



HANDBOOK
SAFETY DEVICES

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 **Castel**[®]
Italian technology

CHAPTER 6

CHANGEOVER VALVES IN SERIES 3032, 3032N, AND 3032E



APPLICATIONS

Changeover valves in series 3032, 3032N and 3032E perform the role of a service valve for a pair of safety valves, allowing the use of one and the exclusion of the other. This device allows the user to work on the isolated valve, for periodic inspection or replacement, while the line is completely operative and the system safety is integral. N.B.: each safety valve located on the changeover valve must have sufficient capacity to protect the vessel alone.

Valves models 3032/33, 3032N/33 and 3032E/33 are supplied with:

- Two female 3/8" NPT threaded connections with swivel nut, Castel code 3039/3
- Two O-Rings for these connections

These components ensure perfect alignment of a pair of safety valves 3060/33, 3060/34, 3060/36 or 3061/3.

Valves models 3032/44, 3032N/44 and 3032E/44 are supplied with:

- Two female 1/2" NPT threaded connections with swivel nut, Castel code 3039/4
- Two O-Rings for these connections

These components ensure perfect alignment of a pair of safety valves 3060/45, 46/46 or 3061/4.

Valves, models: 3032/64, 3032N/64, and 3032E/64; 3032/66, 3032N/66, and 3032E/66; 3032/88, 3032N/88, and 3032E/88; and 3032/108, 3032N/108, and 3032E/108 do not have threaded connections with swivel nuts on the outlet connection. Therefore, valve models 3030/44, 3030/66, 3030/88, 3065/4 and 3065/6 are screwed directly on to the changeover valve.

The valves in this chapter can be used with the same fluids foreseen for safety valves series 3030, 3060, 3061 and 3065, specifically:

- Valves in series 3032 can be used with the following refrigerant fluids:
 - HCFC (R22)
 - HFC (R134a, R32, R404A, R407C, R410A or R507)

- HFO and HFO/HFC mixtures (R1234yf, R1234ze, R448A, R449A, R450A or R452A)

- Valves in series 3032N can be used with the following refrigerant fluids:

- HFC (R134a, R32, R404A, R407C, R410A or R507)
- HFO and HFO/HFC mixtures (R1234yf, R1234ze, R448A, R449A, R450A or R452A)
- HC (R290, R600, R600a)

CAUTION! Valves in series 3032N cannot be installed on systems that use HCFC (R22) refrigerants or other refrigerants blended with mineral oils or alkylbenzenes.

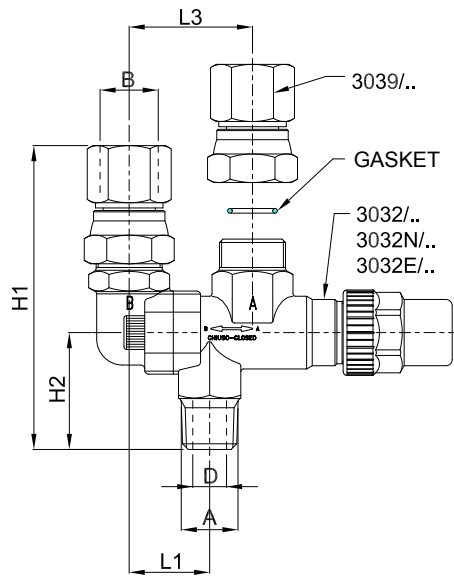
- Valves in series 3032E can be used only with refrigerant fluid R744.

