,56	652	0,72	305	260	-31	230			
			36220-T-03-12.5-A	1/2											
			36220-T-04-12.5-A	5/8	16									3,02	
			36220-T-06-12.5-A	7/8	22										
			36220-T-04-16.5-A	5/8	16									4,42	188
			36220-T-05-16.5-A	3/4										5,58	
			36220-T-06-16.5-A	7/8	22									6,63	
			36220-T-08-16.5-A	1.1/8										11,62	
			36220-T-08-25.5-A	1.1/8											
			36220-T-09-25.5-A	1.3/8										275	



## PART NUMBER 36020-T

Solenoid valve for refrigeration, direct action, with OLABLOCK connections.



Code	Dimensions [in]									
	A	B	C	D	E	F	G	ES.CH.1	ES.CH.2	FIL
36020-T-01-2.2- ...	3,858	3,063	2,590	1,638	1,181	0,616	0,919	0,827	0,787	M4 horizontal
36020-T-01-2.5- ...										
36020-T-01-3.0- ...										
36020-T-02-3.0- ...										
36020-T-M10-3.0- ...										

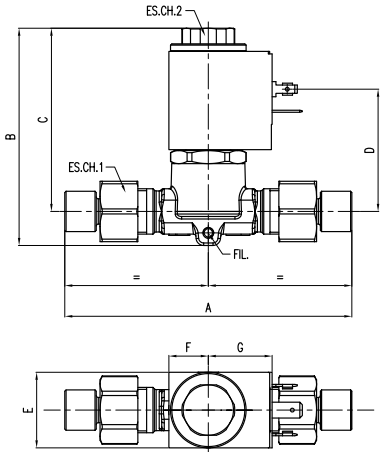
Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
36020-T-01-2.2-...	2,55	2,75	2,6	1,8	2,6	1,73							1,28	1,6	1,74	1,44	2,04	1,43
36020-T-01-2.5-...	2,98	3,2	3,0	2,08	3,0	2,0							1,5	1,9	2,03	1,68	2,38	1,67
36020-T-01-3.0-...	3,9	4,2	3,95	2,74	3,95	2,65							1,96	2,5	2,67	2,2	3,13	2,19
36020-T-02-3.0-...																		
36020-T-M10-3.0-...																		

The mentioned capacities refer to the following working conditions: Evaporation temperature = 39,2°F - dew point=100,4°F - pressure drop = 2,17 psi  
For hot gas: Suction temperature = 64,4°F - pressure drop = 14,5 psi



PART NUMBER 36 1 20-T

Solenoid valve for refrigeration, pilot-controlled diaphragm, with OLABLOCK connections.



Code	Dimensions [in]									
	A	B	C	D	E	F	G	ES.CH.1	ES.CH.2	FIL
36120-T-02-6.5- ...	4,488	3,398	2,866	1,913	1,181	0,616	0,919	0,945	0,787	M4 horizontal
36120-T-M10-6.5- ...										
36120-T-M12-6.5- ...										
36120-T-03-6.5- ...										

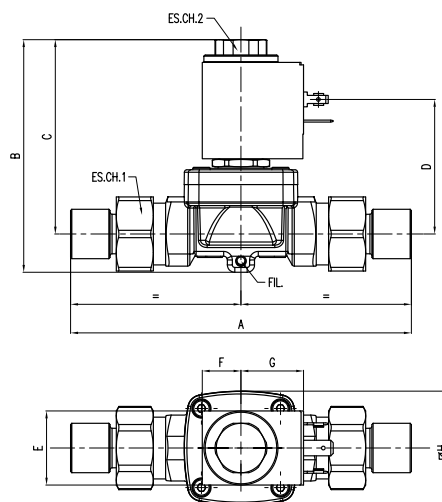
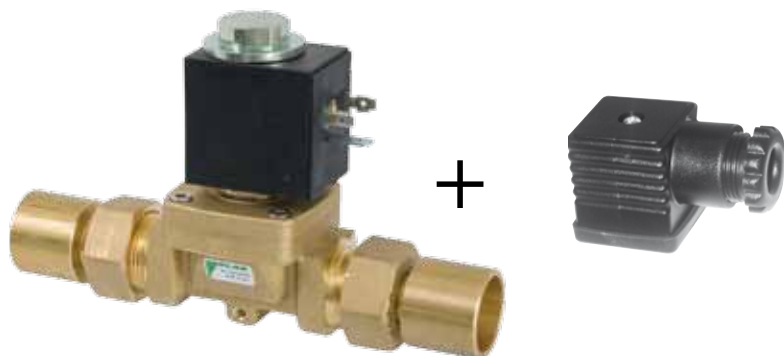
Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
36120-T-02-6.5- ...	13,5	14,6	13,8	9,5	13,7	9,2	1,5	2,04	1,8	1,78	2,4	1,78	6,8	8,6	9,3	7,7	10,9	7,6
36120-T-M10-6.5- ...																		
36120-T-M12-6.5- ...																		
36120-T-03-6.5- ...																		

The mentioned capacities refer to the following working conditions: Evaporation temperature = 39,2°F - dew point=100,4°F - pressure drop = 2,17 psi  
For hot gas: Suction temperature = 64,4°F - pressure drop = 14,5 psi



## PART NUMBER 36220-T

Solenoid valve for refrigeration, pilot-controlled diaphragm with flanged cover, with OLABLOCK connections.



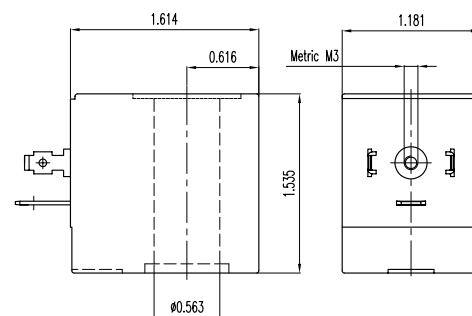
Code	Dimensions [in]											
	A	B	C	D	E	F	G	H	ES.CH.1	ES.CH.2	FIL	
36220-T-M12-12.5- ...	5,118	3,709	3,098	2,146	1,181	0,616	0,919	1,811	1,181	0,787	M4 horizontal	
36220-T-03-12.5- ...												
36220-T-04-12.5- ...												
36220-T-06-12.5- ...												
36220-T-04-16.5- ...	6,299	4,280	3,216	2,264				2,244	1,653		M8 vertical	
36220-T-05-16.5- ...	6,614											
36220-T-06-16.5- ...	6,850											
36220-T-08-16.5- ...	7,047											
36220-T-08-25.5- ...	8,622	4,724	4,000	3,051				3,150	1,890			
36220-T-09-25.5- ...	8,858											

Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
36220-T-M12-12.5- ...	37,4	40,3	37,9	26,2	37,8	25,3	4,16	5,6	5,0	4,9	6,6	4,9	18,7	23,8	25,6	21,0	30,0	21,0
36220-T-03-12.5- ...																		
36220-T-04-12.5- ...	44,4	47,8	45,0	31,1	44,8	30,0	4,93	6,6	5,9	5,8	7,8	5,8	22,2	28,2	30,3	25,0	35,5	25,0
36220-T-06-12.5- ...																		
36220-T-04-16.5- ...	64,6	69,5	65,5	45,2	65,2	43,7	7,2	9,7	8,6	8,5	11,4	8,5	32,3	41,0	44,2	36,5	51,7	36,3
36220-T-05-16.5- ...	81,6	87,8	82,7	57,0	82,4	55,2	9,1	12,2	10,9	10,7	14,4	10,7	40,8	51,8	55,8	46,0	65,3	45,8
36220-T-06-16.5- ...	97,0	104,3	98,2	67,8	98,0	65,6	10,8	14,5	12,9	12,7	17,0	12,7	48,5	61,5	66,2	54,7	77,5	54,4
36220-T-08-16.5- ...																		
36220-T-08-25.5- ...	170,0	183,0	172,3	119,0	171,7	115,0	18,9	25,5	22,7	22,3	30,0	22,3	85,0	108,0	116,2	96,0	136,0	95,4
36220-T-09-25.5- ...																		

The mentioned capacities refer to the following working conditions: Evaporation temperature = 39,2°F - dew point=100,4°F - pressure drop = 2,17 psi  
For hot gas: Suction temperature = 64,4°F - pressure drop = 14,5 psi



## PART NUMBER 30000BH



Terminal in compliance with DIN 43650/A

Coils family	Code	Voltage [V] *	Voltage tolerance	Frequency [Hz]	Power supply [VA]	Approvals
30000BH	30000BHFP/B1JU	24	±10%	50/60	21 VA	cUL* **
	30000BHFP/U1JU	110/120	+6% / -10%	50/60	21 VA	cUL* **
	30000BHFP/J1JU	220/230	+6% / -10%	50/60	21 VA	cUL* **
	30000BHFP/L1JU	240	±10%	50/60	21 VA	cUL* **

\* Others types of coils can be made available upon request

\*\* Approved cUL with connector 7000/CON

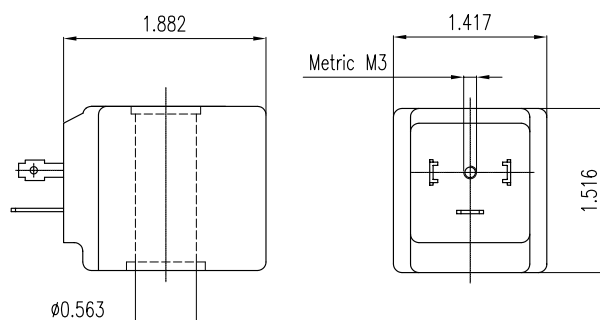
## PART NUMBER 8851

Innovative system for d.c. power supply to the coil. The valve operation is ensured also in case of a wide tolerance range for nominal voltage. It includes a direct current coil + special connector provided with 2000 mm long cables and isolation gaskets.

1,417 in coil with Ø 0,563 in sleeve hole

Code	Voltage [V] *	Power supply	Approvals
8851	24 Vdc	24 W	
8851/A	12 Vdc	24 W	

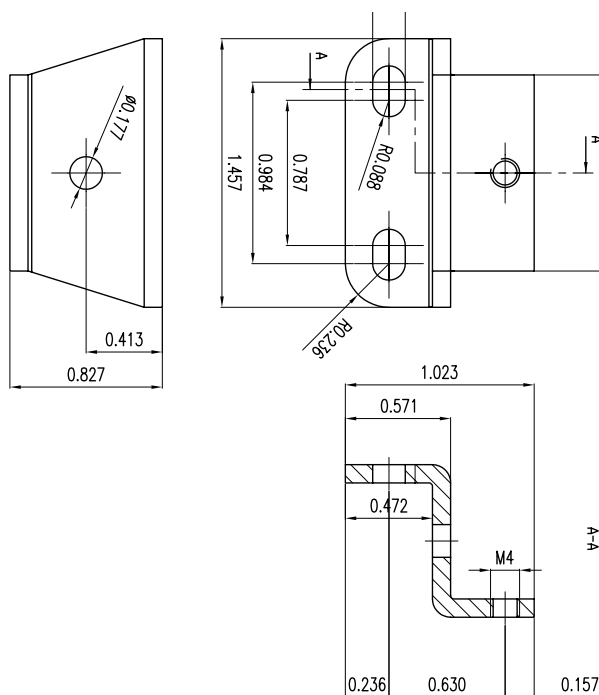
\* Voltage tolerance ±10%



Terminal in compliance with DIN 43650/A

## PART NUMBER 30000-15

White zinc-plated steel bracket with M4 screw



## PART NUMBER 7000/CON (IP 67)

Connector



Max. cable section	0,059 in <sup>2</sup>
Clamping screw	PG9, PG11
Protection degree	IP 67 (DIN40050)
Insulation class	Group C - VDE 0110
Connector colour	Black
Resistance	< 4 mΩ
Voltage rating	250 V
Pole number	2+ Ground
Protection	Glass reinforced nylon
Contact-holder	Glass reinforced nylon
Contact rated current	10 A
Max. contact rated current	16 A
Gasket	NBR nitrile rubber
Working temperature	- 40 + 194°F





## 32000-CS SERIES

### MOISTURE AND LIQUID INDICATORS FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS

#### USE:

The liquid and humidity indicators are designed to be installed on refrigeration and air-conditioning systems for domestic and industrial use. It's possible to use them with all the refrigerant fluids of group II (Part Number 9, point 2.2 of Directive 97/23/CE, with reference to Directive 67/548/CEE) and they are defined as "pressure Equipments", as described in Directive 97/23/CE, Part Number 1, point 2.1.4, and Part Number 3, point 1.3. Group II includes all refrigerants classified as A1 in annex E of EN 378-1:2008 standard.

#### OPERATION:

The central test paper of 32000-CS indicators permits a sure and quick control of humidity level and the control of physical state of refrigerant fluid. The level of humidity inside the refrigerant fluid should be under the limits indicated on the following table.

#### CONSTRUCTION:

The body of 32000-CS indicator is made by hot forged brass (EN12165-CW617N). The indicator is equipped with tempered glass and special seal in PTFE, fixed by a flanging operation that guarantee a perfect sealing.

OLABLOCK connection system includes:

- Hot-forged brass nut EN 12165 - CW617N
- BCL ring, brass washer and adapter EN12164 - CW614N
- Sealing O-ring made of HNBR (temperature range -49°F ÷ 302°F).

#### INSTALLATION:

At the start-up of circuit the color of test paper can be yellow, in consequence of atmospheric humidity or humidity contamination of plant where the indicator is installed. When the humidity level of refrigerant fluid is steady, by the action of dryer filter, the color of test paper becomes green, because the equilibrium conditions are reached.

Normally, the time required to reach the stationary condition of circuit is 12 hour; if the yellow color of test paper remains, it means that is necessary a further action to eliminate the humidity presence inside the circuit.

Color	Humidity level inside the fluid [p.p.m]					
	R22	R134a	R404	R407C	R410A	R507
Green	<60	<75	<30	<30	<30	<30
"Chartreuse" Green	60	75	30	30	30	30
Yellow	>60	>75	>30	>30	>30	>30



## MOISTURE/LIQUID INDICATOR FOR REFRIGERATION SYSTEMS



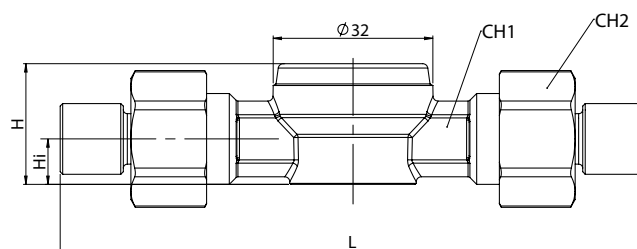
### ORDERING CODE FOR MOISTURE AND LIQUID INDICATORS 32000-CS SERIES

Family	-	Connections	-	Welding pocket size	-	Models	
32000	-	CS	-	01	-	0	
32000	Moisture and liquid indicators	CS	OLABLOCK connection with ODF welding pocket	01	1/4 in	0	Liquid indicator with test paper for humidity
				02	3/8 in	1	Liquid indicator without test paper for humidity
				03	1/2 in		
				04	5/8 in		
				05	3/4 in		
				06	7/8 in		
				07	1 in		
				08	1.1/8 in		
				M06	6 mm	0,236 in	
				M08	8 mm	0,315 in	
				M10	10 mm	0,394 in	
				M12	12 mm	0,472 in	
				M16	16 mm	0,630 in	
				M18	18 mm	0,709 in	
				M22	22 mm	0,866 in	

EXAMPLE 32000-CS-01-0 Indicator valve of liquid and moisture with Olablock System, ODF pocket Ø1/4 in connections



# PART NUMBER 32000-CS



PART NUMBER 32000-CS  
HUMIDITY AND LIQUID INDICATOR

Code	Connections			PS [psi]	TS (°F)		Sizes					
	SAE FLARE	Ø [in]	Ø [mm]		Min	Max	H [in]	Hi [in]	L [in]	CH.1 [in]	CH.2 [in]	Weight [oz]
32000-CS-M06-0		0,236	6	652	-31	230	0,827	0,295	4,055	0,433	0,827	5,3
32000-CS-01-0		1/4					0,827	0,295	4,055	0,433	0,827	5,3
32000-CS-02-0		3/8					0,945	0,354	4,567	0,472	0,945	6,9
32000-CS-M10-0		0,394	10				0,945	0,354	4,567	0,472	0,945	6,9
32000-CS-M12-0		0,472	12				1,063	0,433	5,039	0,591	1,181	9,0
32000-CS-03-0		1/2					1,063	0,433	5,039	0,591	1,181	9,0
32000-CS-04-0		5/8					1,181	0,512	5,709	0,669	1,26	9,9
32000-CS-M16-0		0,630	16				1,181	0,512	5,709	0,669	1,26	9,9
32000-CS-M18-0		0,709	18				1,299	0,591	6,299	0,748	1,339	10,6
32000-CS-05-0		3/4					1,299	0,591	6,299	0,748	1,339	10,6

Final code "0" = humidity and liquid indicator

PART NUMBER 32000-CS  
LIQUID INDICATOR

Code	Connections			PS [psi]	TS (°F)		Sizes					
	SAE FLARE	Ø [in]	Ø [mm]		Min	Max	H [in]	Hi [in]	L [in]	CH.1 [in]	CH.2 [in]	Weight [oz]
32000-CS-M06-1		0,236	6	652	-31	230	0,827	0,295	4,055	0,433	0,827	5,3
32000-CS-01-1		1/4					0,827	0,295	4,055	0,433	0,827	5,3
32000-CS-02-1		3/8					0,945	0,354	4,567	0,472	0,945	6,9
32000-CS-M10-1		0,394	10				0,945	0,354	4,567	0,472	0,945	6,9
32000-CS-M12-1		0,472	12				1,063	0,433	5,039	0,591	1,181	9,0
32000-CS-03-1		1/2					1,063	0,433	5,039	0,591	1,181	9,0
32000-CS-04-1		5/8					1,181	0,512	5,709	0,669	1,26	9,9
32000-CS-M16-1		0,630	16				1,181	0,512	5,709	0,669	1,26	9,9
32000-CS-M18-1		0,709	18				1,299	0,591	6,299	0,748	1,339	10,6
32000-CS-05-1		3/4					1,299	0,591	6,299	0,748	1,339	10,6

Final code "1" = liquid indicator



## 33000-CS SERIES

### CHECK VALVES FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS

#### USE:

The check valves are designed to be installed on refrigeration and air-conditioning systems for domestic and industrial use. It's possible to use them with all the refrigerant fluids of group II (Part Number 9, point 2.2 of Directive 97/23/CE, with reference to Directive 67/548/CEE) and they are defined as "pressure Equipments", as described in Directive 97/23/CE, Part Number 1, point 2.1.4, and Part Number 3, point 1.3. Group II includes all refrigerants classified as A1 in annex E of EN 378-1:2008 standard.

#### OPERATION:

The check valves eliminate flow reversals inside the refrigerant circuit. They are characterized by a low differential pressure.

#### CONSTRUCTION:

According to the model, the body of 33000-CS check valves is made by hot forged brass (EN12420-CW617N) or drawn machined brass (CW614N). The copper tube are as described in Directive EN 12735/1, while the seals are in PTFE.

OLABLOCK connection system includes:

- Hot-forged brass nut EN 12165 - CW617N
- BCL ring, brass washer and adapter EN12164 - CW614N
- Sealing O-ring made of HNBR (temperature range  $-49^{\circ}\text{F} \div 302^{\circ}\text{F}$ ).

#### INSTALLATION:

At start-up ensure that there is no dust or contamination inside the pipes. The arrow direction on body valve should be in accord with the flow direction inside the circuit. All mounting positions are accepted.



## CHECK VALVES FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS



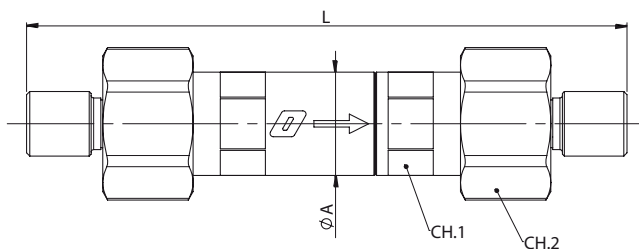
## ORDERING CODE FOR CHECK VALVES 33000-CS SERIES

Family	-	Connections	-	Welding pocket size	-	Models
33000	-	CS	-	01	-	D
33000	Check valve	CS	OLABLOCK connection with ODF welding pocket	01	1/4 in	D
				02	3/8 in	A
				03	1/2 in	
				04	5/8 in	
				05	3/4 in	
				M06	6 mm	0,236 in
				M08	8 mm	0,315 in
				M10	10 mm	0,394 in
				M12	12 mm	0,472 in
				M16	16 mm	0,630 in
				M18	18 mm	0,709 in
				M22	22 mm	0,866 in

EXAMPLE 33000-CS-01-D Check valve with Olablock connections, ODF pocket Ø1/4 in, straight inlet-outlet



## PART NUMBER 33000-CS

PART NUMBER 33000-CS  
CHECK VALVE

Code	Connections		Cv	Pd [psi]	TS (°F)		Sizes				
	Ø [in]	Ø [mm]			Min	Max	ØA [in]	L [in]	CH.1 [in]	CH.2 [in]	Weight [oz]
33000-CS-M06-D	0,236	6	0,57	1,45	-31	230	0,63	3,661	0,551	0,827	5,1
33000-CS-01-D	1/4		0,57				0,63	3,661	0,551	0,827	5,1
33000-CS-02-D	3/8		1,72				0,787	4,134	0,709	0,945	7,4
33000-CS-M10-D	0,394	10	1,72				0,787	4,134	0,709	0,945	7,4
33000-CS-M12-D	0,472	12	2,07				0,866	4,528	0,787	1,063	9,0
33000-CS-03-D	1/2		2,07				0,866	4,528	0,787	1,063	9,0
33000-CS-04-D	5/8		3,79				1,063	4,921	0,945	1,181	10,4
33000-CS-M16-D	0,630	16	3,79				1,063	4,921	0,945	1,181	10,4
33000-CS-M18-D	0,709	18	5,75				1,299	5,315	1,181	1,299	11,7
33000-CS-05-D	3/4		5,75				1,299	5,315	1,181	1,299	11,7



## 37000-CS SERIES

# BALL VALVES FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS

### USE:

37000-CS series ball valves are designed in accordance with the requirements of EN12284:2004 and EN378-1:2012 for installation on refrigeration and air-conditioning systems for civil and industrial use to allow intermittent disconnection of sections of the refrigerating circuit.

They have the following operating features:

Temperature range from -40°F to 302°F

Maximum pressure PS=652 psi

They can be used with all refrigerants listed in Annex E of EN 378-1:2008 belonging to the class A1 (fluids classified as group II according to Part Number 9, point 2.2 of Directive 97/23/CE). Among the refrigerants allowed by the standard, including non-toxic and non-explosive ones, those that currently can be found in refrigerating systems are:

R12 - R22- R134A - R404A - R407C - R410A - R502 - R507

### OPERATION:

According to the standard requirements the 37000-CS series ball valves are provided with a metal protection cap that can be secured with a lead-sealed wire, if necessary, in order to prevent any unauthorized operations.

To operate the valve you must remove the cap using the suitable tool. For the activation of the valve you need a second tool. The metal protection cap, fitted with a sealing gasket, is designed to operate in the same conditions as the valve and therefore can ensure a perfect seal even when the two gaskets mounted on the operating rod may be accidentally deteriorated. The operating rod is designed to prevent its removal due to the internal pressure or tampering actions.

These valves require no maintenance.

### CONSTRUCTION:

- Body made of hot forged brass EN12165 - CW617N
- Operating rod and locking pin made of stainless steel AISI 303
- Ball made of chrome-plated brass (EN12165 - EN12164 CW617N or - CW614N according to size)
- Seals (O-RING) of the operating rod and cap made of chloroprene
- Ball seals made of virgin PTFE
- Protection cap made of hot forged brass EN12165 - CW617N

The perfect seal of the body under every temperature, pressure and external mechanical stress condition is ensured by the welding of the various fixed components and by two O-rings mounted on the operating rod.

OLABLOCK connection system includes:

- Hot-forged brass nut EN12165 - CW617N
- BCL ring, brass washer and adapter EN12164 - CW614N
- Sealing O-ring made of HNBR (temperature -49°F ÷ 302°F)

### INSTALLATION:

37000-CS series ball valves can be installed anywhere in the system taking into account the cooling capacities of the different models. The valve can be mounted regardless of the fluid flow direction since ball valves are bidirectional.





