

For Inert Gas and Vacuum

SP-V Cupla

For vacuum

Working pressure

3.0 to 7.5
MPa
(31 to 76 kgf/cm²)

Valve structure

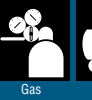


Two-way shut-off

Applicable fluids



Inert gas,
Vacuum



Gas



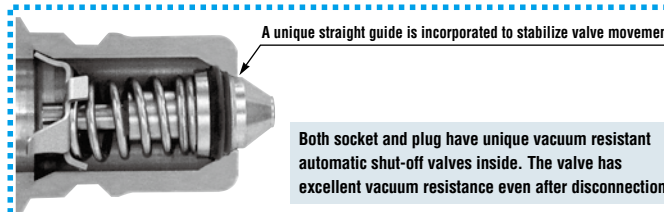
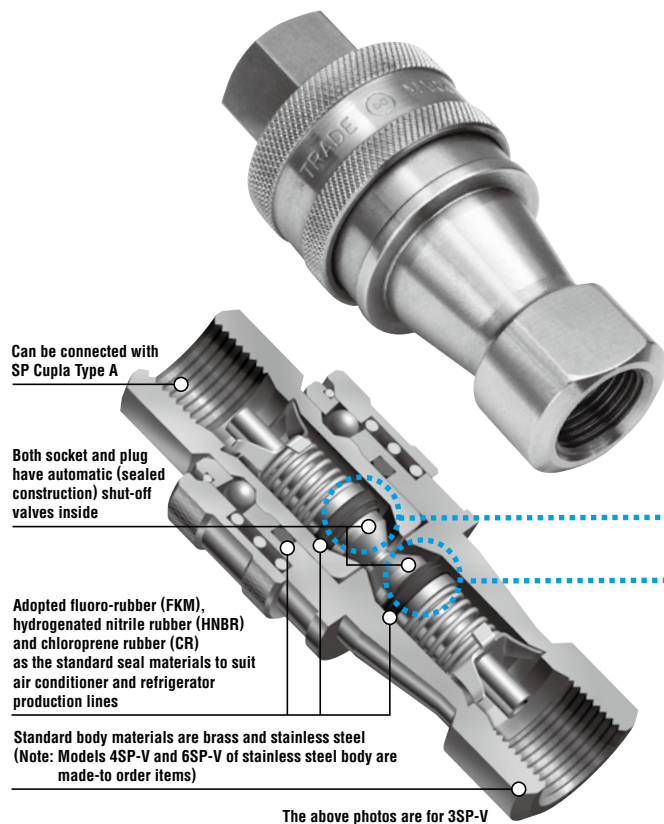
Air



Water

Automatic shut-off valves in both socket and plug for vacuum applications. Each can withstand a vacuum of as high as 1.3×10^{-1} Pa even when disconnected.

- Uses automatic shut-off valves with ultra-tight sealed construction in both socket and plug. Ideal for vacuum applications.
- Having automatic shut-off valves in both socket and plug facilitates easy fluid handling. Suitable for a wide range of vacuum applications as high as 1.3×10^{-1} Pa (1×10^{-3} mmHg) even when disconnected.
- Three types of seal material are available to suit any of the diversified production lines for air conditioners, refrigerators or similar.
- Can be connected with SP Cupla Type A.



Specifications

Body material		Brass (Standard material)		Stainless steel (Standard material)	Stainless steel (Made-to-order item)
Size (Thread)		1/4", 3/8"	1/2", 3/4"	1/4", 3/8"	1/2", 3/4"
Working pressure	MPa	5.0	3.0	7.5	4.5
	kgf/cm ²	51	31	76	46
	bar	50	30	75	45
	PSI	725	435	1090	653
Seal material		Mark		Working temperature range	Remarks
Working temperature range		Chloroprene rubber	CR (C308)	-20°C to +80°C	Standard material
		Fluoro rubber	FKM (X-100)	-20°C to +180°C	Standard material
		Hydrogenated nitrile rubber	HNBR (H708)	-20°C to +120°C	Standard material

