

# Refrigeration • Automotive • Air conditioning

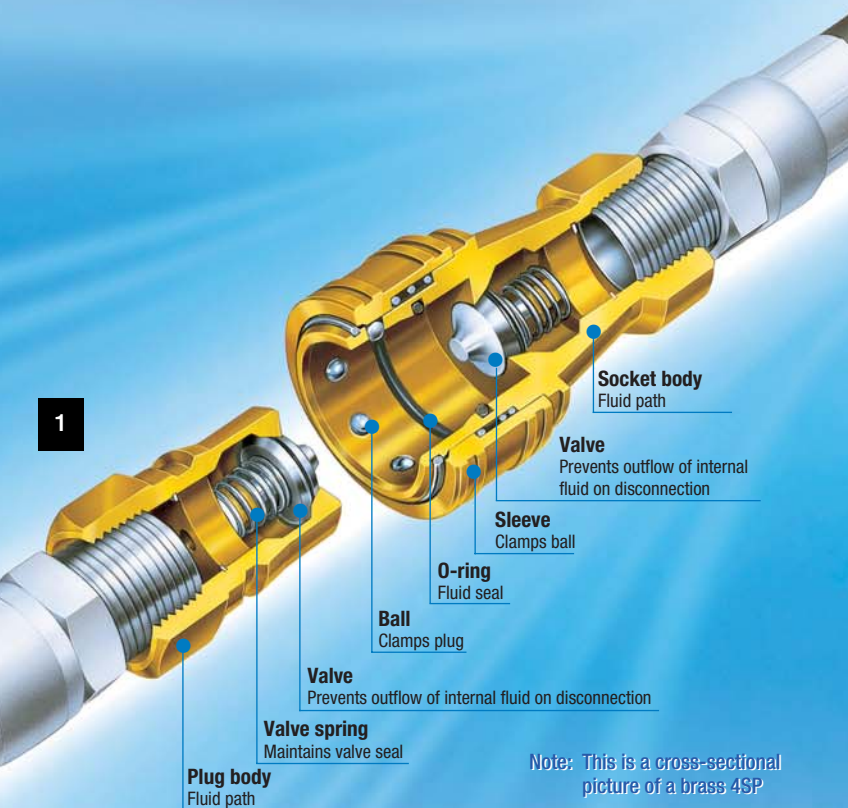
# Cupla Series





# Nitto Kohki's unique technologies and dedicated research have been proven by numerous patents, which led to the development of 25,000 different Cupla variations.

- From general household use to high-tech industrial applications in oceanic and space development
- Diameters range from a tiny 2.5mm to a huge 540mm
- Bodies of steel, brass, plastic, aluminum and stainless steel
- "Cupla" is the world brand that answers all user needs in all industries



Note: This is a cross-sectional picture of a brass 4SP

## For replacements:

Replacements of pneumatic/hydraulic tools, pneumatic/hydraulic cylinders, mold attachments, etc.

## For testing:

Vacuum, pressure, leakage, running tests, etc.

## For filling:

For filling all types of industrial gases, including inert gases, nitrogen, LPG, carbon dioxide, oxygen, fuel gas, etc.

## For maintenance:

For maintenance of computer cooling equipment, hydraulic cylinders on diecasting machines.

## For conveying:

For conveying solid items such as screws and nuts as well as connecting electric power cables.

## For joining:

Applications other than the conveying of fluids include connections for holding and moving the work, such as fishing rod joints and compact disks.

CUPLA is a registered trademark of Nitto Kohki Co., Ltd.

# CUPLA

## Beware of Imitations

Similar products that invite misidentification or confusion with Nitto Kohki Cuplas, and products that claim to have compatible mating parts have recently appeared on the market.



Trademark No. 2075184

Even if it were possible to connect a Nitto Kohki Cupla with a coupling of another brand, Nitto Kohki cannot accept responsibility for any accident that may result. Nitto Kohki Cuplas are produced with unique tolerances and precision based on strict quality control and are not interchangeable with couplings made by other companies. Therefore, their use in connection with another brand of coupling is quite capable of causing sudden damage to the Cupla or personal injury.



Trademark No. 1605297



Trademark No. 1891027

When ordering and purchasing, please be sure to check that these marks are inscribed on Nitto Kohki Cupla products.

*A profusion of patented technology crystallized in global recognition of high quality and high performance*

## ISO 9001 and 14001 Certification Award

Quick-action fluid couplings, "Cuplas", produced as a crystallization of high-grade know-how nurtured in the fields of fluid engineering and materials engineering, and top level precision machining technology.

Having assessed the consistent quality assurance and control system ranging from design and development through procurement of materials, manufacture, assembly, and shipping, the Japan Quality Assurance Foundation, authority for inspection and registration, awarded us "ISO 9001", international standard for quality management systems, and "ISO14001", international standard for environment management systems intended to perform global environment preservation and pollution control.

High reliability built on unparalleled "high quality" and an unquestionable record of "productive capacity" for stable supply. Receiving overwhelming support from many users spread throughout the world as the top brand for fluid energy transmission and control.



## Explanation of Terms

### International System of Units (or SI units)

The units of measure described in this catalog are in SI units based on a new method of measurement. Note that the main, non-SI units (old units) are also provided as reference values in brackets {}.

#### ■ Body Material

This indicates the material used for the socket and plug that form the flow path through the Cupla. Some products have internal components of a different material. Please contact us for details.

#### ■ Packing Material

This indicates the material used to seal Cupla, usually O-rings.

##### <<Characteristics of Seals Used in O-rings>>

Packing Material		General Temperature Range (Note)	Characteristics
General Name (Symbol)	Nitto Symbol		
Nitrile butadiene rubber (NBR)	SG	-20°C ~ +80°C	Standard packing with excellent oil and water resistance. High nitrile is particularly oil resistant. Low nitrile has excellent low temperature resistance but less oil resistance.
Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C	For freezer oil resistant and alternate fluorocarbon resistant applications.
Fluoro-rubber (FKM)	X-100	-20°C ~ +180°C	Excellent heat resistance. Also oil and chemical resistant for wide-ranging uses.
Chloroprene rubber (CR)	C308	-20°C ~ +80°C	In addition to conventional properties, this is suitable for alternate fluorocarbon resistant applications.

Note: Usage temperature ranges may vary according to the characteristics of the Cupla even for packing of the same material.

#### ■ Working Temperature Range

This describes the minimum and maximum working temperature ranges for packing used in the Cuplas. However, Cuplas should not be consistently used at the maximum or minimum working temperatures. If you need consistent operation in these ranges, please consult with us.

#### ■ Size

This indicates the dimensions of the pipe screw.

#### ■ Automatic Shutoff Valves

This shows the structure of valves that open and shut automatically on detachment.

#### ■ Suitability for Vacuum Uses

This indicates whether the performance required for vacuum applications is present.

Note: that this is different for connection and disconnection.

#### ■ Pressure

##### Maximum Usage Pressure

This indicates the tolerance value of normally applied pressure when continuously using Cuplas.

##### Pressure Durability

This indicates the limit value of pressure under which the performance of the Cuplas will not be hindered, even when pressures suddenly rise. However, the Cuplas cannot be used continuously under those pressures.

#### ■ Pressure Loss

This indicates a reduced pressure value occurring when flowing fluid through the Cuplas.

#### ■ Minimum Sectional Area

This indicates the minimum sectional area of the fluid path when the Cuplas are connected.

#### ■ Interchangeability

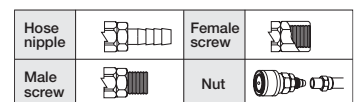
This indicates that the two Cupla products can be connected with no loss of basic performance regardless of the connecting shape and size of the sockets and plugs.

#### ■ Maximum Tightening Torque

Considering a balance between leakage and endurance when fitting a Cupla, this indicates the proper torque to be applied with tightening.

## Things to Consider When Selecting Cuplas

<b>Fluid Type and Temperature</b>	Select a Cupla with body material and packing material that suit the fluid type and temperature.	There are different body materials and packing materials to suit different fluids. For example, we recommend steel Hi Cuplas for air and brass or stainless steel for water.
<b>Fluid Pressure</b>	Select a Cupla with a pressure resistance that suits the fluid pressure.	Fluid pressure is a key to Cupla selection. Series of hydraulic Cuplas have different structures to cope with pressure resistances ranging between 5.0MPa {51kgf/cm <sup>2</sup> } to 68.6MPa {700kgf/cm <sup>2</sup> }.
<b>Automatic Shut-off Valve Structure</b>	Select a Cupla with a valve structure that suits the piping application.	Valve structures may be two-way shut-off, one-way shut-off, or straight through types. Choose carefully. Unless it is a two-way shut-off type, the internal fluid will flow out when the Cupla is disconnected.
<b>Cupla Operating Environment</b>	Select a Cupla with structure and materials that suit the operating environment.	Consider temperature, dirt and dust and corrosion in the operating environment when choosing the type of Cupla, body material and packing.
<b>Size and Type of Connections</b>	Finally, be careful to specify the size and type of the connections.	Having verified the type and material for the Cupla, specify the size and type of connection to suit the type of piping. Choose carefully because the size affects fluid flow rates.



Note: Type and size may be limited by the type of Cupla.

For air, nitrogen gas, refrigerator oil, coolant gas refilling, vacuum pulling and helium tests

Greatly contributes to rationalizing filling and inspection work on refrigerators, air conditioners and vehicle related devices!!






Name and Type	External Appearance	Body Material	Size	Characteristics/Use	Page No.
Vacuum/coolant Type <b>SP-V Type</b>		Brass Stainless steel	1/4", 3/8" 1/2", 3/4"	<ul style="list-style-type: none"> <li>Product developed specially for vacuums and Freon refilling.</li> <li>Has packing material that handles Freon substitutes.</li> </ul>	5-6
★ Double O-ring Type <b>S-V-W Type</b>		Brass Stainless steel	1/4", 3/8" 1/2", 3/4"	<ul style="list-style-type: none"> <li>Employs a double-packing structure on the SP-V type Coupla socket.</li> <li>Employs a double-O-ring packing to improve sealing when connected for excellent air-tightness and vacuum resistance.</li> </ul>	6
★ Non-interchangeable with the SP-V <b>SP-V-GN Type</b>		Brass Stainless steel	1/4", 3/8" 1/2", 3/4"	<ul style="list-style-type: none"> <li>Prevents misconnections in lines comprising both new and old coolants.</li> <li>One groove is established in the spanner surface to differentiate from the SP-V type.</li> </ul>	7-8
★ Double-packing Version of the SP-V-GN <b>S-V-GN-W Type</b>		Brass Stainless steel	1/4", 3/8" 1/2", 3/4"	<ul style="list-style-type: none"> <li>Employs a double-packing structure in the SP-V-GN Coupla socket.</li> <li>Employs double-O-ring packing to improve sealing when connected for excellent air-tightness and vacuum resistance.</li> </ul>	8
For Connection to Straight Aluminum-copper Piping <b>PCV Type</b>		Brass	Copper pipe diameter 4mm ~ 5/8"	<ul style="list-style-type: none"> <li>Detachable with no pipe forming.</li> <li>Perfect for pressure testing, vacuums and Freon gas filling.</li> </ul>	9-10
For Connection to Straight Aluminum-copper Piping <b>PCVH Type</b>		Brass	Copper pipe diameter 4mm ~ 5/8"	<ul style="list-style-type: none"> <li>Lever shape changed to improve operability to handle the high pressures of new coolants.</li> </ul>	11-12
★ Triple-packing Version of the PCVH <b>PCVH-W Type</b>		Brass	Copper pipe diameter 4mm ~ 5/8"	<ul style="list-style-type: none"> <li>Employs triple-packing structure in the PCVH Coupla.</li> <li>Employs a double-O-ring packing to improve sealing when connected for excellent air-tightness and vacuum resistance.</li> </ul>	12
★ For Direct Connection with Male Screws <b>PCS Type</b>		Steel (Part stainless steel and brass)	7/16, 5/8UNF	<ul style="list-style-type: none"> <li>One-touch connection to male screws.</li> <li>Safe design to securely fasten when connecting.</li> </ul>	13
★ High Pressure Resistant Version of the PCS <b>PCS-HP Type</b>		Steel (Part stainless steel and brass)	7/16 ~ 11/16UNF	<ul style="list-style-type: none"> <li>Advanced pressure resistance to handle new coolants.</li> </ul>	14
★ Bellows Type Version of the PCS <b>PCSB Type</b>		Steel (Part stainless steel and brass)	7/16, 5/8, 3/4UNF	<ul style="list-style-type: none"> <li>Employs a slide-ring with bellows to reduce O-ring swinging resistance that accompanies cleaning of grease using Freon.</li> </ul>	15
★ Screws onto Male thread <b>NCF Type</b>		Stainless steel	UNF screw M screw	<ul style="list-style-type: none"> <li>Easy, direct-screw-in to male screws.</li> <li>Packing employs specially designed "stepped-lip packing."</li> </ul>	16
★ For gas charging <b>CS Type</b>		Stainless steel (Part stainless steel and brass)	1/4", 3/8"	<ul style="list-style-type: none"> <li>Connects to SP-V type plug.</li> <li>Detachable under pressure.</li> </ul>	17
★ High Pressure Resistant Version of the CS <b>CS-HP Type</b>		Stainless steel (Part stainless steel and brass)	1/4", 3/8"	<ul style="list-style-type: none"> <li>Advanced pressure resistance to handle new coolants.</li> </ul>	18
★ For Gas Charging (With purge function) <b>CNR Type</b>		Stainless steel (Part stainless steel and brass)	3/8", 1/2"	<ul style="list-style-type: none"> <li>Connects to SP-V type plug.</li> <li>Detachable under pressure.</li> <li>Easy plug separation because residual pressure is purged by lifting lever.</li> </ul>	19
★ For Gas Charging <b>CNA Type</b>		Stainless steel (Part stainless steel and brass)	3/8"	<ul style="list-style-type: none"> <li>Employs an air-less structure to hold down the mixing of air when connecting and fluid leaks when separating.</li> </ul>	20
★ For Automatic Plug Disconnection <b>ACV Type</b>		Stainless steel (Part stainless steel and brass)	1/4", 3/8"	<ul style="list-style-type: none"> <li>Connects to SP-V type plug.</li> <li>Air drive to separate plug.</li> </ul>	21
★ High Pressure Resistant Version of the ACV <b>ACV-HP Type</b>		Stainless steel (Part stainless steel and brass)	1/4", 3/8"	<ul style="list-style-type: none"> <li>Advanced pressure resistance to handle new coolants.</li> </ul>	22
★ For Valve Opening/shutting and Separation <b>AC Type</b>		Stainless steel (Part stainless steel and brass)	1/4", 3/8"	<ul style="list-style-type: none"> <li>Connects to SP-V type plug.</li> <li>Air drive to connect and separate with plug and valve opening/shutting operation.</li> </ul>	23
★ High Pressure Resistant Version of the AC <b>AC-HP Type</b>		Stainless steel (Part stainless steel and brass)	3/8"	<ul style="list-style-type: none"> <li>Advanced pressure resistance to handle new coolants.</li> </ul>	24



# Pipe Cupla Series

# INDEX

Connects variety of pipe shapes.

Name and Type	External Appearance	Body Material	Size	Characteristics/Use	Page No.
★ For Expanded Pipes Spring clamp method <b>PCE Type</b>		Brass (Part stainless steel)	According to internally used pipe dimensions.	• Employs a spring clamp method to prevent damaging the locking portion.	26
★ For Expanded Pipes <b>PCB Type</b>		Brass Stainless steel	According to internally used pipe dimensions.	• Double-packing possible on the inner diameter portion and edge surface portion of the piping.	26
★ For Bulge Piping and Spool Piping <b>PCBW Type</b>		Brass Stainless steel	According to internally used pipe dimensions.	• Two-row ball lock system prevents pipe from falling over.	27
★ For Bulge Piping and Spool Piping <b>PCP Type</b>		Stainless steel (Part plastic)	According to internally used pipe dimensions.	• Employs plastic clamp to reduce pipe damage and to connect to plastic pipes for bulge piping and spool piping.	27
★ For Straight Pipes <b>PCBL Type</b>		Stainless steel (Part aluminum and brass)	According to internally used pipe dimensions.	• Structure uses balls to lock outer diameter of pipe to improve detachability using the lever.	28
★ For Straight Pipes <b>PCL Type</b>		Brass (Part steel)	According to internally used pipe dimensions.	• Structure uses a clamp to lock outer diameter of pipe to improve detachability using the lever.	28
★ For Straight Pipes <b>PCVH Type with Residual Pressure Release</b>		Brass (Part stainless steel and steel)	According to internally used pipe dimensions	• Standard PCVH Cupla equipped with residual pressure release. • Easy pipe separation because residual pressure is purged by lifting lever on residual pressure release.	29
★ For Straight Pipes <b>PCLB Type with Residual Pressure Release</b>		Brass (Part stainless steel and steel)	According to internally used pipe dimensions	• Employs ball lock system for pipe outer diameter. • Easy pipe separation because residual pressure is purged by lifting lever on residual pressure release.	29
★ For Expansion of Straight Pipes with Rubber Valves <b>PCW Type</b>		Brass (Part stainless steel and steel)	According to internally used pipe dimensions.	• Structure allows some variations in pipe dimensions.	30
★ For Large Diameter Straight Pipes <b>PCVC Type</b>		Brass (Part steel)	According to internally used pipe dimensions.	• To handle large diameter pipes and to improve pressure resistance.	30
★ For Special Pipes <b>PCD Type</b>		Stainless steel (Part aluminum)	According to internally used pipe dimensions.	• Handles wide range of uses for special pipes.	31
★ For Bead Pipes <b>PCH Type</b>		Stainless steel	According to internally used pipe dimensions.	• Employs collet clamp system for improved pressure resistance.	31
★ For Direct Connection with Female Screws <b>PCSI Type</b>		Stainless steel (Part aluminum)	According to internally used pipe dimensions.	• Employs a connectable female screw clamp for one-touch connection to female screws.	32
★ For Inner Diameter Tip Work <b>PCBI Type</b>		Stainless steel (Part aluminum)	According to internally used pipe dimensions.	• Employs inner wall ball lock system to lock inner diameter of leading end of work.	32
★ For Inner Diameter Tip Work <b>PCI Type</b>		Stainless steel (Part aluminum and steel)	According to internally used pipe dimensions.	• Employs inner clamp system to lock inner diameter of the leading end of work.	33
★ For Pipe Inner Wall Lock <b>PCIF Type</b>		Stainless steel	According to internally used pipe dimensions.	• Highly effective in narrow spaces because of the structure placing the clamp in the pipe inner wall.	33
★ Automatic Cupla for Pipes <b>APCB Type</b>		Stainless steel	According to internally used pipe dimensions.	• Air drive to separate pipes.	34
★ For New Car Cooler Coolants <b>PCB Type</b>		Brass (Part stainless steel)	For low pressure (M10 ¥1.5) For high pressure (M12 ¥1.75)	• Cupla for replenishing new car air conditioner coolant gas in vehicles.	34

\* Products listed on pages 3 and 4 with star marks next to them are order made. Please contact us for details.