CONSTRUCTION

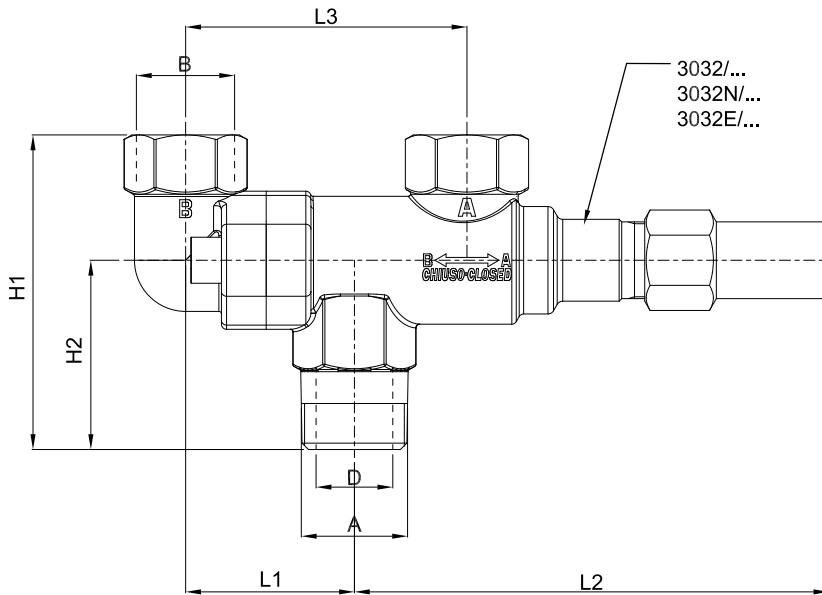
Valves in series 3032, 3032N and 3032E are designed so that it is never possible to exclude both safety valves simultaneously. Under working conditions, the shutter must be clamped against one of the two seats of the valve, front port or back port, in order to ensure always full discharge to the corresponding safety valve. Intermediate shutter positions must be avoided in order not to affect the operation of both safety valves. The valve ensures a pressure drop perfectly compatible with the safety valve operation under saturated vapour and superheated vapour discharge conditions.

The main parts of the valves in series 3032, 3032N, and 3032E are made from the following materials:

- Hot forged brass EN 12420 – CW 617N for the body
- Steel, with proper surface protection, for the spindle.
- Chloroprene rubber (CR) for outlet seal gaskets in valves series 3032
- Hydrogenated nitrile butadiene rubber (HNBR) for outlet seal gaskets in valves series 3032N
- Ethylene propylene diene monomer rubber (EPDM) for outlet seal gaskets in valves series 3032E
- Glass reinforced PBT for the protective cap that covers the spindle.
- Hot forged steel EN 12420 – CW 617N for the protective cap of the spindle for models from 1" to 1-1/4" NPT.



3032/33
 3032/44
 3032N/33
 3032N/44
 3032E/33
 3032E/44



3032/64
 3032/66
 3032/88
 3032/108
 3032N/64
 3032N/66
 3032N/88
 3032N/108
 3032E/64
 3032E/66
 3032E/88
 3032E/108

TABLE 19: General characteristics, dimensions and weights of valves 3032

Catalogue Number	Designed for valve	Kv Factor [m³/h]	PS [bar]	TS [°C]		TA [°C]		Dimensions [mm]							Inlet connection wrench torque (min/max) [Nm]	Weight [g]	Risk Category according to PED Recast	
				min	max	min	max	D	A	B	H1	H2	L1	L2				L3
3032/33	3060/33C 3060/34C 3060/36C 3061/3C	2,5	80	-40	+120	-40	+50	13	3/8" NPT	3/8" NPT	117	45	33	91	50	14/20	775	Art. 4.3
3032/44	3060/45C 3060/46C 3061/4C	3,3						13	1/2" NPT	1/2" NPT	117	45	33	91	50	21/30	775	
3032/64	3030/44C 3065/4C	9,0						17,5	3/4" NPT	1/2" NPT	95	52	48	133	80	32/45	1750	
3032/66	3030/66C 3065/6C	9,0			+150			17,5	3/4" NPT	3/4" NPT	95	52	48	133	80	32/45	1750	
3032/88	3030/88C	14,5						22,0	1" NPT"	1" NPT	120	71	66	185	110	50/65	3200	
3032/108		20,0						31,0	1. 1/4" NPT	1" NPT	123	74	66	185	110	60/80	3200	