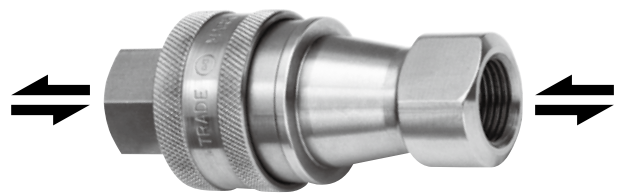
Max. Tightening Torque

Nm {kgf·cm}

Size (Thread)		1/4"	3/8"	1/2"	3/4"
Torque	Brass	9 {92}	12 {122}	30 {306}	50 {510}
	Stainless steel	14 {143}	22 {224}	60 {612}	90 {918}

Flow Direction

Fluid may flow in either direction from plug or from socket side when coupled.



Interchangeability

Socket and plug with different sizes cannot be connected to each other. Interchangeable with SP Cupla Type A but take heed of flow rate reduction.

Min. Cross-Sectional Area

(mm²)

Model	2SP-V	3SP-V	4SP-V	6SP-V
Min. cross-sectional area	18	38	71	110

Suitability for Vacuum

1.3×10^{-1} Pa [1×10^{-3} mmHg]

Socket only	Plug only	When connected
Operational	Operational	Operational

Admixture of Air on Connection

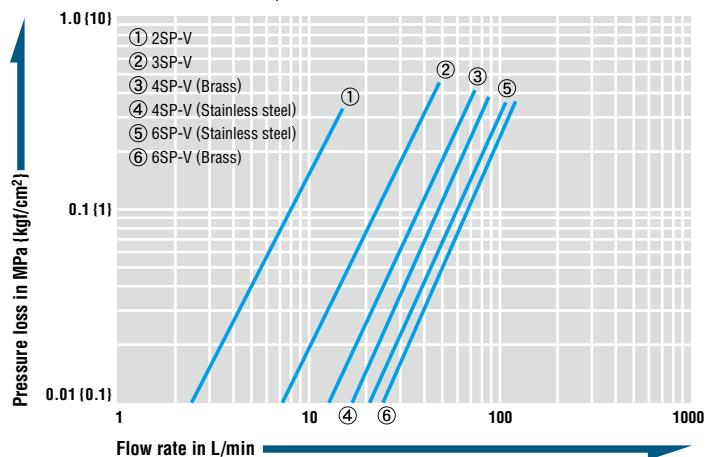
Admixture of air may vary depending upon the usage conditions.

(mL)

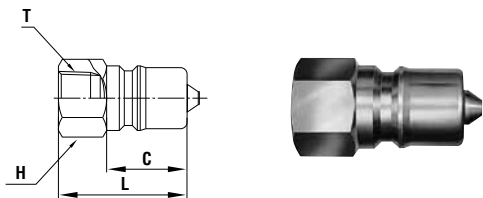
Model	2SP-V	3SP-V	4SP-V	6SP-V
Volume of air	1.0	2.4	3.2	10.5

Flow Rate – Pressure Loss Characteristics

[Test conditions] • Fluid : Water • Temperature: 24°C ± 6°C

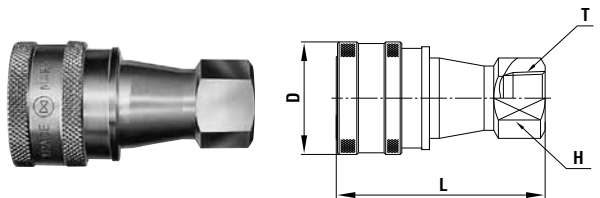


Plug Female thread



Model	Application	Mass (g)		Dimensions (mm)			
		Brass	Stainless steel	L	H(WAF)	C	T
2P-V	R 1/4	39	34	36	Hex.17	22	Rc 1/4
3P-V	R 3/8	67	59	40	Hex.21	25	Rc 3/8
4P-V	R 1/2	123	118	44	Hex.29	28	Rc 1/2
6P-V	R 3/4	211	202	52	Hex.35	36	Rc 3/4

Socket Female thread



Model	Application	Mass (g)		Dimensions (mm)			
		Brass	Stainless steel	L	øD	H(WAF)	T
2S-V	R 1/4	136	127	58	(28)	19	Rc 1/4
3S-V	R 3/8	217	197	65	(35)	21	Rc 3/8
4S-V	R 1/2	421	393	72	(45)	29	Rc 1/2
6S-V	R 3/4	709	658	88	(55)	35	Rc 3/4

• The sleeve shape of 4S-V and 6S-V differs from that of the above photo.