## BALL VALVES FOR REFRIGERATION SYSTEMS WITH OLABLOCK CONNECTIONS

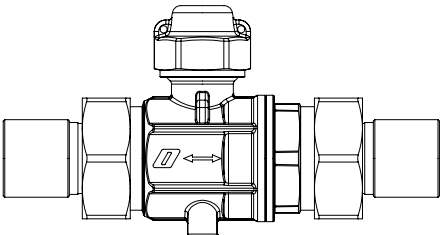


### ORDERING CODE FOR BALL VALVES 37000-CS SERIES

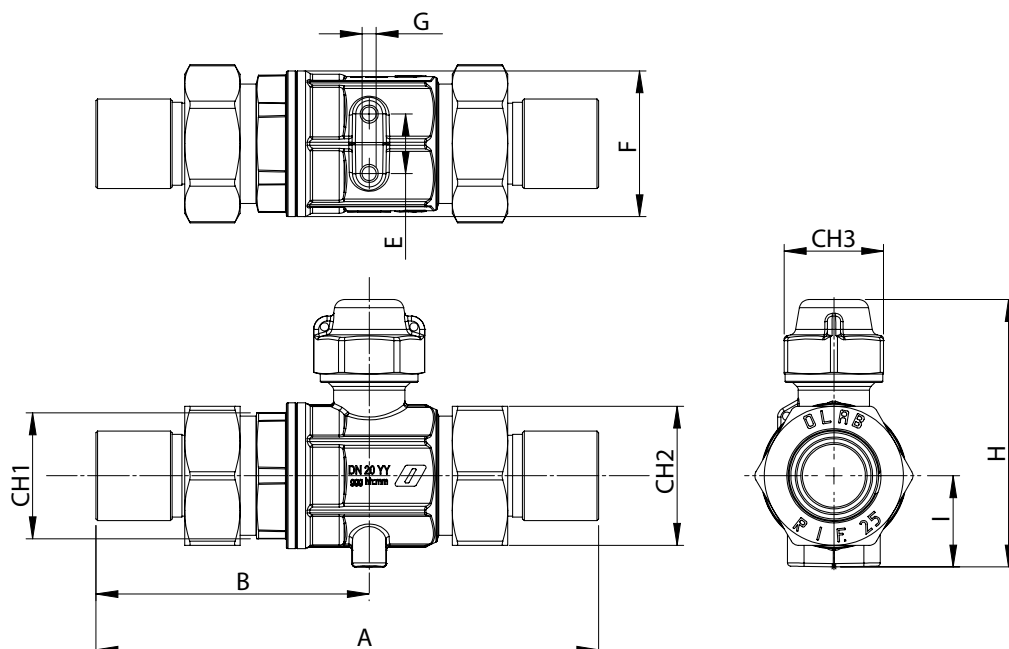
Family	-	Connections	-	Welding pocket size	-	Orifice diameter	-	Variants	
37000	-	CS	-	06	-	20	-	0	
37000	Ball valve for refrigeration systems according to EN 12284:2004		CS	OLABLOCK with ODF connection		M6	0,236 in (6 mm)	12	0,472 in (12mm)
					01	1/4 in	15	0,591 in (15mm)	
					02	3/8 in	20	0,787 in (20mm)	
					M10	0,394 in (10mm)	25	0,984 in (25mm)	
					M12	0,472 in (12mm)	32	1,260 in (32mm)	
					03	1/2 in			
					04	5/8 in (16mm)			
					M18	0,709 in (18mm)			
					05	3/4 in			
					06	7/8 in (22mm)			
					M28	1,102 in (28mm)			
					08	1.1/8 in			
					09	1.3/8 in (35mm)			
					10	1.5/8 in			
					M42	1,654 in (42mm)			
								0	Not used



## GENERAL CHARACTERISTICS 37000-CS SERIES

VALVE WITHOUT CHARGE FITTING	Code	Welding pocket size		Orefice [in]	Cv	PS [psi]	TS (°F)			
		Ø [in]	Ø [mm]				Min	Max		
	37000-CS-M6-12-0	0,236	6	0,472 (12mm)	1,2	652	-40	302		
	37000-CS-01-12-0	1/4			4,7					
	37000-CS-02-12-0	3/8								
	37000-CS-M10-12-0	0,394	10							8,1
	37000-CS-M12-12-0	0,472	12							
	37000-CS-03-12-0	1/2								
	37000-CS-04-15-0	5/8	16	0,591 (15mm)	16,3	652	-40	302		
	37000-CS-04-15-0	5/8	16							
	37000-CS-M18-15-0	0,709	18							
	37000-CS-05-15-0	3/4		0,787 (20mm)	22,1	652	-40	302		
	37000-CS-06-15-0	7/8	22							
	37000-CS-06-20-0	7/8	22							
	37000-CS-M28-20-0	1,102	28	0,984 (25mm)	32,6	652	-40	302		
	37000-CS-08-20-0	1 1/8								
	37000-CS-M28-25-0	1,102	28							
	37000-CS-08-25-0	1 1/8		1,260 (32mm)	58,1	652	-40	302		
	37000-CS-09-25-0	1 3/8								
	37000-CS-09-32-0	1 3/8								
37000-CS-10-32-0	1 5/8		93,0	652	-40	302				
37000-CS-M42-32-0	1,658	42								

Code	Welding pocket size		Dimensioni [in]																		
	Ø [in]	Ø [mm]	Orifice	A	B	E	F	G	H	I	CH1	CH2	CH3	Weight [oz]							
37000-CS-M6-12-0	0,236	6	0,472	4,016	2,205	0,709	1,181	Metric M5	2,244	0,787	1,063 (27mm)	0,945 (24mm)	0,984 (25mm)	13,40							
37000-CS-01-12-0	1/4			4,173	2,283									13,58							
37000-CS-02-12-0	3/8			4,213	2,283									16,05							
37000-CS-M10-12-0	0,394	10		4,528	2,441							0,709		1,417	Metric M5	2,5197	0,9449	1,126 (32mm)	1,339 (34mm)	0,984 (25mm)	16,23
37000-CS-M12-12-0	0,472	12																			21,69
37000-CS-03-12-0	1/2																				22,05
37000-CS-04-12-0	5/8	16	0,591	4,961	2,756	0,709	1,732	Metric M5	3,150	1,083	1,496 (38mm)	1,654 (42mm)	1,181 (30mm)	22,40							
37000-CS-04-12-0	5/8	16		5,276	2,913									37,57							
37000-CS-M18-12-0	0,709	18		5,512	3,031									38,80							
37000-CS-05-20-0	3/4		0,787	5,984	4,528	0,709	1,732	Metric M5	3,150	1,083	1,496 (38mm)	1,654 (42mm)	1,181 (30mm)	50,44							
37000-CS-06-20-0	7/8	22		6,181	3,346									52,56							
37000-CS-06-20-0	7/8	22		6,496	3,583									76,90							
37000-CS-M28-20-0	1,102	28	0,984	6,732	3,701	1,181	2,067	Metric M6	3,425	1,181	1,732 (44mm)	1,890 (48mm)	1,181 (30mm)	80,07							
37000-CS-08-20-0	1 1/8			7,008	3,780																
37000-CS-M28-25-0	1,102	28		7,244	3,898																
37000-CS-08-25-0	1 1/8		1,260			1,181	2,480	Metric M6	4,173	1,457	2,165 (55mm)	2,362 (60mm)	1,339 (34mm)								
37000-CS-09-25-0	1 3/8																				
37000-CS-09-32-0	1 3/8																				
37000-CS-10-32-0	1 5/8		1,260			1,181	2,480	Metric M6	4,173	1,457	2,165 (55mm)	2,362 (60mm)	1,339 (34mm)								
37000-CS-M42-32-0	1.658	42																			





**OLAB®**



**COMPONENTS FOR  
REFRIGERATION SYSTEMS  
WITH TRADITIONAL  
CONNECTIONS**



## 30000 SERIES SOLENOID VALVES FOR REFRIGERATION SYSTEMS

### USE:

The solenoid valves of 30000 series are designed to be installed on refrigeration and air-conditioning systems using refrigerants of group II (Part Number 9, par. 2.2 of Directive 97/23/EC with reference to directive 67/548/EEC). Group II includes all refrigerants classified as A1 in annex E of EN 378-1: 2008 standard.

**OPERATION:** the valves of 30000, 30100 and 30200 series are two-way normally closed valves.

### CONSTRUCTION:

The main construction components of the solenoid valves of the 30000 series are:

- Hot-forged brass body EN12165 - CW617N
- AISI303 stainless steel sleeve
- Ferritic stainless steel for cores
- AISI 302 stainless steel spring
- Outside neoprene sealing gaskets
- PTFE seat sealing gasket
- Austenitic stainless steel for clamping screws between cover and body

All the coils are class H with winding made of enameled copper wire with insulation class 356°F. The outer casing is made of resin with dielectric properties that provide an effective waterproof insulation.

The coil is always provided with two O-rings at the upper and lower ends that protect the device from humidity. Coils are designed for continuous operation.

### INSTALLATION:

Solenoid valves can be installed anywhere in the system provided that the cooling capacity of all different models is taken into account. The device must be installed ensuring that the refrigerant flows in the direction shown by the arrows on the valve body. All models of this series can be mounted in all positions except for the one with a coil turned downwards. Brazing of valves to weldable pipes must be carried out using an alloy with low melting point.

To avoid damages, make sure the flame is not pointed to the body during pipe welding.

Before connecting the device make sure the operating data shown on the coil correspond to those on the system.



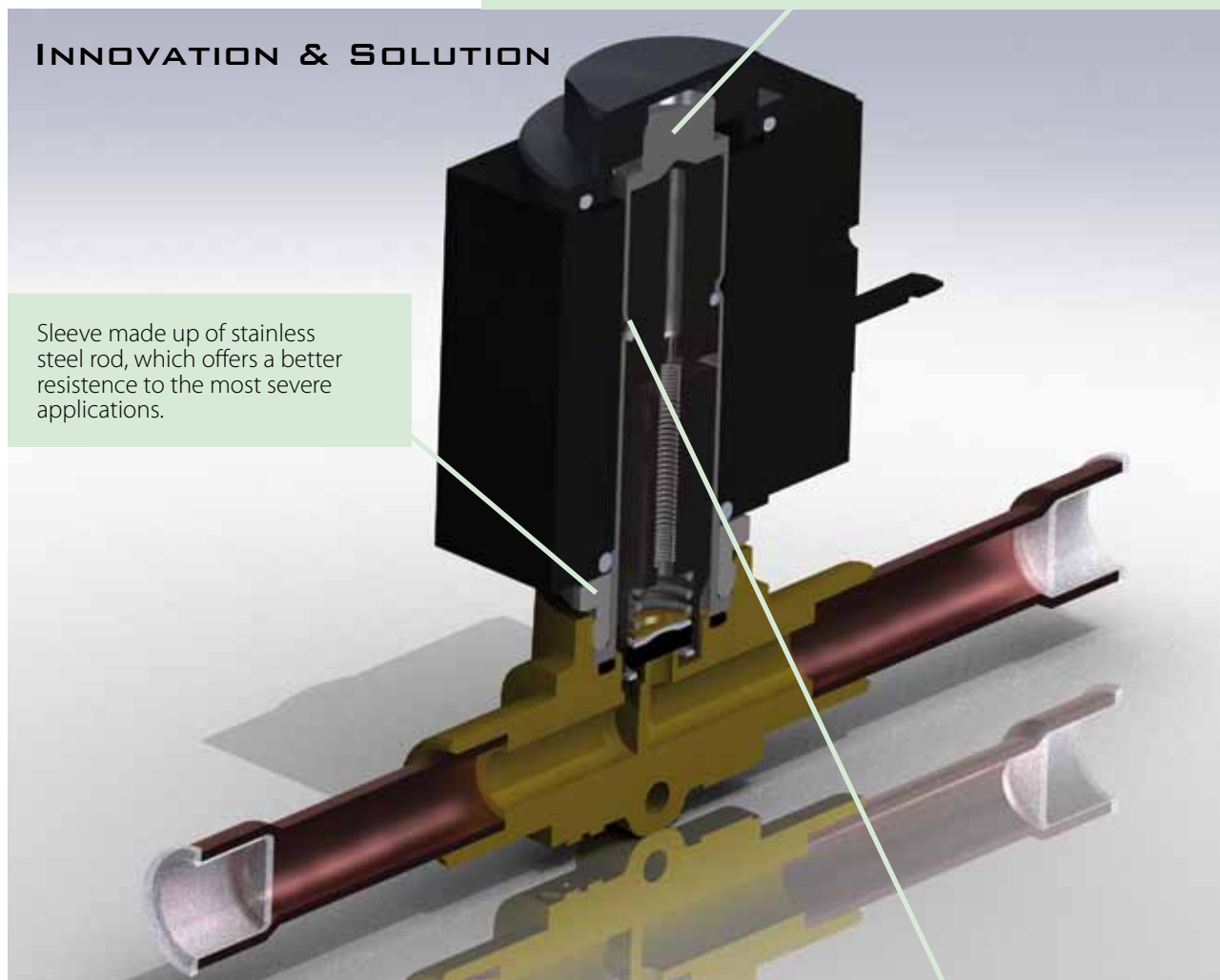
## 30000 SERIES STRENGTH POINTS



The cup which fixes the coil to the body valve is screwed on a thread on the top of the sleeve, in order to grant easy and correct assembly. There is no need of auxiliary components.

### INNOVATION & SOLUTION

Sleeve made up of stainless steel rod, which offers a better resistance to the most severe applications.



The fixed core is locked by rolling process, which assures mechanical deformation of the sleeve, without discontinuity points which could generate cracking.



## SOLENOID VALVES FOR REFRIGERATION SYSTEMS



P R O F E S S I O N A L



## ORDERING CODE FOR SOLENOID VALVES 30000 SERIES

Family		-	Connections		-	Pipe measure - Thread		-	Orifice diameter		-	Coil		-	Specials	
30020		-	T		-	01		-	2.2		-	E		-	1	
30010	N.C. direct action without coil	T	ODF copper pipe		01	1/4 in		2.2	Ø2,2 mm Ø0,086 in		E	220/230VAC 50/60Hz 21VA cUL		Coils 30000BHPF series	1	With fixing bracket
30110	N.C. pilot-controlled diaphragm without coil	F	SAE FLARE connection		02	3/8 in		2.5	Ø2,5 mm Ø0,098 in		F	24VAC 50/60Hz 21VA cUL			2	HNBR O-rings
30210	N.C. pilot-controlled diaphragm with flanged cover and without coil				03	1/2 in		3.0	Ø3,0 mm Ø0,118 in		G	110/120VAC 50/60Hz 21VA cUL				
30020	N.C. direct action with connector				04	5/8 in		6.5	Ø6,5 mm Ø0,255 in		H	240VAC 50/60Hz 21VA cUL				
30120	N.C. pilot-controlled diaphragm with connector				05	3/4 in		12.5	Ø12,5 mm Ø0,490 in		I	12Vdc 24W			Coil + connector Part Number 8851	
30220	N.C. pilot-controlled diaphragm with flanged cover and connector				06	7/8 in		16.5	Ø16,5 mm Ø0,650 in		L	24Vdc 24W				
					07	1 in		25.5	Ø25,5 mm Ø1 in							
					08	1.1/8 in										
					09	1.3/8 in										
					10	1.5/8 in										
					11	5/16 in										
					M10	10 mm 0,394 in										
					M12	12 mm 0,472 in										
					M16	16 mm 0,630 in										
					M22	22 mm 0,866 in										
					M35	35 mm 1,378 in										
					M42	42 mm 1,653 in										

Different voltages available upon request

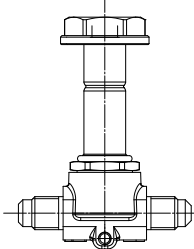
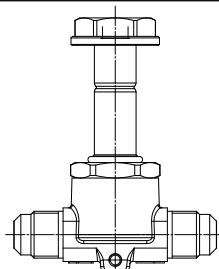
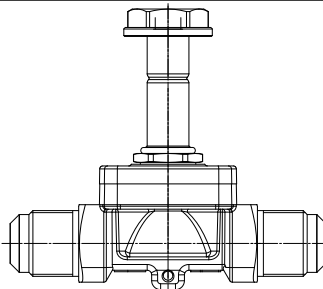
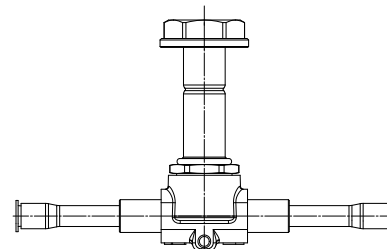
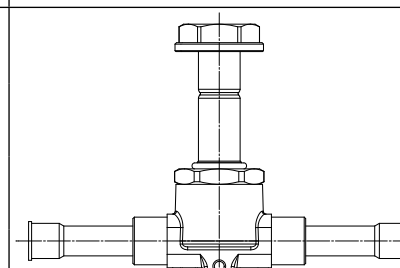
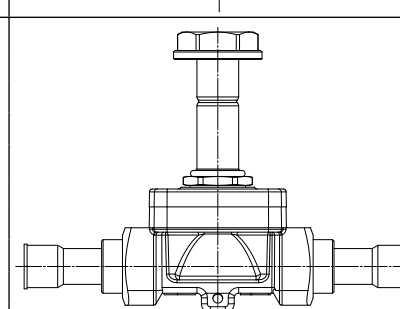
EXAMPLES 30020-T-02-3.0-E  
30120-F-02-6.5-G

2-way normally closed direct action solenoid valve, connections ODF Ø3/8 in, orifice diameter Ø0,118 in and 220/230V 50/60Hz 21VA coil with connector  
2-way normally closed pilot-controlled solenoid valve, SAE FLARE 3/8 connections, orifice diameter Ø0,255 in and 110/120V 50/60Hz 21VA coil with connector



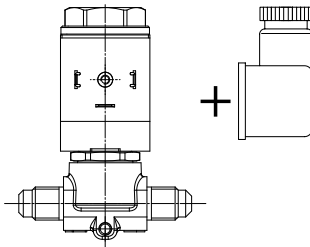
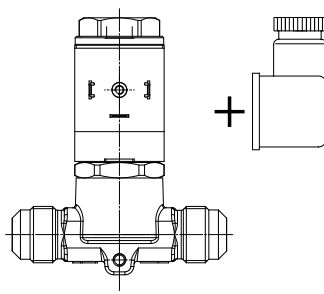
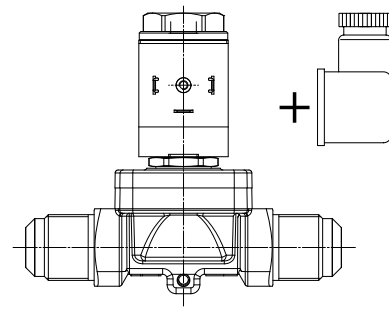
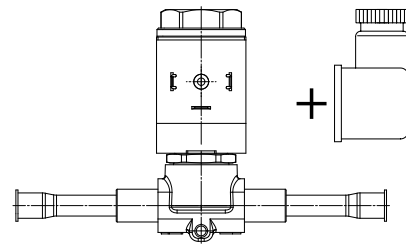
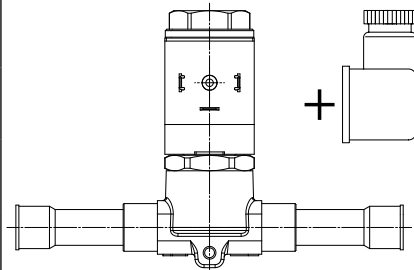
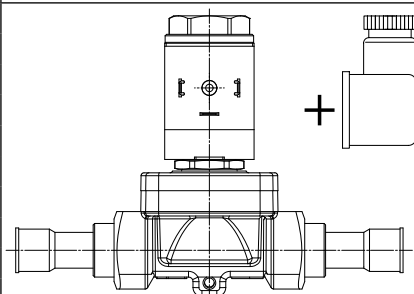
## GENERAL CHARACTERISTICS 30000 SERIES

### SOLENOID VALVES WITHOUT COIL

Working principle	Code	Connections			Cv	PS [psi]	Differential opening pressure [psi]			TS [°F]			
		SAE FLARE	Ø [in]	Ø [mm]			min	MOPD		Min	Max		
								AC	DC				
Direct acting	30010-F-01-2.5	1/4			0,20	652	0	305	275	-31	230		
	30010-F-02-3.0	3/8			0,27								
Diaphragm pilot operated	30110-F-02-6.5	3/8			0,93	652	0,72	305	275	-31	230		
	30110-F-03-6.5	1/2											
Diaphragm pilot operated with flange	30210-F-03-12.5	1/2			2,56	652	0,72	305	260	-31	230		
	30210-F-04-12.5	5/8											
	30210-F-04-16.5	5/8							4,42				188
	30210-F-05-16.5	3/4											
Direct acting	30010-T-01-2.2		1/4		0,17	652	0	305	275	-31	230		
	30010-T-01-3.0		1/4		0,27								
	30010-T-02-3.0		3/8										
	30010-T-M10-3.0		0,394	10									
Diaphragm pilot operated	30110-T-02-6.5		3/8		0,93	652	0,72	305	275	-31	230		
	30110-T-M10-6.5		0,394	10									
	30110-T-M12-6.5		0,472	12									
	30110-T-03-6.5		1/2										
Diaphragm pilot operated with flange	30210-T-M12-12.5		0,472	12	2,56	652	0,72	305	260	-31	230		
	30210-T-03-12.5		1/2										
	30210-T-04-12.5		5/8	16	3,02				188				
	30210-T-06-12.5		7/8	22									
	30210-T-04-16.5		5/8	16	4,42				275				
	30210-T-05-16.5		3/4		5,58								
	30210-T-06-16.5		7/8	22	6,63								
	30210-T-08-16.5		1.1/8										
	30210-T-08-25.5		1.1/8										11,62
30210-T-09-25.5		1.3/8											



## GENERAL CHARACTERISTICS 30000 SERIES SOLENOID VALVES WITH COIL AND WITH CONNECTOR

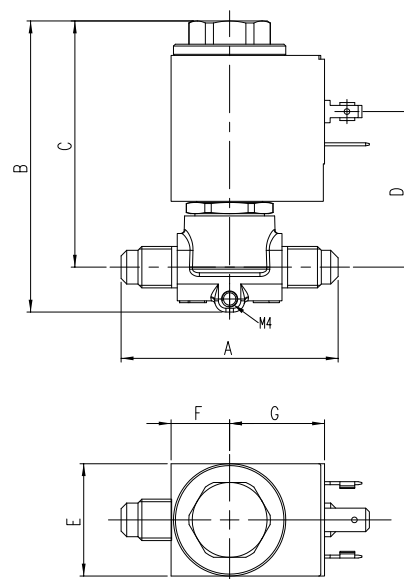
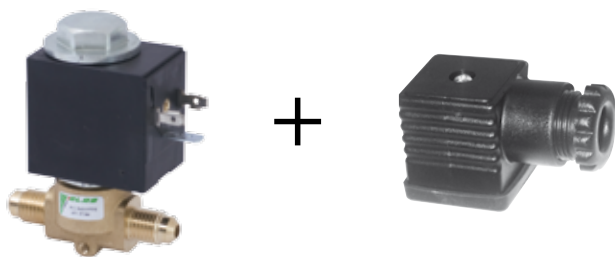
Working principle	Code	Connections			Cv	PS [psi]	Differential opening pressure [psi]			TS [°F]												
		SAE FLARE	Ø [in]	Ø [mm]			min	MOPD		Min	Max											
								AC	DC													
Direct acting	30020-F-01-2.5-A	1/4			0,20	652	0	305	275	-31	230											
	30020-F-02-3.0-A	3/8			0,27																	
Diaphragm pilot operated	30120-F-02-6.5-A	3/8			0,93	652	0,72	305	275	-31	230											
	30120-F-03-6.5-A	1/2																				
Diaphragm pilot operated with flange	30220-F-03-12.5-A	1/2			2,56	652	0,72	305	260	-31	230											
	30220-F-04-12.5-A	5/8							188													
	30220-F-04-16.5-A	5/8			4,42																	
	30220-F-05-16.5-A	3/4			5,58																	
Direct acting	30020-T-01-2.2-A		1/4		0,17	652	0	305	275	-31	230											
	30020-T-01-3.0-A		1/4		0,27																	
	30020-T-02-3.0-A		3/8																			
	30020-T-M10-3.0-A		0,394	10																		
Diaphragm pilot operated	30120-T-02-6.5-A		3/8		0,93	652	0,72	305	275	-31	230											
	30120-T-M10-6.5-A		0,394	10																		
	30120-T-M12-6.5-A		0,472	12																		
	30120-T-03-6.5-A		1/2																			
Diaphragm pilot operated with flange	30220-T-M12-12.5-A		0,472	12	2,56	652	0,72	305	260	-31	230											
	30220-T-03-12.5-A		1/2										3,02									
	30220-T-04-12.5-A		5/8	16																		
	30220-T-06-12.5-A		7/8	22	4,42				188													
	30220-T-04-16.5-A		5/8	16																		
	30220-T-05-16.5-A		3/4		5,58																	
	30220-T-06-16.5-A		7/8	22	6,63																	
	30220-T-08-16.5-A		1.1/8																			
	30220-T-08-25.5-A		1.1/8		11,62				275													
	30220-T-09-25.5-A		1.3/8																			





## PART NUMBER 30020-F

Solenoid valve for refrigeration, direct action, SAE FLARE connection.

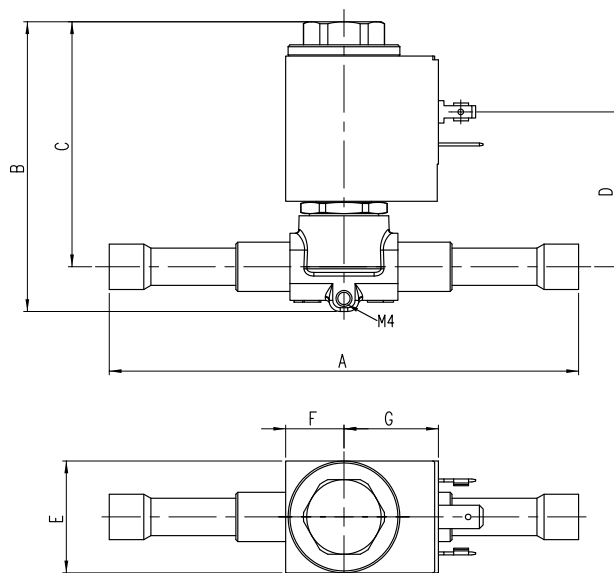
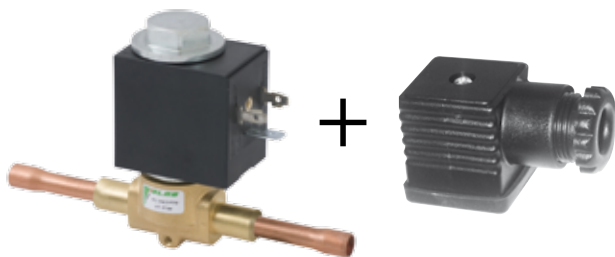


Code	Dimensions [in]						
	A	B	C	D	E	F	G
30020-F-01-2.5- ...	2,283	3,063	2,590	1,638	1,181	0,616	0,959
30020-F-02-3.0- ...	2,559						

Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
30020-F-01-2.5- ...	2,98	3,2	3,0	2,08	3,0	2,0	-	-	-	-	-	-	1,5	1,9	2,03	1,68	2,38	1,67
30020-F-02-3.0- ...	3,9	4,2	3,95	2,74	3,95	2,65							1,96	2,5	2,67	2,2	3,13	2,19

## PART NUMBER 30020-T

Solenoid valve for refrigeration, direct action, ODF copper pipe.



Code	Dimensions [in]						
	A	B	C	D	E	F	G
30020-T-01-2.2- ...	4,842	3,063	2,590	1,638	1,181	0,616	0,959
30020-T-01-3.0- ...							
30020-T-02-3.0- ...	4,960						
30020-T-M10-3.0- ...							

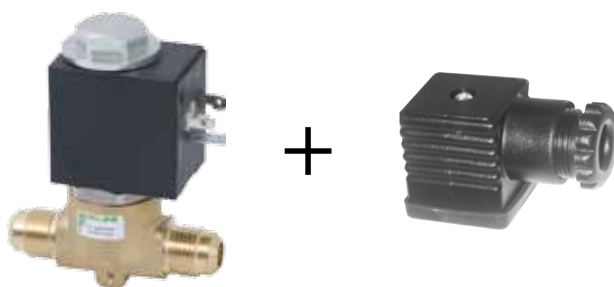
Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
30020-T-01-2.2- ...	2,55	2,75	2,6	1,8	2,6	1,73	-	-	-	-	-	-	1,28	1,6	1,74	1,44	2,04	1,43
30020-T-01-3.0- ...	3,9	4,2	3,95	2,74	3,95	2,65							1,96	2,5	2,67	2,2	3,13	2,19
30020-T-02-3.0- ...																		
30020-T-M10-3.0- ...																		