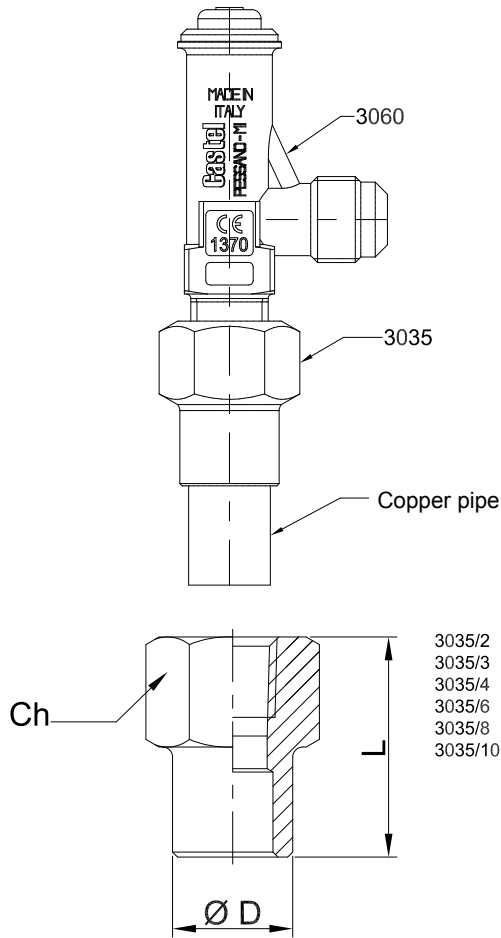
TABLE 20: General characteristics, dimensions and weights of valves 3032N

Catalogue Number	Designed for valve	Kv Factor [m³/h]	PS [bar]	TS [°C]		TA [°C]		Dimensions [mm]							Inlet connection wrench torque (min/max) [Nm]	Weight [g]	Risk Category according to PED Recast	
				min	max	min	max	D	A	B	H1	H2	L1	L2				L3
3032N/33	3060/33C 3060/34C 3060/36C 3061/3C	2,5	80	-40	+150	-40	+50	13	3/8" NPT	3/8" NPT	117	45	33	91	50	14/20	775	Art. 4.3
3032N/44	3060/45C 3060/46C 3061/4C	3,3						13	1/2" NPT	1/2" NPT	117	45	33	91	50	21/30	775	
3032N/64	3030/44C 3065/4C	9,0						17,5	3/4" NPT	1/2" NPT	95	52	48	133	80	32/45	1750	
3032N/66	3030/66C 3065/6C	9,0						17,5	3/4" NPT	3/4" NPT	95	52	48	133	80	32/45	1750	

TABLE 21: General characteristics, dimensions and weights of valves 3032E

Catalogue Number	Designed for valve	Kv Factor [m³/h]	PS [bar]	TS [°C]		TA [°C]		Dimensions [mm]							Inlet connection wrench torque (min/max) [Nm]	Weight [g]	Risk Category according to PED Recast	
				min	max	min	max	D	A	B	H1	H2	L1	L2				L3
3032E/33	3060/33C 3060/34C 3060/36C 3061/3C	2,5	120	-40	+150	-40	+50	13	3/8" NPT	3/8" NPT	117	45	33	91	50	14/20	775	Art. 4.3
3032E/44	3060/45C 3060/46C 3061/4C	3,3						13	1/2" NPT	1/2" NPT	117	45	33	91	50	21/30	775	
3032E/64	3030/44C 3065/4C	9,0						17,5	3/4" NPT	1/2" NPT	95	52	48	133	80	32/45	1750	
3032E/66	3030/66C 3065/6C	9,0						17,5	3/4" NPT	3/4" NPT	95	52	48	133	80	32/45	1750	
3032E/88	3030/88C	14,5						22,0	1" NPT"	1" NPT	120	71	66	185	110	50/65	3200	
3032E/108		20,0						31,0	1. 1/4" NPT	1" NPT	123	74	66	185	110	60/80	3200	

CHAPTER 7 ■ FITTINGS IN SERIES 3035



The fittings in series 3035 allow for the installation of:

- safety valves in series 3030, 3060, 3061 and 3065
- bursting disc devices in series 3070
- shut-off valves in series 3064, 3064N and 3064E
- changeover valves in series 3032, 3032N and 3032E

near pressure equipment to be protected in the system. These fittings are designed to be installed in two ways:

- Construct a copper pipe by-pass that connects the pressure equipment to the fitting. Insert the end of the by-pass in the solder connection of the fitting and then perform capillary brazing.
- Drill the inner/outer pipe near the pressure equipment (if possible, it is best to build a collar on the pipe). Put the end of the fitting into this hole and proceed to braze weld.

The fittings in series 3035 are produced by machining brass bars EN 12164-CW614N.