Seal Materials for Refrigerants

Various eco-friendly refrigerants for air conditioner and refrigerator have been developed. Nitto Kohki, having invested years in the research and development of excellent seal materials to withstand refrigerants and refrigerant oils, has made early attempts to develop and manufacture the seal materials for these eco-friendly refrigerants.

	Seal material	
	Hydrogenated nitrile rubber	Chloroprene rubber
Mark	HNBR (H708)	CR (C308)
Features	Resistant to hydrofluorocarbons (HFC-134a, HFC-407C, HFC-410A, HFC-404A), and PAG type and ester type oils. Also resistant to heat up to 120°C	Excellent resistance to hydrofluorocarbons (HCFC-22 and HFC-134a)
Application	Refrigerator production lines Air conditioner production lines	Air conditioner production lines

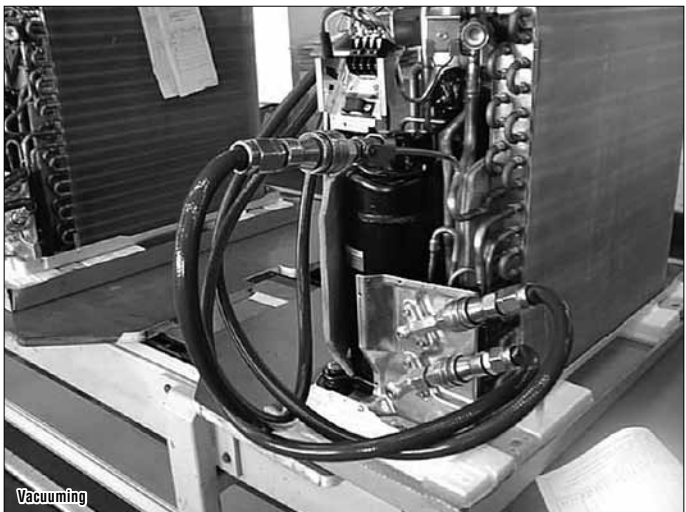
Comparison of External Appearance

When two different gases are used simultaneously in the production lines, SP-V-GN type and SP-V-GNN type (non-interchangeable with standard SP-V and each others) may be required in order to prevent connections to improper lines by mistakes. They are made-to-order items. For details please contact Nitto Kohki direct or its distributor in your country.

	Socket	Plug
SP-V Cupla		
SP-V-GN Cupla		
SP-V-GNN Cupla		

X indicates incompatibility.

Application Example



For Inert Gas and Vacuum

PCV Pipe Cupla

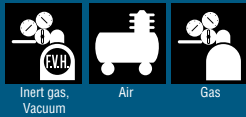
For connection to copper pipes

Working pressure

4.5
4.5 MPa
(46 kgf/cm²)

Valveless

Applicable fluids



Clamps directly on straight copper pipes !
Double seal construction withstands a vacuum of up to 1.3×10^{-1} Pa.

- Clamps directly on to a straight copper pipe eliminating unnecessary welding or flaring.
- Withstands a vacuum of up to 1.3×10^{-1} Pa (when connected) making it possible to be used in leak testing, evacuation and refrigerant gas charge.
- Select from three standard types of seal materials to be used with fluids for air conditioner and refrigerator production lines. Many models to suit various pipe sizes.
- One lever operation simultaneously clamps and seals pipe. Double seal construction for tight fit on end and outside surface of pipe ensures excellent sealing and vacuum resistance.