The mentioned capacities refer to the following working conditions: Evaporation temperature = 39,2°F - dew point=100,4°F - pressure drop = 2,17 psi  
For hot gas: Suction temperature = 64,4°F - pressure drop = 14,5 psi

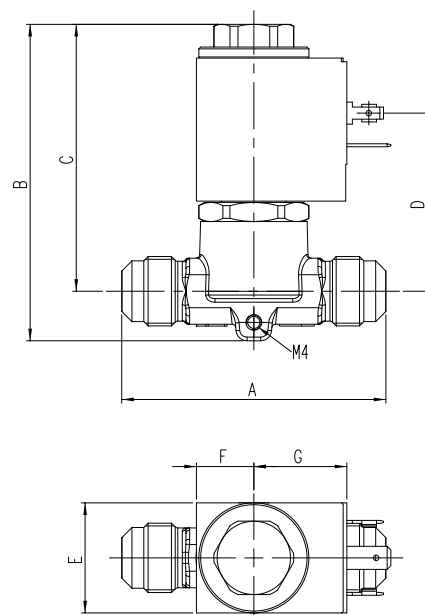


## PART NUMBER 30120-F

Solenoid valve for refrigeration, pilot-controlled diaphragm, SAE FLARE connection.



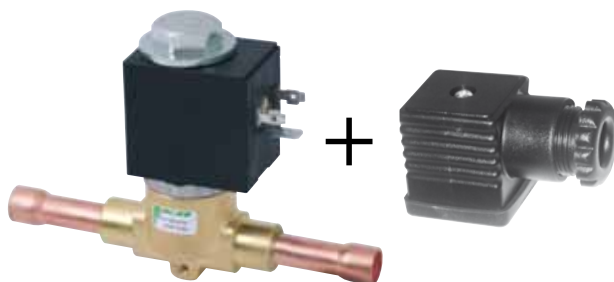
Code	Dimensions [in]						
	A	B	C	D	E	F	G
30120-F-02-6.5- ...	2,677	3,398	2,866	1,913	1,181	0,616	0,959
30120-F-03-6.5- ...	2,835						



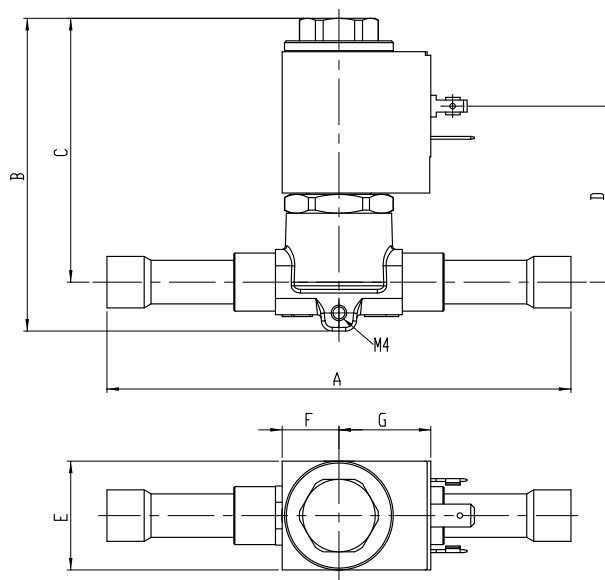
Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
30120-F-02-6.5- ...	13,5	14,6	13,8	9,5	13,7	9,2	1,5	2,04	1,8	1,78	2,4	1,78	6,8	8,6	9,3	7,7	10,9	7,6
30120-F-03-6.5- ...																		

## PART NUMBER 30120-T

Solenoid valve for refrigeration, pilot-controlled diaphragm, ODF copper pipe.



Code	Dimensions [in]						
	A	B	C	D	E	F	G
30120-T-02-6.5- ...	4,961	3,398	2,866	1,913	1,181	0,616	0,959
30120-T-M10-6.5- ...							
30120-T-M12-6.5- ...	5,039						
30120-T-03-6.5- ...							



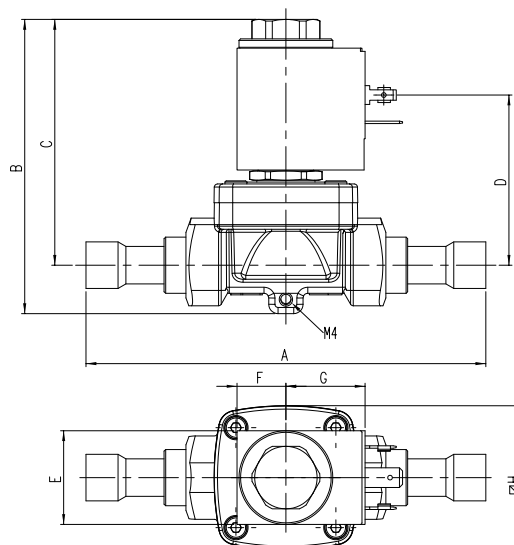
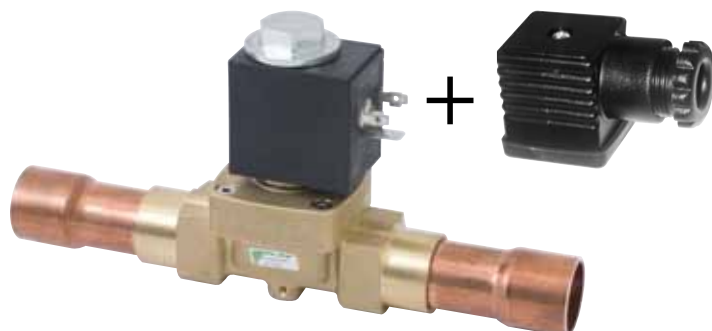
Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
30120-T-02-6.5- ...	13,5	14,6	13,8	9,5	13,7	9,2	1,5	2,04	1,8	1,78	2,4	1,78	6,8	8,6	9,3	7,7	10,9	7,6
30120-T-M10-6.5- ...																		
30120-T-M12-6.5- ...																		
30120-T-03-6.5- ...																		

The mentioned capacities refer to the following working conditions: Evaporation temperature = 39,2°F - dew point=100,4°F - pressure drop = 2,17 psi  
For hot gas: Suction temperature = 64,4°F - pressure drop = 14,5 psi



## PART NUMBER 30220-T

Solenoid valve for refrigeration, pilot-controlled diaphragm with flanged cover, ODF copper pipe.



Code	Dimensions [in]							
	A	B	C	D	E	F	G	H
30220-T-M12-12.5- ...	5,039	3,709	3,098	2,146	1,181	0,616	0,959	1,772
30220-T-03-12.5- ...								
30220-T-04-12.5- ...								
30220-T-06-12.5- ...								
30220-T-04-16.5- ...	6,890	4,279	3,216	2,264				2,244
30220-T-05-16.5- ...								
30220-T-06-16.5- ...								
30220-T-08-16.5- ...								
30220-T-08-25.5- ...	9,842	4,646	3,898	2,953				3,150
30220-T-09-25.5- ...								

Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
30220-T-M12-12.5- ...	37,4	40,3	37,9	26,2	37,8	25,3	4,16	5,6	5,0	4,9	6,6	4,9	18,7	23,8	25,6	21,0	30,0	21,0
30220-T-03-12.5- ...																		
30220-T-04-12.5- ...	44,4	47,8	45,0	31,1	44,8	30,0	4,93	6,6	5,9	5,8	7,8	5,8	22,2	28,2	30,3	25,0	35,5	25,0
30220-T-06-12.5- ...																		
30220-T-04-16.5- ...	64,6	69,5	65,5	45,2	65,2	43,7	7,2	9,7	8,6	8,5	11,4	8,5	32,3	41,0	44,2	36,5	51,7	36,3
30220-T-05-16.5- ...	81,6	87,8	82,7	57,0	82,4	55,2	9,1	12,2	10,9	10,7	14,4	10,7	40,8	51,8	55,8	46,0	65,3	45,8
30220-T-06-16.5- ...																		
30220-T-08-16.5- ...	97,0	104,3	98,2	67,8	98,0	65,6	10,8	14,5	12,9	12,7	17,0	12,7	48,5	61,5	66,2	54,7	77,5	54,4
30220-T-08-25.5- ...																		
30220-T-09-25.5- ...	170,0	183,0	172,3	119,0	171,7	115,0	18,9	25,5	22,7	22,3	30,0	22,3	85,0	108,0	116,2	96,0	136,0	95,4

The mentioned capacities refer to the following working conditions: Evaporation temperature = 39,2°F - dew point=100,4°F - pressure drop = 2,17 psi  
For hot gas: Suction temperature = 64,4°F - pressure drop = 14,5 psi

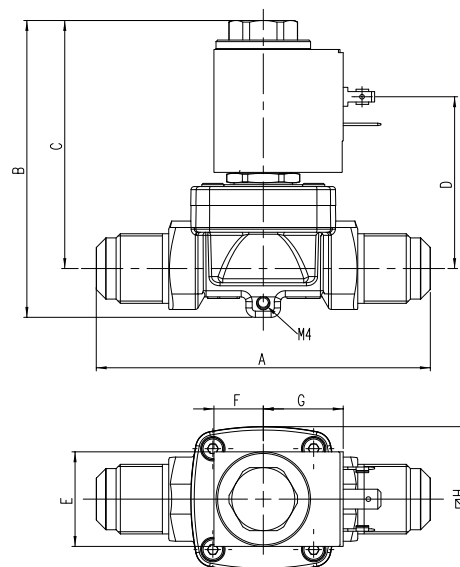


## PART NUMBER 30220-F

Solenoid valve for refrigeration, pilot-controlled diaphragm with flanged cover, SAE FLARE connection.



Code	Dimensions [in]							
	A	B	C	D	E	F	G	H
30220-F-03-12.5- ...	3,937	3,709	3,098	2,146	1,181	0,616	0,959	1,772
30220-F-04-12.5- ...	4,173							
30220-F-04-16.5- ...	4,724	4,279	3,217	2,264				
30220-F-05-16.5- ...	4,882							



Code	Cooling capacity [kW]																	
	Liquid						Steam						Hot gas					
	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507	R134A	R22	R407C	R404A	R410A	R507
30220-F-03-12.5- ...	37,4	40,3	37,9	26,2	37,8	25,3	4,16	5,6	5,0	4,9	6,6	4,9	18,7	23,8	25,6	21,0	30,0	21,0
30220-F-04-12.5- ...	44,4	47,8	45,0	31,1	44,8	30,0	4,93	6,6	5,9	5,8	7,8	5,8	22,2	28,2	30,3	25,0	35,5	25
30220-F-04-16.5- ...	64,5	69,5	65,5	45,2	65,2	43,7	7,2	9,7	8,6	8,5	11,4	8,5	32,3	41	44,2	36,5	51,7	36,3
30220-F-05-16.5- ...	81,6	87,8	82,7	57,1	82,4	55,2	9,1	12,2	10,9	10,7	14,4	10,7	40,8	51,8	55,8	46,1	65,3	45,8

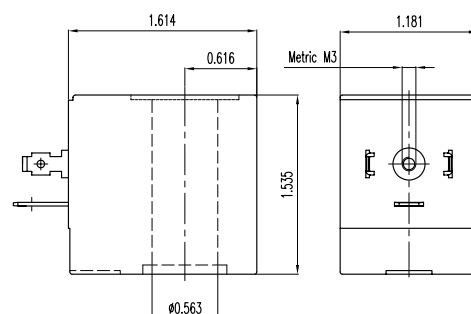
The mentioned capacities refer to the following working conditions: Evaporation temperature = 39,2°F - dew point=100,4°F - pressure drop = 2,17 psi  
For hot gas: Suction temperature = 64,4°F - pressure drop = 14,5 psi

## PART NUMBER 30000BH

Coils family	Code	Voltage [V] *	Voltage tolerance	Frequency [Hz]	Power supply [VA]	Approvals
30000BH	30000BHFP/B1JU	24	±10%	50/60	21 VA	cUL**
	30000BHFP/U1JU	110/120	+6% / -10%	50/60	21 VA	cUL**
	30000BHFP/J1JU	220/230	+6% / -10%	50/60	21 VA	cUL**
	30000BHFP/L1JU	240	±10%	50/60	21 VA	cUL**

\* Others types of coils can be made available upon request

\*\* Approved cUL with connector 7000/CON

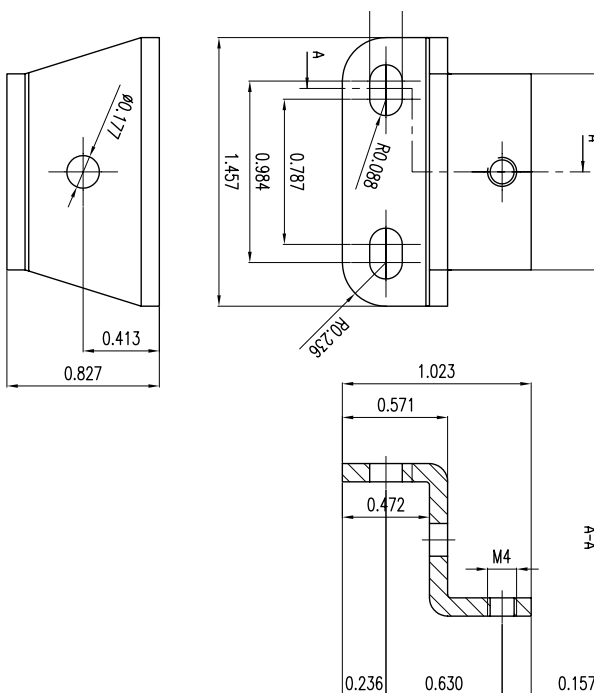


Terminal in compliance with DIN 43650/A



## PART NUMBER 30000-15

White zinc-plated steel bracket with M4 screw



## PART NUMBER 8851

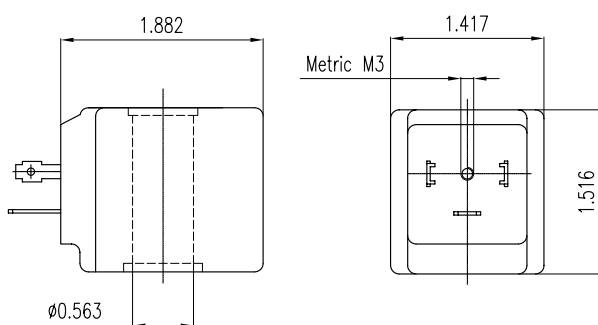
Innovative system for d.c. power supply to the coil. The valve operation is ensured also in case of a wide tolerance range for nominal voltage. It includes a direct current coil + special connector provided with 2000 mm long cables and isolation gaskets.

1,417 in coil with Ø 0,563 in sleeve hole



Code	Voltage [V] *	Power supply	Approvals
8851	24 Vdc	24 W	
8851/A	12 Vdc	24 W	

\* Voltage tolerance  $\pm 10\%$



Terminal in compliance with DIN 43650/A

## PART NUMBER 7000/CON (IP 67)

Connector



Max. cable section	0,059 in <sup>2</sup>
Clamping screw	PG9, PG11
Protection degree	IP 67 (DIN40050)
Insulation class	Group C - VDE 0110
Connector colour	Black
Resistance	< 4 mΩ
Voltage rating	250 V
Pole number	2+ Ground
Protection	Glass reinforced nylon
Contact-holder	Glass reinforced nylon
Contact rated current	10 A
Max. contact rated current	16 A
Gasket	NBR nitrile rubber
Working temperature	- 40 + 194°F



## 32000 SERIES

### MOISTURE AND LIQUID INDICATORS FOR REFRIGERATION SYSTEMS

#### USE:

The liquid and humidity indicators are designed to be installed on refrigeration and air-conditioning systems for domestic and industrial use. It's possible to use them with all the refrigerant fluids of group II (Part Number 9, point 2.2 of Directive 97/23/CE, with reference to Directive 67/548/CEE) and they are defined as "pressure Equipments", as described in Directive 97/23/CE, Part Number 1, point 2.1.4, and Part Number 3, point 1.3.

Group II includes all refrigerants classified as A1 in annex E of EN 378-1: 2008 standard.

#### OPERATION:

The central test paper of 32000 indicators permits a sure and quick control of humidity level and the control of physical state of refrigerant fluid. The level of humidity inside the refrigerant fluid should be under the limits indicated on the following table.

#### CONSTRUCTION:

The body of 32000 indicator is made by hot forged brass (EN12165-CW617N).

The indicator is equipped by tempered glass and special seal, fixed by a flanging operation that guarantee a perfect sealing. The copper tube are as described in Directive EN 12735/1, while the seals are in PTFE.

#### INSTALLATION:

At the start-up of circuit the color of test paper can be yellow, in consequence of atmospheric humidity or humidity contamination of plant where the indicator is installed. When the humidity level of refrigerant fluid is steady, by the action of dryer filter, the color of test paper becomes green, because the equilibrium conditions are reached.

Normally, the time required to reach the stationary condition of circuit is 12 hour; if the yellow color of test paper remains, it means that is necessary a further action to eliminate the humidity presence inside the circuit.

The braze welding of indicators equipped by copper tubes should made by special alloy, with low melting point.

The flame should not be directed toward the glass or body of indicator, because it can damage the indicator in consequence of overheating.

Color	Humidity level indside the fluid [p.p.m]					
	R22	R134a	R404	R407C	R410A	R507
Green	<60	<75	<30	<30	<30	<30
"Chartreuse" Green	60	75	30	30	30	30
Yellow	>60	>75	>30	>30	>30	>30



## MOISTURE/LIQUID INDICATOR FOR REFRIGERATION SYSTEMS



### ORDERING CODE FOR MOISTURE AND LIQUID INDICATORS 32000 SERIES

Family		-	Connections		-	Pipe measure - thread		-	Models	
32000		-	TS		-	01		-	0	
32000	Moisture and liquid indicators		TS	ODF soldering copper pipe		01	1/4 in		0	Liquid indicator with test paper for humidity
			MM	SAE FLARE male/male connection		02	3/8 in		1	Liquid indicator without test paper for humidity
			MF	SAE FLARE male/female connection		03	1/2 in			
						04	5/8 in			
						05	3/4 in			
						06	7/8 in			
						07	1 in			
						08	1.1/8 in			
						M06	6 mm	0,236 in		
						M08	8 mm	0,315 in		
						M10	10 mm	0,394 in		
						M12	12 mm	0,472 in		
						M16	16 mm	0,630 in		
						M18	18 mm	0,709 in		
						M22	22 mm	0,866 in		

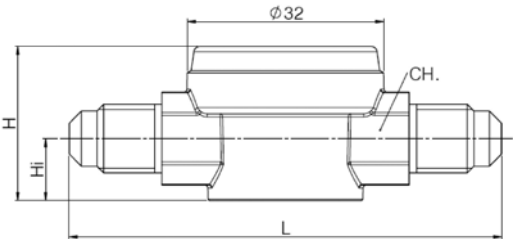
EXAMPLES 32000-TS-02-0 Indicator valve of liquid and moisture with ODF soldering pipe Ø3/8 in  
32000-MF-03-1 Indicator valve of liquid with male/female SAE FLARE connections ref. 1/2





PART NUMBER 32000-MM-xxx-0											
HUMIDITY AND LIQUID INDICATOR - MALE/MALE SAE FLARE											
Code	Connections			PS [psi]	TS (°F)		Sizes				
	SAE FLARE	Ø [in]	Ø [mm]		Min	Max	H [in]	Hi [in]	L [in]	CH. [in]	Weight [oz]
32000-MM-01-0	1/4			652	-31	+230	0,984	0,394	2,756	0,591	4,2
32000-MM-02-0	3/8						1,181	0,512	2,953	0,827	6,0
32000-MM-03-0	1/2						1,299	0,591	3,150	0,945	8,7

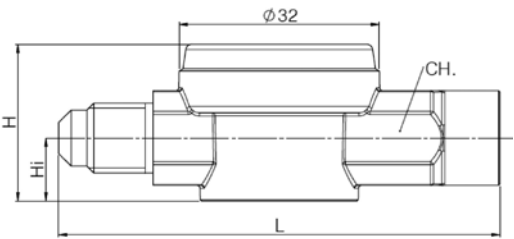
Final code "O" = humidity and liquid indicator



Male connections-"MM" series

PART NUMBER 32000-MF-xxx-0											
HUMIDITY AND LIQUID INDICATOR - MALE/FEMALE SAE FLARE											
Code	Connections			PS [psi]	TS (°F)		Sizes				
	SAE FLARE	Ø [in]	Ø [mm]		Min	Max	H [in]	Hi [in]	L [in]	CH. [in]	Weight [oz]
32000-MF-01-0	1/4			652	-31	+230	0,984	0,394	2,756	0,591	4,4
32000-MF-02-0	3/8						1,181	0,512	2,953	0,827	6,4
32000-MF-03-0	1/2						1,299	0,591	3,150	0,945	8,7

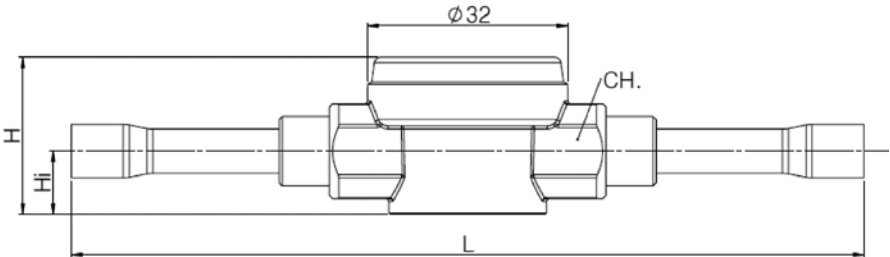
Final code "O" = humidity and liquid indicator



Male/Female connections-"MF" series

PART NUMBER 32000-TS-xxx-0											
HUMIDITY AND LIQUID INDICATOR - MALE/FEMALE SAE FLARE											
Code	Connections			PS [psi]	TS (°F)		Sizes				
	SAE FLARE	Ø [in]	Ø [mm]		Min	Max	H [in]	Hi [in]	L [in]	CH. [in]	Weight [oz]
32000-TS-M06-0		0,236	6	652	-31	+230	0,984	0,394	4,961	0,591	4,4
32000-TS-01-0		1/4					0,984	0,394	4,961	0,591	4,5
32000-TS-02-0		3/8					1,181	0,512	5,236	0,827	6,5
32000-TS-M10-0		0,394	10				1,181	0,512	5,236	0,827	6,5
32000-TS-M12-0		0,472	12				1,299	0,591	5,512	0,945	8,8
32000-TS-03-0		1/2					1,299	0,591	5,512	0,945	8,8
32000-TS-04-0		5/8					1,299	0,591	6,102	0,945	9,5
32000-TS-M16-0		0,630	16				1,299	0,591	6,102	0,945	9,5
32000-TS-M18-0		0,709	18				1,299	0,591	6,102	0,945	9,7
32000-TS-05-0		3/4					1,299	0,591	6,102	0,945	9,7

Final code "O" = humidity and liquid indicator



ATTACCO TUBO RAME - SERIE "TS" - Copper tube connections-"TS" series

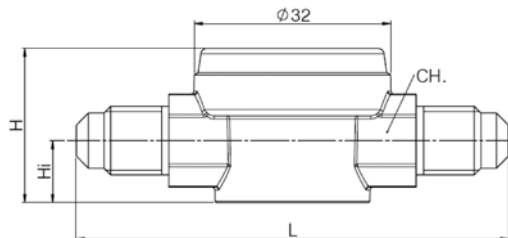




**PART NUMBER 32000-MM-xxx-1**  
LIQUID INDICATOR - MALE/MALE SAE FLARE

Code	Connections			PS [psi]	TS (°F)		Sizes				
	SAE FLARE	Ø [in]	Ø [mm]		Min	Max	H [in]	Hi [in]	L [in]	CH. [in]	Weight [oz]
32000-MM-01-1	1/4			652	-31	+230	0,984	0,394	2,756	0,591	4,2
32000-MM-02-1	3/8						1,181	0,512	2,953	0,827	6,0
32000-MM-03-1	1/2						1,299	0,591	3,150	0,945	8,7

Final code "1" = liquid indicator

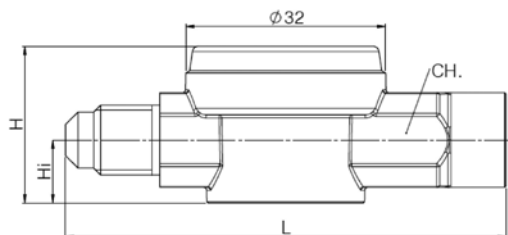


Male Connections-"MM" series

**PART NUMBER 32000-MF-xxx-1**  
LIQUID INDICATOR - MALE/FEMALE

Code	Connections			PS [psi]	TS (°F)		Sizes				
	SAE FLARE	Ø [in]	Ø [mm]		Min	Max	H [in]	Hi [in]	L [in]	CH. [in]	Weight [oz]
32000-MF-01-1	1/4			652	-31	+230	0,984	0,394	2,756	0,591	4,4
32000-MF-02-1	3/8						1,181	0,512	2,953	0,827	6,4
32000-MF-03-1	1/2						1,299	0,591	3,150	0,945	8,7

Final code "1" = liquid indicator

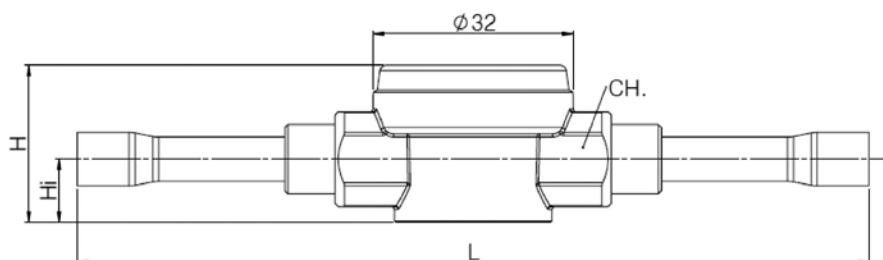


Male/Female connections-"MF" series

**PART NUMBER 32000-TS-xxx-1**  
LIQUID INDICATOR - COPPER TUBE ODF CONNECTIONS

Code	Connections			PS [psi]	TS (°F)		Sizes				
	SAE FLARE	Ø [in]	Ø [mm]		Min	Max	H [in]	Hi [in]	L [in]	CH. [in]	Weight [oz]
32000-TS-M06-1		0,236	6	652	-31	+230	0,984	0,394	4,961	0,591	4,4
32000-TS-01-1		1/4					0,984	0,394	4,961	0,591	4,5
32000-TS-02-1		3/8					1,181	0,512	5,236	0,827	6,5
32000-TS-M10-1		0,394	10				1,181	0,512	5,236	0,827	6,5
32000-TS-M12-1		0,472	12				1,299	0,591	5,512	0,945	8,8
32000-TS-03-1		1/2					1,299	0,591	5,512	0,945	8,8
32000-TS-04-1		5/8					1,299	0,591	6,102	0,945	9,5
32000-TS-M16-1		0,630	16				1,299	0,591	6,102	0,945	9,5
32000-TS-M18-1		0,709	18				1,299	0,591	6,102	0,945	9,7
32000-TS-05-1		3/4					1,299	0,591	6,102	0,945	9,7

Final code "1" = liquid indicator



Copper tube connections-"TS" series



## 33000 SERIES

### CHECK VALVE FOR REFRIGERATION SYSTEMS

#### USE:

The check valves are designed to be installed on refrigeration and air-conditioning systems for domestic and industrial use. It's possible to use them with all the refrigerant fluids of group II (Part Number 9, point 2.2 of Directive 97/23/CE, with reference to Directive 67/548/CEE) and they are defined as "pressure Equipments", as described in Directive 97/23/CE, Part Number 1, point 2.1.4, and Part Number 3, point 1.3.