TABLE 22: General characteristics, dimensions and weights of unions 3035

Catalogue Number	Connections		PS [bar]	Dimensions [mm]			Weight [g]
	NPT	ODS Ø [mm]		D	L	Ch	
3035/2	1/4"	12	120	18	33	21	58
3035/3	3/8"	18		22	36,5	26	90,5
3035/4	1/2"	22		28	44	32	165
3035/6	3/4"	28		35	51	40	255
3035/8	1"	35		42	72	45	364
3035/10	1.1/4"	42		54	67	55	613

CHAPTER 8 ■ SHUT-OFF VALVES IN SERIES 3064, 3064N, AND 3064E



APPLICATIONS

Please remember that the operation of pressure equipment and pressure assemblies is not covered by Directive 2014/68/EC ; rather, it is regulated by the national legislation of the Member States of the European Union. Therefore, the various Member States have issued laws that call for periodic inspection of pressure equipment and pressure assemblies. Italy issued Ministerial Decree 329 dated 01/12/2004 regarding the provisions for the installation and use of pressure equipment and pressure assemblies that comply with Directive 97/23/EC.

Any intervention for periodic inspection or replacement of an installed safety device becomes very difficult if the protected vessel is not equipped with a shut-off valve.

Shut-off valves in series 3064, 3064N and 3064E installed between the protected vessel and the safety valve, allow the device to be disassembled for inspection or replacement without blowing off all the refrigerant fluid from an entire section of the system.

The valves in this chapter can be used with the same fluids foreseen for safety valves series 3030, 3060, 3061 and 3065, specifically:

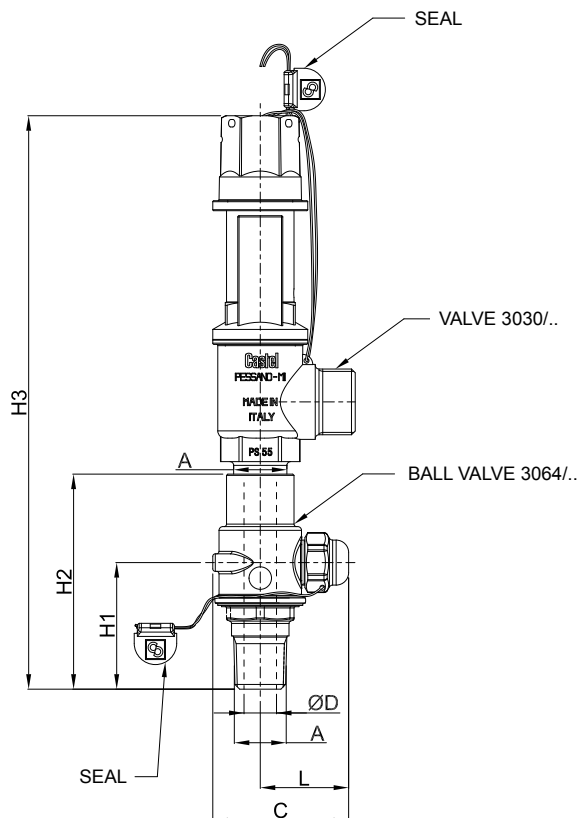
- a. Valves in series 3064 can be used with the following refrigerant fluids:
 - HCFC (R22)
 - HFC (R134a, R32, R404A, R407C, R410A or R507)
 - HFO and HFO/HFC mixtures (R1234yf, R1234ze, R448A, R449A, R450A or R452A)
- b. Valves in series 3064N can be used with the following refrigerant fluids:
 - HFC (R134a, R32, R404A, R407C, R410A or R507)
 - HFO and HFO/HFC mixtures (R1234yf, R1234ze, R448A, R449A, R450A or R452A)
 - HC (R290 , R600 , R600a)

CAUTION! Valves in series 3064N cannot be installed on systems that use HCFC (R22) refrigerants or other refrigerants blended with mineral oils or alkylbenzenes.
- c. Valves in series 3064E can be used only with refrigerant fluid R744.