Wide variations of end configurations; 1/4", 3/8" and blind plug

Standard seal materials fluoro rubber (FKM), hydrogenated nitrile rubber (HNBR) and chloroprene rubber (CR) to suit air conditioner and refrigerator production lines

Double seal design for tight fit on both end and outside of pipe

Many models to cover various pipe sizes

One lever operation simultaneously clamps and seals pipe

For exclusive use on straight copper pipes

Specifications

Model	PCV400	PCV470	PCV500	PCV600	PCV630	PCV800	PCV950	PCV1000	PCV1270	PCV1590
Copper pipe OD	ø4.0	ø4.76 (3/16")	ø5.0	ø6.0	ø6.35 (1/4")	ø8.0 (5/16")	ø9.52 (3/8")	ø10.0	ø12.7 (1/2")	ø15.88 (5/8")
Body material	Brass									
Working pressure	MPa	4.5								
	kgf/cm ²	46								
	bar	45								
	PSI	653								
Seal material	Seal material	Mark	Working temperature range	Remarks						
Working temperature range	Chloroprene rubber	CR (C308)	-20°C to +80°C	Standard material						
	Fluoro rubber	FKM (X-100)	-20°C to +180°C	Standard material						
	Hydrogenated nitrile rubber	HNBR (H708)	-20°C to +120°C	Standard material						

* Hydrogenated nitrile rubber (HNBR) is colored in blue for easy recognition.

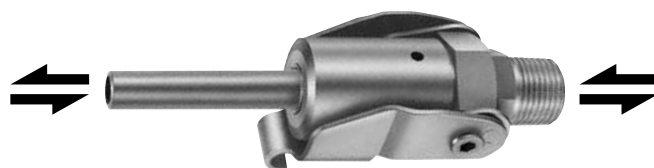
Max. Tightening Torque

Nm (kgf·cm)

Size (Thread)	1/4"	3/8"
Torque	9 (92)	12 (122)

Flow Direction

Fluid may flow in either direction from plug or from socket side when coupled.



Min. Cross-Sectional Area

(mm²)

Model	PCV400	PCV470	PCV500	PCV600	PCV630	PCV800
Min. cross-sectional area	3.8	3.8	3.8	9.1	9.1	16.6
Model	PCV950	PCV1000	PCV1270-2	PCV1270-3	PCV1590-2	PCV1590-3
Min. cross-sectional area	16.6	16.6	50.3	73.9	50.3	78.5

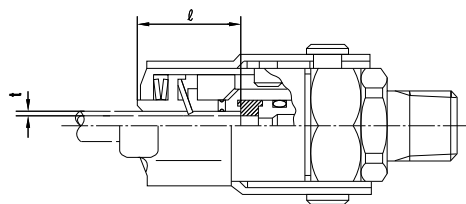
Suitability for Vacuum

1.3×10^{-1} Pa { 1×10^{-3} mmHg}

Cupla only	When connected to a pipe
—	Operational

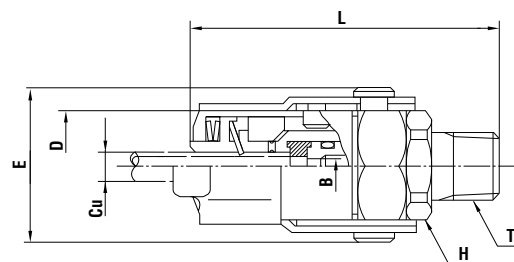
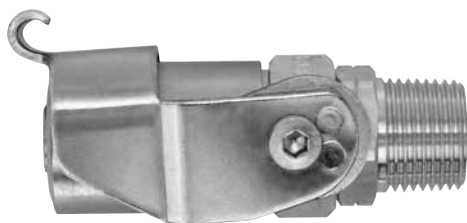
Insert Length of Pipe into Cupla and Essential Thickness of Pipe Wall

(mm)



Items with asterisk (*) are made-to-order products.