Group II includes all refrigerants classified as A1 in annex E of EN 378-1: 2008 standard.

#### OPERATION:

The check valves permit to eliminate flow reversals inside the refrigerant circuit. They are characterized by a low differential pressure.

#### CONSTRUCTION:

According to the model, the body of 33000 check valve is made by hot forged brass (EN12420-CW617N) or drawn machined brass (CW614N). The copper tube are as described in Directive EN 12735/1, while the seals are in PTFE.

#### INSTALLATION:

At the start-up of circuit is good to be sure that there are not dust or contamination inside the pipes.

The arrow direction on body valve should be in accord with the flow direction inside the circuit. All mounting positions are accepted, even if is better to be in accord with the vertical axis. The braze welding of copper tubes should made by special alloy, with low melting point. The flame should not be directed toward the seals or body of valve, because it can damage the valve in consequence of overheating.



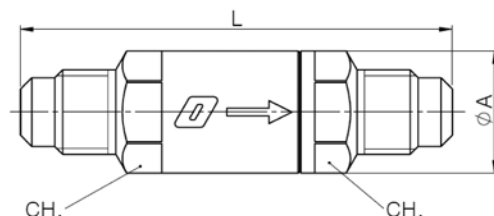


## ORDERING CODE FOR CHECK VALVES 33000 SERIES

Family		-	Connections		-	Pipe measure - thread		-	Models	
33000		-	TS		-	M10		-	D	
33000	Check valve		TS	ODF soldering copper pipe		01	1/4 in		D	Straight inlet-outlet
			TM	ODM soldering copper pipe		02	3/8 in			
						03	1/2 in			
						04	5/8 in		A	Angle inlet-outlet
			MM	SAE FLARE male/male connection		05	3/4 in			
						M06	6 mm	0,236 in		
						M08	8 mm	0,315 in		
						M10	10 mm	0,394 in		
						M12	12 mm	0,472 in		
						M16	16 mm	0,630 in		
						M18	18 mm	0,709 in		
						M22	22 mm	0,866 in		

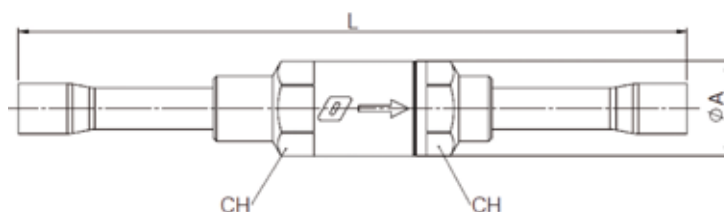
EXAMPLE 33000-MM-01-D Check valve SAE FLARE male/male connection, ref. 1/4 In - straight series

PART NUMBER 33000-MM-xxx-D												
STRAIGHT SAE FLARE MALE/MALE CHECK VALVE												
Code	Connections			Cv	Minimum opening differential pressure [psi]	PS [psi]	TS (°F)		Sizes			
	SAE FLARE	Ø [in]	Ø [mm]				Min	Max	ØA [in]	CH. [in]	L [in]	Weight [oz]
33000-MM-01-D	1/4			0,58	1,45	652	-31	+230	0,630	0,551	2,244	1,9
33000-MM-02-D	3/8			1,74					0,787	0,709	2,717	3,4
33000-MM-03-D	1/2			2,09					0,866	0,787	2,913	4,2



Male connections-"MM" series

PART NUMBER 33000-TS-xxx-D												
STRAIGHT ODF CONNECTION CHECK VALVE												
Code	Connections			Cv	Minimum opening differential pressure [psi]	PS [psi]	TS (°F)		Sizes			
	SAE FLARE	Ø [in]	Ø [mm]				Min	Max	ØA [in]	CH. [in]	L [in]	Weight [oz]
33000-TS-M06-D		0,236	6	0,58	1,45	652	-31	+230	0,630	0,551	4,449	2,1
33000-TS-01-D		1/4		0,58					0,630	0,551	4,449	2,1
33000-TS-02-D		3/8		1,74					0,787	0,709	4,724	3,0
33000-TS-M10-D		0,394	10	1,74					0,787	0,709	4,724	3,0
33000-TS-M12-D		0,472	12	2,09					0,866	0,787	5,512	4,6
33000-TS-03-D		1/2		2,09					0,866	0,787	5,512	4,8
33000-TS-04-D		5/8		3,84					1,063	0,984	6,102	6,4
33000-TS-M16-D		0,630	16	3,84					1,063	0,984	6,102	6,5
33000-TS-M18-D		0,709	18	5,81					1,299	1,181	6,102	6,7
33000-TS-05-D		3/4		5,81					1,299	1,181	6,102	6,9



Copper tube connections-"TS" series



## 37000 SERIES BALL VALVES FOR REFRIGERATION SYSTEMS

### USE:

37000 series ball valves are designed in accordance with the requirements of EN12284:2004 and EN378-1:2012 for installation on refrigeration and air-conditioning systems for civil and industrial use to allow intermittent disconnection of sections of the refrigerating circuit.

They have the following operating features:

Temperature range from -40°F to 302°F

Maximum pressure PS=652 psi

They can be used with all refrigerants listed in Annex E of EN 378-1:2008 belonging to the class A1 (fluids classified as group II according to Part Number 9, point 2.2 of Directive 97/23/CE). Among the refrigerants allowed by the standard, including non-toxic and non-explosive ones, those that currently can be found in refrigerating systems are:

R12 - R22- R134A - R404A - R407C - R410A - R502 – R507

### OPERATION:

According to the standard requirements the 37000 series ball valves are provided with a metal protection cap that can be secured with a lead-sealed wire, if necessary, in order to prevent any unauthorized operations.

To operate the valve you must remove the cap using the suitable tool. For the activation of the valve you need a second tool. The metal protection cap, fitted with a sealing gasket, is designed to operate in the same conditions as the valve and therefore can ensure a perfect seal even when the two gaskets mounted on the operating rod may be accidentally deteriorated. The operating rod is designed to prevent its removal due to the internal pressure or tampering actions.

These valves require no maintenance.

### CONSTRUCTION:

- Body made of hot forged brass EN12165 - CW617N
- Operating rod and locking pin made of stainless steel AISI 303
- Ball made of chrome-plated brass (EN12165 – EN12164 CW617N or - CW614N according to size)
- Seals (O-RING) of the operating rod and cap made of chloroprene
- Ball seals made of virgin PTFE
- Protection cap made of hot forged brass EN12165 - CW617N

The perfect seal of the body under every temperature, pressure and external mechanical stress condition is ensured by the welding of the various fixed components and by two O-RINGS mounted on the operating rod.

### INSTALLATION:

37000 series ball valves can be installed anywhere in the system taking into account the cooling capacities of the different models. The valve can be mounted regardless of the fluid flow direction since ball valves are bidirectional. All models of this series can be mounted in any position.



## BALL VALVES FOR REFRIGERATION SYSTEMS

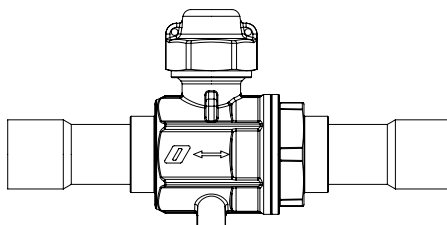
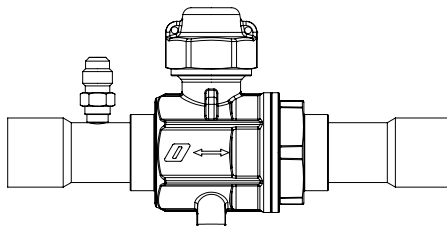


## ORDERING CODE FOR BALL VALVES 37000 SERIES

Family		-	Connections		-	Welding pocket size		-	Orifice diameter		-	Models			
37000		-	TS		-	06		-	20		-	1			
37000		Ball valve for refrigeration systems according to EN 12284:2004		TS		ODF copper pipe		M6		0,236 in (6 mm)		12		0,472 in (12mm)	
								01		1/4 in		15		0,591 in (15mm)	
								02		3/8 in		20		0,787 in (20mm)	
								M10		0,394 in (10mm)		25		0,984 in (25mm)	
								M12		0,472 in (12mm)		32		1,260 in (32mm)	
								03		1/2 in					
								04		5/8 in (16mm)					
								M18		0,709 in (18mm)					
								05		3/4 in					
								06		7/8 in (22mm)					
								M28		1,102 in (28mm)					
								08		1.1/8 in					
								09		1.3/8 in (35mm)					
								10		1.5/8 in					
								M42		1,654 in (42mm)					

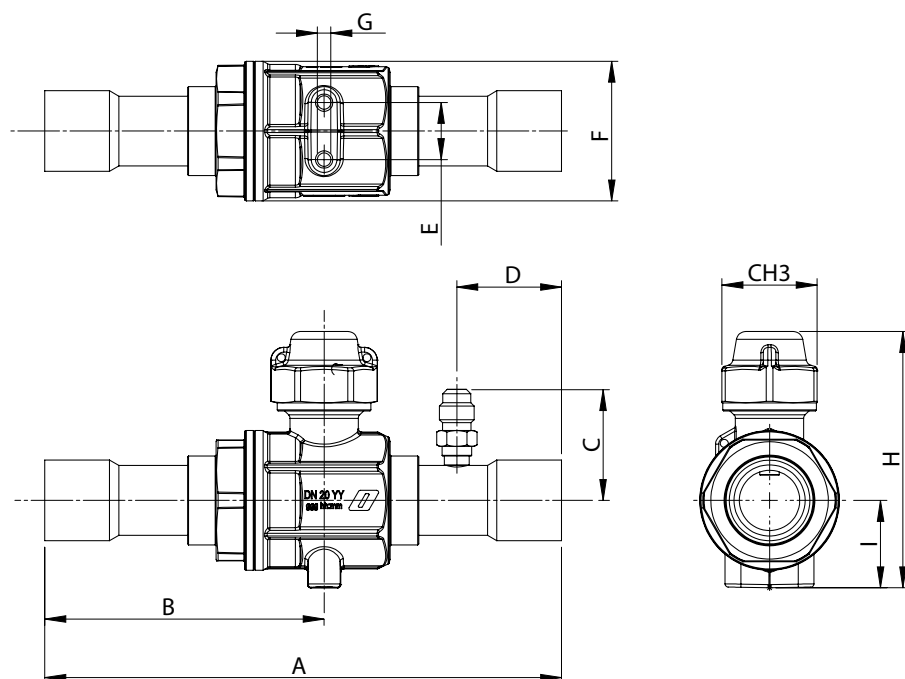


## GENERAL CHARACTERISTICS 37000 SERIES

	Code	ODF		Orifice [in]	Cv	PS [psi]	TS (°F)			
		Ø [in]	Ø [mm]				Min	Max		
VALVE WITHOUT CHARGE FITTING	37000-TS-M6-12-0	0,236	6	0,472 (12mm)	1,2	652	-40	302		
	37000-TS-01-12-0	1/4			4,7					
	37000-TS-02-12-0	3/8								
	37000-TS-M10-12-0	0,394	10							8,1
	37000-TS-M12-12-0	0,472	12							
	37000-TS-03-12-0	1/2								
	37000-TS-04-12-0	5/8	16	0,591 (15mm)	16,3	652	-40	302		
	37000-TS-04-15-0	5/8	16							
	37000-TS-M18-15-0	0,709	18		22,1					
	37000-TS-05-15-0	3/4								
	37000-TS-06-15-0	7/8	22							
	37000-TS-06-20-0	7/8	22		0,787 (20mm)	32,6				
	37000-TS-M28-20-0	1,102	28							
	37000-TS-08-20-0	1 1/8		0,984 (25mm)						58,1
	37000-TS-M28-25-0	1,102	28							
	37000-TS-08-25-0	1 1/8			1,260 (32mm)	93,0	652	-40		
	37000-TS-09-25-0	1 3/8								
37000-TS-09-32-0	1 3/8		1,260 (32mm)	93,0					652	-40
37000-TS-10-32-0	1 5/8									
37000-TS-M42-32-0	1,658	42								
VALVE WITH CHARGE FITTING	37000-TS-02-12-1	3/8		0,472 (12mm)	4,7	652	-40	302		
	37000-TS-M10-12-1	0,394	10		8,1					
	37000-TS-M12-12-1	0,472	12							
	37000-TS-03-12-1	1/2								0,591 (15mm)
	37000-TS-04-15-1	5/8	16	22,1						
	37000-TS-M18-15-1	0,709	18		0,787 (20mm)	32,6	652	-40		
	37000-TS-05-15-1	3/4		0,984 (25mm)						58,1
	37000-TS-06-20-1	7/8	22		1,260 (32mm)	93,0	652	-40		
	37000-TS-M28-25-1	1,102	28							
	37000-TS-08-25-1	1 1/8								
	37000-TS-09-32-1	1 3/8	35							



NO CHARGE FITTING Code	CHARGE FITTING Code	ODF		Dimensions [in]												Weight [oz]					
		Ø [in]	Ø [mm]	Orifice	A	B	C	D	E	F	G	H	I	CH3							
37000-TS-M6-12-0		0,236	6	0,472	4,606	2,441	-	-	0,709	1,181	Metric M5	2,244	0,787	0,984 (25mm)	9,17						
37000-TS-01-12-0		1/4			4,567	2,480															
37000-TS-02-12-0	37000-TS-02-12-1	3/8			4,646	2,520	1,142	0,787												9,52	
37000-TS-M10-12-0	37000-TS-M10-12-1	0,394	10		4,764	2,559	1,181	0,906												9,88	
37000-TS-M12-12-0	37000-TS-M12-12-1	0,472	12																		
37000-TS-03-12-0	37000-TS-03-12-1	1/2			5,157	2,756	1,299	0,945												10,93	
37000-TS-04-12-0	37000-TS-04-12-1	5/8	16	0,591	5,472	3,031	1,299	0,945	0,709	1,417	Metric M5	2,520	0,945	0,984 (25mm)	14,46						
37000-TS-04-15-0	37000-TS-04-15-1	5/8	16		5,551	3,071											15,52				
37000-TS-M18-15-0	37000-TS-M18-15-1	0,709	18		5,787	3,189											16,58				
37000-TS-05-15-0	37000-TS-05-15-1	3/4			6,969	3,780	-	-											25,57		
37000-TS-06-15-0		7/8	22		6,417	3,465	1,378	1,299							0,709	1,732	Metric M5	3,150	1,083	1,181 (30mm)	26,81
37000-TS-06-20-0	37000-TS-06-20-1	7/8	22		7,559	4,055	-	-													
37000-TS-M28-20-0		1 1/8		7,835	4,173																
37000-TS-M28-25-0	37000-TS-M28-25-1	1,102	28	0,984	7,756	4,173	1,496	1,654	1,181	2,067	Metric M6	3,425	1,181	1,181 (30mm)	37,39						
37000-TS-08-25-0	37000-TS-08-25-1	1 1/8			9,409	5,000	-	-											39,86		
37000-TS-09-25-0		1 3/8																			
37000-TS-09-32-0	37000-TS-09-32-1	1 3/8		1,260	8,268	4,409	1,654	1,732	1,181	2,480	Metric M6	4,173	1,457	1,339 (34mm)	48,68						
37000-TS-10-32-0		1 5/8					-	-													
37000-TS-M42-32-0		1,658	42																		





## 31000 SERIES FITTINGS FOR REFRIGERATION SYSTEMS

### OPERATION

- The sealing system between the end of the male fitting and a nut of the 31000, 31001, 31002 and 31003 series needs a special flare near the end of the copper pipe.
- Flaring of copper pipes (which is forbidden by the national regulations of certain European countries) can be avoided using a sealing system between the end of a male fitting and an adapter with socket welding shank as the copper pipe end is braze welded into the shank pocket. The perfect sealing of the device is obtained by inserting a truncated copper washer (31017/3 series).

### CONSTRUCTION MATERIALS

- Union fittings (male and female threaded nipples, adapter shanks, plugs) are made of EN 12164-CW614N brass  
Nuts, elbow fittings and Tee fittings are made of hot-forged EN 12165-CW617N brass  
Caps and truncated gaskets are made of Cu-ETP UNI 5649 copper

### TECHNICAL CHARACTERISTICS

- The design maximum pressure of Series 31000 fittings is 652 psi. When hydrostatically tested, these products can withstand a 932 psi pressure (1.43 times the maximum pressure) according to Directive PED (97/23/CE). The burst tests made on the 31000 series fittings proved that they can resist a 1956 psi pressure (3 times the maximum pressure as according to the modified EN 378-2: 2008 standard).





## FITTINGS FOR REFRIGERATION SYSTEMS



IN ORDER TO ENSURE THE PERFORMANCES DESCRIBED ABOVE, THE FOLLOWING TORQUE WRENCH SETTINGS MUST BE APPLIED:

SAE thread type	Torque wrench [N.m]	Torque wrench [lbf-ft]
1/4"	14	10,33
3/8"	25	18,44
1/2"	47	34,67
5/8"	65	47,94
3/4"	70	51,63
7/8"	120	88,51
1"	150	110,63

## TYPES OF THREADED CONNECTIONS

THE TABLE BELOW SHOWS THE SIZE OF THREADS TYPE SAE J513-92 (ASME B1.1-89) USED TO CONNECT A COPPER PIPE WITH FLARED END (IN BOTH MALE AND FEMALE VERSION):

SAE thread type	Thread size
1/4"	7/16"-20 UNF
5/16"	1/2"-20 UNF
3/8"	5/8"-18 UNF
1/2"	3/4"-16 UNF
5/8"	7/8"-14 UNF
3/4"	1.1/16"-14 UNS
7/8"	1.1/4"-12 UNF
1"	1.3/8"-12 UNF

## HOW TO READ SIZES IN INCHES    HOW TO READ SIZES IN MILLIMETRES

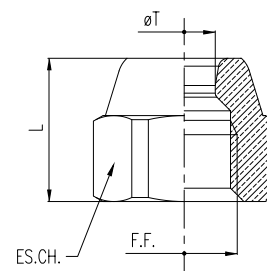
Size in inches	Final extension of the code	Sizes in millimetres	Final extension of the code
1/4"	...-01	6	...-M6
3/8"	...-02	10	...-M10
1/2"	...-03	12	...-M12
5/8"	...-04	15	...-M15
3/4"	...-05	18	...-M18
7/8"	...-06	22	...-M22
1"	...-07	28	...-M28
5/16"	...-11	42	...-M42
		64	...-M64
		80	...-M80



## PART NUMBER 31000

SAE FLARE nuts for inch tubing

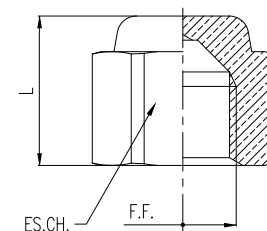
Code	Int. Code	F.F. SAE FLARE	Copper pipe		EC.CH. [in]	L [in]	ØT [in]	Weight [oz]	Pack [pieces]
			Ø [in]	Ø [mm]					
31000-01	NS4-4	1/4	1/4	6	0,669	0,590	0,255	0,7	25
31000-02	NS4-6	3/8	3/8		0,866	0,728	0,381	1,4	25
31000-03	NS4-8	1/2	1/2		0,984	0,728	0,511	1,75	25
31000-04	NS4-10	5/8	5/8	16	1,102	0,826	0,637	3,2	10
31000-05	NS4-12	3/4	3/4		1,299	1,181	0,763	3,4	10
31000-06	NS4-14	7/8	7/8	22	1,614	1,437	0,885	6	5
31000-07	NS4-16	1	1		1,614	1,437	1,007	5,4	5



## PART NUMBER 31001

SAE FLARE cup nuts

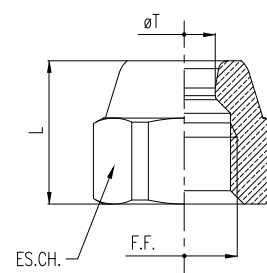
Code	Int. Code	F.F. SAE FLARE	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31001-01	NS-4	1/4	0,669	0,590	0,78	25
31001-11	NS-5	5/16	0,669	0,590	0,7	25
31001-02	NS-6	3/8	0,866	0,728	1,4	25
31001-03	NS-8	1/2	0,984	0,767	1,75	25



## PART NUMBER 31002

SAE FLARE reducing nuts for inch tubing

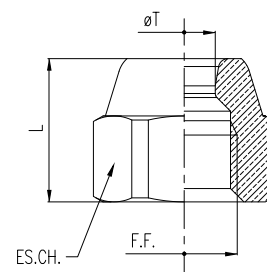
Code	Int. Code	F.F. SAE FLARE	Copper pipe		EC.CH. [in]	L [in]	ØT [in]	Weight [oz]	Pack [pieces]
			Ø [in]	Ø [mm]					
31002-02-01	NRS4-64	3/8	1/4	6s	0,866	0,728	0,255	1,35	25
31002-03-02	NRS4-86	1/2	3/8		0,984	0,767	0,381	1,87	25
31002-04-03	NRS4-108	5/8	1/2		1,102	0,826	0,511	3,1	10
31002-05-04	NRS4-1210	3/4	5/8	16	1,299	1,181	0,637	3,67	5
31002-07-06	NRS4-1614	1	7/8	22	1,614	1,437	0,885	5,65	5



## PART NUMBER 31003

SAE FLARE nuts for metric tubing

Code	F.F. SAE FLARE	Copper pipe	EC.CH. [in]	L [in]	ØT [in]	Weight [oz]	Pack [pieces]
		Ø [mm]					
31003-02-M8	3/8	8	0,866	0,728	0,327	1,3	25
31003-02-M10	3/8	10	0,866	0,728	0,406	1,3	25
31003-03-M10	1/2	10	0,984	0,768	0,406	1,9	25
31003-03-M12	1/2	12	0,984	0,768	0,484	1,8	25
31003-03-M14	1/2	14	0,984	0,886	0,563	1,7	25
31003-04-M12	5/8	12	1,102	0,827	0,484	3,3	10
31003-04-M14	5/8	14	1,102	0,827	0,563	3,2	10
31003-05-M14	3/4	14	1,299	1,181	0,536	3,7	5
31003-05-M18	3/4	18	1,299	1,181	0,720	3,5	5

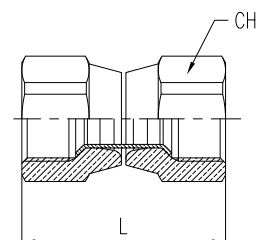




## PART NUMBER 31004

### SAE FLARE twin nuts

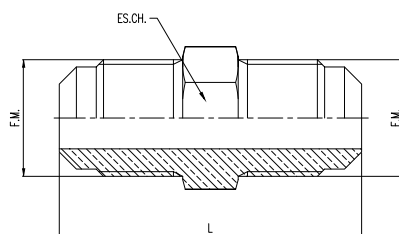
Code	Int. Code	F.F. SAE FLARE	CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31004-01	US4-4	1/4	0,669	1,260	1,4	25
31004-02	US4-6	3/8	0,866	1,575	2,8	10
31004-03	US4-8	1/2	0,984	1,811	3,9	5
31004-04	US4-10	5/8	1,181	2,008	5,3	5



## PART NUMBER 31005

### SAE FLARE unions

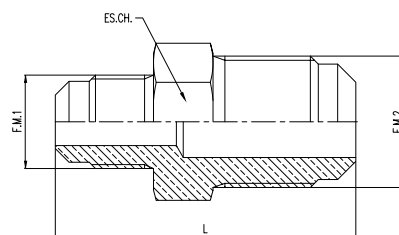
Code	Int. Code	F.M. SAE FLARE	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31005-01	U2-4	1/4	0,472	1,496	0,9	25
31005-02	U2-6	3/8	0,669	1,654	1,7	25
31005-03	U2-8	1/2	0,787	1,929	2,8	10
31005-04	U2-10	5/8	0,906	2,283	4,3	5
31005-05	U2-12	3/4	1,063	2,480	5,8	5
31005-07	U2-16	1	1,417	2,835	10,7	5



## PART NUMBER 31006

### Reducing SAE FLARE unions

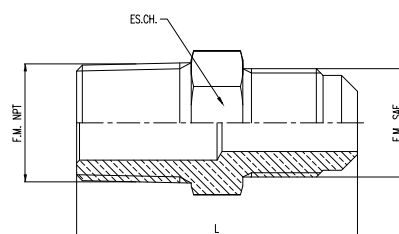
Code	Int. Code	F.M.1 SAE FLARE	F.M.2 SAE FLARE	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31006-01-02	UR2-64	1/4	3/8	0,669	1,594	1,5	25
31006-01-03	UR2-84	1/4	1/2	0,787	1,732	2,1	10
31006-02-03	UR2-86	3/8	1/2	0,787	1,791	2,4	10
31006-02-04	UR2-106	3/8	5/8	0,906	1,988	3,4	5
31006-03-04	UR2-108	1/2	5/8	0,906	2,126	3,7	5
31006-04-05	UR2-1210	5/8	3/4	1,063	2,421	6,0	5



## PART NUMBER 31007

### SAE FLARE-NPT unions

Code	Int. Code	F.M. SAE FLARE	F.M. NPT	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31007-01-01	U1-4b	1/4	1/4"	0,551	1,496	1	25
31007-02-02	U1-6c	3/8	3/8"	0,669	1,594	1,6	25
31007-03-03	U1-8d	1/2	1/2"	0,866	1,929	3	10
31007-05-05	U1-12f	3/4	3/4"	1,063	2,283	5,4	5
31007-07-07	U1-16h	1	1"	1,417	2,677	9,8	5

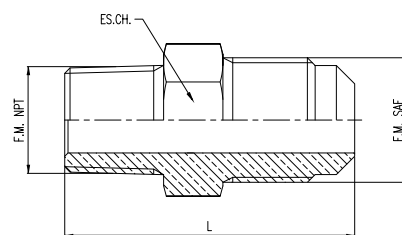




## PART NUMBER 31008

SAE FLARE-NPT reducing unions

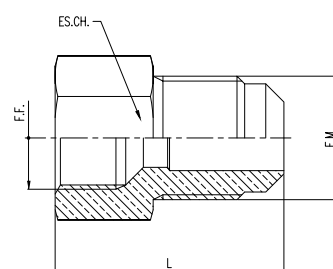
Code	Int. Code	F.M. SAE FLARE	F.M. NPT	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31008-01-00	U1-4A	1/4	1/8"	0,472	1,378	0,8	25
31008-02-01	U1-6B	3/8	1/4"	0,669	1,594	1,5	25
31008-03-02	U1-8C	1/2	3/8"	0,787	1,732	2,3	10
31008-04-03	U1-10D	5/8	1/2"	0,906	2,126	3,8	5



## PART NUMBER 31009

Male-female reducing unions (reduced female)