# SP-V Cupla

**Cupla for use with refrigerant, helium gas and vacuums, with automatic shut-off valves built-in to the socket plug.**

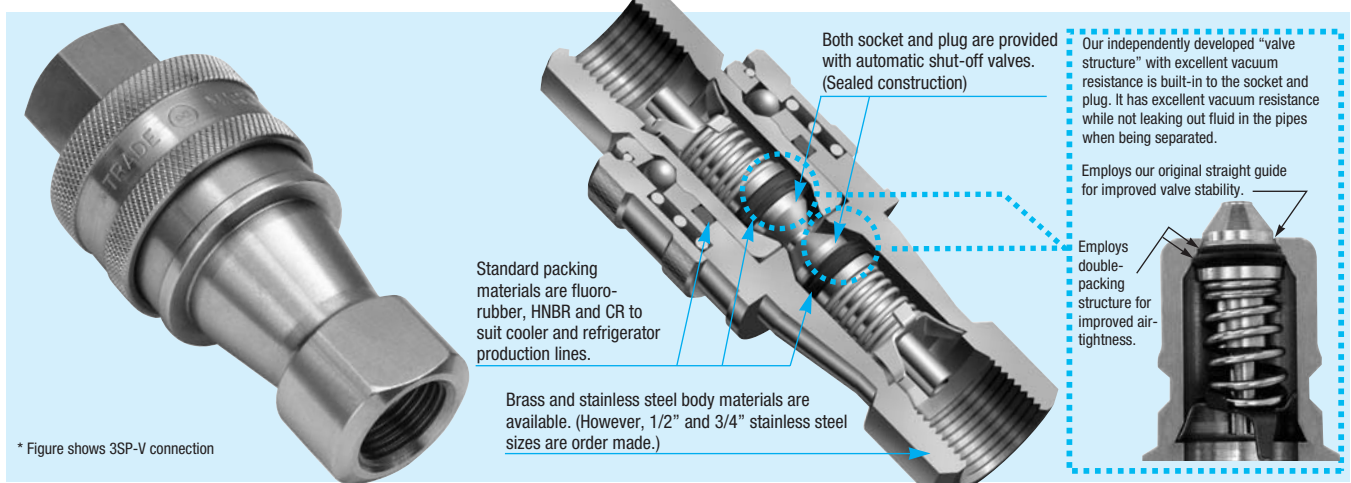
Excellent seal structure developed for use in replenishing refrigerant and for vacuums. Employs an automatic shut-off valve. Both sides of the socket and plug are completely sealed when separated. These are available for a wide variety of vacuums up to vacuums of  $1.3 \times 10^{-1}$  Pa ( $1 \times 10^{-3}$  mm Hg).

An abundance of main unit materials and packing materials are available to handle air conditioner and refrigerator production lines (vacuums, gas charging, inspections). Special packing materials are also available to handle new types of refrigerants.

## ■ Packing Materials for Freon Substitutes

Freon gas R11 – R12 is being replaced by a substitute Freon gas for use as the coolant gas in car air conditioners and refrigerators. Nitto Kohki, having invested years in the research and development of excellent packing materials to withstand Freon and refrigerator oils, has made early attempts to develop and to manufacture Freon substitute (R-134a, R-407C, R-410A and R-404A) packing materials.

	Packing Material	
	Hydrogen added nitrile butadiene rubber (HNBR)	Chloroprene rubber (CR)
Nitto Symbol	H708	C308
Feature	Resistant to Freon substitute HFC134a (HFC134a, HFC407C, HFC410A, HFC404A) and PAG type and ester type oils. Heat resistant to 120°C.	Excellent resistance to conventional Freon (R12 and R22) and Freon substitutes (HFC134a).
Use	Refrigerator production lines Air conditioner production lines	Air conditioner production lines



## ■ Specifications

Body Material	Brass (Standard Material)		Stainless Steel (Standard Material)	Stainless Steel (Order Made)
	1/4", 3/8"	1/2", 3/4"	1/4", 3/8"	1/2", 3/4"
Size	1/4", 3/8"	1/2", 3/4"	1/4", 3/8"	1/2", 3/4"
Maximum Pressure MPa (kgf/cm <sup>2</sup> )	5.0 {51}	3.0 {31}	7.5 {76}	4.5 {46}
Pressure Resistance MPa (kgf/cm <sup>2</sup> )	7.5 {76}	4.5 {46}	10.0 {102}	6.5 {66}
Packing Material	Packing Material	Nitto Symbol	Working Temp. Range	Remarks
	CR	C308	-20°C ~ +80°C	Standard Material
	FKM	X-100	-20°C ~ +180°C	Standard Material
Working Temperature Range	HNBR	H708	-20°C ~ +120°C	Standard Material

CR: Chloroprene rubber  
FKM: Fluoro-rubber  
HNBR: Hydrogen added nitrile butadiene rubber

## ■ Recommended Maximum Tightening Torque N·m(kgf·cm)

Screw size	1/4"	3/8"	1/2"	3/4"
	Torque Value	9 {92}	12 {122}	30 {306}
	Brass	14 {143}	22 {224}	60 {612}
	Stainless Steel			90 {918}

## ■ Minimum Sectional Area (mm<sup>2</sup>)

Product Code	2SP-V type	3SP-V type	4SP-V type	6SP-V type
Minimum Sectional Area	17	44	62	111

## ■ Suitability for Vacuum Applications $1.3 \times 10^{-1}$ Pa( $1 \times 10^{-3}$ mmHg)

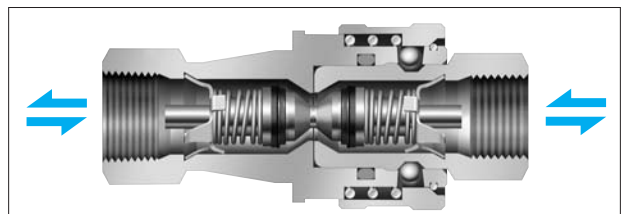
Socket Only	Plug Only	When Connected
●	●	●
● Suitable		

## ■ Admixture of Air on Connection (mℓ)

Product Code	2SP-V type	3SP-V type	4SP-V type	6SP-V type
Volume of Air	1.02	2.40	3.20	10.50

## ■ Direction of Fluid Flow

Fluid flows in either direction from plug or socket.



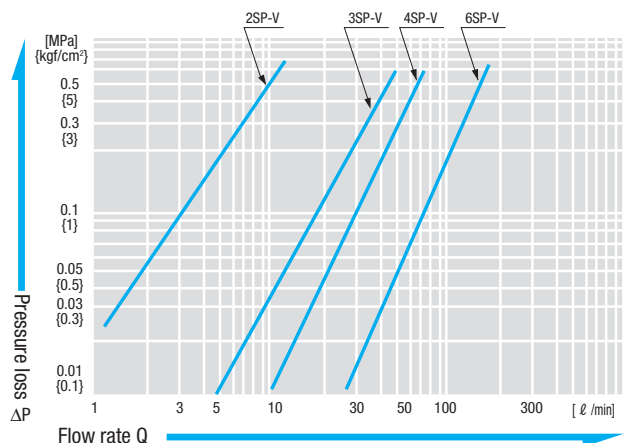
## ■ Interchangeability

Differing sizes are not interchangeable.

\* Interchangeable with SP Cupla, but consider flow rates.

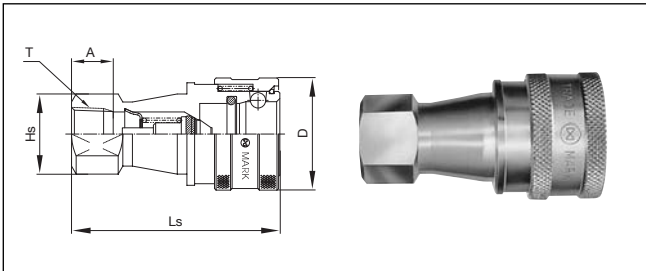
## ■ Flow Rate – Pressure Loss Characteristics

Measuring conditions • Fluid: Hydraulic fluid #46 • Temperature: 30°C ±5°C  
• Kinematic viscosity  $46 \times 10^{-6}$ m<sup>2</sup>/s  
• Specific gravity:  $0.8661 \times 10^3$ kg/m<sup>3</sup>



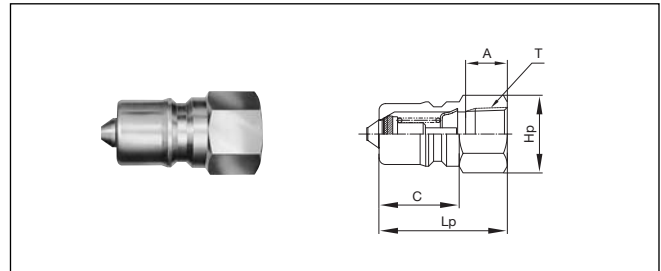
■ Product Codes and Dimensions Tables

**Socket**



Product Code	Application	Mass (g)		Dimensions (mm)				
		Brass	Stainless Steel	Ls	øD	Hs	A	T
2S-V	R1/4 (PT1/4)	136	127	58	28	2 Face 19 x ø22	13	Rc1/4
3S-V	R3/8 (PT3/8)	217	197	65	35	2 Face 21 x ø25	13	Rc3/8
4S-V	R1/2 (PT1/2)	421	393	72	45	2 Face 29 x ø35	15	Rc1/2
6S-V	R3/4 (PT3/4)	709	658	88	55	2 Face 35 x ø41	17	Rc3/4

**Plug**



Product Code	Application	Mass (g)		Dimensions (mm)				
		Brass	Stainless Steel	Lp	Hp	C	A	T
2P-V	R1/4 (PT1/4)	39	34	36	Hex 17	22	13	Rc1/4
3P-V	R3/8 (PT3/8)	67	59	40	Hex 21	25	13	Rc3/8
4P-V	R1/2 (PT1/2)	123	118	44	Hex 29	28	15	Rc1/2
6P-V	R3/4 (PT3/4)	211	202	52	Hex 35	36	17	Rc3/4

■ Examples of Cuplas in Use



Double O-ring Version of the SP-V Cupla

# S-V-W Cupla

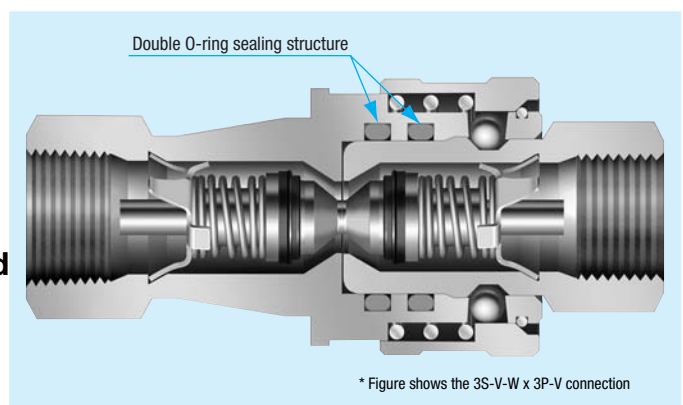
**Employs a double O-ring sealing structure to handle new refrigerant and high air-tightness. Highly effective air-tightness and vacuum resistance when connected!**

■ Specifications

\* Same specifications as the SP-V Cupla.  
See the SP-V Cupla specifications.

■ Dimensions

\* Same dimensions as the SP-V Cupla.  
See the SP-V Cupla dimensions.



■ Product Codes Display Method

\* W is added to the end of the SP-V Cupla socket product code.

Product Code	Application
2S-V-W	R1/4 (PT1/4)
3S-V-W	R3/8 (PT3/8)
4S-V-W	R1/2 (PT1/2)
6S-V-W	R3/4 (PT3/4)



Non-interchangeable with the SP-V Cupla

# SP-V-GN Cupla

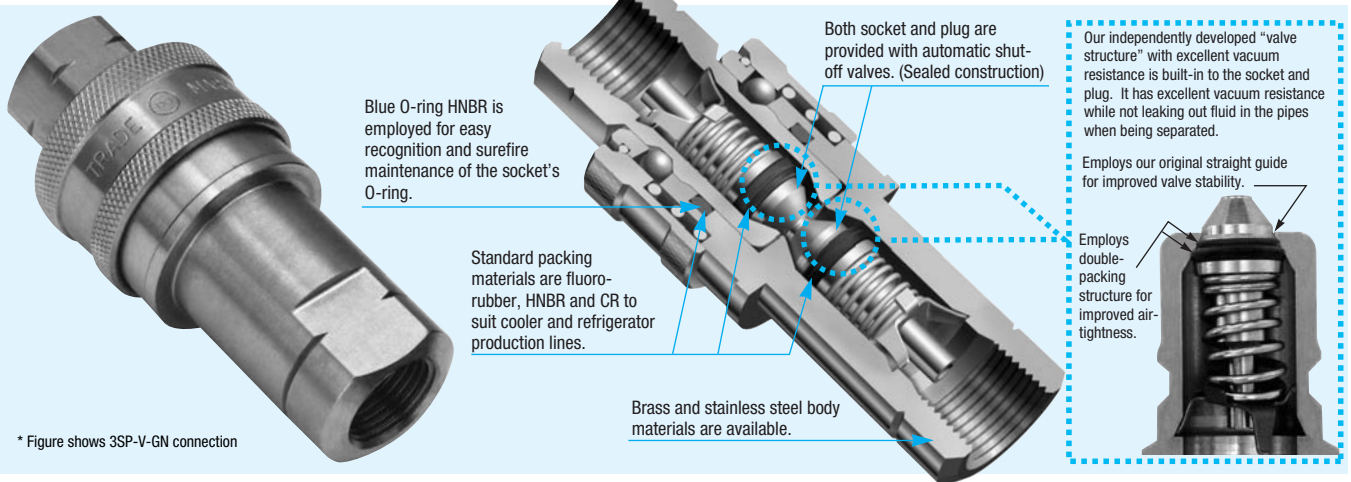
**Prevents misconnections in lines carrying both Freon and Freon substitute.**

There is a possibility of damaging equipment or products if the refrigerating oil for new refrigerant and the refrigerating oil for old coolants become mixed together.

- The structure that disallows interchangeability with the SP-V Cupla prevents any misconnections with the SP-V Cupla.
- The external shape of the socket and one groove is established in the spanner surface to differentiate with the SP-V Cupla. The plug is established with a groove in the spanner surface.

## Comparison of External Appearance

	Socket (S)	Plug (P)
SP-V Cupla		
SP-V-GN Cupla		
SP-V-GNN Cupla		



\* Figure shows 3SP-V-GN connection

## Specifications

Body Material	Brass		Stainless Steel	
	1/4", 3/8"	1/2", 3/4"	1/4", 3/8"	1/2", 3/4"
Size	1/4", 3/8"	1/2", 3/4"	1/4", 3/8"	1/2", 3/4"
Maximum Pressure MPa (kgf/cm <sup>2</sup> )	5.0 {51}	3.0 {31}	7.5 {76}	4.5 {46}
Pressure Resistance MPa (kgf/cm <sup>2</sup> )	7.5 {76}	4.5 {46}	10.0 {102}	6.5 {66}
Packing Material	Packing Material	Nitto Symbol	Working Temp. Range	Remarks
	CR	C308	-20°C ~ +80°C	Standard Material
Working Temperature Range	FKM	X-100	-20°C ~ +180°C	Standard Material
	HNBR	H708	-20°C ~ +120°C	Standard Material

CR: Chloroprene rubber  
FKM: Fluoro-rubber  
HNBR: Hydrogen added nitrile butadiene rubber

## Recommended Maximum Tightening Torque N·m(kgf·cm)

Screw Size	1/4"	3/8"	1/2"	3/4"
	Torque Value	9 {92}	12 {122}	30 {306}
	14 {143}	22 {224}	60 {612}	90 {918}

## Minimum Sectional Area (mm<sup>2</sup>)

Product Code	2SP-V-GN type	3SP-V-GN type	4SP-V-GN type	6SP-V-GN type
Minimum Sectional Area	17	44	62	111

## Suitability for Vacuum Applications 1.3 × 10<sup>-1</sup>Pa(1×10<sup>-3</sup>mmHg)

Socket Only	Plug Only	When Connected
●	●	●

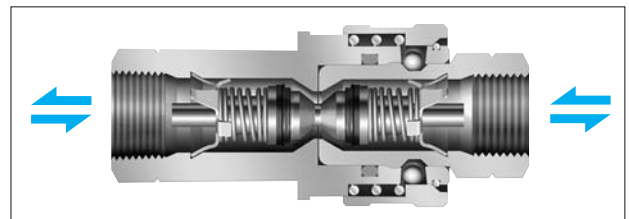
● Suitable

## Admixture of Air on Connection (mℓ)

Product Code	2SP-V-GN type	3SP-V-GN type	4SP-V-GN type	6SP-V-GN type
Volume of Air	1.02	2.40	3.20	10.50

## Direction of Fluid Flow

Fluid flows in either direction from plug or socket.



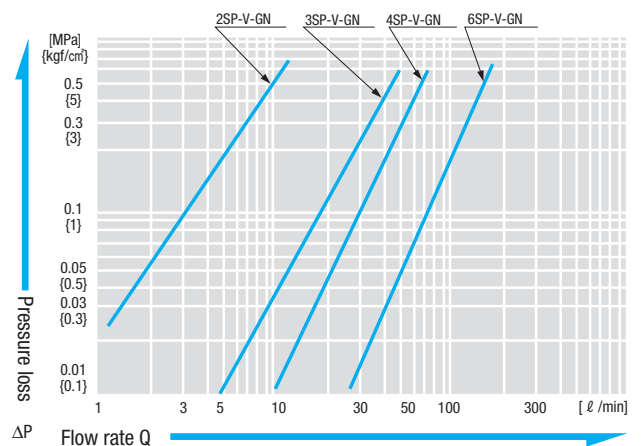
## Interchangeability (See details on the page at right.)

Differing sizes are not interchangeable.

\* Connection with the SP-V Cupla is not possible.

## Flow Rate – Pressure Loss Characteristics

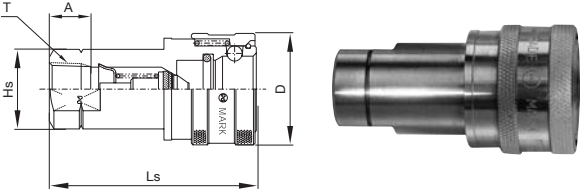
Measuring conditions • Fluid: Hydraulic fluid #46 • Temperature: 30°C ±5°C  
• Kinematic viscosity 46 × 10<sup>-6</sup>m<sup>2</sup>/s  
• Specific gravity: 0.8661 × 10<sup>3</sup>kg/m<sup>3</sup>





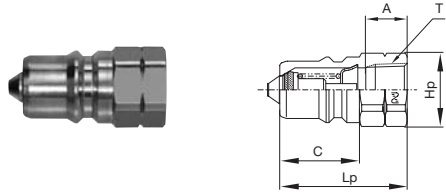
■ **Product Codes and Dimensions Tables**

**Socket**



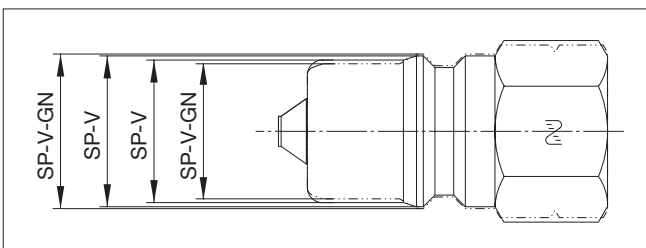
Product Code	Application	Dimensions (mm)				
		Ls	øD	Hs	A	T
2S-V-GN	R1/4 (PT1/4)	58	28	2 Face 19 x ø22	13	Rc1/4
3S-V-GN	R3/8 (PT3/8)	65	35	2 Face 21 x ø25	13	Rc3/8
4S-V-GN	R1/2 (PT1/2)	72	45	2 Face 29 x ø35	15	Rc1/2
6S-V-GN	R3/4 (PT3/4)	88	55	2 Face 35 x ø41	17	Rc3/4

**Plug**



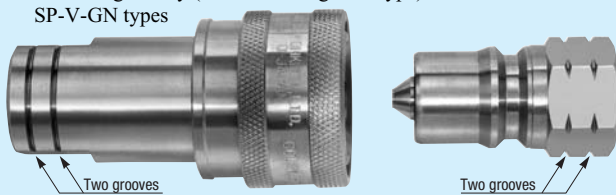
Product Code	Application	Dimensions (mm)				
		Lp	Hp	C	A	T
2P-V-GN	R1/4 (PT1/4)	36	Hex 17	22	13	Rc1/4
3P-V-GN	R3/8 (PT3/8)	40	Hex 21	25	13	Rc3/8
4P-V-GN	R1/2 (PT1/2)	44	Hex 29	28	15	Rc1/2
6P-V-GN	R3/4 (PT3/4)	52	Hex 35	36	17	Rc3/4

■ **Detailed Comparison of the SP-V and SP-V-GN Plugs**



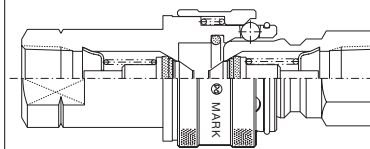
**SP-V-GNN Cupla**

\* We also manufacture the SP-V-GNN type which has no interchangeability (non-interchangeable type) with the SP-V and SP-V-GN types



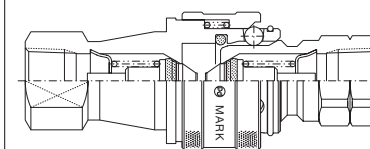
■ **Interchangeability**

**When inserting a SP-V type plug into a SP-V-GN type socket**



Because the inner diameter of the socket packing on the SP-V-GN type is smaller than the outer diameter on the leading end of the SP-V type insertion plug, the plug cannot be inserted any further, as shown in the figure at left. Thus, it cannot be connected and the valves built-in to the socket and plug do not open.