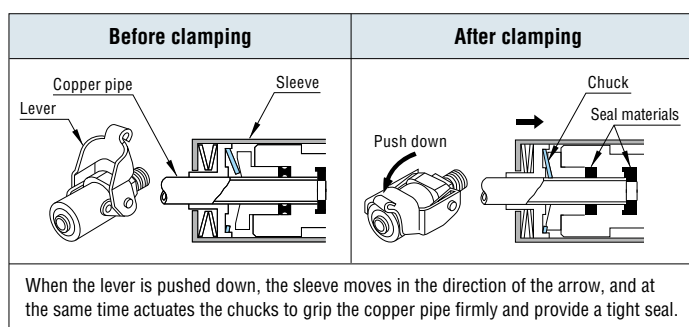
Model	Insert length of pipe into Cupla (ℓ)	Essential thickness of pipe wall (t)
PCV400*	19	Minimum 0.8
PCV470		
PCV500*		
PCV600		
PCV630	20.5	Minimum 0.8
PCV800		
PCV950		
PCV1000*		
PCV1270	30	Minimum 1.0
PCV1590		



Model	Pipe OD (Cu)	Model	Size (T)	Mass (g)	Dimensions (mm)				
					L	H(WAF)	øB	øD	E
PCV400*	ø4.0	PCV400-2	R 1/4	155	(59)	Hex.17	2.2	22.2	(32.5)
		PCV400-3	R 3/8	155	(60)	Hex.19			
PCV470	ø4.76 (3/16")	PCV470-2	R 1/4	155	(60)	Hex.17	2.2	22.2	(32.5)
		PCV470-3	R 3/8	160	(61)	Hex.19			
		PCV470-0	Blind plug	160	(47)	—	—		
PCV500*	ø5.0	PCV500-2	R 1/4	155	(59)	Hex.17	2.2	22.2	(32.5)
		PCV500-3	R 3/8	155	(60)	Hex.19			
PCV600	ø6.0	PCV600-2	R 1/4	150	(60)	Hex.17	3.4	22.2	(32.5)
		PCV600-3	R 3/8	155	(61)	Hex.19			
		PCV600-0	Blind plug	155	(47)	—	—		
PCV630	ø6.35 (1/4")	PCV630-2	R 1/4	145	(60)	Hex.17	3.4	22.2	(32.5)
		PCV630-3	R 3/8	150	(61)	Hex.19			
		PCV630-0	Blind plug	150	(47)	—	—		
PCV800	ø8.0 (5/16")	PCV800-2	R 1/4	175	(62)	Hex.17	4.6	24.8	(35.5)
		PCV800-3	R 3/8	180	(63)	Hex.19			
		PCV800-0	Blind plug	185	(50)	—	—		
PCV950	ø9.52 (3/8")	PCV950-2	R 1/4	175	(62)	Hex.17	4.6	24.8	(35.5)
		PCV950-3	R 3/8	180	(63)	Hex.19			
		PCV950-0	Blind plug	180	(50)	—	—		
PCV1000*	ø10.0	PCV1000-2	R 1/4	155	(62)	Hex.17	4.6	24.8	(35.5)
		PCV1000-3	R 3/8	155	(63)	Hex.19			
PCV1270	ø12.7 (1/2")	PCV1270-2	R 1/4	470	(80)	Hex.24	8.0	34.8	(45.0)
		PCV1270-3	R 3/8	465	(81)	Hex.24	9.7		
		PCV1270-0	Blind plug	475	(68)	—	—		
PCV1590	ø15.88 (5/8")	PCV1590-2	R 1/4	424	(80)	Hex.24	8.0	34.8	(45.0)
		PCV1590-3	R 3/8	435	(81)	Hex.24	10.0		
		PCV1590-0	Blind plug	445	(68)	—	—		

* For mass with a plug, add (brass body) 2P-V : 39 g, 3P-V : 67 g, (stainless steel body) 2P-V : 34 g, or 3P-V : 59 g * Available on request

Clamping Mechanism



Application Example



Before use, please be sure to read "Safety Guide" described at the end of this book and "Instruction Sheet" that comes with the products.