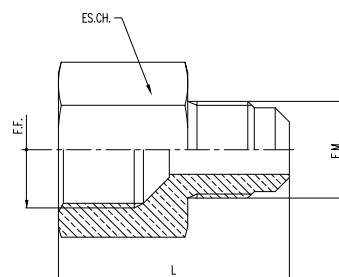
Code	Int. Code	F.M. SAE FLARE	F.F. SAE FLARE	F.F. NPT	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31009-01-00	U3-4A	1/4		1/8"	0,551	1,142	0,7	25
31009-02-01	UR3-46	3/8	1/4		0,669	1,280	1,3	25
31009-03-02	UR3-68	1/2	3/8		0,866	1,378	2,3	10
31009-04-03	UR3-810	5/8	1/2		0,984	1,772	3,5	10
31009-05-03	UR3-812	3/4	1/2		1,063	1,831	4,7	5
31009-05-04	UR3-1012	3/4	5/8		1,181	1,949	5,5	5



## PART NUMBER 31010

Male-female reducing unions (reduced male)

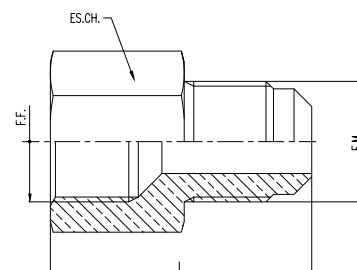
CODE	INT. CODE	F.M. SAE FLARE	F.F. SAE FLARE	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31010-01-02	UR3-64	1/4	3/8	0,866	1,280	1,7	25
31010-01-03	UR3-84	1/4	1/2	0,984	1,417	2,3	10
31010-02-03	UR3-86	3/8	1/2	0,984	1,476	2,5	10
31010-03-04	UR3-108	1/2	5/8	1,181	1,713	4,5	5
31010-03-05	UR3-128	1/2	3/4	1,339	1,772	4,9	5
31010-04-05	UR3-1210	5/8	3/4	1,339	1,929	5,3	5



## PART NUMBER 31013

Male-female unions

Code	F.M. SAE FLARE	F.F. SAE FLARE	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31013-01-01	1/4	1/4	0,669	1,181	1,1	25
31013-02-02	3/8	3/8	0,866	1,339	1,8	10
31013-03-03	1/2	1/2	0,984	1,614	3,0	10

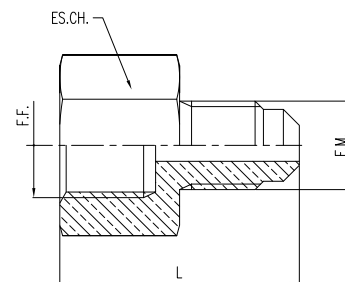




## PART NUMBER 31014

Unions SAE FLARE to BSP female thread

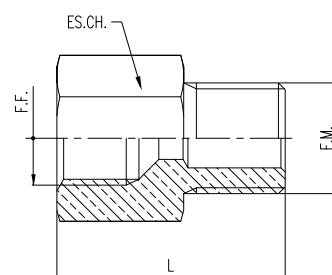
Code	F.M. SAE FLARE	F.F. cylindrical gas	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31014-01-01	1/4	G 1/4"	0,787	1,181	1,5	25



## PART NUMBER 31015

Unions SAE FLARE to BSP male thread

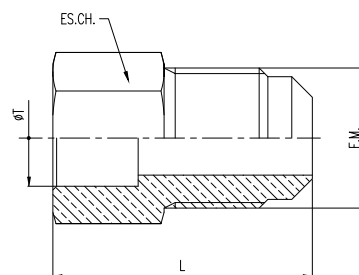
Code	F.F. SAE FLARE	F.M. BSP thread	EC.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31015-01-01	1/4	G 1/4"	0,669	1,063	0,71	25



## PART NUMBER 31016

Male SAE FLARE - solder unions

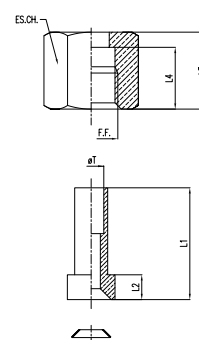
Code	Int. code	F.M. SAE FLARE	Copper pipe		EC.CH. [in]	L [in]	ØT [in]	Weight [oz]	Pack [pieces]
			Ø [inches]	Ø [mm]					
31016-01-01	US3-44	1/4	1/4	6	0,472	1,043	0,256	0,6	25
31016-01-M08		1/4	0,315	8	0,472	1,043	0,327	0,6	25
31016-02-02	USR-66	3/8	3/8		0,669	1,280	0,382	1,4	25
31016-02-M10		3/8	0,394	10	0,669	1,280	0,406	1,3	25
31016-03-03	US3-88	1/2	1/2		0,787	1,378	0,512	1,9	10
31016-03-M12		1/2	0,472	12	0,787	1,378	0,484	2,0	10
31016-04-04	US3-1010	5/8	5/8		0,984	1,772	0,638	3,2	10
31016-05-M18		3/4	0,709	18	1,063	1,791	0,720	4,3	5



## PART NUMBER 31017

SAE FLARE - ODS adapters

Code	F.F. SAE FLARE	Copper pipe		L1 [in]	L2 [in]	L3 [in]	L4 [in]	CH. [in]	Weight [oz]	Pack [pieces]
		Ø [inches]	Ø [mm]							
31017-01-01	1/4	1/4		0,827	0,138	0,630	0,492	0,669	2,5	25
31017-01-M6	1/4	0,236	6	0,827	0,138	0,630	0,492	0,669	3,0	25
31017-02-02	3/8	3/8		0,925	0,157	0,728	0,579	0,866	4,2	10
31017-02-M10	3/8	0,394	10	0,925	0,157	0,728	0,579	0,866	4,6	10
31017-03-03	1/2	1/2		1,024	0,177	0,827	0,669	1,063	7,4	10
31017-03-M12	1/2	0,472	12	1,024	0,177	0,827	0,669	1,063	8,1	10
31017-04-04	5/8	5/8	16	1,083	0,197	0,886	0,709	1,181	9,7	10
31017-05-05	3/4	3/4		1,181	0,197	0,984	0,787	1,417	14,5	5
31017-05-M18	3/4	0,709	18	1,181	0,197	0,984	0,787	1,417	16,3	5



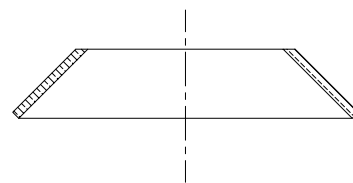


## PART NUMBER 31017/3

Copper gasket

minimum lot 1000

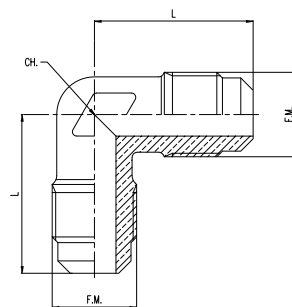
Code	SAE connection	Weight [oz]	Pack [pieces]
31017/3-01	1/4	0,018	2000
31017/3-02	3/8	0,018	2000
31017/3-03	1/2	0,035	2000
31017/3-04	5/8	0,053	1000
31017/3-05	3/4	0,106	1000



## PART NUMBER 31100

SAE FLARE elbows

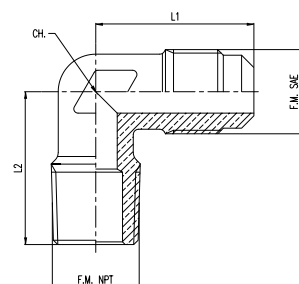
Code	Int. Code	F.M. SAE FLARE	CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31100-01	E2-4	1/4	0,394	0,965	1,2	25
31100-02	E2-6	3/8	0,551	1,161	2,5	10
31100-03	E2-8	1/2	0,630	1,280	3,9	10
31100-04	E2-10	5/8	0,787	1,417	4,1	5
31100-05	E2-12	3/4	0,984	1,673	6,8	5



## PART NUMBER 31101

SAE FLARE-NPT elbows

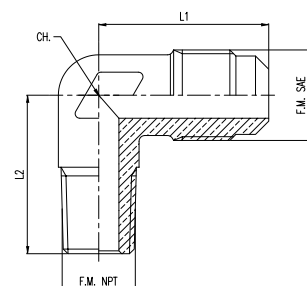
Code	Int. Code	F.M. SAE FLARE	F.M. NPT	CH. [in]	L1 [in]	L2 [in]	Weight [oz]	Pack [pieces]
31101-01	E1-4B	1/4	1/4	0,394	0,965	0,984	1,3	25
31101-02	E1-6C	3/8	3/8	0,551	1,161	1,122	2,5	10
31101-03	E1-8D	1/2	1/2	0,630	1,280	1,299	4,2	10
31101-05	E1-12F	3/4	3/4	0,984	1,673	1,555	6,5	5



## PART NUMBER 31102

SAE FLARE-reduced NPT elbows

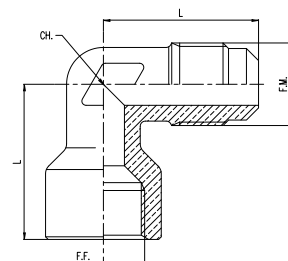
Code	Int. Code	F.M. SAE FLARE	F.M. NPT	CH. [in]	L1 [in]	L2 [in]	Weight [oz]	Pack [pieces]
31102-01-00	E1-4A	1/4	1/8	0,394	0,965	0,945	1,2	25
31102-02-01	E1-6B	3/8	1/4	0,551	1,161	1,083	2,3	10
31102-03-02	E1-8C	1/2	3/8	0,630	1,280	1,22	3,4	10
31102-04-03	E1-10D	5/8	1/2	0,787	1,417	1,378	4,0	10



## PART NUMBER 31103

Male-female SAE FLARE elbows

Code	F.M. SAE FLARE	F.F. SAE FLARE	CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31103-01	1/4	1/4	0,394	0,965	1,5	25
31103-02	3/8	3/8	0,551	1,161	2,8	10
31103-03	1/2	1/2	0,630	1,280	4,6	10

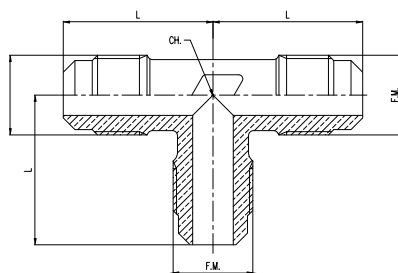




## PART NUMBER 31200

### SAE FLARE TEE

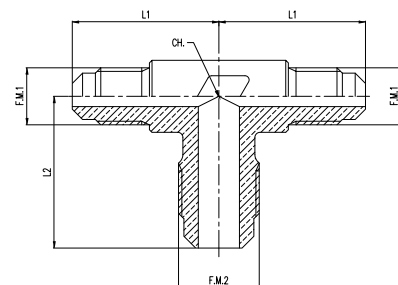
Code	Int. Code	F.M. SAE FLARE	CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31200-01	T2-4	1/4	0,394	0,965	1,8	25
31200-02	T2-6	3/8	0,551	1,161	3,5	10
31200-03	T2-8	1/2	0,630	1,280	5,3	10
31200-04	T2-10	5/8	0,787	1,417	5,4	5
31200-05	T2-12	3/4	0,984	1,634	8,3	5



## PART NUMBER 31201

### SAE FLARE reducing TEE (reduced side connections)

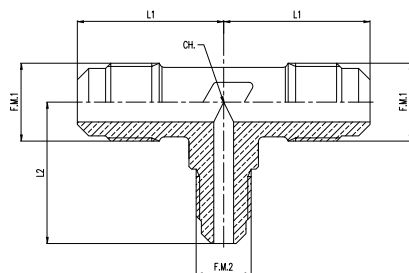
Code	Int. Code	F.M. 1 SAE FLARE	F.M. 2 SAE FLARE	CH. [in]	L1 [in]	L2 [in]	Weight [oz]	Pack [pieces]
31201-01-02	TR2-46	1/4	3/8	0,551	1,122	1,161	3,2	25
31201-02-03	TR2-68	3/8	1/2	0,630	1,240	1,280	5,3	10
31201-03-04	TR2-810	1/2	5/8	0,787	1,417	1,496	5,4	10
31201-04-05	TR2-1012	5/8	3/4	0,984	1,634	1,634	8,1	5



## PART NUMBER 31202

### SAE FLARE reducing TEE (reduced central connection)

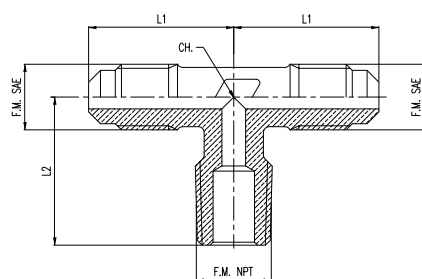
Code	Int. Code	F.M. 1 SAE FLARE	F.M. 2 SAE FLARE	CH. [in]	L1 [in]	L2 [in]	Weight [oz]	Pack [pieces]
31202-02-01	TR2-64	3/8	1/4	0,551	1,161	1,122	3,5	10
31202-03-02	TR2-86	1/2	3/8	0,630	1,280	1,240	5,7	10
31202-04-03	TR2-108	5/8	1/2	0,787	1,417	1,496	5,6	5
31202-05-04	TR2-1210	3/4	5/8	0,984	1,634	1,634	7,8	5



## PART NUMBER 31203

### SAE FLARE/NPT TEE (taper central connection)

Code	Int. Code	F.M. SAE FLARE	F.M. NPT	CH. [in]	L1 [in]	L2 [in]	Weight [oz]	Pack [pieces]
31203-01-00	T1-4A	1/4	1/8	0,394	0,965	0,906	1,6	25
31203-01-01	T1-4B	1/4	1/4	0,394	0,965	0,984	1,8	25
31203-02-02	T1-6B	3/8	3/8	0,551	1,161	1,122	3,5	10
31203-03-02		1/2	3/8	0,630	1,280	1,260	5,3	10
31203-03-03		1/2	1/2	0,630	1,280	1,299	5,7	10

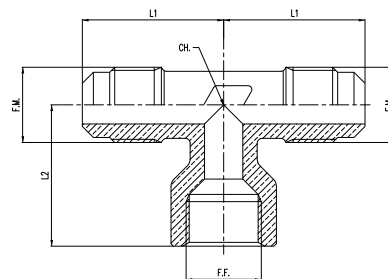




## PART NUMBER 31204

Male-female SAE FLARE TEE (female central connection)

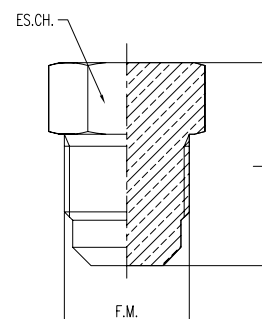
Code	Int. Code	F.M. SAE FLARE	F.F. SAE FLARE	CH. [in]	L1 [in]	L2 [in]	Weight [oz]	Pack [pieces]
31204-01	T6-4	1/4	1/4	0,394	0,965	0,965	1,9	25
31204-02		3/8	3/8	0,551	1,161	1,161	4,2	10
31204-03		1/2	1/2	0,630	1,280	1,280	6,0	10



## PART NUMBER 31400

SAE FLARE plugs

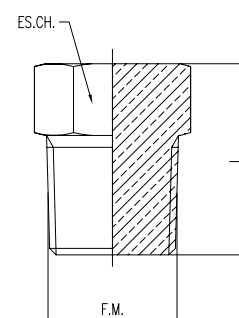
Code	Int. Code	F.M. SAE FLARE	ES.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31400-01	P2-4	1/4	0,472	0,906	0,6	25
31400-02	P2-6	3/8	0,669	1,004	1,2	25
31400-03	P2-8	1/2	0,787	1,142	1,9	10



## PART NUMBER 31401

NPT plugs

Code	Int. Code	F.M. NPT	ES.CH. [in]	L [in]	Weight [oz]	Pack [pieces]
31401-00	121-B-02	1/8	0,472	0,787	0,14	50
31401-01	121-B-04	1/4	0,551	0,906	0,74	25
31401-02	121-B-06	3/8	0,669	0,945	1,17	25
31401-03	121-B-08	1/2	0,866	1,142	2,16	10
31401-05	121-B-12	3/4	1,063	1,260	5,30	5
31401-07	121-B-16	1	1,339	1,535	9,89	5

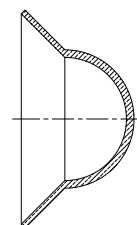


## PART NUMBER 31402

Copper seal caps

Code	SAE connection	Weight [oz]	Pack [pieces]
31402-01	1/4	0,018	2000
31402-02	3/8	0,035	2000
31402-03	1/2	0,053	2000
31402-04	5/8	0,071	1000
31402-05	3/4	0,141	1000
31402-06	7/8	0,353	1000

minimum lot 1000







## 31500 SERIES

### SERVICE VALVE ADAPTERS AND MECHANISMS FOR REFRIGERATION SYSTEMS

#### USE:

Service valve adapters and their mechanisms are designed for installation in cooling systems as well as domestic and industrial air-conditioning systems where refrigerants of Group II (as provided for by Part Number 9, section 2.2 of Directive 97/23/CE with reference to Directive 67/548/EEC) are used.

Thanks to these devices, the system can be quickly and simply filled and drained.

After these operations, a cap with a gasket is installed on the device to prevent refrigerant leaks.

The device can also be closed using a blind pipe union (item 31001) with application of a truncated copper gasket with shank (item 31517).

#### OPERATION:

The housing of the mechanism for service valve adapters is made according to ARI STANDARD 720:1997.

When the mechanism is tightened (according to the provided torque) inside the service valve adapter, the refrigerant can be filled or drained by simply acting on the needle of the mechanism.

#### CONSTRUCTION:

Straight service valve adapters are drawn from EN12164-CW614N brass bar, elbows and Tee service valve adapters are made of hot-forged EN12165-CW617N brass.

Mechanisms are made of EN12164-CW614N brass with neoprene gaskets.



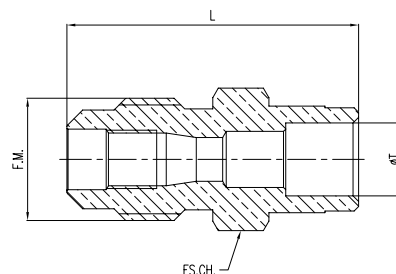
## SERVICE VALVE ADAPTERS FOR REFRIGERATION SYSTEMS



### PART NUMBER 31500

Straight service valve adapter body with SAE male thread and socket weld

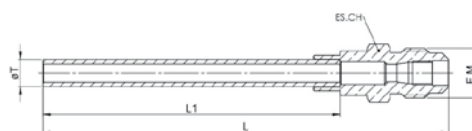
Code	F.M. SAE FLARE	ØT welding socket [in]	EC.CH. [in]	L [in]	Weight [oz]	PS [psi]
31500-01-01	1/4	0,256	0,433	1,024	0,42	652
31500-01-M6	1/4	0,242	0,433	0,787	0,35	652



### PART NUMBER 31501

Straight service valve adapter body with SAE male thread and welded pipe

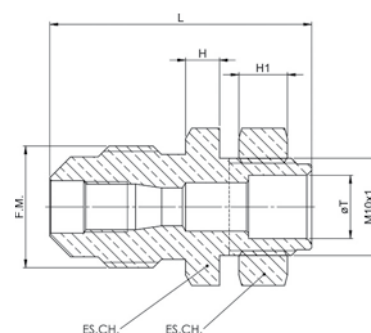
Code	F.M. SAE FLARE	ØT [in]	EC.CH. [in]	L1 [in]	L [in]	Weight [oz]	PS [psi]
31501-01-M6-L90	1/4	Ø0,236x0,039	0,433	2,598	3,543	0,5	652



### PART NUMBER 31502

Straight bulkhead service valve adapter with SAE male thread and socket weld

Code	F.M. SAE FLARE	ØT [in]	EC.CH. [in]	Body			Nut		PS [psi]
				Weight [oz]	H [in]	L [in]	Weight [oz]	H1 [in]	
31502-01-01	1/4	0,256	0,551	0,49	0,138	1,024	0,14	0,2	652
31502-11-01	5/16	0,256	0,551	0,64	0,138	1,063	0,14	0,2	652

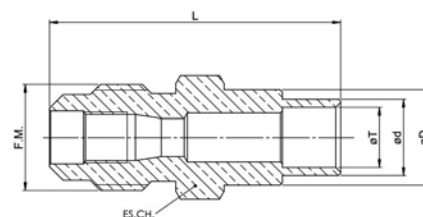




## PART NUMBER 31503

Straight service valve adapter body with SAE male thread - socket weld and shank

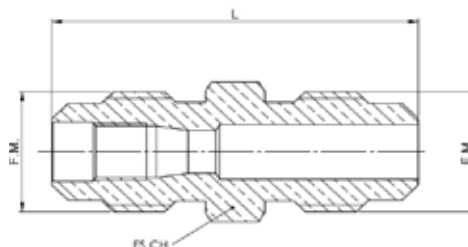
Code	F.M. SAE FLARE	ØT [in]	ØD [in]	Ød [in]	EC.CH. [in]	L [in]	Weight [oz]	PS [psi]
31503/A	1/4	0,242	0,386	0,307	0,433	1,181	0,49	652
31503/B	1/4		0,335	0,228	0,433	1,024	0,42	
31503/C	5/16		0,366	0,268	0,551	1,063	0,67	
31503/D	5/16		0,366	0,228	0,551	1,063	0,67	
31503/E	1/4	0,203	0,307	0,242	0,433	1,063	0,42	



## PART NUMBER 31504

Straight service valve adapter body with two SAE male threads

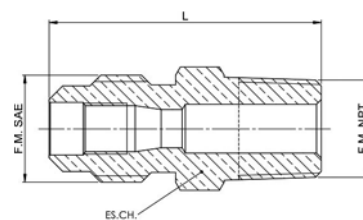
Code	F.M. SAE FLARE	EC.CH. [in]	L [in]	Weight [oz]	PS [psi]
31504-01	1/4	0,433	1,220	0,57	652



## PART NUMBER 31505

Straight service valve adapter body with SAE male thread and NPT male thread

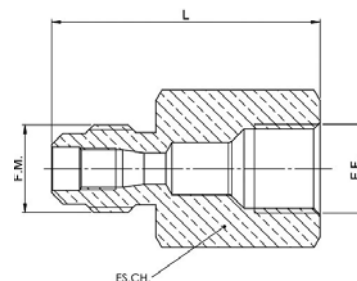
Code	F.M. SAE FLARE	F.M. NPT	EC.CH. [in]	L [in]	Weight [oz]	PS [psi]
31505-01-00	1/4	1/8	0,433	1,102	0,5	652
31505-01-01	1/4	1/4	0,551	1,319	0,9	
31505-01-02	1/4	3/8	0,669	1,398	1,2	



## PART NUMBER 31506

Straight service valve adapter body with SAE male thread and SAE female thread

Code	F.M. SAE FLARE	F.F. SAE FLARE	EC.CH. [in]	L [in]	Weight [oz]	PS [psi]
31506-01-01	1/4	1/4	0,669	1,319	1,4	652

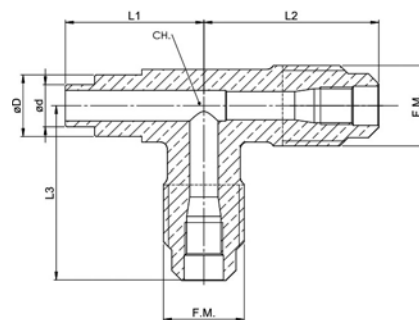




## PART NUMBER 31507

"TEE" service valve adapter body with two SAE male threads and side IDS shank

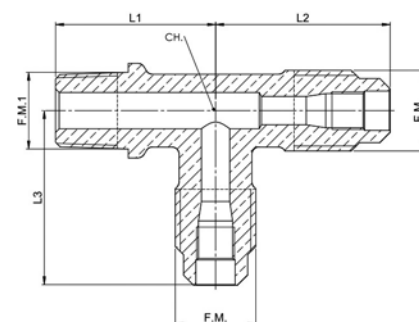
Code	F.M. SAE FLARE	ØD [in]	Ød [in]	L1 [in]	L2 [in]	L3 [in]	CH. [in]	Weight [oz]	PS [psi]
31507-01-M6	1/4	0,335	0,228	0,748	0,945	0,945	0,433	1,2	652



## PART NUMBER 31508

"TEE" service adapter body with two SAE male threads and side NPT thread

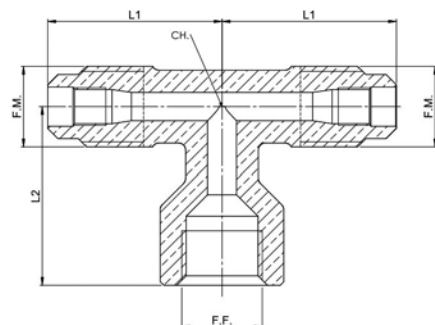
Code	F.M. SAE FLARE	F.M.1	L1 [in]	L2 [in]	L3 [in]	CH. [in]	Weight [oz]	PS [psi]
31508-01-00	1/4	1/8 NPT	0,866	0,945	0,945	0,433	1,3	652
31508-01-01	1/4	1/4 NPT	0,984	0,984	0,984	0,512	1,7	652



## PART NUMBER 31509

"TEE" service valve adapter body with two SAE male threads and central SAE female thread

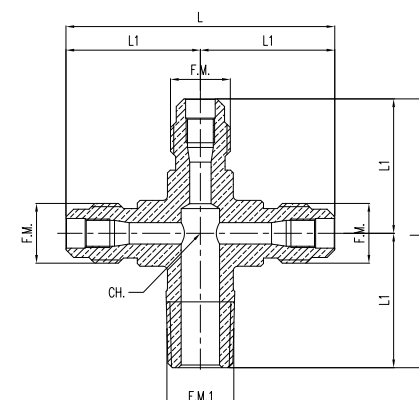
Code	F.M. SAE FLARE	F.F. SAE FLARE	L1 [in]	L2 [in]	CH. [in]	Weight [oz]	PS [psi]
31509-01-01	1/4	1/4	0,945	0,965	0,433	1,7	652



## PART NUMBER 31511

Cross service valve adapter with three SAE male threads and one NPT male thread

Code	F.M. SAE FLARE	F.M.1	L [in]	L1 [in]	CH. [in]	Weight [oz]	PS [psi]
31511-01-01	1/4	1/4 NPT	1,929	0,965	0,512	2,0	652

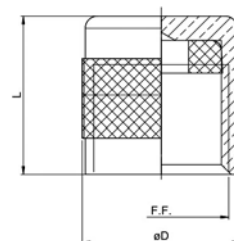




## PART NUMBER 31514

Cap with SAE female thread and neoprene sealing gasket

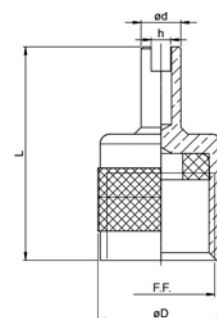
Code	F.F. SAE FLARE	ØD [in]	L [in]	Weight [oz]
31514-01	1/4	0,512	0,512	0,3
31514-11	5/16	0,590	0,551	0,4



## PART NUMBER 31515

Cap with SAE female thread and neoprene sealing gasket with valve tightening wrench

Code	F.F. SAE FLARE	ØD [in]	L [in]	h [in]	Ød [in]	Weight [oz]
31515-01	1/4	0,512	0,866	0,08	0,161	0,35



## PART NUMBER 31516

Valve mechanism with external spring

Code	Static pressure [psi]	Working pressure [psi]	Torque wrench [ft. lb]	Working temperature [°F]
31516	2030	870	0,37	From -40°F to +212°F



## PART NUMBER 31516/A

Valve mechanism with internal spring

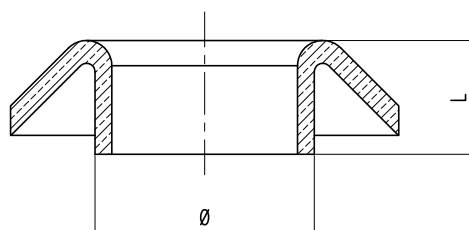
Code	Static pressure [psi]	Working pressure [psi]	Torque wrench [ft. lb]	Working temperature [°F]
31516/A	507	435	0,26	From -31°F to +212°F



## PART NUMBER 31517

Truncated copper gasket with shank

Code	SAE connection	Ø [in]	L [in]	PS [psi]
31517-01	1/4	0,205	0,110	652



# FLUID CONTROL





**OLAB®**



**SOLENOID VALVES  
FLUID CONTROL**



## DESCRIPTION

The pilot-operated solenoid valves manufactured by OLAB represented by the Series 18000, are on-off valves suitable for liquid and gaseous fluids whose viscosity is not greater than 37 CST (or 5°E).