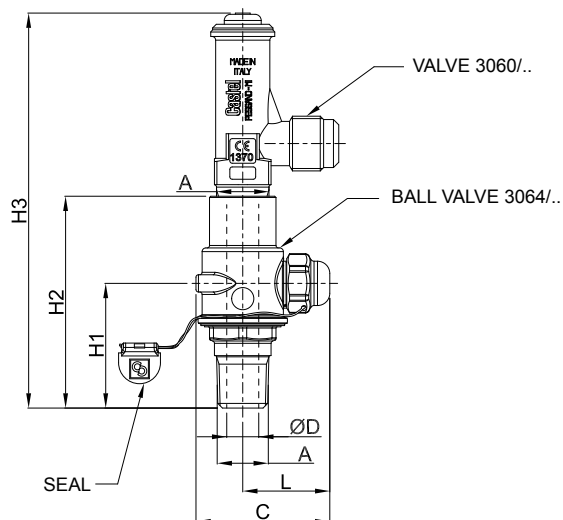
CONSTRUCTION

Valves in series 3064, 3064N and 3064E are supplied by Castel in the open position and the spindle cap protection is sealed with a Castel lead seal. Any operation to close the valve requires causes the tampering with the seal and must be performed exclusively by:

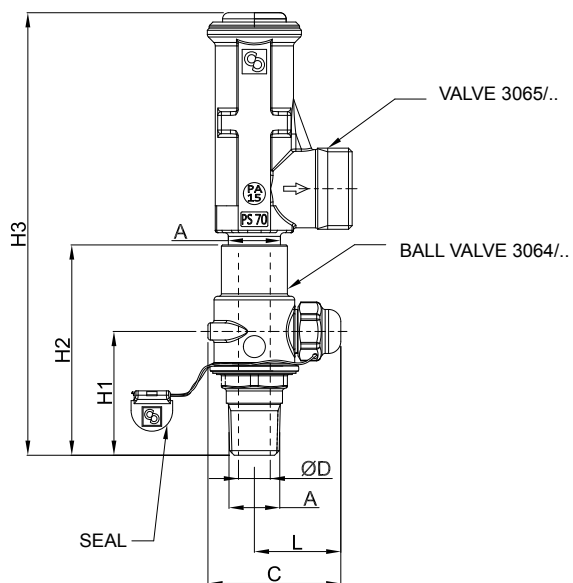
- staff authorized to work on the system
 - an operator of a competent inspection body
- These persons will be responsible for the subsequent re-opening of the valve and the application of a new cap seal with their own lead seal.
- The main parts of the valves in series 3064, 3064N, and 3064E are made from the following materials:
- Hot forged brass EN 12420 – CW 617N for the body
 - Hot forged brass EN 12420 – CW 617N, chromium plated, for the ball
 - Steel, with proper surface protection, for the spindle.
 - P.T.F.E. for the ball seat gaskets
 - Chloroprene rubber (CR) for outlet seal gaskets in valves series 3064
 - Hydrogenated nitrile butadiene rubber (HNBR) for outlet seal gaskets in valves series 3064N
 - Ethylene propylene diene monomer rubber (EPDM) for outlet seal gaskets in valves series 3064E
 - Hot forged brass EN 12420 – CW 617N for the protective cap of the spindle



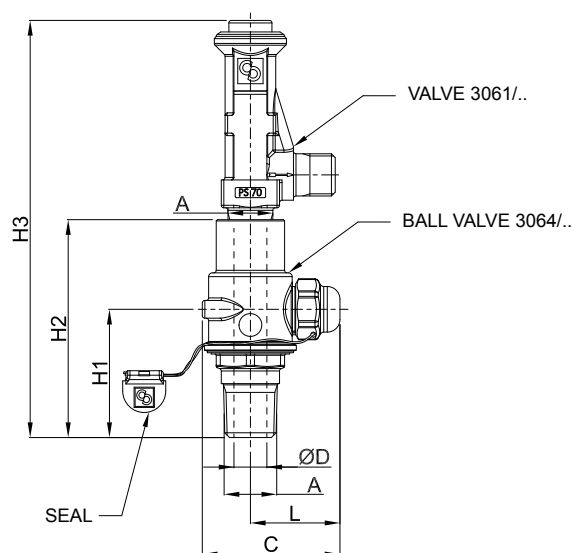
3064/44 → 3030/44C
 3064/88 → 3030/88C
 3064N/44 → 3030/44C
 3064N/88 → 3030/88C
 3064E/44 → 3030/44C
 3064E/88 → 3030/88C