**When inserting a SP-V-GN type plug into a SP-V type socket**



Because the inner diameter of the SP-V type socket inlet is smaller than the maximum outer diameter on the SP-V-GN type insertion plug, the plug cannot be inserted any further, as shown in the figure at left. Thus, it cannot be connected and the valves built-in to the socket and plug do not open.

**Double-packing Version of the SP-V Cupla**

**S-V-GN-W Cupla**

Employs a double O-ring structure in the SP-V-GN Cupla socket to handle high air-tightness.

Highly effective air-tightness and vacuum resistance when connected!

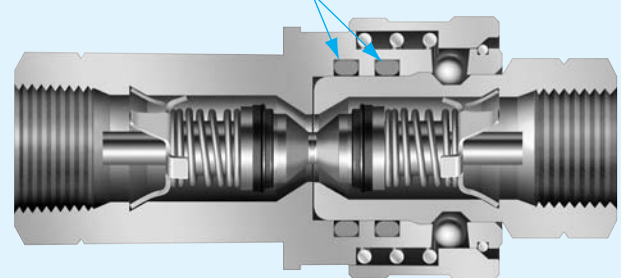
■ **Specifications**

\* Same specifications as the SP-V-GN Cupla.  
See the SP-V-GN Cupla specifications.

■ **Dimensions**

\* Same dimensions as the SP-V-GN Cupla.  
See the SP-V-GN Cupla dimensions.

Double O-ring sealing structure



\* Figure shows the 3S-V-GN x 3P-V-GN connection

■ **Product Codes Display Method**

\* W is added to the end of the SP-V-GN Cupla socket product code.

Product Code	Application
2S-V-GN-W	R1/4
3S-V-GN-W	R3/8
4S-V-GN-W	R1/2
6S-V-GN-W	R3/4

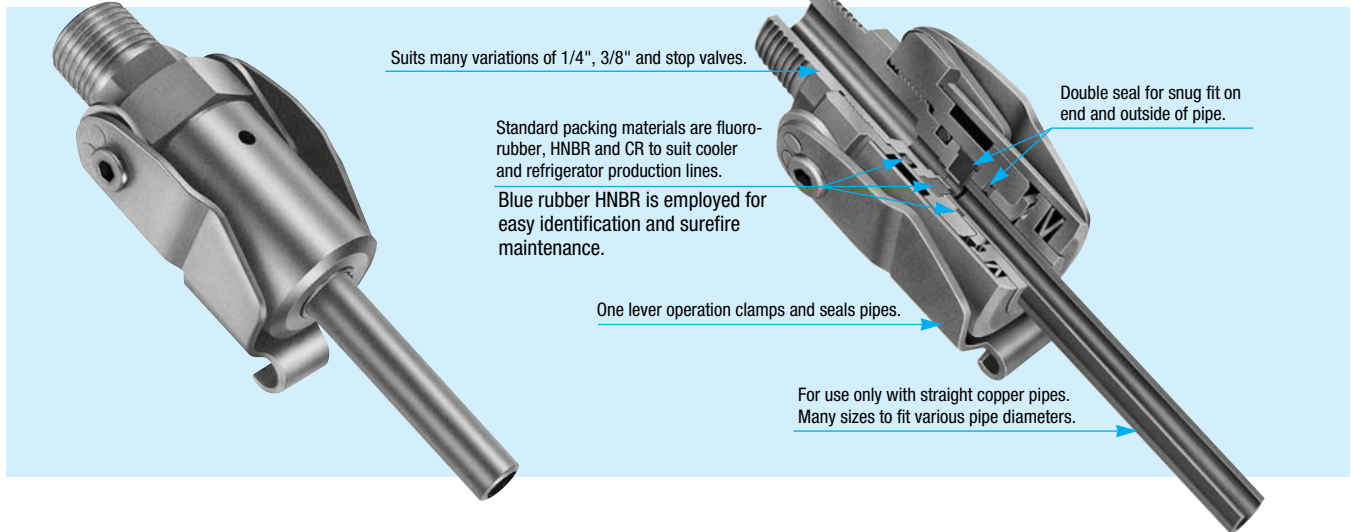
# PCV Pipe Cupla

**No welding, forming or tightening of pipes needed.**

**Clamps directly on straight copper pipes!!**

**Handles high pressure specifications for new refrigerants.**

- Clamps directly on straight copper pipes; no need for welding or flaring.
- Withstands vacuum of  $1.3 \times 10^{-1} \text{Pa}$  {  $1 \times 10^{-3} \text{ mmHg}$  } (when connected) to enable use in pressure testing, coolant gas filling and vacuums.
- An abundance of sizes and packing materials are available to handle air conditioner, refrigerator and package production lines. Special packing materials are also available to handle new types of coolants (R134A, R410A, and R407C).
- One lever operation clamps and seals pipes. Double seal construction for snug fit on end and outside surface of pipe ensures excellent sealing and vacuum resistance.



## Specifications

Product Code	PCV400	PCV470	PCV500	PCV600	PCV630	PCV800	PCV950	PCV1000	PCV1270	PCV1590
Copper Pipe Size	ø4.0	ø4.76 (3/16")	ø5.0	ø6.0	ø6.35 (1/4")	ø8.0 (5/16")	ø9.52 (3/8")	ø10.0	12.7 (1/2")	ø15.88 (5/8")
Body Material	Brass									
Maximum Working Pressure MPa (kgf/cm <sup>2</sup> )	4.5 {45}									
Pressure Resistance MPa (kgf/cm <sup>2</sup> )	5.0 {50}									
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range	Remarks						
	CR	C308	-20°C ~ +80°C	Standard Material						
	FKM	X-100	-20°C ~ +180°C	Standard Material						
	HNBR	H708	-20°C ~ +120°C	Standard Material						

CR: Chloroprene rubber

FKM: Fluoro-rubber

HNBR: Hydrogen added nitrile butadiene rubber

Note: Pressure resistance varies according to the precision of the pipe, its hardness, wall thickness and conditions of use. Use this after checking the details of the pipe

## Recommended Maximum Tightening Torque N·m(kgf·cm)

Mounting Screw Size	1/4"	3/8"
Torque Value	12 {122}	20 {204}

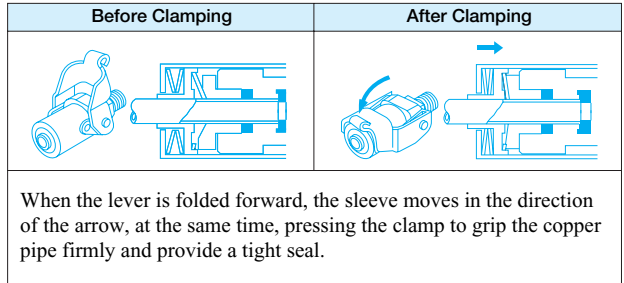
## Suitability for Vacuum Uses $1.3 \times 10^{-1} \text{Pa}$ { $1 \times 10^{-3} \text{ mmHg}$ }

Only When Connected to Pipe
● Suitable

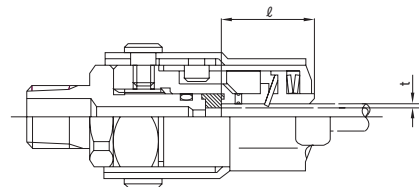
## Interchangeability

If the pipe size is the same, connection to the pipe is possible even if the mounting shapes are different. If the mating portion with the Cupla has the same dimensions, connection is possible even if the pipe is odd-shaped.

## Clamping Structure



## Pipe Insertion Length and Required Wall Thickness (mm)

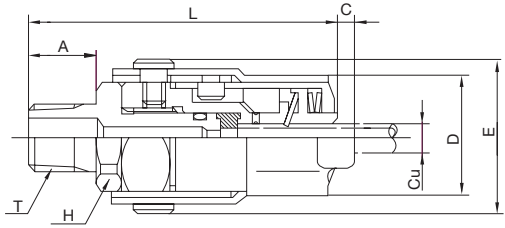
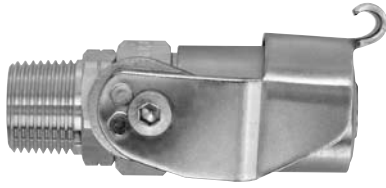


Product Code	Pipe Insertion Length ( ℓ )	Pipe Wall Thickness ( t )
PCV400	19	Min. 0.8
PCV470		
PCV500		
PCV600		
PCV630		
PCV800	20.5	
PCV950		
PCV1000	30	Min. 1.0
PCV1270		
PCV1590		

\* Please consult with us regarding short insertion lengths and thin wall types.



■ **Product Codes and Dimensions Tables**



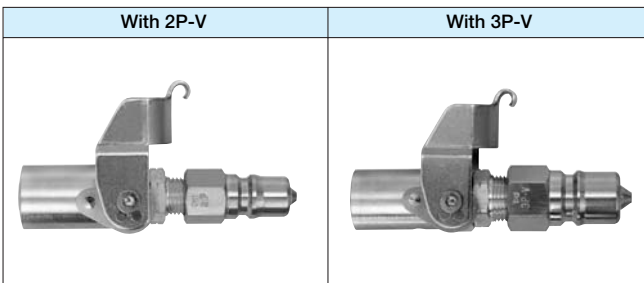
Product Code	Pipe Diameter (Cu)	Type	Screw Size (T)	Mass (g)	Dimensions (mm)					
					L	C	A	H	øD	E
* PCV400	ø4.0	PCV400-2	R1/4 (PT1/4)	102	60	3.0	12	Hex 17	26.0	32.4
		PCV400-3	R3/8 (PT3/8)	160	61	3.0	13	Hex 19		
PCV470	ø4.76 (3/16")	PCV470-2	R1/4 (PT1/4)	155	60	3.0	12	Hex 17	26.0	32.4
		PCV470-3	R3/8 (PT3/8)	160	61	3.0	13	Hex 19		
		PCV470-0	Stop Valve	160	47	3.0	—	Hex 14		
* PCV500	ø5.0	PCV500-2	R1/4 (PT1/4)	155	60	3.0	12	Hex 17	26.0	32.4
		PCV500-3	R3/8 (PT3/8)	155	61	3.0	13	Hex 19		
PCV600	ø6.0	PCV600-2	R1/4 (PT1/4)	153	60	3.0	12	Hex 17	26.0	32.4
		PCV600-3	R3/8 PT3/8)	161	61	3.0	13	Hex 19		
		PCV600-0	Stop Valve	161	48	3.0	—	Hex 14		
PCV630	ø6.35 (1/4")	PCV630-2	R1/4 (PT1/4)	152	60	3.0	12	Hex 17	26.0	32.4
		PCV630-3	R3/8 (PT3/8)	159	61	3.0	13	Hex 19		
		PCV630-0	Stop Valve	159	48	3.0	—	Hex 14		
PCV800	ø8.0 (5/16")	PCV800-2	R1/4 (PT1/4)	185	62	3.0	12	Hex 17	28.5	35.4
		PCV800-3	R3/8 (PT3/8)	190	63	3.0	13	Hex 19		
		PCV800-0	Stop Valve	190	50	3.0	—	Hex 17		
PCV950	ø9.52 (3/8")	PCV950-2	R1/4 (PT1/4)	181	62	3.0	12	Hex 17	28.5	35.4
		PCV950-3	R3/8 (PT3/8)	190	63	3.0	13	Hex 19		
		PCV950-0	Stop Valve	190	50	3.0	—	Hex 17		
* PCV1000	ø10.0	PCV1000-2	R1/4 (PT1/4)	181	62	3.0	12	Hex 17	28.5	35.4
		PCV1000-3	R3/8 (PT3/8)	190	63	3.0	13	Hex 19		
PCV1270	ø12.7 (1/2")	PCV1270-3	R3/8 (PT3/8)	465	81	4.5	13	Hex 24	39.0	45.0
		PCV1270-0	Stop Valve	475	68	4.5	—			
PCV1590	ø15.88 (5/8")	PCV1590-3	R3/8 (PT3/8)	435	81	4.5	13	Hex 24	39.0	45.0
		PCV1590-0	Stop Valve	445	68	4.5	—			

\* Add 2P-V: 39 g, 3P-V: 67 g for brass and 2P-V: 34 g, 3P-V: 59 g for stainless steel for the mass with plugs for each product code. Items marked \* are made-to-order products.

■ **PCV Pipe Cupla with Plugs**

\* Specify the plug type (SP-V, SP-V-GN), the body material and packing material when ordering.

\* Use lock-tite (medium strength 242) as standard for the plug mounting adhesive. Specify for other types.



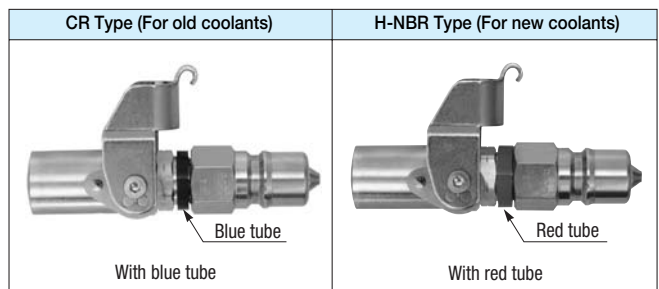
Elbow types are also available.



■ **PCV Pipe Cupla with Plugs (With Identifying Tube)**

\* PCV Pipe Cuplas assembled with colored tubes are available for easy identification of the packing material.

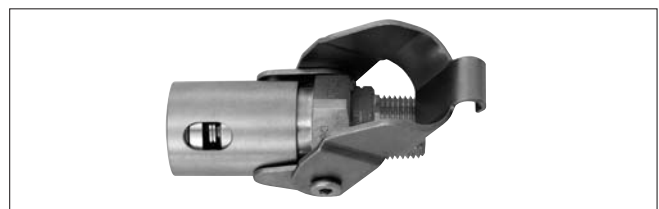
(Specify these products separately when required.)



■ **PCV Pipe Cupla (Sleeve with Moisture Escape Hole)**

\* When using as a water tank sealing pressure test:

We also manufacture the PCV Pipe Cupla that employs a special sleeve (sleeve with moisture escape hole) to make moisture extraction easier. Specify this product separately when required.



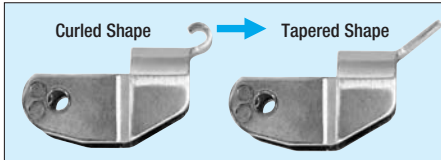
# PCVH Pipe Cupla

**Ergonomic lever shape to improve operability to handle the high pressures of new refrigerants.**

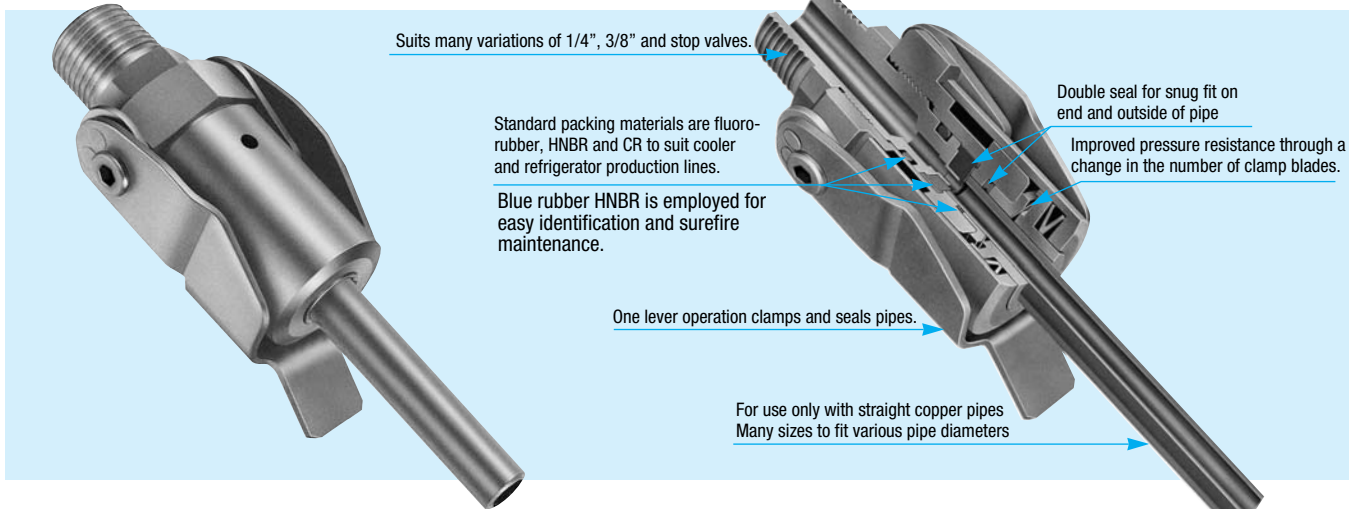
**No welding, forming or tightening of pipes needed.**

**Clamps directly on straight copper pipes!!**

- Lever handle shape changed from a curled shape to a tapered shape to improve operability.



- Clamps directly on straight copper pipes no need for welding or flaring.
- Withstands vacuum of  $1.3 \times 10^{-1}$  Pa ( $1 \times 10^{-3}$  mm Hg) (when connected) to enable use in pressure testing, coolant gas refilling and pulling vacuums.
- An abundance of sizes and packing materials are available to handle air conditioner and refrigerator production lines. Special packing materials are also available to handle new types of coolants (R134A, R410A, and R407C).
- One lever operation clamps and seals pipes. Double seal construction for snug fit on end and outside surface of pipe ensures excellent sealing and vacuum resistance.