These are pilot-controlled diaphragm solenoid valves with NPT threaded female inlet-outlet connections, CW617N brass casing and cap, stainless steel magnetic parts and NBR, EPDM Peroxide or FKM diaphragms.

The **18000** are 2 way normally closed type (2 way 2 positions), while the 18500 valves are 2 way normally open.

Despite their small weight and size (due to their peculiar profile), they are extremely robust and the fluid temperature are in compliance with gasket materials and the maximum allowable viscosity.

They are suitable for all fluids compatible with the materials which the gaskets and the internal components are made of, except for the dangerous fluids of Group 1 as according to the European Directive 97/23/EC (PED).

The range includes all sizes from 3/8" NPT to 2" NPT with orifice holes from Ø0.453 to Ø1.969 inches, while the coils are all Class H for continuous use (ED100%).

The Series 8000 is the direct action solenoid valves manufactured by OLAB.

These Series is composed by:

- **Part Number 8184** and **8201** that are 2 way normally closed valves
- **Part Number 8062** that is 2 way normally open valve
- **Part Number 8251** that is 3 way normally closed valve
- **Part Number 8201K** that is 2 way normally closed valve completely in stainless steel material
- **Part Number 8251K** that is 3 way normally closed valve completely in stainless steel material

All models are available with 1/8 NPT and 1/4 NPT female inlet/outlet thread.

Part Number 8201K and 8251K are also available with 3/8NPT and 1/2NPT threads inlet/outlet.

Gaskets are made of NBR, EPDM peroxide, FKM and other elastomers are also available on request.

The guided diaphragm pilot operated solenoid valves of the Series **20000** by OLAB are of the guided diaphragm-type with NPT threaded female inlet and outlet connections (from 3/8" NPT to 1" NPT), CW617N brass casing and cap, stainless steel magnetic parts and FKM diaphragm.

## INSTRUCTIONS FOR USE

### INSTRUCTIONS FOR MECHANICAL CONNECTION

Install the device so that the flow direction follows the direction on the valve body shown by an arrow or numbers that indicate inlet and outlet.

- Make sure that the connection areas upstream the device are clean.
- **During installation, make sure that no foreign materials or substances used for sealing (glue for securing threads, dopes, etc.) penetrate the device, as solid particles could affect the device operation.**  
Check the boiler carefully, especially the components subjected to sand blasting or shot-peening.  
**The residues of these types of working often penetrate the solenoid valve thus affecting operation.**
- Leave enough space around the solenoid valve to allow maintenance or inspection operations.

### INSTRUCTIONS FOR ELECTRIC CONNECTION

- Make sure that rating corresponds to the operational data and check that voltage is the same as shown on the coil: a higher voltage could blow out the coil, while a lower voltage can prevent the coil from tripping.
- Place the coil as far as possible from a heat source and in a well ventilated area to help heat dissipation.
- Always connect the ground terminal to the equipment ground, though the coil plate (and its earth) is unipotential to the valve body due to contact of parts.
- Do not power the coil if not installed on the solenoid valve: overheating can make the coil blow out.
- The coil installed on the solenoid valves supplied by OLAB is positioned in such a way that the electric connection does not affect the mechanical connection; coils can also be supplied according to the customer request.  
**Important:** the coil locking nut is tightened at the factory by a pre-set torque wrench setting, which is suitable to avoid any mechanical stress on the sleeve.

However, if the coil position needs to be changed, **please call OLAB engineering department.**

The device configuration set at the factory is the best possible for most applications: all changes can affect the product performance.



## GENERAL INSTRUCTIONS FOR USE

- Solenoid valves manufactured by OLAB can operate with high temperatures due to the coil normal heating caused by current, fluid temperature and heating of the surrounding devices (boilers, electrical cards, etc.). Therefore, high temperatures are a normal condition: do not put your hands on the solenoid valve after a long operation. Instead, smoke and burning smell can be signs of abnormal overheating.
- Solenoid valves manufactured by OLAB have been designed to guarantee higher performance as regards working pressure, in compliance with the insulation class H for coils. In any case, you should not forget pressure natural decrease due to coil heating.
- Registered pressure is the maximum test pressure used by the certification agencies. The real maximum working pressure of each single model at the rated temperature must be calculated from the data sheet and depends on the inner diameter of the passing hole, the coil power, the maximum working temperature, the type of fluid being used. For further information call our engineering department.

## TEST STANDARDS

**The solenoid valves manufactured by OLAB have been designed according to the standards in force for electrically-controlled valves. as they undergo stricter tests than those provided for by the standards, they can be used for a large range of applications under the best conditions of safety and reliability.**

This approach has been imposed not only by the will of developing an extremely competitive product, but also by the awareness that users often adopt internal test procedures linked to the standards in force in this field, which are often stricter than the prescribed directions.

**Nevertheless, we suggest that customers should call OLAB engineering department to test equipment where solenoid valves have been installed according to prescriptions which do not follow the field prescriptions (en60335, en50106).**

Follow the recommendation below:

- The solenoid valve electrical part (the coil) has an IP00 protection degree if not equipped with appropriate connector, and the housing is made up of plastic material and has a minimum hygroscopicity. Therefore, the absorption of water from the surrounding environment is to be taken into account when assessing the insulation power of plastics. In any case, **avoid plunging the coil into water.**
- The insulating power of all plastic materials, and so also the coil's housing, decreases as temperature increases; beyond 90°C, the dielectric strength of a good plastic material is reduced to a half. This fact must be taken into consideration when hot dielectric strength tests are carried out, as there will not be the same performance as for tests carried out at room temperature.
- If repeated several times, the dielectric strength tests cause a deterioration of the plastics insulating power. This factor must be taken into account when sequential tests are carried out and it will also be convenient to carry out all dielectric strength tests with a voltage 20% lower than the previous one.
- The field standards (EN 60730, EN 60335) prescribe that the dielectric strength tests are not carried out immediately after the hygroscopicity test. In fact, water absorbed by plastics reduces its insulating power and this factor must be taken into account if the test is carried out in wet conditions. In this case, the performance will not be the same as in dry conditions.
- During dielectric strength tests, make sure not to touch the coil housing with the test prod as this could cause a superficial current discharge between phase terminal and ground terminal, which does not witness the plastics insulating power but only the presence of an electric arc in the air or on the coil surface.

## MAINTENANCE

- Before removing the device, check it is not under pressure.
- Before removing the device, turn off the power.
- In the solenoid valves suitable to be cleaned inside (with tightened sleeve), the internal parts can be removed for cleaning/replacement.
- Components must be replaced by OLAB original spare parts.
- Do not damage the most delicate parts (cores, gaskets, tight seats) when cleaning the internal components.

## INSTALLATION

Solenoid valves are particularly sensitive to the formation of limestone deposits, especially where hot water is used. This is because the inlet sections of the outlet gauged hole (DN) are larger, and dirt from the upstream devices can easily accumulate.

This fact can cause:

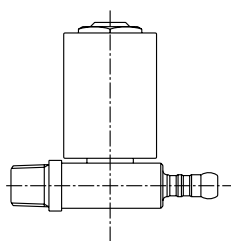
- A noisy solenoid valve (vibrations).
- Decrease of the internal gasket and outlet hole sealing capacity.

Solenoid valves can generally operate regardless of their position; nevertheless, the best position is the one shown in fig. 1, while fig. 2 shows wrong installations which could result in vibrations, and fig. 3 shows the "upside-down" position to be avoided as it causes dirt accumulation and formation of limestone deposits near the core contact surface.

If, during installation, you have to grip on the solenoid valve to secure or tighten it to the inlet and outlet connections, we suggest you should act **always and only** on the solenoid valve using properly dimensioned fork spanners and the locking surfaces on the forged piece.

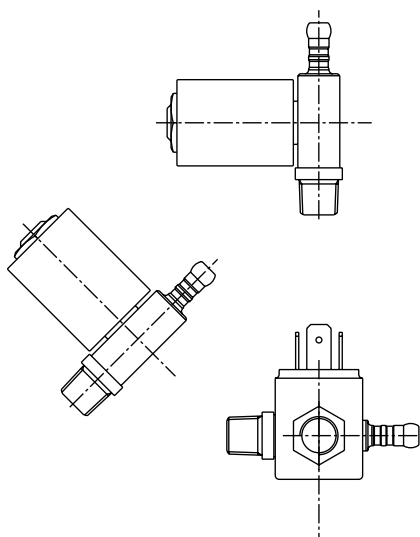
**Never touch the coil to prevent sleeve deformation!**

It is also recommended not to loosen or tighten the coil locking nut as this could affect the pre-set torque wrench setting.



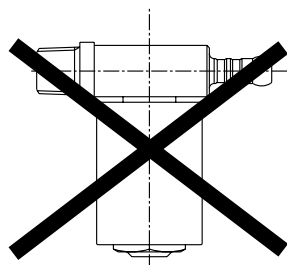
**FIG. 1**

BEST WORKING POSITION OF THE SOLENOID VALVE.



**FIG. 2**

WORKING POSITIONS TO BE AVOIDED BECAUSE OF VIBRATIONS.



**FIG. 3**

WORKING POSITION TO BE AVOIDED BECAUSE OF DIRT AND LIMESTONE ACCUMULATION ON THE CORE CONTACT SURFACE.

## PILOT-OPERATED SOLENOID VALVES

### GENERAL FEATURES

#### Operating instructions

The electro-pilot of the pilot-operated solenoid valves is not directly responsible for opening the solenoid valve. The solenoid valve presents three sequential chambers (see drawing below):

- inlet chamber  $C_i$  (upstream the diaphragm)
- compensating chamber  $C_c$  (downstream the diaphragm and upstream the electro-pilot)
- outlet chamber  $C_u$  (downstream the electro-pilot).

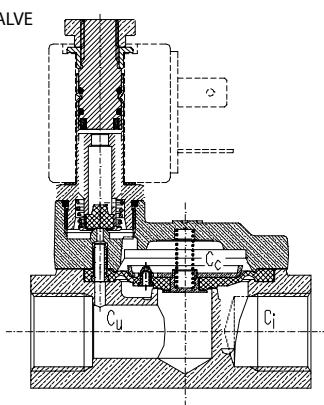
In the 2 way normally closed (N.C.) solenoid valve,  $C_i$  and  $C_c$  are communicating by means of a compensating hole when the coil is de-energized. Therefore, the diaphragm is in a condition of balanced pressure level and orifice tightness is ensured by the retaining spring load of the same diaphragm.

When the coil is energized by acting on the electro-pilot, there is an immediate communication between  $C_c$  and  $C_u$ : the sudden increase in volume of the pressurized fluid over the diaphragm ( $C_c + C_u > C_i$ ) causes, according to the Boyle-Mariotte's law, a pressure drop.

The diaphragm is no longer in a condition of balanced pressure level (pressure under it is higher than pressure over it) and swells up in the higher pressure direction raising up and opening the orifice to let the fluid flow.

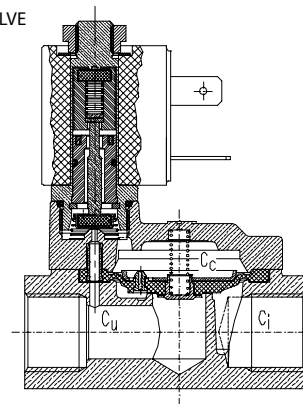
In the 2 way normally open (N.O.) solenoid valve,  $C_c$  and  $C_u$  are communicating when the coil is de-energized and pressure under the diaphragm is higher than pressure over it and as a result, the diaphragm is raised to let the fluid flow. When instead the coil is energized, the communicating passage between  $C_c$  and  $C_u$  is closed. The volume available to the pressurized fluid above the diaphragm is suddenly reduced and, always because of the Boyle-Mariotte's law, this results in a pressure increase above the diaphragm. The lack of balance so produced makes the diaphragm close on the seal.

N.C. PILOT-OPERATED SOLENOID VALVE



Internal view of a pilot operated solenoid valve

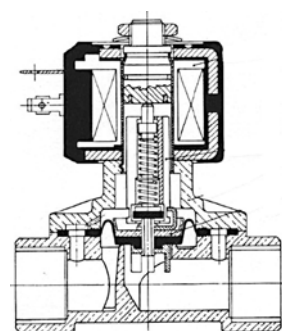
N.O. PILOT-OPERATED SOLENOID VALVE



Internal view of a pilot operated solenoid valve

In the direct action solenoid valves, the electro-pilot has direct control on the solenoid valve opening (N.O. versions) or closing (N.C. versions) when the coil is energized.

In the guided diaphragm pilot operated solenoid valves, the electro-pilot is partially responsible for opening the solenoid valve as it lifts the diaphragm by pulling it upwards. For this reason, it is characterised by the electro-pilot positioned in the middle of the cap and not laterally as in the pilot operated solenoid valves.



Internal structure of a guided diaphragm pilot operated solenoid valve

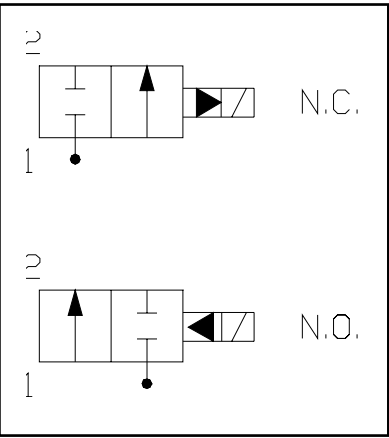
### MINIMUM PRESSURE

One of the main characteristics of pilot-operated solenoid valves is their need for a minimum inlet pressure in the range of 1,45 ÷ 5,80 psi according to the versions. This is not true for direct action solenoid valves, nor for guided diaphragm pilot operated solenoid valves that do not need minimum pressure to be operated.

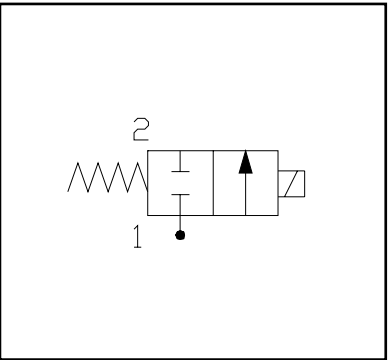
### DELAY

Another peculiarity of these solenoid valves is the delay between the power supply electric impulse and the solenoid valve opening (or closing). For pilot-operated solenoid valves this delay (depending on diameters and compensating holes) can reach about a hundred milliseconds. For direct action and guided diaphragm pilot operated solenoid valves, the delay is only a few dozen milliseconds.

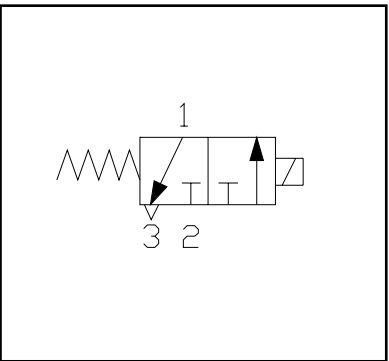
SYMBOLS ACCORDING TO CETOP STANDARD



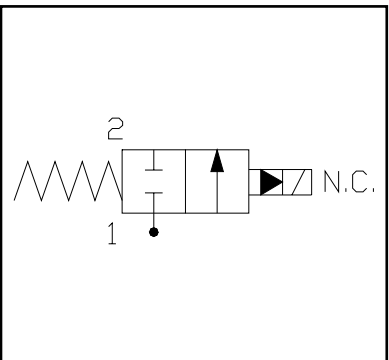
PILOT-OPERATED 2-WAY SOLENOID VALVES



DIRECT ACTION 2-WAY SOLENOID VALVES



DIRECT ACTION 3-WAY SOLENOID VALVES



GUIDED DIAPHRAGM PILOT OPERATED 2-WAY SOLENOID VALVES

## 18000 SERIES PILOT-OPERATED SOLENOID VALVES RANGE



## ORDERING CODE FOR SOLENOID VALVES 18000 SERIES

Family		-	Female thread connections		-	Orifice diameter		-	Gasket Material		-	Coils			
18020		-	42		-	11.5		-	B		-	AE			
18020	NC with coil and connector		42	3/8" NPT	YELLOW BRASS	mm	in		B	NBR	AE	220/230VAC 50/60Hz 11,5VA cUL	6000BH SERIES COILS		
		43	1/2" NPT					11.5	0,453	3/8" NPT	LP	PEROXIDE EPDM		AF	24VAC 50/60Hz 11,5VA cUL
18025	NC with coil and connector Slow closing	44	3/4" NPT					13.5	0,531	1/2" NPT	I	FKM		AG	120VAC 50/60Hz 11,5VA cUL
		45	1" NPT					13.5	0,531	3/4" NPT				AH	240VAC 50/60Hz 11,5VA cUL
18520	NO with coil and connector	46	1"1/4 NPT					18	0,709					H	12Vdc 10W
		47	1"1/2 NPT	BRASS WITH TM4 TREATMENT			26	1,024	1" NPT	REFERENCE		I	24Vdc 10W	8000BH SERIES COILS	
18525	NO with coil and connector Slow closing	48	2" NPT				32	1,260	1"1/4 NPT			AI	220/230VAC 50/60Hz 17VA cUL		
		72	3/8" NPT				45	1,772	1"1/2 NPT			AL	24VAC 50/60Hz 17VA cUL		
		73	1/2" NPT				50	1,969	2" NPT			AM	120VAC 50/60Hz 17VA cUL		
		74	3/4" NPT									AN	240VAC 50/60Hz 17VA cUL		
		75	1" NPT									AT	12Vdc 19W		
		76	1"1/4 NPT									U	24Vdc 19W		
		77	1"1/2 NPT									AO	220/230VAC 50/60Hz 29VA		
		78	2" NPT									Z	24VAC 50/60Hz 29VA		
												AP	120VAC 50/60Hz 29VA		10000BH SERIES COILS
										AR	240VAC 50/60Hz 29VA				
										AS	12Vdc 30W				
										Y	24Vdc 30W				

NOTE N.O. and N.C. solenoid valves up to 1" NPT have coils of the series 6000BH installed  
 N.O. 1"1/4 NPT solenoid valves and N.C. up to 2" NPT have coils of the series 8000BH installed  
 N.O. 1"1/2 NPT and 2" NPT valves have coils of the series 10000BH installed

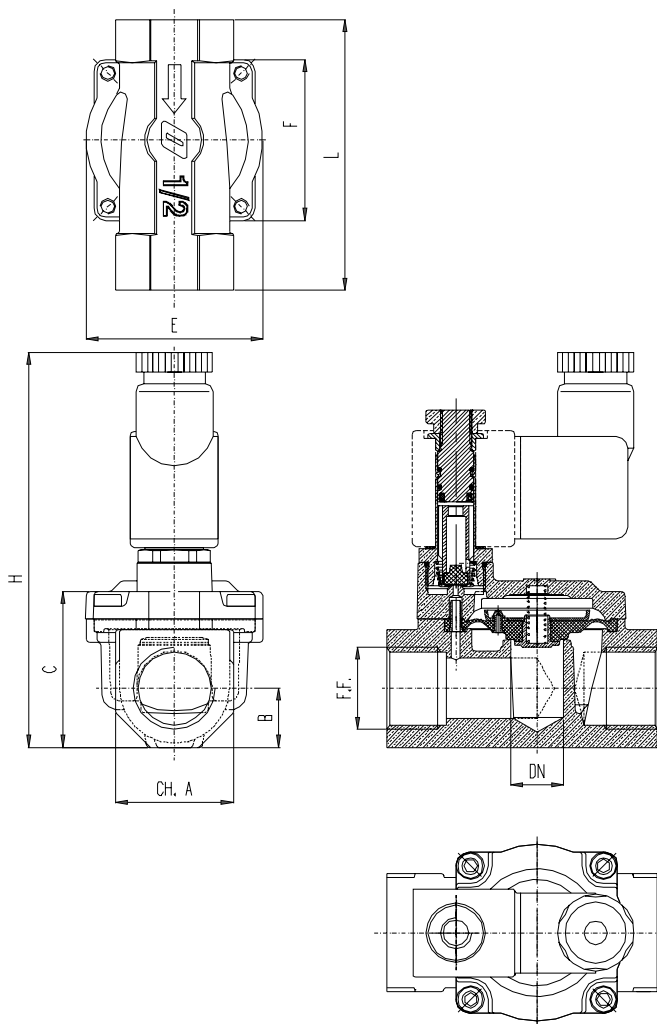
EXAMPLES 18020-44-18-LP-AE Normally closed solenoid valve, 3/4" NPT inlet/outlet female connections, Ø0,709 inches orifice, peroxidic EPDM gaskets, with 220/230V 50/60Hz 11,5VA cUL coil  
 18525-42-11.5-I-AF Normally open solenoid valve, 3/8" NPT inlet/outlet female connections, Ø0,453 inches orifice, FKM gaskets, with 24V 50/60Hz 11,5VA cUL coil

## 18020 SOLENOID VALVES

### PILOT OPERATED - 2 WAY NORMALLY CLOSED (N.C.)

SIZE, PERFORMANCE AND PRICE.

Main applications: thermo-hydraulic plants, autoclaves, machine-tools cooling plants, cleaning systems, watering plants, fire-extinguishing plants, hygienic and sanitary plants, high-pressure water jet machines.



SOLENOID VALVES 18020 (WITH COIL AND CONNECTOR)												
Code	Reference		Cv	Opening differential pressure [psi]		Dimensions						
	F.F.	DN (orifice diameter) [in]		Min	Max	CH.A [in]	B [in]	C [in]	E [in]	F [in]	L [in]	H [in]
18020-42-11.5-xx-xx 18020-72-11.5-xx-xx	3/8" NPT	0,453	1,98	1,45	217	0,945	0,472	1,280	1,650	1,512	2,244	3,091
18020-43-13.5-xx-xx 18020-73-13.5-xx-xx	1/2" NPT	0,531	4,42	1,45	217	1,181	0,591	1,563	1,772	1,614	2,717	3,374
18020-44-13.5-xx-xx 18020-74-13.5-xx-xx	3/4" NPT	0,531	4,42	2,90	217	1,417	0,709	1,831	2,142	1,984	3,110	3,650
18020-44-18-xx-xx 18020-74-18-xx-xx		0,709	5,81								2,913	
18020-45-26-xx-xx 18020-75-26-xx-xx	1" NPT	1,024	12,79	2,90	174	1,772	0,886	2,354	2,795	2,654	3,661	4,114
18020-46-32-xx-xx 18020-76-32-xx-xx	1 1/4" NPT	1,260	19,77	5,80	174	2,165	1,083	2,894	3,409	3,126	4,370	5,118
18020-47-45-xx-xx 18020-77-45-xx-xx	1 1/2" NPT	1,772	31,40	5,80	145	2,441	1,220	3,346	4,331	3,937	5,433	5,445
18020-48-50-xx-xx 18020-78-50-xx-xx	2" NPT	1,969	41,86	5,80	145	2,953	1,476	3,890	4,331	3,937	5,709	5,984

NOTE: Operating temperatures

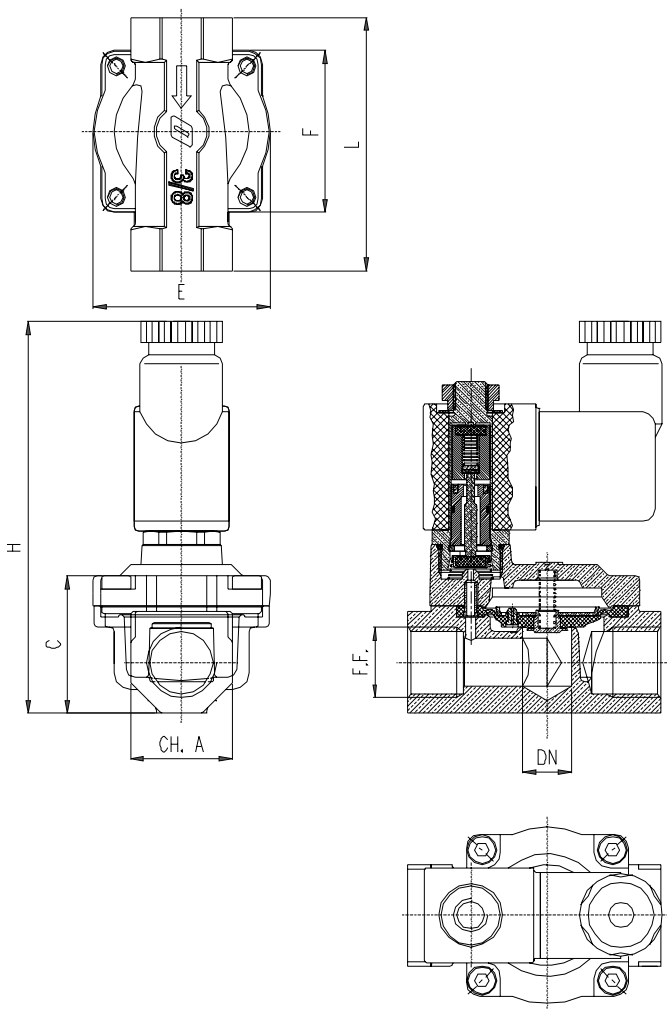
NBR from -4°F to 194°F  
EPDM from -22°F to 293°F  
FKM from 5°F to 320°F

## 18520 SOLENOID VALVES

### PILOT OPERATED - 2 WAY NORMALLY OPEN (N.O.)

SIZE, PERFORMANCE AND PRICE.

Main applications: thermo-hydraulic plants, autoclaves, machine-tools cooling plants, cleaning systems, watering plants, fire-extinguishing plants, hygienic and sanitary plants, high-pressure water jet machines.