3064/22 → 3060/..C
 3064/33 → 3060/..C
 3064/44 → 3060/..C
 3064N/22 → 3060/..C
 3064N/33 → 3060/..C
 3064N/44 → 3060/..C
 3064E/22 → 3060/..C
 3064E/33 → 3060/..C
 3064E/44 → 3060/..C



3064/44 → 3065/4C
 3064N/44 → 3065/4C
 3064E/44 → 3065/4C



3064/22 → 3061/2C
 3064/33 → 3061/3C
 3064/44 → 3061/4C
 3064N/22 → 3061/2C
 3064N/33 → 3061/3C
 3064N/44 → 3061/4C
 3064E/22 → 3061/2C
 3064E/33 → 3061/3C
 3064E/44 → 3061/4C

TABLE 23: General characteristics, dimensions and weights of valves series 3064

Catalogue Number	Designed for valve	Kv Factor [m³/h]	PS [bar]	TS [°C]		TA [°C]		Dimensions [mm]						Inlet connection wrench torque (min/max) [Nm]	Weight [g]	Risk Category according to PED Recast	
				min	max	min	max	∅ D	A	C	L	H ₁	H ₂				H ₃
3064/22	3060/23C	2,5	80	-40	+150	-40	+50	7	1/4" NPT	47	32	45	74	147	10/15	216	Art. 4.3
	3060/24C													157			
	3061/2C																
3064/33	3060/33C	5	80	-40	+150	-40	+50	10	3/8" NPT	47	32	45	74	147	14/20	208	Art. 4.3
	3060/34C													163			
	3060/36C													154			
	3061/3C																
3064/44	3060/45C	10	80	-40	+150	-40	+50	13	1/2" NPT	54	35	51	86	165	21/30	334	Art. 4.3
	3060/46C													176			
	3061/4C													168			
	3065/4C													188			
	3030/44C													235			
3064/88	3030/88C	20						20	1" NPT	78	52	70	119	323	50/65	871	

TABLE 24: General characteristics, dimensions and weights of valves series 3064N

Catalogue Number	Designed for valve	Kv Factor [m³/h]	PS [bar]	TS [°C]		TA [°C]		Dimensions [mm]						Inlet connection wrench torque (min/max) [Nm]	Weight [g]	Risk Category according to PED Recast	
				min	max	min	max	∅ D	A	C	L	H ₁	H ₂				H ₃
3064N/22	3060/23C	2,5	80	-40	+150	-40	+50	7	1/4" NPT	47	32	45	74	147	10/15	216	Art. 4.3
	3060/24C													157			
	3061/2C																
3064N/33	3060/33C	5	80	-40	+150	-40	+50	10	3/8" NPT	47	32	45	74	147	14/20	208	Art. 4.3
	3060/34C													163			
	3060/36C													154			
	3061/3C																
3064N/44	3060/45C	10	80	-40	+150	-40	+50	13	1/2" NPT	54	35	51	86	165	21/30	334	Art. 4.3
	3060/46C													176			
	3061/4C													168			
	3065/4C													188			
	3030/44C													235			

TABLE 25: General Characteristics, dimensions and weights of valves series 3064E

Catalogue Number	Designed for valve	Kv Factor [m³/h]	PS [bar]	TS [°C]		TA [°C]		Dimensions [mm]						Inlet connection wrench torque (min/max) [Nm]	Weight [g]	Risk Category according to PED Recast	
				min	max	min	max	∅ D	A	C	L	H ₁	H ₂				H ₃
3064E/22	3060/23C	2,5	120	-40	+150	-40	+50	7	1/4" NPT	47	32	45	74	147	10/15	216	Art. 4.3
	3060/24C													157			
	3061/2C																
3064E/33	3060/33C	5	120	-40	+150	-40	+50	10	3/8" NPT	47	32	45	74	147	14/20	208	Art. 4.3
	3060/34C													163			
	3060/36C													154			
	3061/3C																
3064E/44	3060/45C	10	120	-40	+150	-40	+50	13	1/2" NPT	54	35	51	86	165	21/30	334	Art. 4.3
	3060/46C													176			
	3061/4C													168			
	3065/4C													188			
	3030/44C													235			
3064E/88	3030/88C	20	80					20	1" NPT	78	52	70	119	323	50/65	871	

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