## Specifications

Product Code	PCV400H	PCV470H	PCV500H	PCV600H	PCV630H	PCV800H	PCV950H	PCV1000H	PCV1270H	PCV1590H
Copper Pipe Size	ø4.0	ø4.76 (3/16")	ø5.0	ø6.0	ø6.35 (1/4")	ø8.0 (5/16")	ø9.52 (3/8")	ø10.0	12.7 (1/2")	ø15.88 (5/8")
Body Material	Brass									
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	4.5 {45}									
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	5.0 {50}									
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range	Remarks						
	CR	C308	-20°C ~ +80°C	Standard Material						
	FKM	X-100	-20°C ~ +180°C	Standard Material						
	HNBR	H708	-20°C ~ +120°C	Standard Material						

CR: Chloroprene rubber

FKM: Fluoro-rubber

HNBR: Hydrogen added nitrile butadiene rubber

Note: Pressure resistance varies according to the precision of the pipe, its hardness, wall thickness and conditions of use.

## Recommended Maximum Tightening torque N·m{kgf·cm}

Mounting Screw Size	1/4"	3/8"
Torque Value	12 {122}	20 {204}

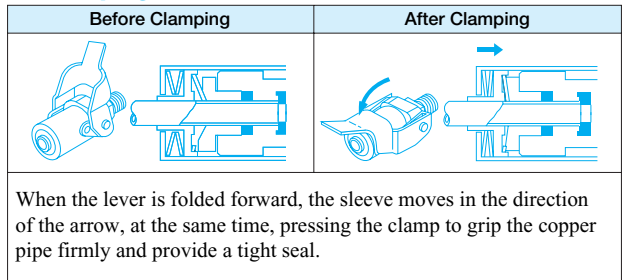
## Suitability for Vacuum Uses $1.3 \times 10^{-1}$ Pa { $1 \times 10^{-3}$ mmHg}

Only When Connected to Pipe	● Suitable
	● Suitable

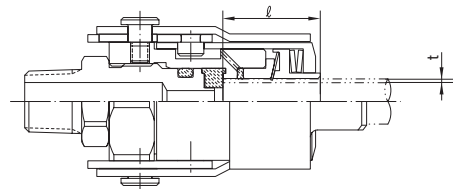
## Interchangeability

Defined by pipe shapes, size and insertion length.

## Clamping Structure



## Pipe Insertion Length and Required Wall Thickness (mm)

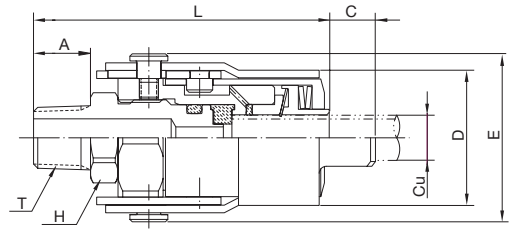
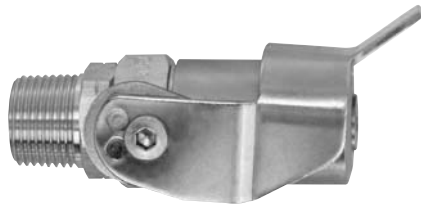


Product Code	Pipe Insertion Length ( ℓ )	Pipe Wall Thickness ( t )
PCV400H	19	Min. 0.8
PCV470H		
PCV500H		
PCV600H		
PCV630H		
PCV800H	20.5	Min. 1.0
PCV950H		
PCV1000H		
PCV1270H	30	Min. 1.0
PCV1590H		

\* Please consult with us regarding short insertion lengths and thin wall types.



■ **Product Codes and Dimensions Tables**



Product Code	Pipe Diameter (Cu)	Type	Screw Size (T)	Mass (g)	Dimensions (mm)					
					L	C	A	H	øD	E
*PCV400H	ø4.0	PCV400H-2	R1/4 (PT1/4)	102	60	10	12	Hex 17	26.0	32.4
		PCV400H-3	R3/8 (PT3/8)	160	61	10	13	Hex 19		
PCV470H	ø4.76 (3/16")	PCV470H-2	R1/4 (PT1/4)	155	60	10	12	Hex 17	26.0	32.4
		PCV470H-3	R3/8 (PT3/8)	160	61	10	13	Hex 19		
		PCV470H-0	Stop Valve	160	47	10	—	Hex 14		
*PCV500H	ø5.0	PCV500H-2	R1/4 (PT1/4)	155	60	10	12	Hex 17	26.0	32.4
		PCV500H-3	R3/8 (PT3/8)	155	61	10	13	Hex 19		
PCV600H	ø6.0	PCV600H-2	R1/4 (PT1/4)	153	60	10	12	Hex 17	26.0	32.4
		PCV600H-3	R3/8 (PT3/8)	161	61	10	13	Hex 19		
		PCV600H-0	Stop Valve	161	48	10	—	Hex 14		
PCV630H	ø6.35 (1/4")	PCV630H-2	R1/4 (PT1/4)	152	60	10	12	Hex 17	26.0	32.4
		PCV630H-3	R3/8 (PT3/8)	159	61	10	13	Hex 19		
		PCV630H-0	Stop Valve	159	48	10	—	Hex 14		
PCV800H	ø8.0 (5/16")	PCV800H-2	R1/4 (PT1/4)	185	62	10	12	Hex 17	28.5	35.4
		PCV800H-3	R3/8 (PT3/8)	190	63	10	13	Hex 19		
		PCV800H-0	Stop Valve	190	50	10	—	Hex 17		
PCV950H	ø9.52 (3/8")	PCV950H-2	R1/4 (PT1/4)	181	62	10	12	Hex 17	28.5	35.4
		PCV950H-3	R3/8 (PT3/8)	190	63	10	13	Hex 19		
		PCV950H-0	Stop Valve	190	50	10	—	Hex 17		
*PCV1000H	ø10.0	PCV1000H-2	R1/4 (PT1/4)	181	62	10	12	Hex 17	28.5	35.4
		PCV1000H-3	R3/8 (PT3/8)	190	63	10	13	Hex 19		
PCV1270H	ø12.7 (1/2")	PCV1270H-3	R3/8 (PT3/8)	465	81	11	13	Hex 24	39.0	45.0
		PCV1270H-0	Stop Valve	475	68	11	—	Hex 24		
PCV1590H	ø15.88 (5/8")	PCV1590H-3	R3/8 (PT3/8)	435	81	11	13	Hex 24	39.0	45.0
		PCV1590H-0	Stop Valve	445	68	11	—	Hex 24		

• Add 2P-V: 39 g, 3P-V: 67 g for brass and 2P-V: 34 g, 3P-V: 59 g for stainless steel for the mass with plugs for each product code. Items marked \* are made-to-order products.

■ **PCVH Pipe Cupla with Plugs**

These correspond in the same way as the PCV pipe Cupla (see P10).

■ **PCVH Pipe Cupla with Plugs (With Identifying Tube)**

These correspond in the same way as the PCV pipe Cupla (see P10).

■ **Triple-packing Version of the PCVH Pipe Cupla**

# PCVH-W Cupla

**Employs a triple-packing structure (pipe end packing and outside surface double-packing) to handle new refrigerants and high air-tightness.**

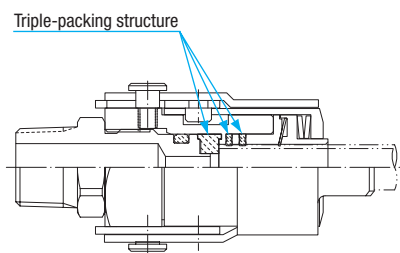
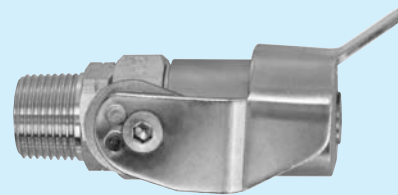
**Highly effective air-tightness and vacuum resistance when connected!**

■ **Specifications**

\* Same specifications as the PCVH Cupla.  
See the PCVH Cupla specifications.

■ **Dimensions**

\* Same dimensions as the PCVH Cupla.  
See the PCVH Cupla dimensions.



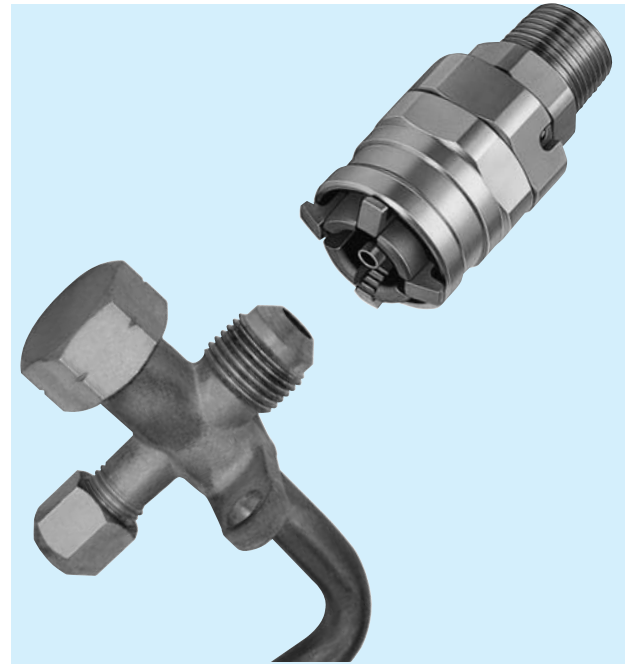
■ **Product Codes Display Method**

\* W is added to the end of the PCVH Cupla product code.  
(Ex.) PCV630H-W-3

# Screw Cupla PCS Type

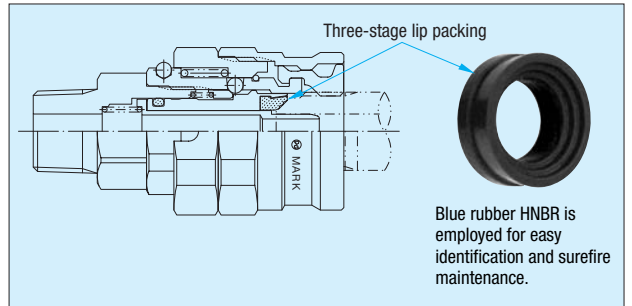
**Direct, one-touch connection to male screws. Ball lock sleeve provides safety.**

- Directly connects to threads on UNF screws.
- Connecting is easy! Simply press it onto the screw. Secure design ensures that its locking claw securely grips the screw at the same time as it is connected.
- Equipped with a locking mechanism that prevents careless separations when in use.
- Employs a three-stage lip packing on the packing surface (PAT) to enable a more stable packing surface compared to O-rings and conventional packing.
- Blue rubber HNBR is employed for easy identification and surefire maintenance.



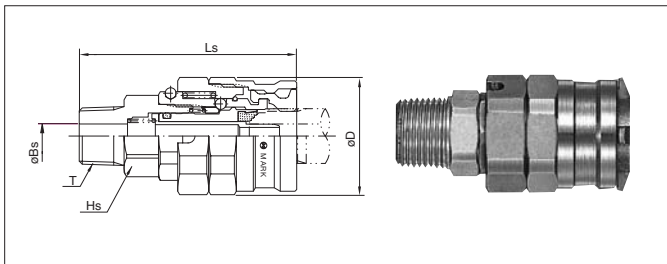
## Specifications

Body Material	Steel (Part Stainless Steel and Brass)		
Size	For 7/16-20UNF, For 5/8-18UNF		
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	3.0 {31}		
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	4.5 {46}		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Chloroprene rubber (CR)	C308	-20°C ~ +80°C
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C



## Product Codes and Dimensions Tables

### Socket

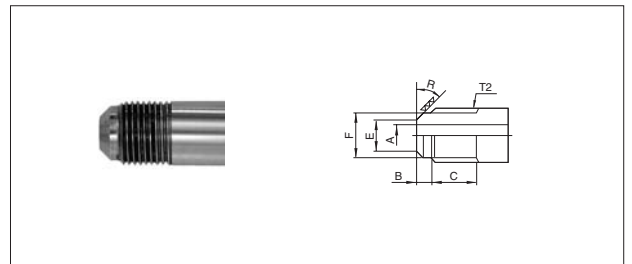


Product Code	Connecting Screw Size	Type	Application	Dimensions (mm)				
				Ls	øD	øBs	Hs	T
PCS-7U	7/16-20UNF	PCS-7U-2	Rc1/4 (PT1/4)	55	28	4	Hex 19	R1/4
		PCS-7U-3	Rc3/8 (PT3/8)					R3/8
PCS-10U	5/8-18UNF	PCS-10U-2	Rc1/4 (PT1/4)	63	34	7	Hex 21	R1/4
		PCS-10U-3	Rc3/8 (PT3/8)					R3/8

### PCS Cupla with Plugs

These correspond in the same way as the PCV Pipe Cupla (see P10).

### Application Work



Dimensions (mm)						
øE	øF	R	B	C	øA	T2
5.5	8.7	45°	3.7	Min. 8.3	4.8	7/16-20UNF
8	13.5	45°	4.8	Min. 8.2	7	5/8-18UNF

Note: When considering the type to use, refer to the outer diameter dimension of the sockets above. Verify whether the dimensions of the UNF screw and the device it is to be connected to match





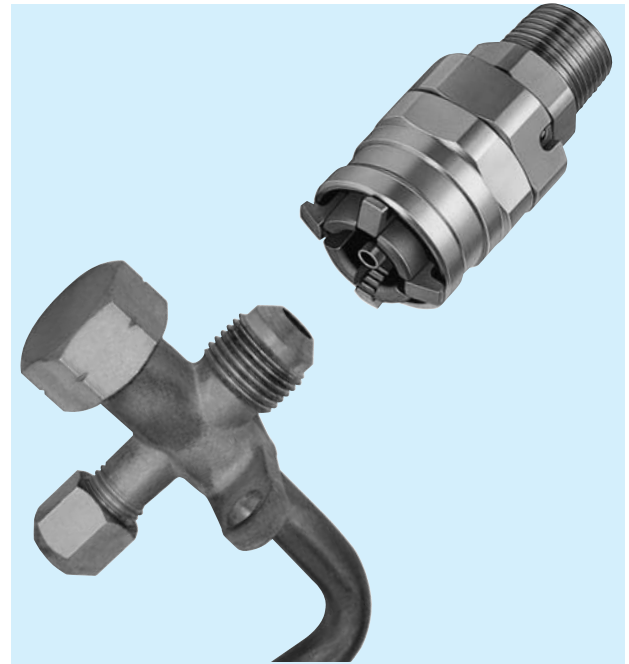
High Pressure Resistant Version of the PCS Cupla

# Screw Cupla PCS-HP Type

Handles high pressure specifications for new refrigerants.

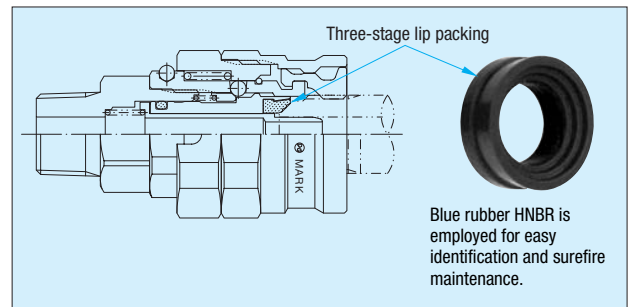
Direct, one-touch connection to male screws. Ball lock sleeve provides safety.

- Handles high pressure specifications for new coolants.
- Directly connects to threads on UNF screws.
- Connecting is easy! Simply it press onto the screw. Secure design ensures that its locking claw securely grips the screw at the same time as it is connected.
- Equipped with locking mechanism that prevents careless separations when in use.
- Employs a three-stage lip packing on the packing surface (PAT) to enable a more stable packing surface compared to O-rings and conventional packing.
- Blue rubber HNBR is employed for easy identification and surefire maintenance.



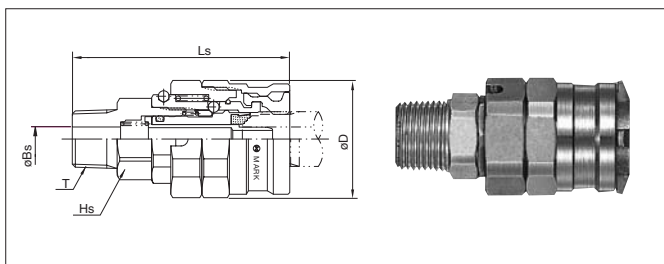
## Specifications

Body Material	Steel (Part Stainless Steel and Brass)		
Size	For 7/16-20UNF, 5/8-18UNF, 3/4-16UNF, 7/8-14UNF, and 11/16-14UNF		
Maximum Working Pressure MPa (kgf/cm <sup>2</sup> )	4.5 (45)		
Pressure Resistance MPa (kgf/cm <sup>2</sup> )	5.0 (50)		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Chloroprene rubber (CR)	C308	-20°C ~ +80°C
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C



## Product Codes and Dimensions Tables

### Socket



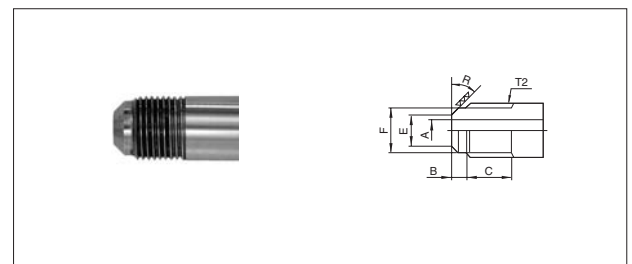
Product Code	Connecting Screw Size	Type	Application	Dimensions (mm)				
				Ls	øD	øBs	Hs	T
PCS-7U-HP	7/16-20UNF	PCS-7U-HP-2	Rc1/4 (PT1/4)	55	28	4	Hex 19	R1/4
		PCS-7U-HP-3	Rc3/8 (PT3/8)					R3/8
PCS-10U-HP	5/8-18UNF	PCS-10U-HP-2	Rc1/4 (PT1/4)	63	34	7	Hex 21	R1/4
		PCS-10U-HP-3	Rc3/8 (PT3/8)					R3/8
PCS-12U-HP	3/4-16UNF	PCS-12U-HP-2	Rc1/4 (PT1/4)	71.5	40	7	Hex 24	R1/4
		PCS-12U-HP-3	Rc3/8 (PT3/8)			10		R3/8
PCS-14U-HP	7/8-14UNF	PCS-14U-HP-2	Rc1/4 (PT1/4)	75.5	43	7	Hex 27	R1/4
		PCS-14U-HP-3	Rc3/8 (PT3/8)			10		R3/8
PCS-17U-HP	11/16-14UNF	PCS-17U-HP-3	Rc3/8 (PT3/8)	75	51	11	Hex 35	R3/8

### PCS-HP Cupla with Plugs

These correspond in the same way as the PCV Pipe Cupla (see P10).

Note: When considering the type to use, refer to the outer diameter dimension of the sockets above. Verify whether the dimensions of the UNF screw and the device it is to be connected to match.