SOLENOID VALVES 18520 (WITH COIL AND CONNECTOR)												
Code	Reference		Cv	Opening differential pressure [psi]		Dimensions						
	F.F.	DN (orifice diameter) [in]		Min	Max	CH.A [in]	B [in]	C [in]	E [in]	F [in]	L [in]	H [in]
18520-42-11.5-xx-xx 18520-72-11.5-xx-xx	3/8" NPT	0,453	1,98	1,45	217	0,945	0,472	1,280	1,650	1,512	2,244	3,091
18520-43-13.5-xx-xx 18520-73-13.5-xx-xx	1/2" NPT	0,531	4,42	1,45	217	1,181	0,591	1,563	1,772	1,614	2,717	3,374
18520-44-13.5-xx-xx 18520-74-13.5-xx-xx	3/4" NPT	0,531	4,42	2,90	217	1,417	0,709	1,831	2,142	1,984	3,110	3,650
18520-44-18-xx-xx 18520-74-18-xx-xx		0,709	5,81								2,913	
18520-45-26-xx-xx 18520-75-26-xx-xx	1" NPT	1,024	12,79	2,90	174	1,772	0,886	2,354	2,795	2,654	3,661	4,114
18520-46-32-xx-xx 18520-76-32-xx-xx	1"1/4 NPT	1,260	19,77	5,80	174	2,165	1,083	2,894	3,409	3,126	4,370	5,118
18520-47-45-xx-xx 18520-77-45-xx-xx	1"1/2 NPT	1,772	31,40	5,80	145	2,441	1,220	3,346	4,331	3,937	5,433	5,445
18520-48-50-xx-xx 18520-78-50-xx-xx	2" NPT	1,969	41,86	5,80	145	2,953	1,476	3,890	4,331	3,937	5,709	5,984

NOTE: Operating temperatures

NBR  
EPDM  
FKM

from -4°F to 194°F  
from -22°F to 293°F  
from 5°F to 320°F



## COILS FOR 18020 AND 18520 SERIES

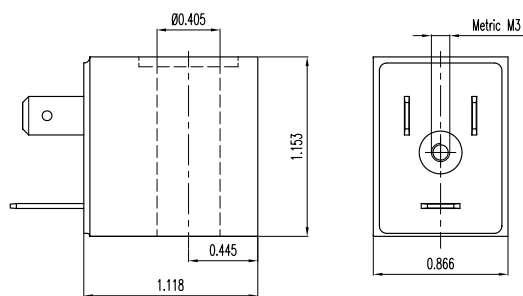
### PART NUMBER 6000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
6000BH	6000BH/B1GU	24	50/60	11,5 VA	cUL**
	6000BH/G1GU	120	50/60	11,5 VA	cUL**
	6000BH/J1GU	220/230	50/60	11,5 VA	cUL**
	6000BH/L1GU	240	50/60	11,5 VA	cUL**
	6000BH/A0DN	12	DC	10W	
	6000BH/B0DN	24	DC	10W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils  
Other voltages are available on request

\*\* Approved cUL with connector 6000/CON

Used for: SV series 18000 from 3/8" NPT to 1" NPT  
SV series 18500 from 3/8" NPT to 1" NPT



Terminal in compliance with DIN 43650/B

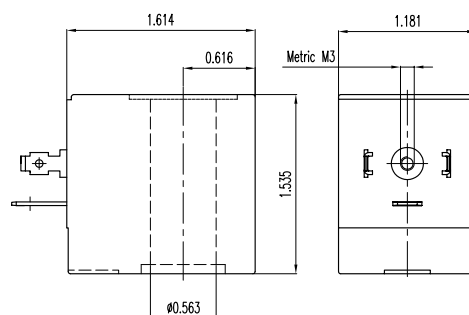
### PART NUMBER 8000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
8000BH	8000BH/B1IU	24	50/60	17 VA	cUL**
	8000BH/G1IU	120	50/60	17 VA	cUL**
	8000BH/J1IU	220/230	50/60	17 VA	cUL**
	8000BH/L1IU	240	50/60	17 VA	cUL**
	8000BH/A0LN	12	DC	19 W	
	8000BH/B0LN	24	DC	19 W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils. (for Part Number 8062 tolerance  $\pm 5\%$  both AC and DC coils) - Other voltages are available on request

\*\* Approved cUL with connector 7000/CON

Used for: SV series 18000 from 1" 1/4 NPT to 2" NPT  
SV series 18500 from 1" 1/4 NPT



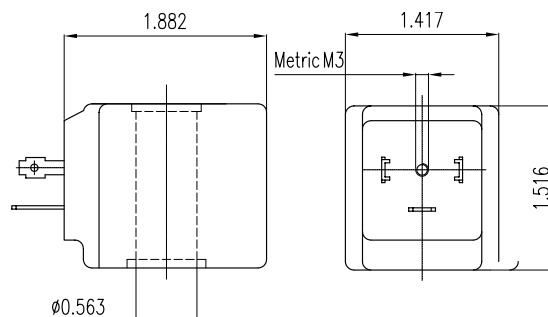
Terminal in compliance with DIN 43650/A

### PART NUMBER 10000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
10000BH	10000BH/B1NN	24	50/60	29 VA	
	10000BH/G1NN	120	50/60	29 VA	
	10000BH/J1NN	220/230	50/60	29 VA	
	10000BH/L1NN	240	50/60	29 VA	
	10000BH/A0AAN	12	DC	30 W	
	10000BH/B0AAN	24	DC	30 W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils -  
Other voltages are available on request

Used for: SV series 18500 from 1" 1/2 NPT to 2" NPT



Terminal in compliance with DIN 43650/A

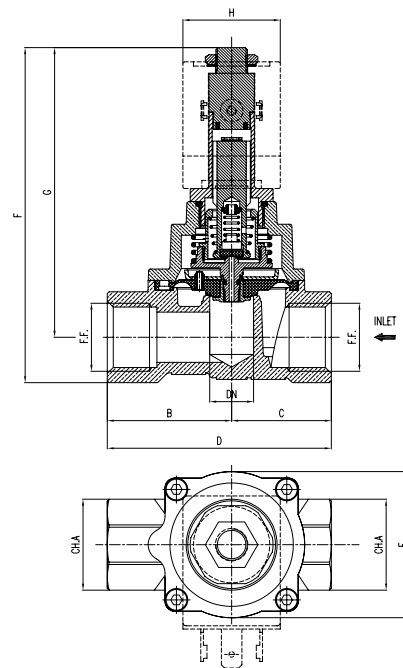
**20020 SERIES****GUIDED DIAPHRAGM PILOT OPERATED SOLENOID VALVE  
2 WAY NORMALLY CLOSED (N.C.)****GUIDED DIAPHRAGM - 2 WAY - N.C. - WITH COIL AND CONNECTOR**

SIZE, PERFORMANCE AND PRICE.

Main applications: thermo-hydraulic plants, dish-washers, high-pressure water jet machines, suction lifting plants with fluids such as water, light oils, inert gas and low-viscosity fluids in general (up to 2°E or up to 12 CST).

**ORDERING CODE FOR SOLENOID VALVES 20020 SERIES**

Family	-	Female thread connections	-	Orifice diameter	-	Gasket Material	-	Coils
20020	-	42	-	11.5	-	I	-	Q
20020	NC with coil and connector	42 3/8" NPT 43 1/2" NPT 44 3/4" NPT 45 1" NPT 72 3/8" NPT 73 1/2" NPT 74 3/4" NPT 75 1" NPT	YELLOW BRASS BRASS WITH TM4 TREATMENT	mm 11.5 in 0,453 3/8" NPT 13.5 0,531 1/2" NPT 18 0,709 3/4" NPT 26 1,024 1" NPT	REFERENCE	I FKM LP PEROXIDE EPDM B NBR	Q 220/230VAC 50/60Hz 17VA cUL R 24VAC 50/60Hz 17VA cUL S 120VAC 50/60Hz 17VA cUL T 240VAC 50/60Hz 17VA cUL O 12Vdc 19W E 24Vdc 19W	8000BH SERIES COILS



SOLENOID VALVES 20020 SERIES															
Code	Reference		Opening differential pressure [psi]			Temperature range [°F]		Dimensions							
	F.F.	DN (orifice diameter) [in]	Min	Max		Min	Max	CH.A [in]	B [in]	C [in]	D [in]	E [in]	F [in]	G [in]	H [in]
				AC coils	DC coils										
20020-02-11.5-I-x	3/8" NPT	0,453	0	123	73	5	320	1,102	1,409	1,110	2,520	1,772	4,063	3,512	1,181
20020-03-13.5-I-x	1/2" NPT	0,531	0	123	73	5	320	1,102	1,508	1,209	2,717	1,772	4,063	3,512	1,181
20020-04-18-I-x	3/4" NPT	0,709	0	87	44	5	320	1,654	1,949	1,713	3,661	2,795	4,701	3,874	1,181
20020-05-26-I-x	1" NPT	1,024	0	87	44	5	320	1,654	1,949	1,713	3,661	2,795	4,701	3,874	1,181

NOTE: Operating temperatures  
NBR from -4°F to 194°F  
EPDM from -22°F to 293°F  
FKM from 5°F to 320°F

■ Sealing with standard gasket: FKM  
On demand, sealing available with NBR – EPDM gaskets.  
500 pcs minimum quantity

## COILS FOR 20020 SERIES

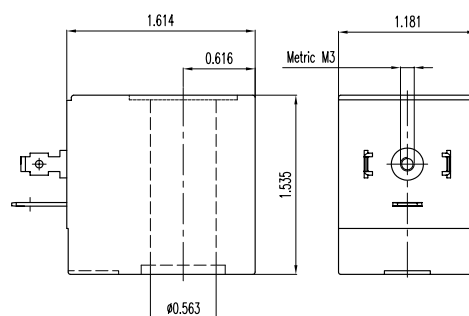
### PART NUMBER 8000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
8000BH	8000BH/B1IU	24	50/60	17 VA	cUL**
	8000BH/G1IU	120	50/60	17 VA	cUL**
	8000BH/J1IU	220/230	50/60	17 VA	cUL**
	8000BH/L1IU	240	50/60	17 VA	cUL**
	8000BH/A0LN	12	DC	19 W	
	8000BH/B0LN	24	DC	19 W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils. (for Part Number 8062 tolerance  $\pm 5\%$  both AC and DC coils) - Other voltages are available on request

\*\* Approved cUL with connector 7000/CON

Used for: SV series 18000 from 1" 1/4 NPT to 2" NPT  
SV series 18500 from 1" 1/4 NPT



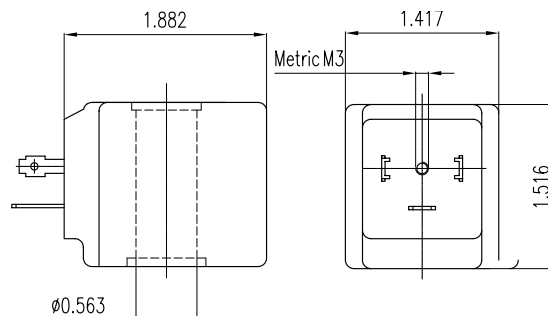
Terminal in compliance with DIN 43650/A

### PART NUMBER 10000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
10000BH	10000BH/B1NN	24	50/60	29 VA	
	10000BH/G1NN	120	50/60	29 VA	
	10000BH/J1NN	220/230	50/60	29 VA	
	10000BH/L1NN	240	50/60	29 VA	
	10000BH/A0AAN	12	DC	30 W	
	10000BH/B0AAN	24	DC	30 W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils - Other voltages are available on request

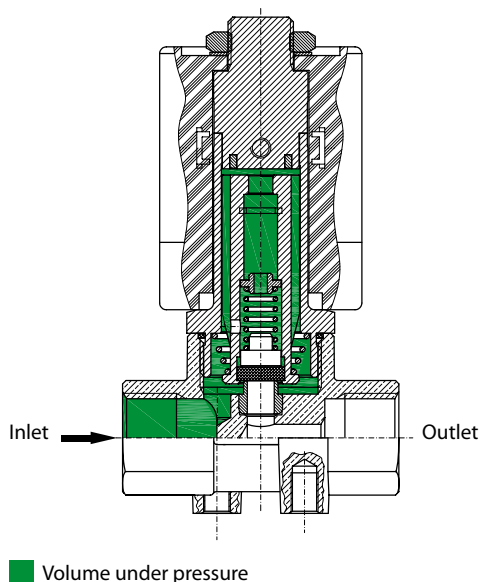
Used for: SV series 18500 from 1" 1/2 NPT to 2" NPT



Terminal in compliance with DIN 43650/A

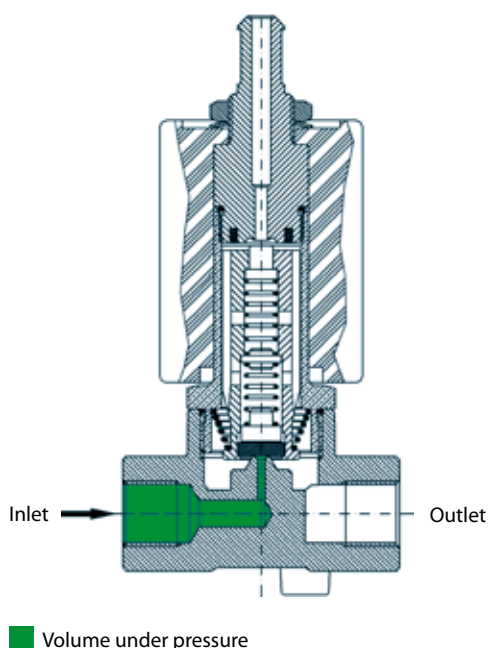
## DIRECT ACTION SOLENOID VALVES

### CLOSED POSITION



#### NORMALLY CLOSED 2-WAY

During the quiescent state the coil winding is not energized, the core spring, because of fluid pressure, pushes the sealing gasket onto the solenoid valve body seat (orifice) and keeps it closed.



#### NORMALLY CLOSED 3-WAY

During the quiescent state the coil winding is not energized, the plunger tapered retaining spring, due to fluid pressure, pushes the sealing gasket onto the solenoid valve body seat (orifice) and keeps it closed. The exhaust is connected with the outlet, and they present a balanced pressure level.

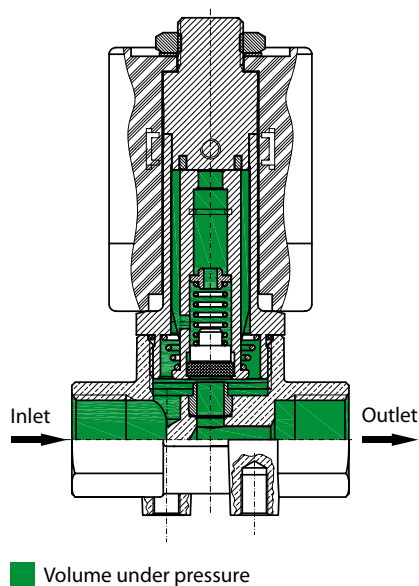
### FIELDS OF APPLICATION

Solenoid valves manufactured by OLAB are generally used for the following fluids:

- water
- steam
- air
- gas
- oils

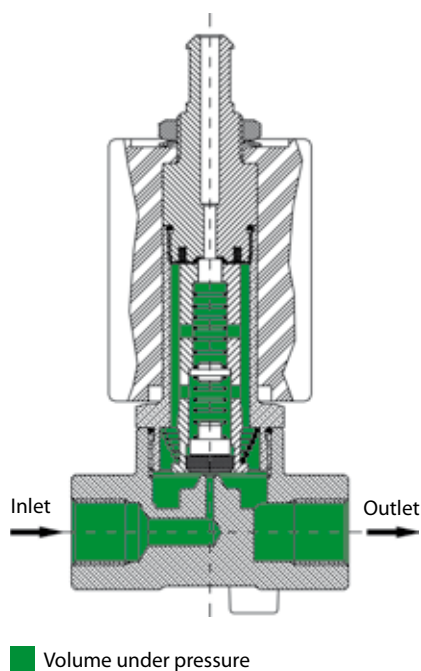
Other applications can be agreed upon the customer request. In the aim of optimising the performance of OLAB solenoid valves according to their field of application, special technical solutions have been adopted to guarantee operation even under the heaviest working conditions. The operational tests allow OLAB to simulate as truthfully as possible the real final conditions of use. The constant contact with our customers has allowed OLAB to develop very special test sessions for custom-oriented products.

## OPEN POSITION



### NORMALLY CLOSED 2-WAY

When the coil winding is energized, the plunger is attracted by the fixed core, the orifice (DN) is opened and fluid passes through. The maximum pressure difference allowed (M.P.O.D.) decreases as the seat diameter increases.



### NORMALLY CLOSED 3-WAY

When the coil winding is energized, the plunger is attracted by the fixed core, the main orifice (DN) is opened and exhaust is simultaneously closed, and the fluid is free to pass directly from inlet to outlet

## SOLENOID VALVES - DIRECT ACTION - 2 WAY

Solenoid valve - 2 way - suitable to be cleaned inside - 1/8" or 1/4" NPT Female inlet and outlet - Stainless steel sleeve  
M4 fixing supports, until Ø0,295 inches orifice

Family	-	Female thread	-	DN (Orifice diameter)	-	Orifice gasket material	-	Coils	-	Other	
<b>8184</b>	-	<b>40</b>	-	<b>60</b>	-	<b>B</b>	-	<b>I</b>	-	<b>3</b>	
8184	2 way NC solenoid valve	40	1/8" NPT	60	Ø0,236 in	B	NBR	I	220/230VAC 50/60Hz 17VA cUL	3	With connector and single package
		41	1/4" NPT	75	Ø0,295 in	L	EPDM Peroxide	L	24VAC 50/60Hz 17VA cUL		
		70	1/8" NPT			I	FKM food grade	M	120VAC 50/60Hz 17VA cUL		
		71	1/4" NPT					N	240VAC 50/60Hz 17VA cUL		
								H	12Vdc 19W		
								G	24Vdc 19W		

Technical drawing of the 1/2" NPT x 1/2" NPT 100 PSI 100% Brass Solenoid Valve. The drawing includes a perspective view of the valve assembly (top left), a cross-sectional view (center), and a side view (right). Dimensions are provided in inches.

**Key Dimensions:**

- Overall Height:** 2.949 in
- Body Height (excluding mounting bracket):** 2.476 in
- Mounting Bracket Height:** 0.472 in
- Overall Width:** 1.614 in
- Mounting Bracket Width:** 0.551 in
- Outlet Diameter:** 0.512 in
- Outlet Thread:** 1/2" NPT
- Mounting Bracket Thread:** M4 metric thread

**Labels:**

- INLET:** Indicated by an arrow pointing to the top of the valve.
- INLET FROM PORT 1:** Indicated by an arrow pointing to the side of the valve.

Gaskets: Standard FKM (other on request)		
Operating temperatures	NBR	from -4°F to 194°F
	EPDM	from -22°F to 293°F
	FKM	from 5°F to 320°F

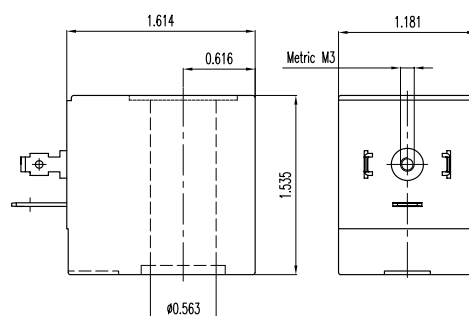
# COILS FOR PART NUMBER 8184

## PART NUMBER 8000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
8000BH	8000BH/B1IU	24	50/60	17 VA	cUL**
	8000BH/G1IU	120	50/60	17 VA	cUL**
	8000BH/J1IU	220/230	50/60	17 VA	cUL**
	8000BH/L1IU	240	50/60	17 VA	cUL**
	8000BH/A0LN	12	DC	19 W	
	8000BH/B0LN	24	DC	19 W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils. (for Part Number 8062 tolerance  $\pm 5\%$  both AC and DC coils) - Other voltages are available on request

\*\* Approved cUL with connector 7000/CON



Terminal in compliance with DIN 43650/A

SOLENOID VALVES - DIRECT ACTION - 2 WAY NORMALLY  
OPEN (N.O.) - STAINLESS STEEL INSERT

## PART NUMBER 8062

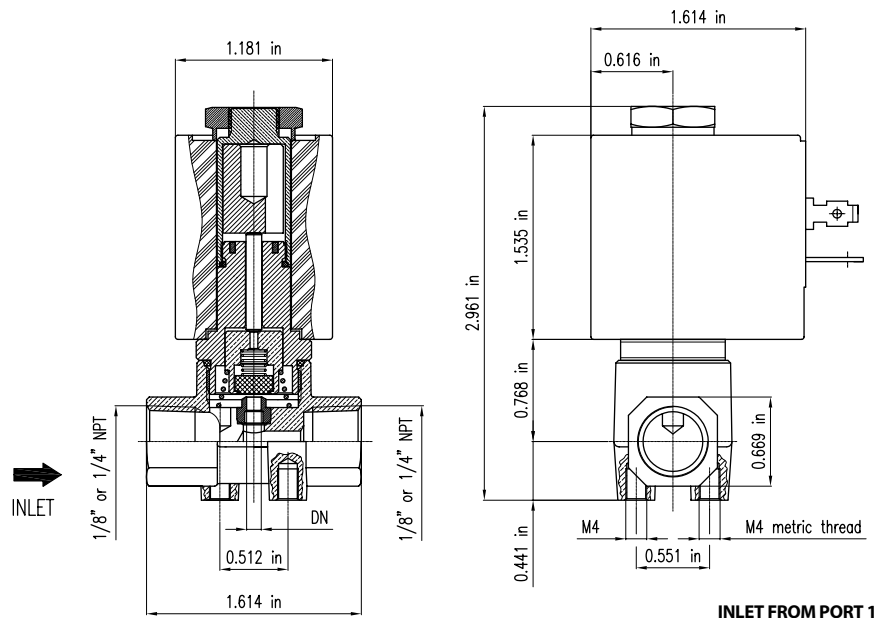
Solenoid valve 2 way normally open - 1/8" or 1/4" NPT female inlet and outlet - stainless steel insert

## ORDERING CODE FOR SOLENOID VALVES 8062 SERIES

Family		-	Female thread		-	DN (Orifice diameter)		-	Orifice gasket material		-	Coils		-	Other	
8062		-	40		-	15		-	B		-	I		-	3	
8062	2 way NO solenoid valve	40	1/8" NPT	YELLOW BRASS	15	Ø0,059 in		B	NBR		I	220/230VAC 50/60Hz 17VA cUL		COILS 8000BH SERIES	3	With connector and single package
		41	1/4" NPT		20	Ø0,079 in		L	EPDM Peroxide		L	24VAC 50/60Hz 17VA cUL				
		70	1/8" NPT	BRASS WITH TM4 TREATMENT	25	Ø0,098 in		I	FKM food grade	M	120VAC 50/60Hz 17VA cUL					
		71	1/4" NPT		30	Ø0,118 in				N	240VAC 50/60Hz 17VA cUL					
					35	Ø0,138 in				H	12Vdc 19W					
					40	Ø0,157 in				G	24Vdc 19W					

Other orifice on request

EXAMPLE	8062-40-15-B-I-3	Normally open 2-way solenoid valve, 1/8" NPT female threads, orifice diameter Ø0,059 in, NBR gasket and coil 220/230V 50/60Hz 17VA. With connector and single package
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PERFORMANCES OF THE 8062 SERIES			
Orifice diameter [in]	Differential working pressure [psi]		CV
	min.	max.	
Ø0,059	0	217	0,08
Ø0,079	0	130	0,13
Ø0,098	0	87	0,16
Ø0,118	0	58	0,21
Ø0,138	0	36	0,28
Ø0.157	0	20	0.33

Gaskets: Standard FKM (other on request)

Operating temperatures	NBR	from -4°F to 194°F
	EPDM	from -22°F to 293°F
	FKM	from 5°F to 320°F



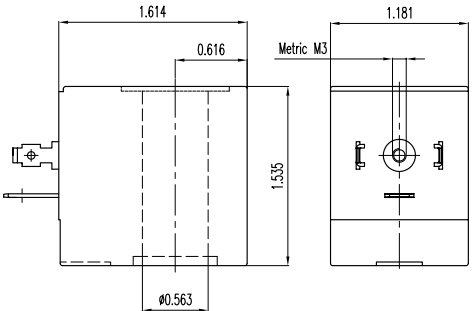
COILS FOR PART NUMBER 8062

PART NUMBER 8000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
8000BH	8000BH/B1IU	24	50/60	17 VA	cUL**
	8000BH/G1IU	120	50/60	17 VA	cUL**
	8000BH/J1IU	220/230	50/60	17 VA	cUL**
	8000BH/L1IU	240	50/60	17 VA	cUL**
	8000BH/A0LN	12	DC	19 W	
	8000BH/B0LN	24	DC	19 W	

\* Voltage tolerance: ±10% for AC coils / ±5% for DC coils. (for Part Number 8062 tolerance ±5% both AC and DC coils) - Other voltages are available on request

\*\* Approved cUL with connector 7000/CON



Terminal in compliance with DIN 43650/A

8200 SERIES  
SOLENOID VALVES - DIRECT ACTION - 2 WAY NORMALLY  
CLOSED (N.C.) - STAINLESS STEEL SLEEVE AND INSERT

PART NUMBER 8201

Solenoid valve 2 way normally closed - 1/8" or 1/4" NPT female inlet and outlet - stainless steel sleeve and insert

ORDERING CODE FOR SOLENOID VALVES 8201 SERIES

Family	-	Female thread	-	DN (Orifice diameter)	-	Orifice gasket material	-	Coils	-	Other
8201	-	40	-	15	-	B	-	I	-	3
8201	2 way NC solenoid valve	40	1/8" NPT	YELLOW BRASS	15	Ø0,059 in	B	NBR	I	220/230VAC 50/60Hz 17VA cUL 24VAC 50/60Hz 17VA cUL 120VAC 50/60Hz 17VA cUL 240VAC 50/60Hz 17VA cUL 12Vdc 19W 24Vdc 19W
		41	1/4" NPT		20	Ø0,079 in	L	EPDM Peroxide	L	
		70	1/8" NPT	BRASS WITH TM4 TREATMENT	25	Ø0,098 in	I	FKM food grade	M	
		71	1/4" NPT		30	Ø0,118 in	ID	FKM food grade 85Sh.A	N	
					35	Ø0,138 in			H	
		40	Ø0,157 in			G	24Vdc 19W			
COILS 8000BH SERIES										
3 With connector and single package										

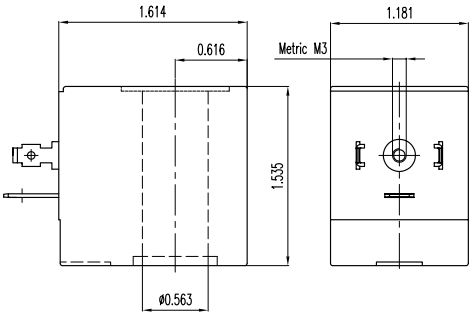
COILS FOR PART NUMBER 8201

PART NUMBER 8000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
8000BH	8000BH/B1IU	24	50/60	17 VA	cUL**
	8000BH/G1IU	120	50/60	17 VA	cUL**
	8000BH/J1IU	220/230	50/60	17 VA	cUL**
	8000BH/L1IU	240	50/60	17 VA	cUL**
	8000BH/A0LN	12	DC	19 W	
	8000BH/B0LN	24	DC	19 W	