### Application Work



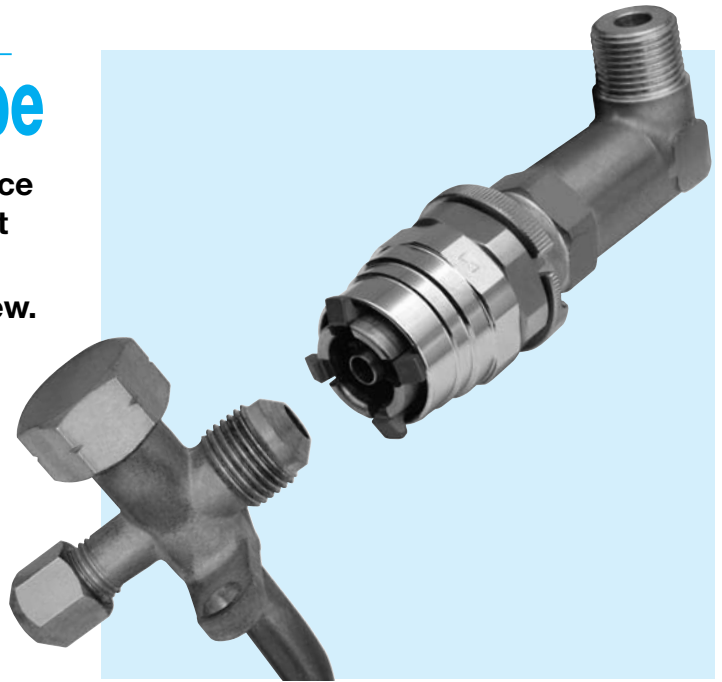
Dimensions (mm)						
øE	øF	R	B	C	øA	T2
5.5	8.7	45°	3.7	Min. 8.3	4.8	7/16-20UNF
8	13.5	45°	4.8	Min. 8.2	7	5/8-18UNF
11	16	45°	6	Min. 10	10	3/4-16UNF
13.5	19	45°	6	Min. 14	12	7/8-14UNF
18	24	45°	6	Min. 20	16	11/16-14UNF



# Screw Cupla PCSB Type

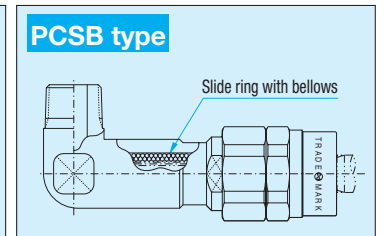
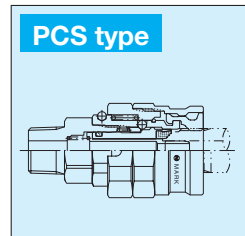
Employs a slide-ring with bellows to reduce O-ring friction that accompanies lubricant removal of Freon.

Direct one-touch connection to male screw.



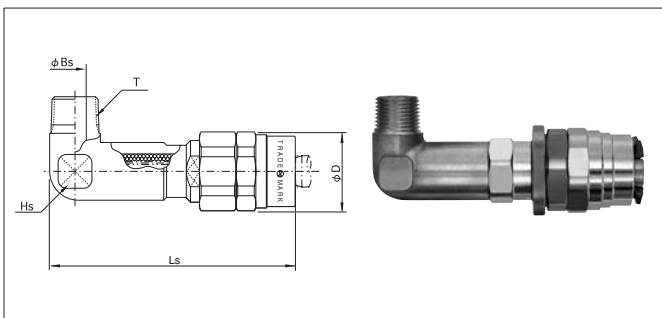
## Specifications

Body Material	Steel (Part Stainless Steel and Brass)		
Size	For 7/16-20UNF, 5/8-18UNF, and 3/4-16UNF		
Maximum Working Pressure MPa (kgf/cm <sup>2</sup> )	3.0 {31}		
Pressure Resistance MPa (kgf/cm <sup>2</sup> )	4.5 {46}		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Chloroprene rubber (CR)	C308	-20°C ~ +80°C
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C



## Product Codes and Dimensions Tables

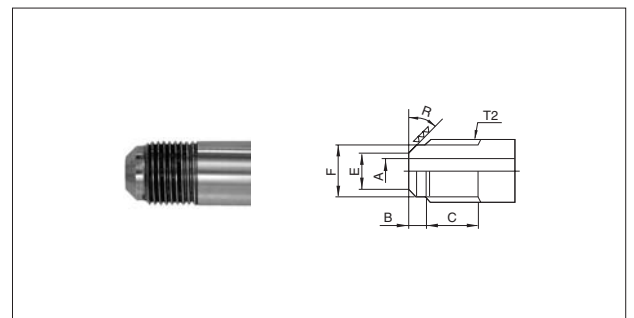
### Socket



Product Code	Connecting Screw Size	Application	Type	Dimensions (mm)				
				Ls	ØD	ØBs	Hs	T
PCSB-7U	7/16-20UNF	PCSB-7U-4.8-2L	Rc1/4 (PT1/4)	87	28	7	2 Face 21	R1/4
		PCSB-7U-4.8-3L	Rc3/8 (PT3/8)					R3/8
PCSB-10U	5/8-18UNF	PCSB-10U-7-2L	Rc1/4 (PT1/4)	98	34	7	2 Face 21	R1/4
		PCSB-10U-7-3L	Rc3/8 (PT3/8)					R3/8
PCSB-12U	3/4-16UNF	PCSB-12U-10-2L	Rc1/4 (PT1/4)	102	40	7	2 Face 21	R1/4
		PCSB-12U-10-3L	Rc3/8 (PT3/8)					R3/8

Note: When considering the type to use, refer to the outer diameter dimension of the sockets above. Verify whether the dimensions of the UNF screw and the device it is to be connected to match.

### Application Work



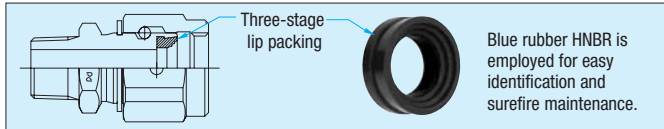
Dimensions (mm)						
ØE	ØF	R	B	C	ØA	T2
5.5	8.7	45°	3.7	Min. 8.3	4.8	7/16-20UNF
8	13.5	45°	4.8	Min. 8.2	7	5/8-18UNF
11	16	45°	6	Min. 10	10	3/4-16UNF

# Screw Cupla NCF Type

**Easy, direct-screws-in to male threads!!**

**The use of bearings reduce nut tightening force and damage to the packing!!**

- Easy, direct connection to male threads on UNF screws.
- Employs a three-stage lip packing on the packing surface (PAT) to enable a more stable packing surface compared to O-rings and conventional packing.

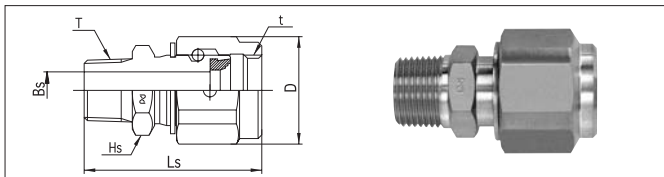


## Specifications

Body Material	Stainless Steel		
Size	For UNF screws, M screws		
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	4.5 {45}		
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	5.0 {50}		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Chloroprene rubber (CR)	C308	-20°C ~ +80°C
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C

## Product Codes and Dimensions Tables

### Socket



Product Code	Connecting Screw (t)	Type	Dimensions (mm)				
			Ls	D	øBs	Hs	T
NCF-7U	7/16-20UNF	NCF-7U-2	44	Hex 27 x ø29	4.2	Hex 17	R1/4
		NCF-7U-3					R3/8
NCF-10U	5/8-18UNF	NCF-10U-2	46	Hex 27 x ø29	8	Hex 19	R1/4
		NCF-10U-3					R3/8
NCF-12U	3/4-16UNF	NCF-12U-2	48	Hex 27 x ø29	10	Hex 21	R1/4
		NCF-12U-3					R3/8
NCF-14U	7/8-14UNF	NCF-14U-2	51	Hex 32 x ø35	7/10	Hex 24	R1/4
		NCF-14U-3					R3/8
NCF-17U	1 1/16-14UNF	NCF-17U-2	50	Hex 35 x ø39	7/10	Hex 29	R1/4
		NCF-17U-3					R3/8

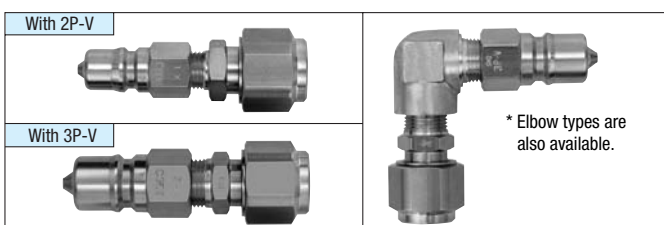
  

Product Code	Connecting Screw (t)	Type	Dimensions (mm)				
			Ls	D	øBs	Hs	T
NCF-12M	M12 x 1.25	NCF-12M-2	44	Hex 27 x ø29	4.2	Hex 17	R1/4
		NCF-12M-3					R3/8
NCF-16M	M16 x 1.5	NCF-16M-2	46	Hex 27 x ø29	8	Hex 19	R1/4
		NCF-16M-3					R3/8
NCF-18M	M18 x 1.5	NCF-18M-2	49	Hex 27 x ø29	10	Hex 21	R1/4
		NCF-18M-3					R3/8
NCF-22M	M22 x 1.5	NCF-22M-2	51	Hex 32 x ø35	7/10	Hex 24	R1/4
		NCF-22M-3					R3/8
NCF-27M	M27 x 2	NCF-27M-2	51	Hex 35 x ø39	7/10	Hex 29	R1/4
		NCF-27M-3					R3/8

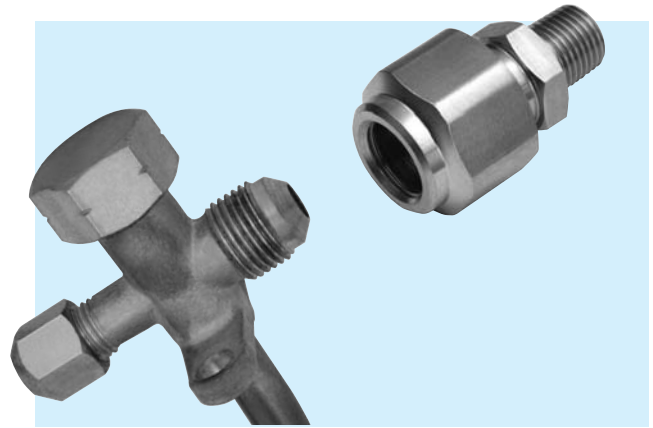
Note: When considering the type to use, refer to the outer diameter dimension of the sockets above. Verify whether the dimensions of the UNF screw and the device it is to be connected to match.

## NCF Cupla with Plugs

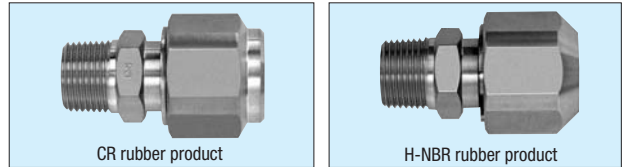
- \* Specify the plug type (SP-V, SP-V-GN), the body material and packing material when ordering.
- \* Use lock-tite (medium strength 242) as standard for the plug mounting adhesive. Specify for other types.



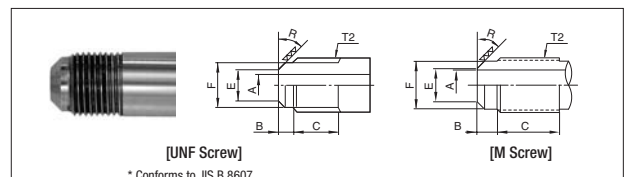
\* Long-type Adapters, 45° elbow types, special nuts (small outer diameter types) and round nuts (knurled) types are all available. Specify separately when ordering.



- Withstands vacuum of  $1.3 \times 10^{-1}$  Pa {  $1 \times 10^{-3}$  mm Hg } (when connected) to enable use in pressure testing, coolant gas filling and pulling vacuums.
- An abundance of sizes and packing materials are available to handle air conditioner, refrigerator and package production lines. Special packing materials are also available to handle new types of coolants (R134A, R410A, and R407C).
- The nut shape is different to identify the packing material with its external appearance.



## Application Work



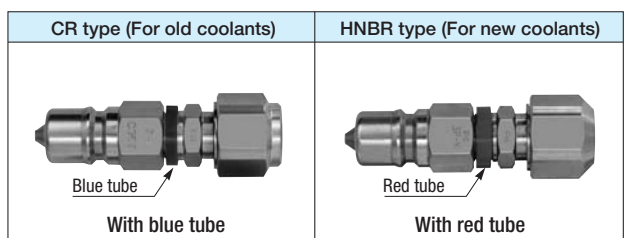
[UNF Screw]	Dimensions (mm)					
øE	øF	R	B	C	øA	T2
5.5	9.2	45° ~ 46°	3.7	Min. 7.6	4.8	7/16-20UNF
8	13.5	45° ~ 46°	4.8	Min. 9.2	7	5/8-18UNF
11	16	45° ~ 46°	5.5	Min. 11.3	10	3/4-16UNF
13.5	19	45° ~ 46°	6	Min. 13.9	12.5	7/8-14UNF
18	24	45° ~ 46°	6	Min. 12.5	16	1 1/16-14UNF

[M Screw]	Dimensions (mm)					
øE	øF	R	B	C	øA	T2
5	9.8	45°	5	Min. 6.3	4	M12 x 1.25
9	13.8	45°	5	Min. 8.3	8	M16 x 1.5
11	15.8	45°	6.5	Min. 10.5	10	M18 x 1.5
14.3	19.2	45°	5.5	Min. 13	13	M22 x 1.5
17.6	22.2	45°	6.2	Min. 11.8	15.5	M27 x 2

## NCF Cupla with Plugs (With identifying tube)

- \* A type mounted with a colored tube is available for easy identification of the packing material. Recommended when old and new coolant types are being used in production on the same line and differentiation is necessary. (Specify for these products separately, when required.)





For Filling Industrial Use Gas and Refrigerant Gas

# Charge Cupla CS Type

Frequent detaching under pressure made easy by our unique lever!!

Perfect for filling refrigerant, pulling vacuums and discharging residual pressure.

- Equipped with an automatic shut-off valve. Fluid in the hose is prevented from flowing out when separated.
- Detaching of the socket and plug is possible even there is residual pressure. The valve can be opened and closed using the lever on the back side.
- Safe design prevents the valve from opening if the plug is not connected, even if the lever is operated.
- The lever can be set to any position over 360°.
- The standard product SP-V type Cuplas 2P-V and 3P-V can be used as plugs.  
(The CS type can also be used with the SP-V-GN type Cuplas 2P-V-GN and 3P-V-GN.)
- Blue rubber HNBR is employed for easy identification and surefire maintenance.
- Employs a double-packing O-ring sealing structure in the socket to handle high air-tightness when connected.



Blue colored anodic oxide coating

## Specifications

Body Material	Stainless Steel (Part Aluminum and Brass)		
Size	1/4", 3/8"		
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	3.0 {31}		
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	3.6 {37}		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Chloroprene rubber (CR)	C308	-20°C ~ +80°C
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C

## Minimum Sectional Area (mm<sup>2</sup>)

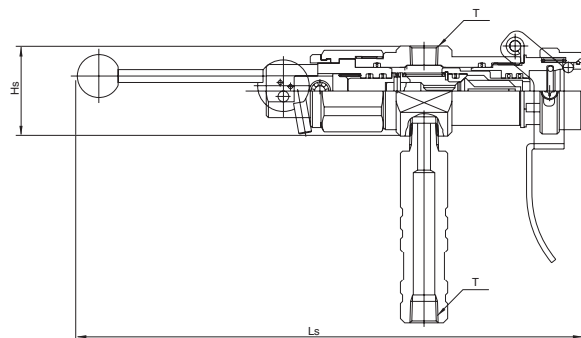
Product Code	CS-2S-V × 2P-V	CS-3S-V × 3P-V
Minimum Sectional Area	17	44

## Combined Overall Length (mm)

Product Code	CS-2S-V × 2P-V	CS-3S-V × 3P-V
Combined Overall Length	245.5	250.5

## Product Codes and Dimensions Tables

### Socket



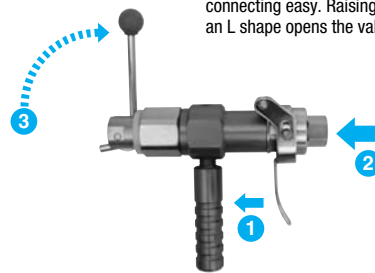
Product Code	Connecting Side	Dimensions (mm)		
		Ls	øHs	T
CS-2S-V	For Connecting with Plugs (2P-V)	232.5	42	Rc1/4 (PT1/4)
CS-3S-V	For Connecting with Plugs (3P-V)	235.5	42	Rc1/4 (PT1/4)

Note: No lubricant for socket's O-rings with H.NBR seal. Apply refrigerator oil before use.

## Structure

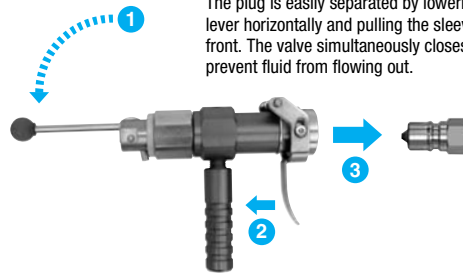
### Connection with Plugs

Pulling the sleeve lever to insert the plug makes connecting easy. Raising the back-side lever 90° to an L shape opens the valve to allow the flow of fluid.



### Separation from Plugs

The plug is easily separated by lowering the back-side lever horizontally and pulling the sleeve lever to the front. The valve simultaneously closes instantly to prevent fluid from flowing out.



Handles High Pressure Specifications of New Refrigerants

# Charge Cupla CS-HP Type

## High pressure resistant version of the CS type.

(Main unit is coated with red-colored anodic oxide to distinguish from the CS type.)

## Frequent detaching under pressure made easy by our unique lever!!

- Equipped with an automatic shut-off valve. Fluid in the hose is prevented from flowing out when separated.
- Detaching of the socket and plug is possible even there is residual pressure. The valve can also be opened and closed using the lever on the back side.
- This safe design prevents the valve from opening if the plug is not connected, even if the lever is operated.
- The lever can be set to any position over the full 360°.
- The standard product SP-V type Cuplas 2P-V and 3P-V can be used as plugs.  
(The CS-HP type can also be used with the SP-V-GN type Cuplas 2P-V-GN and 3P-V-GN.)
- Employs a double-packing O-ring sealing structure in the socket to handle high air-tightness when connected.



## Specifications

Body Material	Stainless Steel (Part Aluminum and Brass)		
Size	1/4", 3/8"		
Maximum Working Pressure MPa (kgf/cm <sup>2</sup> )	4.5 (45)		
Pressure Resistance MPa (kgf/cm <sup>2</sup> )	5.0 (50)		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C

## Minimum Sectional Area (mm<sup>2</sup>)

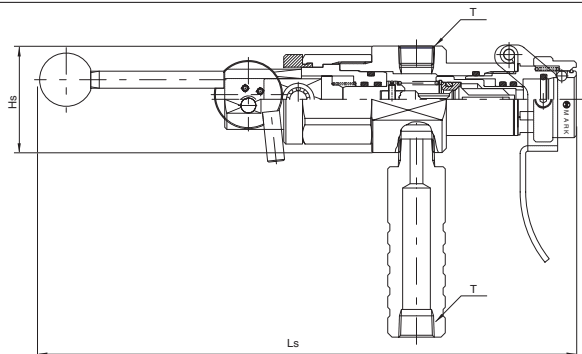
Product Code	CS-2S-V-HP × 2P-V	CS-3S-V-HP × 3P-V
Minimum Sectional Area	17	44

## Combined Overall Length (mm)

Product Code	CS-2S-V-HP × 2P-V	CS-3S-V-HP × 3P-V
Combined Overall Length	263	267

## Product Codes and Dimensions Tables

### Socket

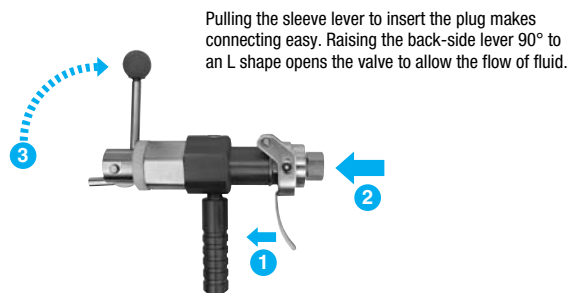


Product Code	Connecting Side	Dimensions (mm)		
		Ls	øHs	T
CS-2S-V-HP	For Connecting with Plugs (2P-V)	250	50	Rc3/8 (PT3/8)
CS-3S-V-HP	For Connecting with Plugs (3P-V)	252	50	Rc3/8 (PT3/8)

Note: No lubricant for socket's O-rings with H.NBR seal. Apply refrigerator oil before use.

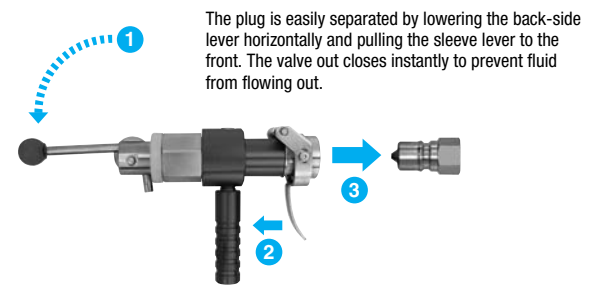
## Structure

### Connection with Plugs



Pulling the sleeve lever to insert the plug makes connecting easy. Raising the back-side lever 90° to an L shape opens the valve to allow the flow of fluid.

### Separation from Plugs



The plug is easily separated by lowering the back-side lever horizontally and pulling the sleeve lever to the front. The valve out closes instantly to prevent fluid from flowing out.

For Filling Industrial Use Gas and Refrigerant Gas

# Charge Cupla CNR Type

**Frequent detaching under pressure made easy by our unique lever!**

**Easy plug separation because residual pressure is purged by lifting lever.**

**Perfect for filling refrigerant, pulling vacuums and detaching under residual pressure.**

- Equipped with an automatic shut-off valve. Fluid in the hose is prevented from flowing out when separated.
- Detaching of the socket and plug is possible even there is residual pressure. The valve can be opened and closed using the lever.
- Employs a double-packing sealing structure to handle high airtightness when connected.
- This safe design prevents the valve from opening if the plug is not connected, even if the lever is operated.
- Easy plug separation because residual pressure is purged by lifting lever after refilling is completed.
- The standard product SP-V type Cuplas 3P-V and 4P-V can be used as plugs.  
(The CNR-GN type that can also be used with SP-V-GN type Cuplas 2P-V-GN and 3P-V-GN.)
- Blue rubber HNBR is employed for easy identification and surefire maintenance.



## Specifications

Body Material	Stainless Steel (Part Aluminum and Brass)		
Size	3/8", 1/2"		
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	4.5 {45}		
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	5.0 {50}		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Chloroprene rubber (CR)	C308	-20°C ~ +80°C
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C

## Minimum Sectional Area (mm<sup>2</sup>)

Product Code	CNR-3SP type	CNR-4SP type
Minimum Sectional Area	44	62

## Combined Overall Length (mm)

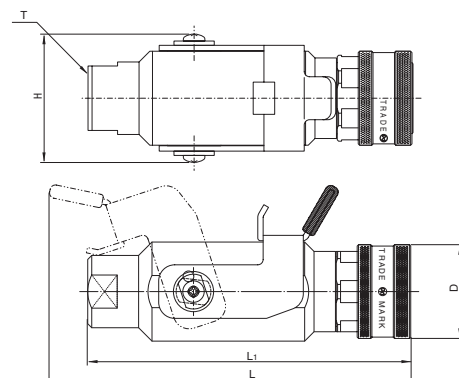
Product Code	CNR-3SP type	CNR-4SP type
Combined Overall Length	136	161

## Product Codes and Dimensions Tables

### Socket



Product Code	Connecting Side	Dimensions (mm)				
		L	øD	L <sub>1</sub>	H	T
CNR-3S	For Connecting with Plugs (3P-V)	135	35	121	48	Rc3/8 (PT3/8)
CNR-4S	For Connecting with Plugs (4P-V)	161	45	145	54	Rc1/2 (PT1/2)

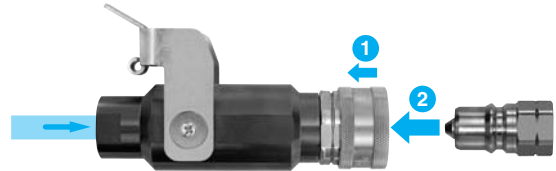


Note: No lubricant for socket's O-rings with H.NBR seal. Apply refrigerator oil before use.

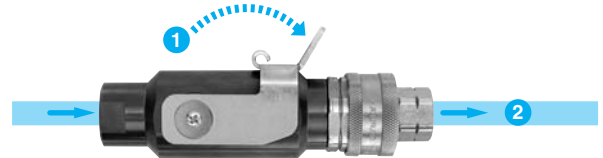
## Structure

### Connection of Plug and Socket

Pulling the sleeve to insert the plug makes connecting easy.

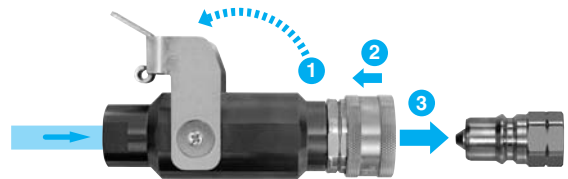


Lowering the lever opens the fluid path to allow the flow of fluid.



### Detaching of Plug and Socket

Pressure between the valves on the socket on plug is purged by lifting the lever. The plug is easily removed by pulling the sleeve front to back. The valve simultaneously closes instantly to prevent fluid from flowing out.



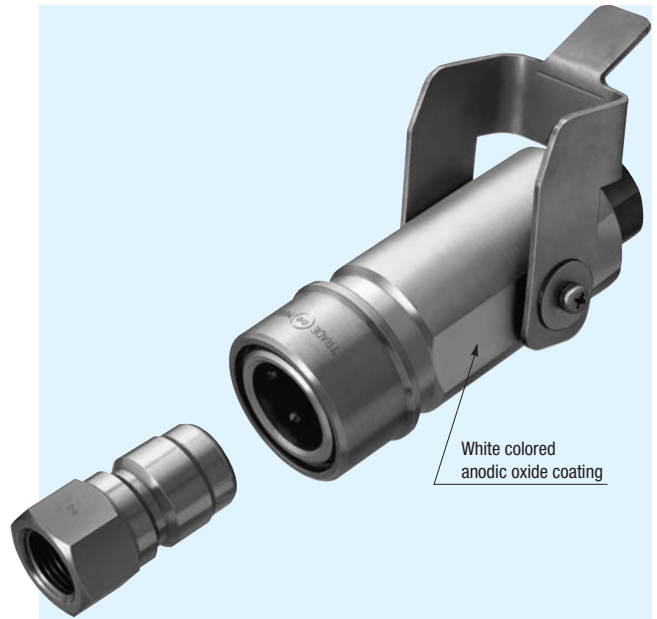


# Airless Charge Cupla CNA Type

This airless valve structure keeps the mixing in of air and leaking of fluid to a minimum!!

Perfect for filling refrigerant, pulling vacuums and discharging residual pressure.

- A special valve structure (airless structure) for an automatic shut-off valve is provided in both the socket and the plug. This holds down the mixing in of air when connecting and the leaking of fluids when detaching to a minimum.
- Detaching of the socket and plug is possible even there is residual pressure. The valve can also be opened and closed using the lever.
- This safe design prevents the valve from opening if the plug is not connected, even if the lever is operated.



## Specifications

Body Material	Stainless Steel (Part Aluminum and Brass)		
Size	3/8"		
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	3.0 {31}		
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	3.6 {37}		
Packing Material	Packing Material	Nitto Symbol	Working Temp. Range
Working Temperature Range	Chloroprene rubber (CR)	C-308	-20°C ~ +80°C

## Minimum Sectional Area (mm<sup>2</sup>)

Product Code	CNA-3SP-V type
Minimum Sectional Area	31.5

## Combined Overall Length (mm)

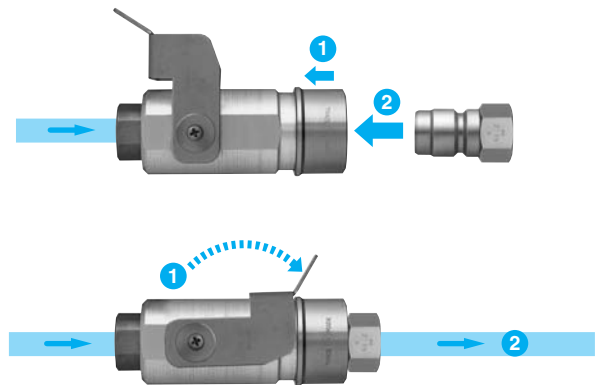
Product Code	CNA-3SP-V type
Combined Overall Length	111



## Structure

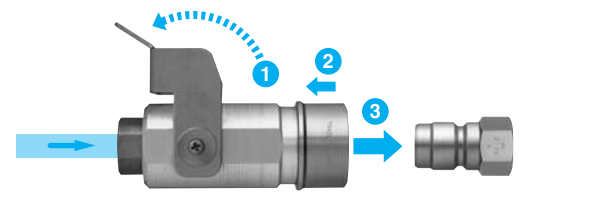
### Connection of Plug and Socket

Pulling the sleeve lever to insert the plug makes connecting easy. Lowering the lever opens the fluid path to allow the flow of fluid.



### Detaching of Plug and Socket

The plug is easily removed by pulling the front side sleeve after raising the lever. The valve simultaneously closes instantly to prevent fluid from flowing out.



## Product Codes and Dimensions Tables

### Socket

Product Code	Application	Dimensions (mm)				
		L	∅D	Ls	H	T
CNA-3S-V	R3/8 (PT3/8)	95	39	120	50	Rc3/8 (PT3/8)

### Plug

Product Code	Application	Dimensions (mm)		
		L	Hp	T
CNA-3P-V	R3/8 (PT3/8)	43	Hex 23	Rc3/8 (PT3/8)

# Automatic Cupla ACV Type

**Automatic separation from the plug!!  
Contributes to energy and manpower conservation on the production line.**

**Connection possible simply by inserting the plug.**

- The detaching mechanism is built-in to the socket. Separation of socket and plug is automatic using air drive. Also, in emergencies, manual separation is also possible. Equipped with an automatic shut-off valve. Fluid in the hose is prevented from flowing out when separated.
- The standard product SP-V Cuplas 2P-V and 3P-V can be used as plugs. (The ACV type that can also be used with the SP-V-GN type Cuplas 2P-V-GN and 3P-V-GN.)
- Blue rubber HNBR is employed for easy identification and surefire maintenance.

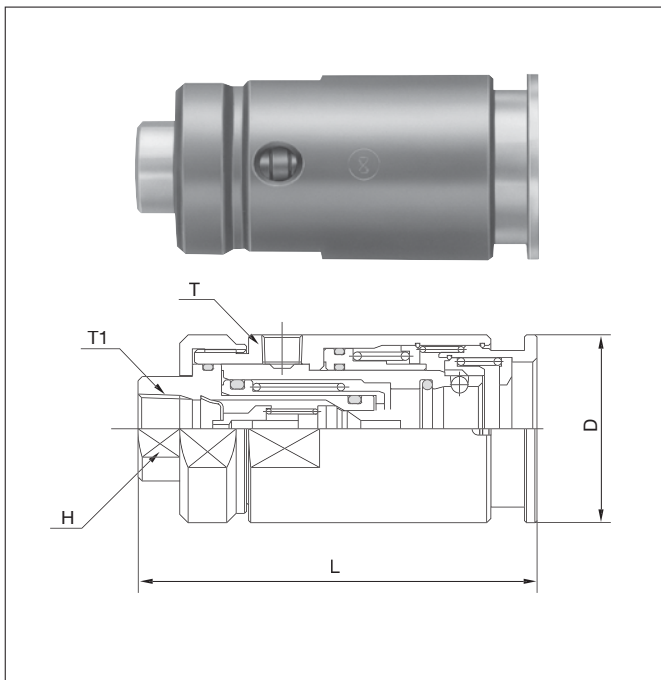


## Specifications

Body Material	Stainless Steel (Part Aluminum and Brass)		
Size	1/4", 3/8"		
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	3.0 {31}		
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	3.6 {37}		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Chloroprene rubber (CR)	C308	-20°C ~ +80°C
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C
	Nitrile butadiene rubber (NBR)	SG	-20°C ~ +80°C
Maximum Cupla Inner Pressure When Operating MPa {kgf/cm <sup>2</sup> }	When Separating Plug		1.0 {10}

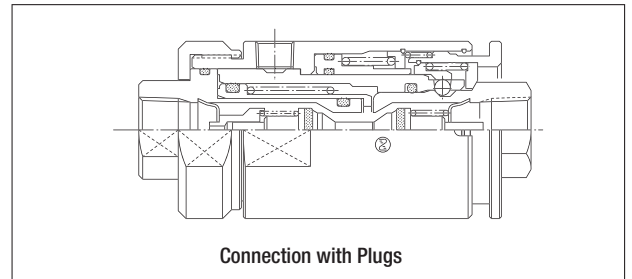
## Product Codes and Dimensions Tables

### Socket



Product Code	Connecting Side	Dimensions (mm)				
		H	øD	L	T	T <sub>1</sub>
ACV-2S	For Connecting with Plugs (2P-V)	2-face 19	42	100	Rc1/8 (PT1/8)	Rc1/4 (PT1/4)
ACV-3S	For Connecting with Plugs (3P-V)	2-face 21	45	96	Rc1/8 (PT1/8)	Rc3/8 (PT3/8)

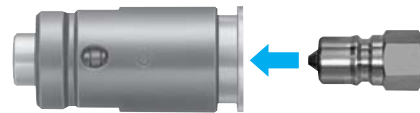
Note: No lubricant for socket's O-rings with H.NBR seal. Apply refrigerator oil before use.



## Structure

### Connection with Plugs

One-touch connection possible simply by inserting the plug.



The valves on the socket and plug open simultaneously when connected to allow the flow of fluid.



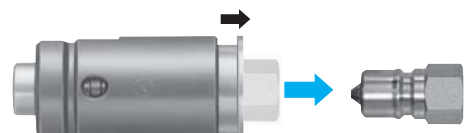
### Operating Plug Separation

The plug automatically separates by applying compressed air of 0.5MPa - 0.6MPa {5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>} pressure to section A.



### Detaching the Plug in Emergencies

The plug is easily detached by pulling the front side sleeve in the direction of the arrow.



Handles High Pressure Specifications of New Refrigerants

# Automatic Cupla ACV-HP Type

**Handles high pressure specifications for new refrigerants.**

**High pressure resistant version of the ACV type.**

(The main unit is coated with red-colored anodic oxide to distinguish it from the ACV type.)

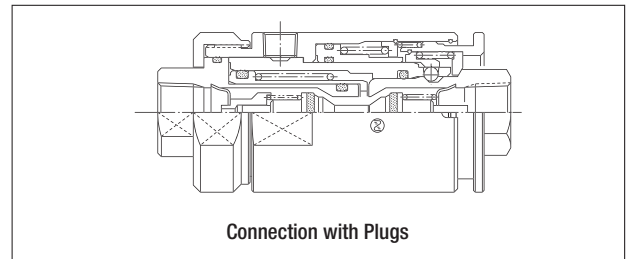
**Automatic separation from the plug!!**

**Contributes to energy and manpower conservation on the production line.**

- Connection possible simply by inserting the plug.
- Detaching mechanism is built-in to the socket. Separation of socket and plug is automatic using air drive. Manual separation is also possible.
- Equipped with an automatic shut-off valve. Fluid in the hose is prevented from flowing out when separated.
- The standard product SP-V type Cuplas 2P-V and 3P-V can be used as plugs. (ACV-HP type can also be used with SP-V-GN type Cuplas 2P-V-GN and 3P-V-GN.)



Red-colored anodic oxide coating



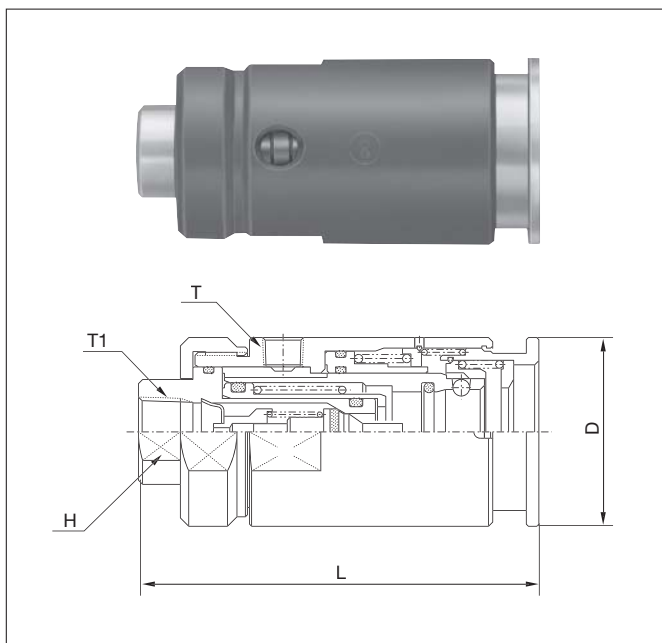
Connection with Plugs

## Specifications

Body Material	Stainless Steel (Part Aluminum and Brass)		
Size	1/4", 3/8"		
Maximum Working Pressure MPa (kgf/cm <sup>2</sup> )	4.5 (45)		
Pressure Resistance MPa (kgf/cm <sup>2</sup> )	5.0 (50)		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C
Maximum Cupla Inner Pressure When Operating MPa (kgf/cm <sup>2</sup> )	When Separating Plug	1.0 (10)	

## Product Codes and Dimensions Tables

### Socket



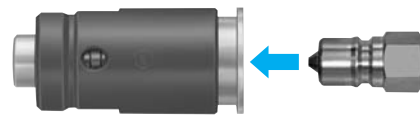
Product Code	Connecting Side	Dimensions (mm)				
		H	øD	L	T	T1
ACV-2S-HP	For Connecting with Plugs (2P-V)	2-face 19	42	100	Rc1/8 (PT1/8)	Rc1/4 (PT1/4)
ACV-3S-HP	For Connecting with Plugs (3P-V)	2-face 21	45	96	Rc1/8 (PT1/8)	Rc3/8 (PT3/8)

Note: No lubricant for socket's O-rings with H.NBR seal. Apply refrigerator oil before use.

## Structure

### Connection with Plugs

One-touch connection possible simply by inserting the plug.



The valves on the socket and plug open simultaneously when connected to allow the flow of fluid.



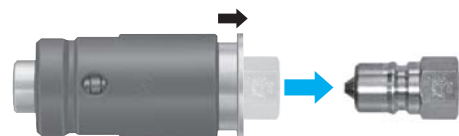
### Operating Plug Separation

The plug automatically separates by applying compressed air of 0.5MPa - 0.6MPa (5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>) pressure to section A.



### Detaching the Plug in Emergencies

The plug is easily detached by pulling the front side sleeve in the direction of the arrow.