\* Voltage tolerance: ±10% for AC coils / ±5% for DC coils. (for Part Number 8062 tolerance ±5% both AC and DC coils) - Other voltages are available on request

\*\* Approved cUL with connector 7000/CON



Terminal in compliance with DIN 43650/A

8250 SERIES  
SOLENOID VALVES - DIRECT ACTION - 3 WAY NORMALLY  
CLOSED (N.C.) - STAINLESS STEEL SLEEVE AND INSERT

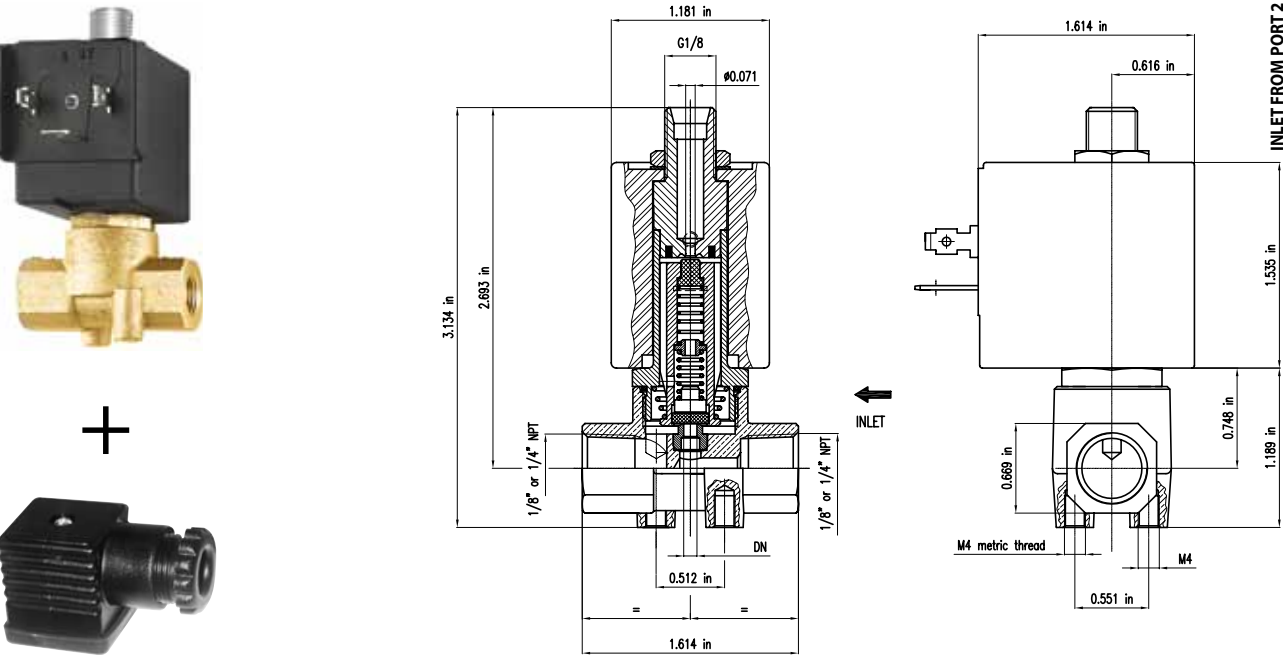
PART NUMBER 8251

Solenoid valve 3 way normally closed - 1/8" or 1/4" NPT female inlet and outlet - Stainless steel sleeve and insert - Third way G1/8"

ORDERING CODE FOR SOLENOID VALVES 8251 SERIES

Family	-	Female thread	-	Third way orifice + spring		DN (Orifice diameter)	-	Orifice gasket material	-	Coils	-	Other	
8251	-	40	-	A		15	-	B	-	I	-	3	
8251 3 way NC solenoid valve	40	1/8" NPT	YELLOW BRASS	A Ø0,071 inches (third way orifice) + spring code 8000/108	15	Ø0,059 in	B	NBR	I	220/230VAC 50/60Hz 17VA cUL	COILS 8000BH SERIES	3 With connector and single package	
	41	1/4" NPT			20	Ø0,079 in	L	EPDM Peroxide	L	24VAC 50/60Hz 17VA cUL			
	70	1/8" NPT	BRASS WITH TM4 TREATMENT		25	Ø0,098 in	I	FKM food grade	M	120VAC 50/60Hz 17VA cUL			
	71	1/4" NPT			30	Ø0,118 in	ID	FKM food grade 85Sh.A	N	240VAC 50/60Hz 17VA cUL			
				Other orifice on request						H	12Vdc 19W		
										G	24Vdc 19W		

EXAMPLE 8251-40-A15-B-I-3 Normally closed 3-way solenoid valve, 1/8" NPT female threads, third way orifice Ø0,071 in, orifice diameter Ø0,059 in, NBR gasket and coil 220/230V 50/60Hz 17VA. With connector and single package



PERFORMANCES OF THE 8251 SERIES			
Orifice diameter [in]	Differential working pressure [psi]		CV
	min.	max.	
Ø0,059	0	200	0,08
Ø0,079	0	130	0,13
Ø0,098	0	72	0,16
Ø0,118	0	50	0,20

Gaskets: NBR, EPDM, FKM  
Operating temperatures  
NBR from -4°F to 194°F  
EPDM from -22°F to 293°F  
FKM from 5°F to 320°F

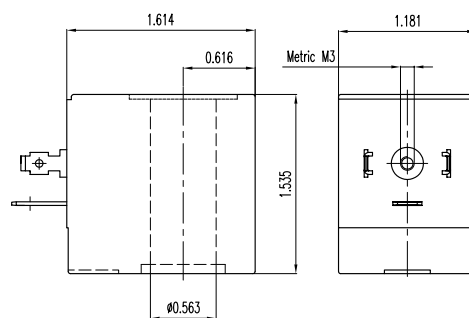
## COILS FOR PART NUMBER 8251

### PART NUMBER 8000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
8000BH	8000BH/B1IU	24	50/60	17 VA	cUL**
	8000BH/G1IU	120	50/60	17 VA	cUL**
	8000BH/J1IU	220/230	50/60	17 VA	cUL**
	8000BH/L1IU	240	50/60	17 VA	cUL**
	8000BH/A0LN	12	DC	19 W	
	8000BH/B0LN	24	DC	19 W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils. (for Part Number 8062 tolerance  $\pm 5\%$  both AC and DC coils) - Other voltages are available on request

\*\* Approved cUL with connector 7000/CON



Terminal in compliance with DIN 43650/A

## 8201K SERIES

### SOLENOID VALVES - DIRECT ACTION - 2 WAY NORMALLY CLOSED (N.C.) - COMPLETELY IN STAINLESS STEEL

The solenoid valves of the 8201K Series are the ideal solution when the environmental conditions are severe or aggressive fluids are used and stainless steel is required.

The 8201K Series is typically used for the following applications:

- Industry
- Acid/aggressive fluids
- Oenology
- Production of olive oil and drinks
- Equipment for treatment of fluids
- Oxygen (gaskets without grease)

The material specifications are the following:

- Valve body made of AISI 316L stainless steel
- AISI 304 stainless steel sleeve
- AISI 430F cores
- AISI 302 springs
- Sealing gaskets\*:  
NBR from -4°F to 194°F  
EPDM from -22°F to 293°F  
FKM from 5°F to 320°F
- 30mm class H coils (356 °F)

\* Check if the gasket is compatible with the fluid used

The valve body threaded inlet and outlet are 1/8" NPT, 1/4" NPT, 3/8" NPT or 1/2" NPT female.

Orifice diameters available are:

Ø0.059 in - Ø0.078 in - Ø0.098 in - Ø0.118 in - Ø0.137 in - Ø0.157 in  
(other diameters on request)



### ORDERING CODE FOR SOLENOID VALVES 8201K SERIES

Family		Female thread	-	DN (Orifice diameter)	-	Orifice gasket material	-	Coils	-	Other
8201K		40	-	15	-	I	-	I	-	3
8201K	2 way NC stainless steel solenoid valve with NPT female inlet-outlet threads	40	1/8" NPT	15	Ø0,059 in	B	NBR	I	220/230VAC 50/60Hz 17VA cUL	3 With connector and single package
		41	1/4" NPT	20	Ø0,079 in	L	EPDM Peroxide	L	24VAC 50/60Hz 17VA cUL	
		42	3/8" NPT	25	Ø0,098 in	I	FKM food grade	M	120VAC 50/60Hz 17VA cUL	
		43	1/2" NPT	30	Ø0,118 in	ID	FKM food grade 85Sh.A	N	240VAC 50/60Hz 17VA cUL	
				35	Ø0,138 in			H	12Vdc 19W	
				40	Ø0,157 in			G	24Vdc 19W	

Other orifice diameter on request

EXAMPLE 8201K40-15-I-I-3

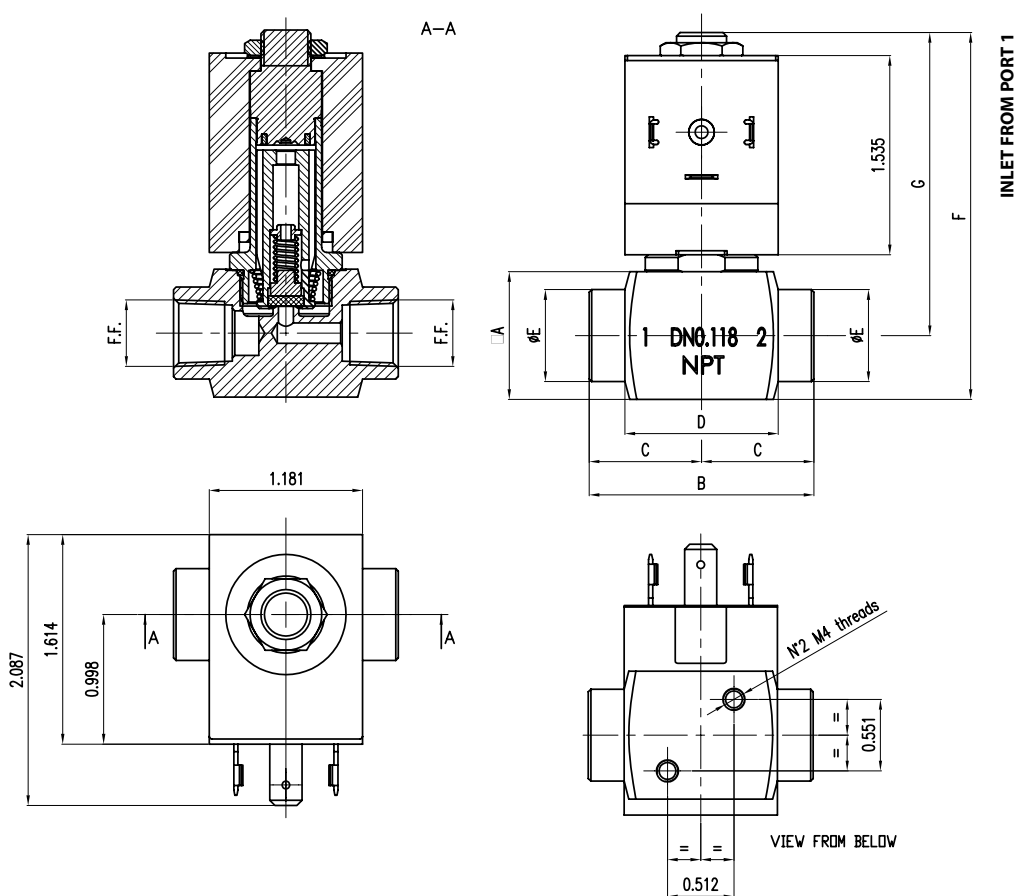
Normally closed 2-way solenoid valve, 1/8" NPT female threads, orifice diameter Ø0,059 in, FKM food grade gasket and coil 220/230V 50/60Hz 17VA. With connector and single package

PERFORMANCES OF THE 8201K SERIES

Orifice diameter [in]	Differential working pressure [psi]		CV
	min.	max.	
Ø0,059	0	362	0,08
Ø0,079	0	319	0,13
Ø0,098	0	217	0,16
Ø0,118	0	145	0,21
Ø0,138	0	108	0,28
Ø0,157	0	87	0,33

TABLE OF DIMENSIONS OF THE 8201K SERIES

Code	F.F.	Dimensions						
		A [in]	B [in]	C [in]	D [in]	ØE [in]	F [in]	G [in]
8201K40-xx-xx-x-x	1/8" NPT	0,984	1,654	0,827	1,142	0,591	2,823	2,331
8201K41-xx-xx-x-x	1/4" NPT	0,984	1,654	0,827	1,102	0,709	2,823	2,331
8201K42-xx-xx-x-x	3/8" NPT	0,984	1,772	0,886	1,102	0,906	2,823	2,331
8201K43-xx-xx-x-x	1/2" NPT	1,181	1,929	0,965	1,220	1,083	3,020	2,429



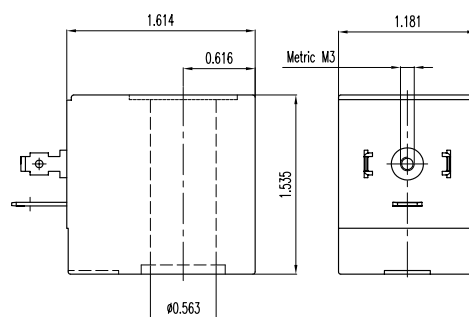
## COILS FOR PART NUMBER 8201K

## PART NUMBER 8000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
8000BH	8000BH/B1IU	24	50/60	17 VA	cUL**
	8000BH/G1IU	120	50/60	17 VA	cUL**
	8000BH/J1IU	220/230	50/60	17 VA	cUL**
	8000BH/L1IU	240	50/60	17 VA	cUL**
	8000BH/A0LN	12	DC	19 W	
	8000BH/B0LN	24	DC	19 W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils. (for Part Number 8062 tolerance  $\pm 5\%$  both AC and DC coils) - Other voltages are available on request

\*\* Approved cUL with connector 7000/CON



Terminal in compliance with DIN 43650/A

## 8251K SERIES

### SOLENOID VALVES - DIRECT ACTION - 3 WAY NORMALLY CLOSED (N.C.) - COMPLETELY IN STAINLESS STEEL

The solenoid valves of the 8251K Series are the ideal solution when the environmental conditions are severe or aggressive fluids are used and stainless steel is required.

The 8251K Series is typically used for the following applications:

- Industry
- Acid/aggressive fluids
- Oenology
- Production of olive oil and drinks
- Equipment for treatment of fluids
- Oxygen (gaskets without grease)

The material specifications are the following:

- Valve body made of AISI 316L stainless steel
- AISI 304 stainless steel sleeve
- AISI 430F cores
- AISI 302 springs
- Sealing gaskets\*:  
NBR from -4°F to 194°F  
EPDM from -22°F to 293°F  
FKM from 5°F to 320°F
- 30mm class H coils (356 °F)

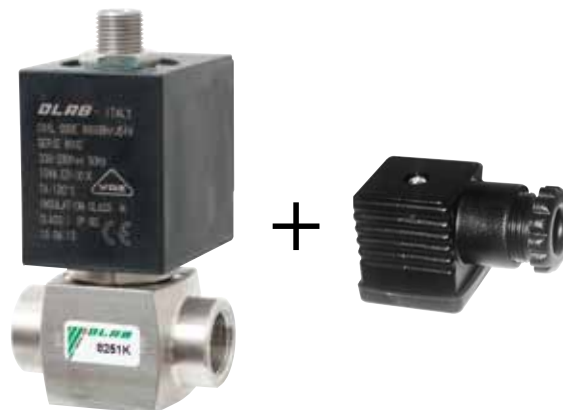
\* Check if the gasket is compatible with the fluid used

The valve body threaded inlet and outlet are 1/8" NPT, 1/4" NPT, 3/8" NPT or 1/2" NPT female.

Orifice diameters available are:

Ø0.059 in - Ø0.078 in - Ø0.098 in - Ø0.118 in - Ø0.137 in - Ø0.157 in  
(other diameters on request)

Third way is G 1/8 threaded with Ø0,071 inches hole.



### ORDERING CODE FOR SOLENOID VALVES 8251K SERIES

Family	Female thread	-	Third way orifice + spring	DN (Orifice diameter)	-	Orifice gasket material	-	Coils	-	Other
8251K	40	-	A	15	-	B	-	I	-	3
8251K	40	1/8" NPT	A	15	Ø0,059 in	B	NBR	I	COILS 8000BH SERIES	3
	41	1/4" NPT		20	Ø0,079 in	L	EPDM Peroxide	L		
	42	3/8" NPT		25	Ø0,098 in	I	FKM food grade	M		
	43	1/2" NPT		30	Ø0,118 in	ID	FKM food grade 85Sh.A	N		
								H		
								G		

Other orifice on request

EXAMPLE 8251K40-A15-I-I-3

Normally closed 3-way solenoid valve, 1/8" NPT female threads, third way Ø0,071 in, orifice diameter Ø0,059 in, FKM food grade gasket and coil 220/230V 50/60Hz 17VA. With connector and single package

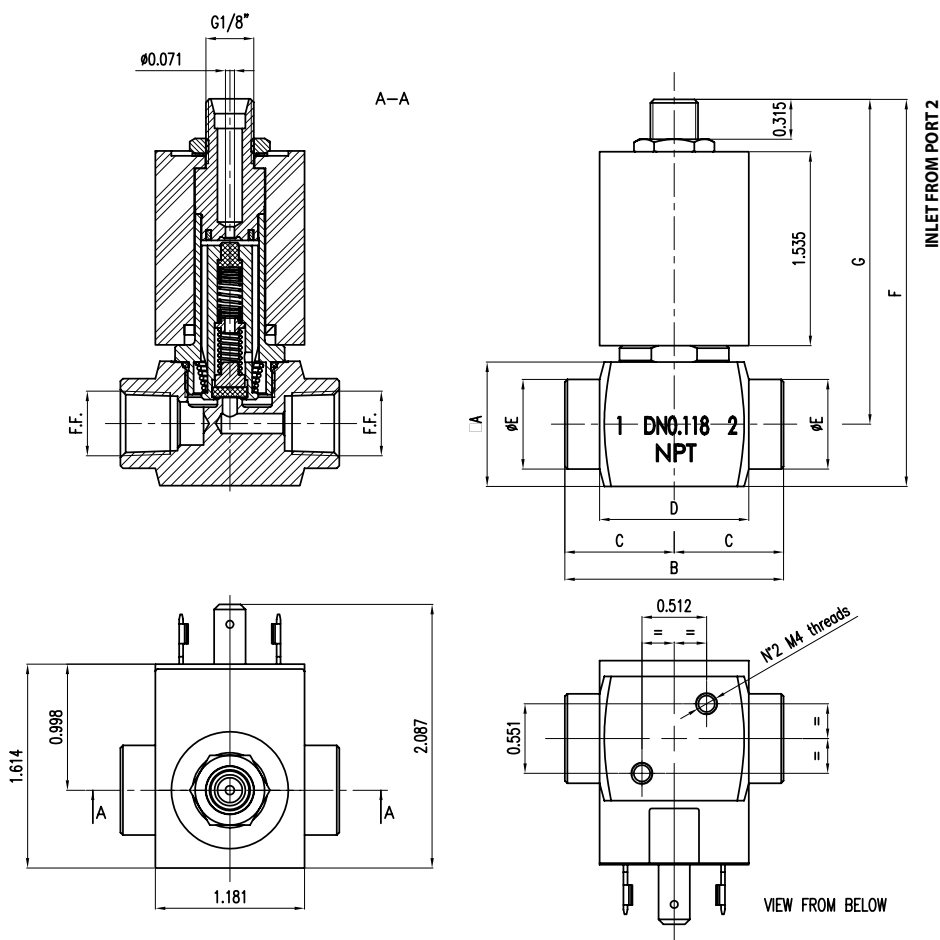


PERFORMANCES OF THE 8251K SERIES

Orifice diameter [in]	Differential working pressure [psi]		CV
	min.	max.	
Ø0,059	0	200	0,08
Ø0,079	0	130	0,13
Ø0,098	0	72	0,16
Ø0,118	0	50	0,20

TABLE OF DIMENSIONS OF THE 8251K SERIES

Code	F.F.	Dimensions						
		A [in]	B [in]	C [in]	D [in]	ØE [in]	F [in]	G [in]
8251K40-Axx-xx-x-x	1/8" NPT	0,984	1,654	0,827	1,142	0,591	3,063	2,571
8251K41-Axx-xx-x-x	1/4" NPT	0,984	1,654	0,827	1,102	0,709	3,063	2,571
8251K42-Axx-xx-x-x	3/8" NPT	0,984	1,772	0,886	1,102	0,906	3,063	2,571
8251K43-Axx-xx-x-x	1/2" NPT	1,181	1,929	0,965	1,220	1,083	3,260	2,670



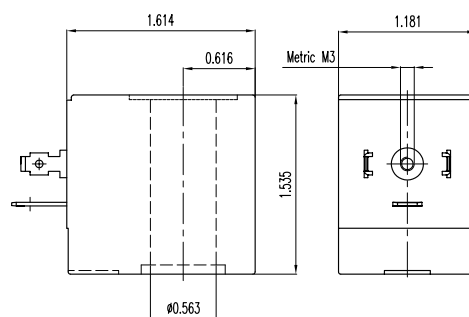
## COILS FOR PART NUMBER 8251K

## PART NUMBER 8000BH

Coils family	Code	Voltage [V] *	Frequency [Hz]	Power supply	Approvals
8000BH	8000BH/B1IU	24	50/60	17 VA	cUL**
	8000BH/G1IU	120	50/60	17 VA	cUL**
	8000BH/J1IU	220/230	50/60	17 VA	cUL**
	8000BH/L1IU	240	50/60	17 VA	cUL**
	8000BH/A0LN	12	DC	19 W	
	8000BH/B0LN	24	DC	19 W	

\* Voltage tolerance:  $\pm 10\%$  for AC coils /  $\pm 5\%$  for DC coils. (for Part Number 8062 tolerance  $\pm 5\%$  both AC and DC coils) - Other voltages are available on request

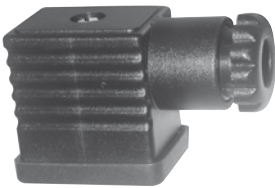
\*\* Approved cUL with connector 7000/CON



Terminal in compliance with DIN 43650/A

PART NUMBER 6000/CON (IP 67)

Connector



Max. cable section	0,059 in <sup>2</sup>
Clamping screw	PG9
Protection degree	IP 67 (DIN40050)
Insulation class	Group C VDE 0110
Connector colour	Black
Resistance	< 4 mΩ
Voltage rating	250 V
Pole number	2+ Ground
Protection	Glass reinforced nylon
Contact-holder	Glass reinforced nylon
Contact rated current	10 A
Max. contact rated current	16 A
Gasket	NBR nitrile rubber
Working temperature	– 40 + 194°F

PART NUMBER 7000/CON (IP 67)

Connector



Max. cable section	0,059 in <sup>2</sup>
Clamping screw	PG9, PG11
Protection degree	IP 67 (DIN40050)
Insulation class	Group C - VDE 0110
Connector colour	Black
Resistance	< 4 mΩ
Voltage rating	250 V
Pole number	2+ Ground
Protection	Glass reinforced nylon
Contact-holder	Glass reinforced nylon
Contact rated current	10 A
Max. contact rated current	16 A
Gasket	NBR nitrile rubber
Working temperature	– 40 + 194°F

## INNOVATION & SOLUTION

### TM4 BRASS COATING FOR FOOD SECTOR



Olab improves the quality of your life.

The new TM4 treatment makes it possible to produce a coating specifically designed for direct contact with food.



PERFECT DOWN TO THE LAST DETAIL





## GOOD HEALTH IS THE RESULT OF CERTAIN BASIC FACTORS

Olab has been producing solenoid valves and fittings for small household appliances for several decades. Over this time research and development have aimed at solving problems felt to be most critical by customers. Part of this research has led to the development of a series of surface treatments complying with the strictest international standards in the food sector. These treatments, mentioned below, have been applied to our products:

- TM1 (in compliance with the requirements of the American NSF/ANSI ST51 Standard (food equipment materials);
- TM2 (in compliance with the requirements of the NSF/ANSI ST51 American Standard (food equipment materials), NSF/ANSI STD 61 (drinking water system components section 8-ph5 hot commercial 82°C), in compliance with the 1935:2004 European Regulation;
- TM3 (in compliance with the 1935:2004 European regulation, only under special conditions)

Our research and development in the field of surface treatments never stopped. Along with the surface treatments mentioned above (proven by several certifications obtained) a new revolutionary treatment has been developed which inhibits the migration of heavy metals at the same time keeping the organoleptic characteristics of fluids unvaried. Almost a year of intensive research resulted in the new TM4 treatment which makes metal surfaces (brass or steel) "impermeable" because of the electrolytic deposition of a double layer of non-toxic agents, which also inhibits the emission of noxious elements.

### REFERENCE STANDARDS CONCERNING THE TESTS CARRIED OUT

Ministerial Decree no. 34 of 21-03 -73 (O.S. O.G. No. 104 of 20-04-73) and the following application decrees, MD 174/2004 EC Reg. no 1935/2004. EC Directive 98/83/EC and Decree Law. 21-02-01:

#### 1.EMISSION OF HEAVY METALS

A Plasma optical spectrometric (ICP) analysis concerning emissions was carried out on the emission liquid obtained from the contact between the tested sample and the simulation liquid. The following results were obtained:

Simulation liquids	Contact condition	Test result
Distilled water	30 minutes at 100°C – repeated contact	Positive
Distilled water	48 hours at 100°C	Positive
Distilled water	10 days at 100°C	Positive

#### 2.SENSORY AND TASTE ANALYSIS

The taste analysis is an evaluation of the difference between the taste of fresh water and water which has come in contact with the sample. A variable score ranging from 0 (no perceivable taste difference) to 4 (significant difference in taste) is given. The final result is expressed by an arithmetical average of the score obtained.

Contact condition	Test result
30 minutes at 100°C – repeated contact	Positive
48 hours at 100°C	Positive
10 days at 100°C	Positive

### TM4 IMPROVES THE QUALITY OF YOUR LIFE

On the basis of the tests carried out at a CSI accredited laboratory, the TM4 treatment is completely suitable for contact with water for human consumption and complies with the reference standards such as Ministerial Decree no. 34 of 21-03-73 (O.S. of O.G. no. 104 of 20-04-73) and with the successive application decrees such as Ministerial Decree 174/2004, EC Reg. no. 1935/2004, EC-Directive 98/83/EC and Decree Law 21-02-01.

CSI APPROVED



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**OLAB®**

 **100%** 