# Automatic Cupla AC type

**Automatic Cupla that opens and closes valves and automatically separates from plugs!!**

**Contributes to energy and manpower conservation on the production line.**

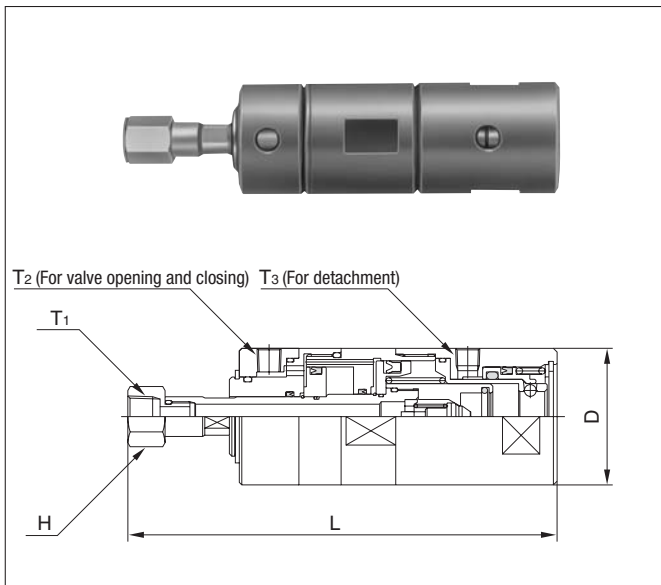
- This Cupla uses air drive to connect and separate with plugs and to open and close the valve.
- Equipped with an automatic shut-off valve. Fluid in the hose is prevented from flowing out when separated.
- Independently developed air drive method reduces the load when connecting the plug.
- Detaching of the socket and plug is possible even there is residual pressure.
- This safe design prevents the valve from opening if the plug is not connected, even when using air drive for the valve opening and closing.
- The standard product SP-V type Cuplas 2P-V and 3P-V can be used as plugs. (AC type can also be used with SP-V-GN type Cuplas 2P-V-GN and 3P-V-GN.)
- Blue rubber HNBR is employed for easy identification and surefire maintenance.

## Specifications

Body Material	Stainless Steel (Part Aluminum and Brass)		
Size	1/4", 3/8"		
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	3.0 {31}		
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	3.6 {37}		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Chloroprene rubber (CR)	C308	-20°C ~ +80°C
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C
	Nitrile butadiene rubber (NBR)	SG	-20°C ~ +80°C
Maximum Cupla Inner Pressure When Operating MPa {kgf/cm <sup>2</sup> }	When Valve Opens and Closes		1.0 {10}
	When Separating Plug		1.0 {10}

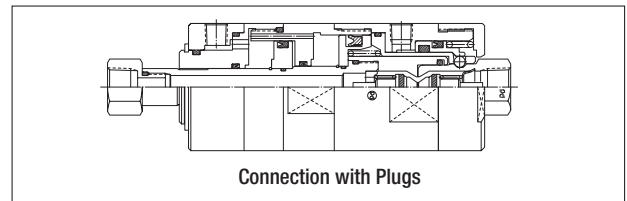
## Product Codes and Dimensions Tables

### Socket



Product Code	Connecting Side	Dimensions (mm)					
		H	øD	L	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
AC-2S	For Connecting with Plugs (2P-V)	Hex 17	44	155	Rc1/4	Rc1/8	Rc1/8
AC-3S	For Connecting with Plugs (3P-V)	Hex 21	55	173	Rc3/8	Rc1/8	Rc1/8

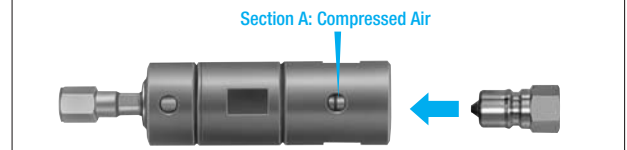
Note: No lubricant for socket's O-rings with H.NBR seal. Apply refrigerator oil before use.



## Structure

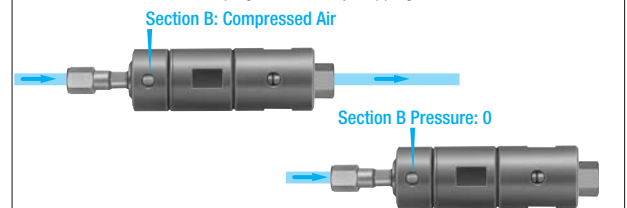
### Plug Connecting Procedures

The ball comes free by applying compressed air of 0.5MPa - 0.6MPa {5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>} pressure to section A. The plug can then be easily inserted. Completely inserting the plug into the socket and reducing the pressure on section A to 0 MPa will lock the socket and plug and completes the connection. (\* The valve is not open in this state.)



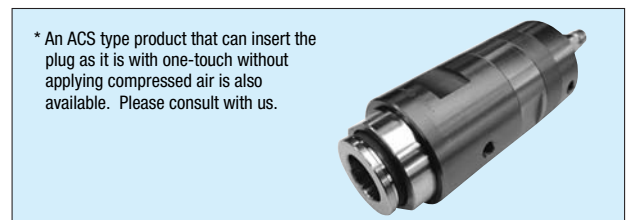
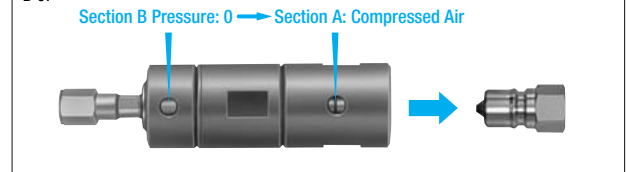
### Opening and Closing the Valve

The valve opens by applying compressed air of 0.5MPa - 0.6MPa {5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>} pressure to section B. By reducing the air pressure on section B to 0 MPa, the valves on the socket and plug close thereby stopping the flow of fluid.



### Detaching the Plug

The plug automatically separates by applying compressed air of 0.5MPa - 0.6MPa {5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>} pressure to section A after making the pressure on section B 0.



\* An ACS type product that can insert the plug as it is with one-touch without applying compressed air is also available. Please consult with us.

Handles High Pressure Specifications of New Refrigerants

# Automatic Cupla AC-HP Type

**Handles high pressure specifications for new refrigerants.**

**High pressure version of the AC type.**

(Main unit is coated with red-colored anodic oxide to distinguish it from the AC type.)

**Automatic Cupla that opens and closes valves and automatically separates from plugs!!**

**Contributes to energy and manpower conservation on the production line.**


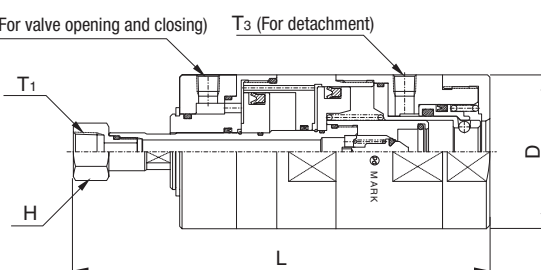
- This Cupla uses air drive to connect and separate with plugs and to open and close the valve.
- Equipped with an automatic shut-off valve. Fluid in the hose is prevented from flowing out when separated.
- Our independently developed air drive method reduces the load when connecting the plug.
- Detaching of the socket and plug is possible even there is residual pressure.
- This safe design prevents the valve from opening if the plug is not connected, even using air drive for the valve opening and closing.
- The standard product SP-V type Cupla 3P-V can be used. (AC-HP type can also be used with SP-V-GN type Cupla 3P-V-GN.)

## Specifications

Body Material	Stainless Steel (Part Aluminum and Brass)		
Size	3/8"		
Maximum Working Pressure MPa {kgf/cm <sup>2</sup> }	4.5 {45}		
Pressure Resistance MPa {kgf/cm <sup>2</sup> }	5.0 {50}		
Packing Material Working Temperature Range	Packing Material	Nitto Symbol	Working Temp. Range
	Hydrogen added nitrile butadiene rubber (HNBR)	H708	-20°C ~ +120°C
Maximum Cupla Inner Pressure When Operating MPa {kgf/cm <sup>2</sup> }	When Valve Opens and Closes	1.0 {10}	
	When Separating Plug	1.0 {10}	

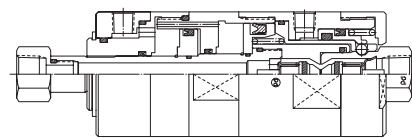
## Product Codes and Dimensions Tables

### Socket

Product Code	Connecting Side	Dimensions (mm)					
		H	øD	L	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
AC-3S-HP	For Connecting with Plugs (3P-V)	Hex 21	65	176	Rc3/8	Rc1/8	Rc1/8

Note: No lubricant for socket's O-rings with H.NBR seal. Apply refrigerator oil before use.

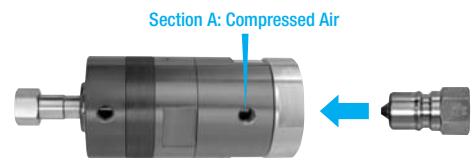


Connection with Plugs

## Structure

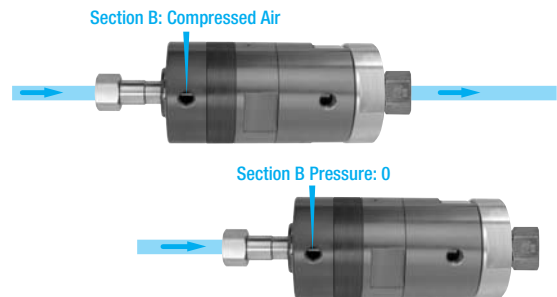
### Plug Connecting Procedures

The ball comes free by applying compressed air of 0.5MPa - 0.6MPa {5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>} pressure to section A. The plug can then be easily inserted. Completely inserting the plug into the socket and reducing the pressure on the section A to 0 MPa locks the socket and plug and completes the connection.  
(\* The valve is not open in this state.)



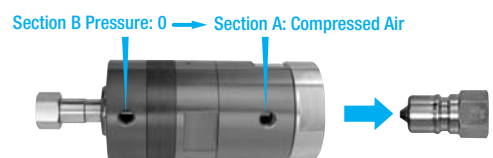
### Opening and Closing the Valve

The valve opens by applying compressed air of 0.5MPa - 0.6MPa {5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>} air pressure to section B. By reducing the air pressure on section B to 0 MPa, the valves on the socket and plug close thereby stopping the flow of fluid.



### Detaching the Plug

The plug automatically separates by applying compressed air of 0.5MPa - 0.6MPa {5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>} pressure to section A after making the pressure on section B 0.

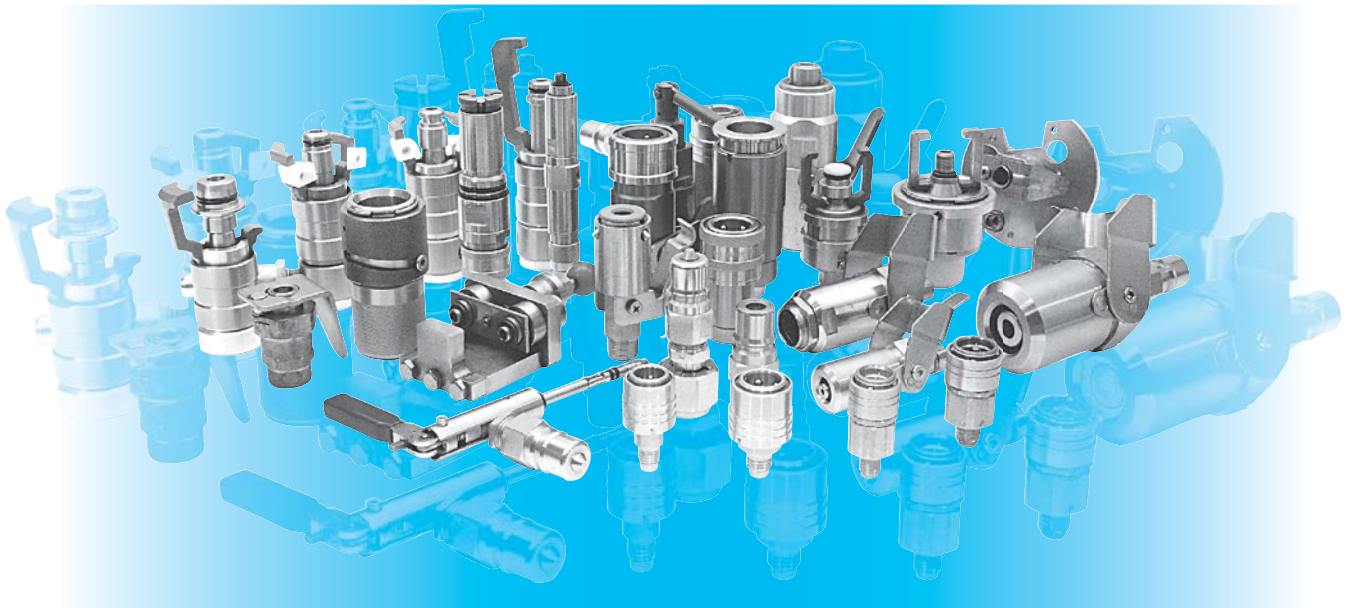


# Pipe Cupla Series


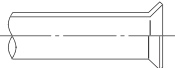
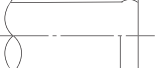
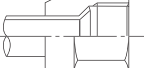

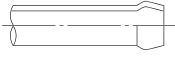


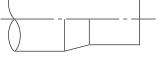
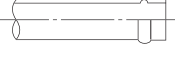


The Cupla series was developed for production line use and maintenance use for refrigerators, air conditioners and automotive production.

Directly connects in one-touch to any and all types of pipe ends!!

Greatly contributes to speedy production lines, energy conservation and automation.



## Connects to All Types of Connections (see example list below)

			
Straight Pipes	Flare Pipes	Metal-ended Hose for Heaters	Flare Nuts
			
Expanded Pipes	Metal-ended Hose for Engine Fuel (Bulge Pipes)	Metal-ended Hose Radiators	Unify Nipples
			
Diaphragm Pipes	Metal-ended Hose for Fuel (Spool Pipes)	Hose Nipple	Union Adapter

## Applications

For Filling Work

For Pressure Tests

For Leak Tests

For Vacuum Pull Tests

For Running Tests

## When Considering the Pipe Cupla

- All pipe Cupla are have been made and designed to customer specification.
- When considering, specify the conditions of it use (pressure, fluid type, Cupla attachment shape, location of use, etc.).
- All pipe Cupla are designed to according to the targeted connection (work). Always provide working drawings and samples.

## Spring Clamping Type for Expanded Pipes

# Pipe Cupla PCE Type

**Minimize work piece damage.**

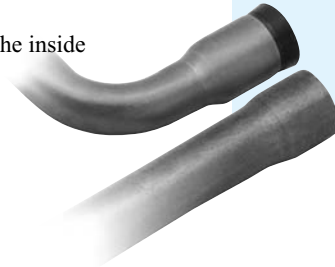
**Perfect for high pressure specifications for new refrigerant.**

- Employs a spring clamping method to minimize locking damage to the work piece.
- Perfect for high pressure specifications for new refrigerants.
- Connects to pipes with rubber stoppers.
- Packing when connecting to pipes is doubled on the inside diameter of the pipe to increase reliability.

### ■ Usage

- Charging Refrigerant Gases
- Pressure Tests
- Leak Tests
- Vacuum Tests

\* We also produce a PCER type (compact type) that enables detaching with pipes by rotating the sleeve made possible by its rotating sleeve lock system.



## For Expanded Pipes

# Pipe Cupla PCB Type

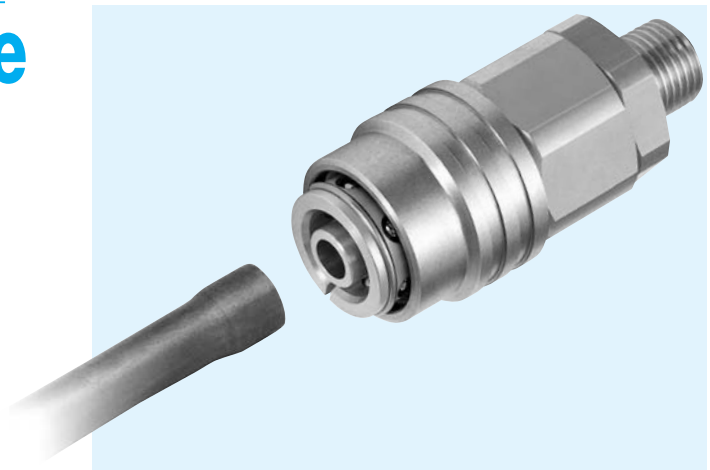
**Suitable for connecting and detaching expanded and plugged pipes !!**

**Easy to handle with the ball lock system using sleeve operation.**

- Connects directly to work piece.
- Employs ball lock system.
- Standard seal is provided on the end of work piece. Double-packing can be designed on the pipe end and inner diameter portion, if needed.
- Automatic shut-off valves and sleeve stoppers (detachment prevention mechanism) that prevent unexpected detachment after connecting pipes are available. Please specify separately.

### ■ Usage

- Charging Work
- Pressure Tests
- Leak Tests
- Vacuum Tests





For Bulge Piping and Spool Piping

## Pipe Cupla PCBW Type

**Perfect in connecting and detaching bulge pipes!!**

**Employs a double-ball lock system for resistance to external forces and vibration.**

- Connection possible simply by inserting the pipe.
- Employs a two-row double-lock system for pipe fastening, stability and structure with resistance to external forces and vibration.
- Automatic shut-off valves and versions with sleeve stoppers (Detachment prevention mechanism) are available. Please specify separately.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests



For Bulge Piping and Spool Piping

## Pipe Cupla PCP Type

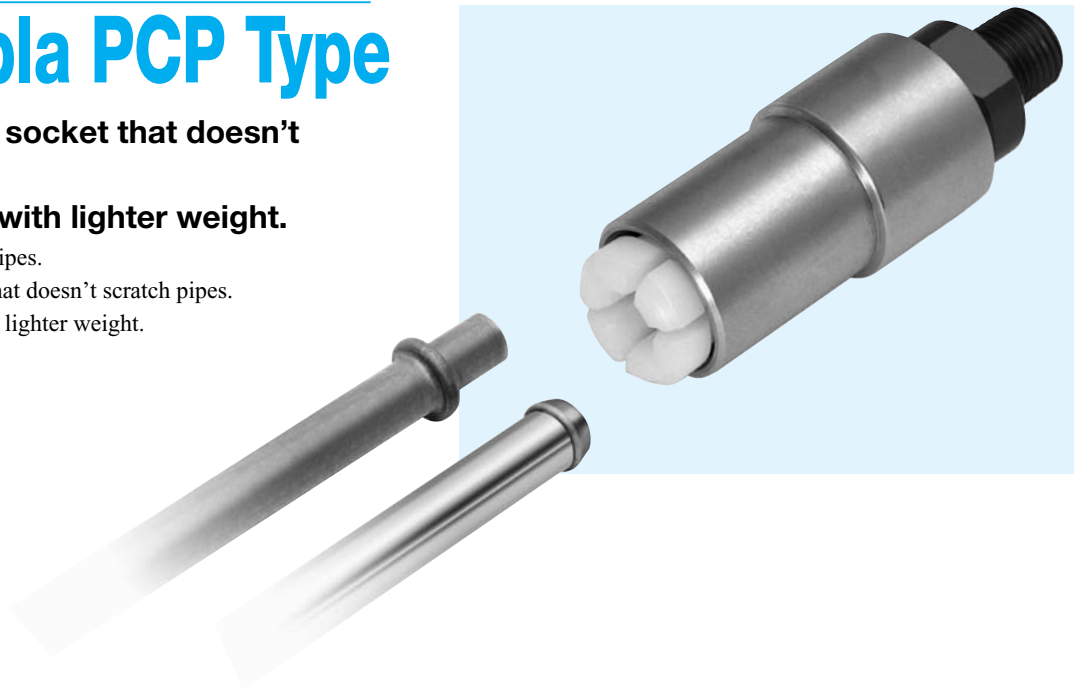
**Employs a plastic socket that doesn't scratch pipes!!**

**Great workability with lighter weight.**

- One-touch connection to pipes.
- Employs a plastic clamp that doesn't scratch pipes.
- Improves workability with lighter weight.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests



For Straight Pipes

## Pipe Cupla PCBL Type

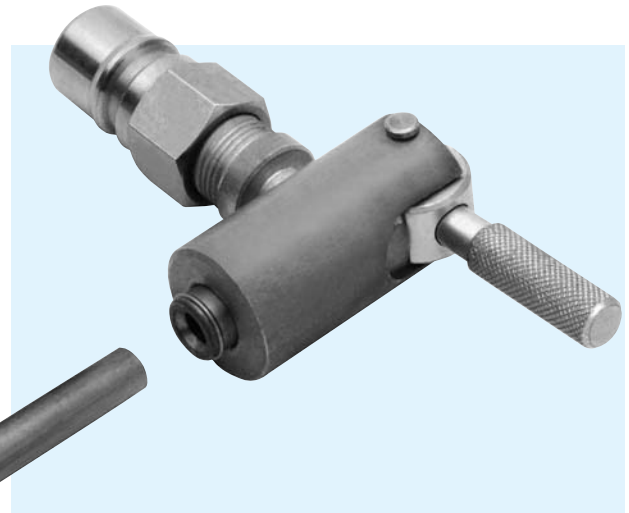
**For connecting and detaching straight pipes!!**

**Employs a ball lock system for pipe outer diameter. Lever operation for easy detaching.**

- Connects directly to pipes.
- Structure uses a ball to lock outer diameter of pipe.
- Employs lever operation system for easy detaching.
- Employs aluminum in the body material to lighten the weight and to improve workability.
- Particularly suitable for refrigerator assembly lines.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests
- Vacuum Pull Test



For Straight Pipes

## Pipe Cupla PCL Type

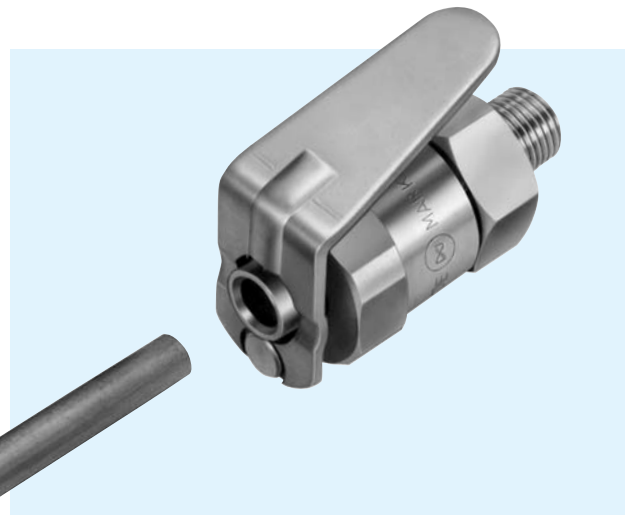
**For connecting and detaching straight pipes!!**

**Employs clamping lock system for pipe outer diameter. Lever operation for easy detaching.**

- Connects directly to pipes.
- Structure uses a clamp to lock outer diameter of pipe.
- Employs lever operation system for easy detaching.
- Uses a spring when connecting to the pipe for secure clamping.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests



\* We also produce a PCLB type (ball locking system) with a ball structure for locking the outer diameter of pipes that uses the same lever operation system as the PCL.



For Straight Pipes

# PCVH Type with Residual Pressure Release

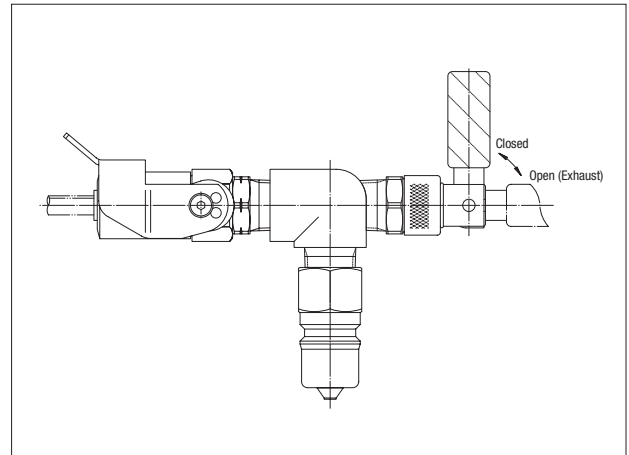
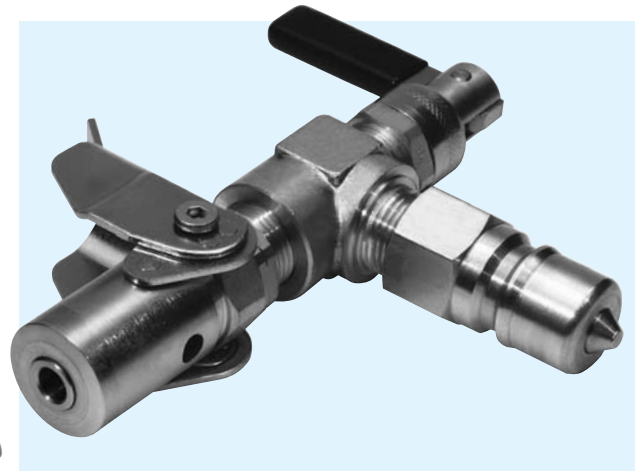
**Equipped with our original residual pressure release system!!**

**Easy pipe separation because residual pressure is purged by lifting lever.**

- Standard PCVH Cupla equipped with residual pressure release.
- Easy pipe separation made possible by our residual pressure release system. After filling, just pull a lever to purge residual pressure.
- Realizes safety when working with high pressure specifications of new refrigerants.

### Usage

- Filling Work
- Pressure Tests
- Leak Tests



For Straight Pipes

# PCLB Type with Residual Pressure Release

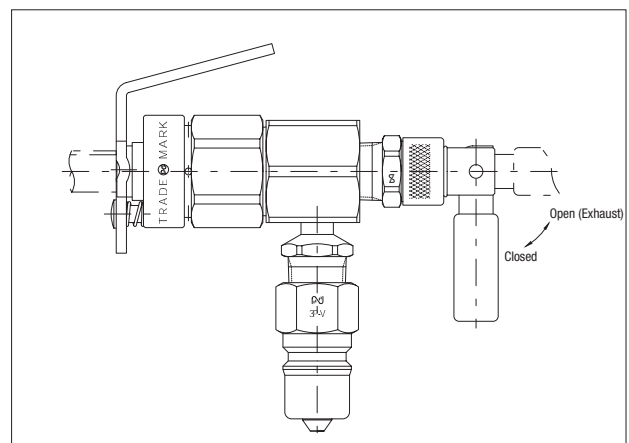
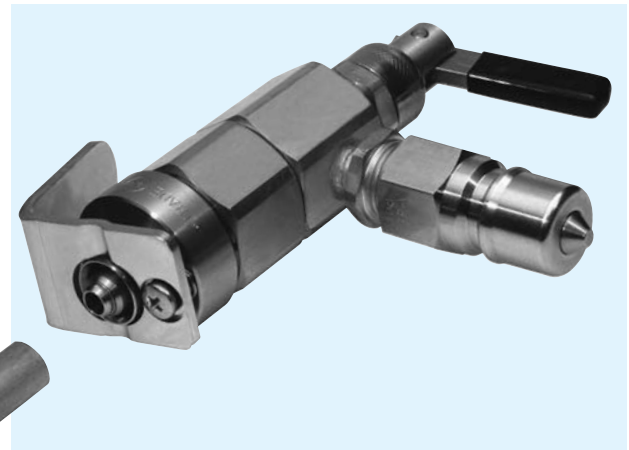
**Perfect for connecting and detaching straight pipes!!**

**Employs a pipe outer diameter ball lock system and makes pipe separation easy because residual pressure can be purged by lifting a lever.**

- Structure uses a ball to lock outer diameter of pipe.
- Employs lever operation system for easy detaching.
- Easy pipe separation made possible by our residual pressure release system. After filling, just pull a lever to purge residual pressure.
- Realizes safety when working with high pressure specifications of new refrigerants.

### Usage

- Filling Work
- Pressure Tests
- Leak Tests



For Straight Pipes and Pipes with Rubber Valves

## Pipe Cupla PCW Type

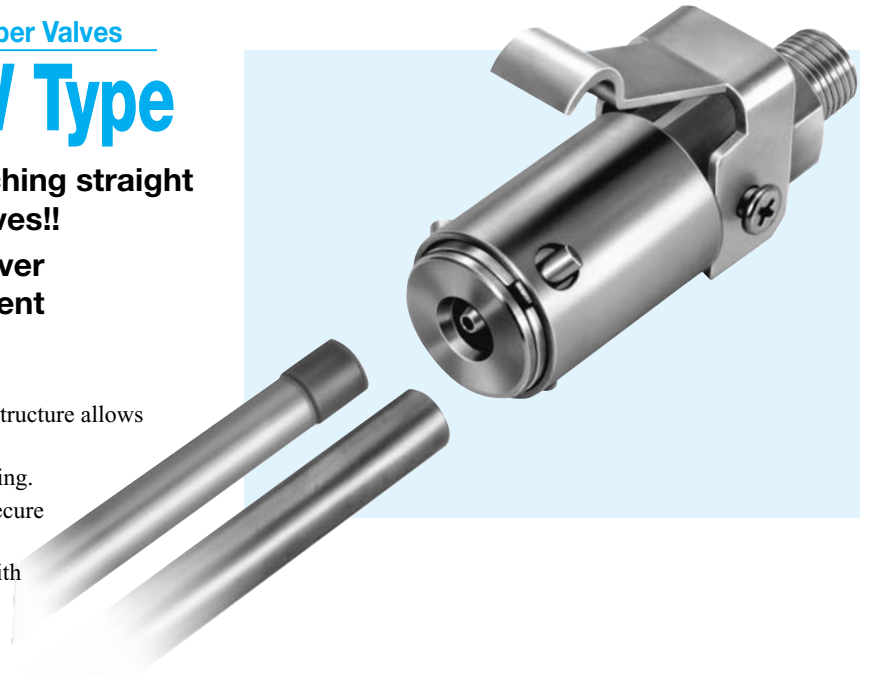
**Perfect in connecting and detaching straight pipes and pipes with rubber valves!!**

**Our independently developed lever operation system handles frequent detaching.**

- Connects directly to pipes.
- Employs our independently developed locking structure allows variations in pipe dimensions.
- Employs lever operation system for easy detaching.
- Uses a spring when connecting to the pipe for secure clamping.
- Perfect in connecting straight pipes and pipes with rubber valves.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests



For Large Diameter Straight Pipes

## Pipe Cupla PCVC Type

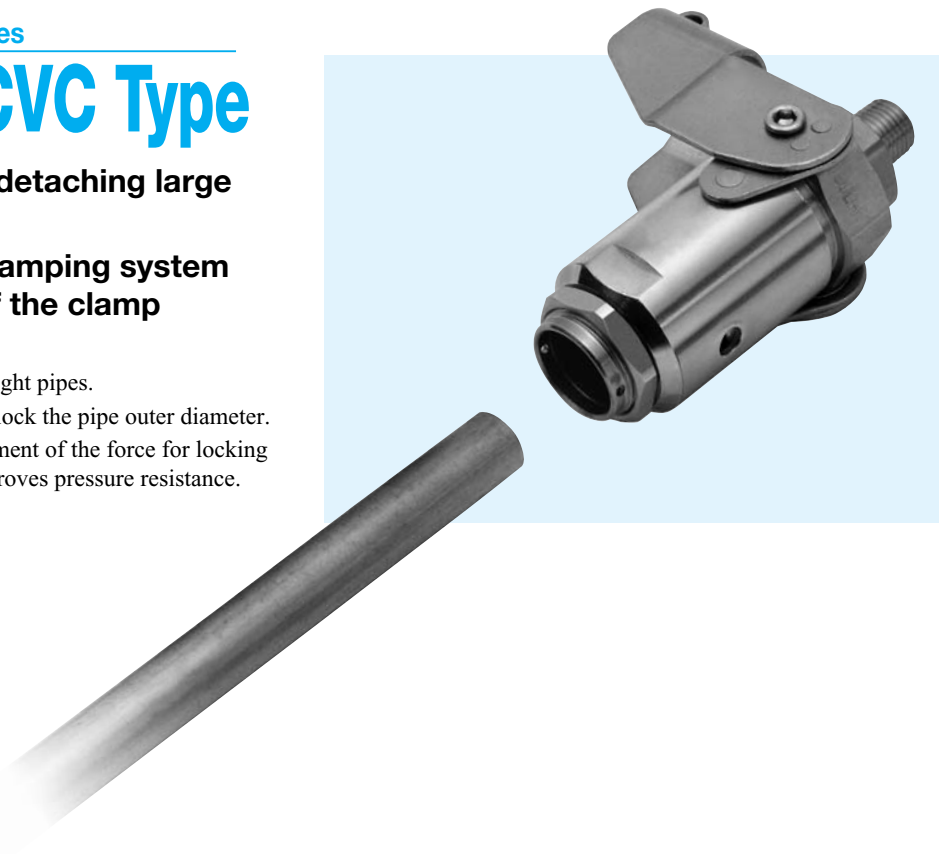
**Perfect in connecting and detaching large diameter straight pipes!!**

**Employs a special collet clamping system that enables adjustment of the clamp locking force.**

- Connects directly to large diameter straight pipes.
- Structure uses a special collet clamp to lock the pipe outer diameter.
- Employs a structure that enables adjustment of the force for locking pipes (lever operating force) which improves pressure resistance.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests
- Vacuum Pull Test





For Special Pipes

## Pipe Cupla PCD Type

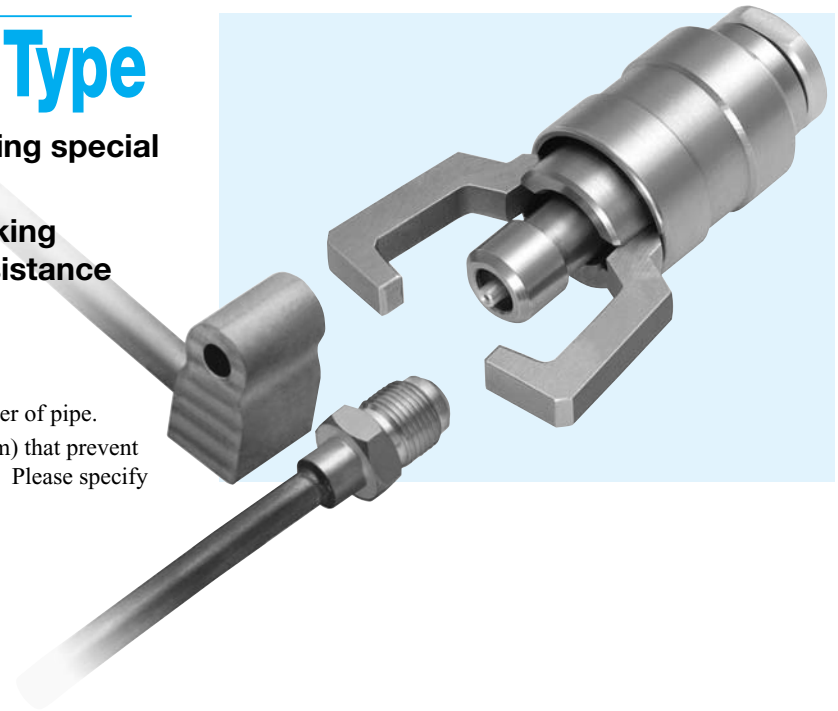
**Perfect in connecting and detaching special pipes!!**

**Our independently developed locking system is perfect for pressure resistance and air-tightness!**

- One-touch connection enables simple insertion.
- Handles wide range of uses.
- Structure uses a special clamp to lock outer diameter of pipe.
- Sleeve stoppers (detachment prevention mechanism) that prevent careless detachment after connecting are available. Please specify separately.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests
- Vacuum Pull Tests



High Pressure Type for Bead Pipes

## Pipe Cupla PCH Type

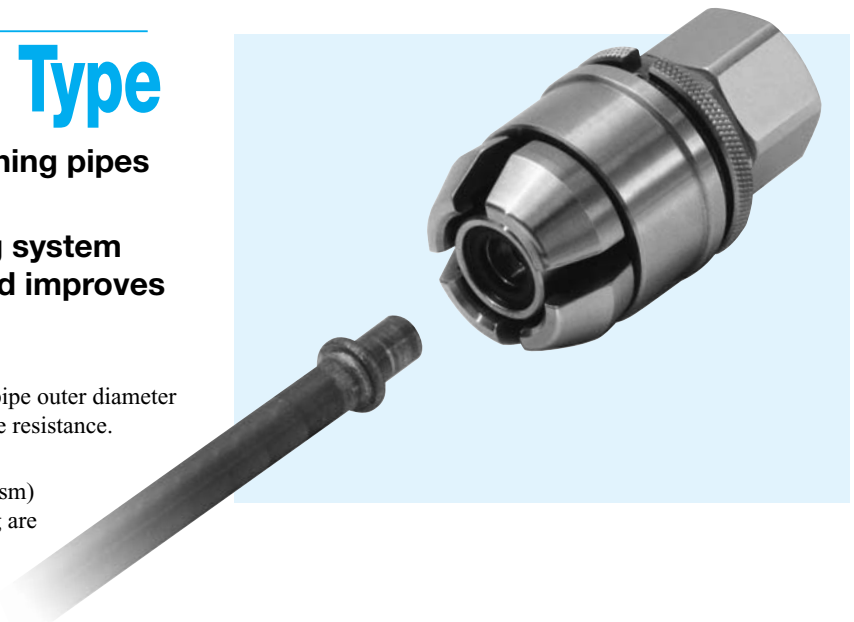
**Perfect in connecting and detaching pipes with stoppers!!**

**Employs a special clamp locking system that alleviates lock scratches and improves pressure resistance!**

- One-touch connection enables simple insertion.
- Structure uses a special collet clamp to lock the pipe outer diameter to alleviate lock scratches and improve pressure resistance.
- Sleeve operation makes pipe detachment easy.
- Sleeve stoppers (detachment prevention mechanism) that prevent careless detachment after connecting are available. Please specify separately.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests



For Direct Connection with Female Screws

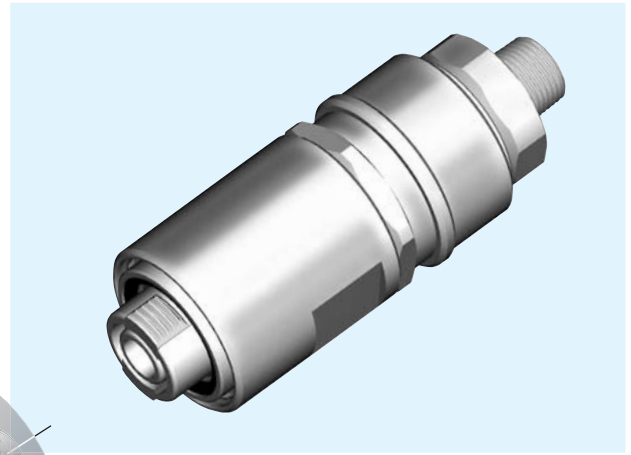
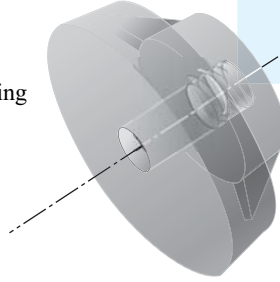
# Female Screw Cupla PCSI Type

**Direct, one-touch connection with female screws greatly improves workability!**

- For direct one-touch connection with female screws.
- Connection to female screws is easy by simply pressing the back side of the Cupla. This design ensures that its locking claw securely grips the screw threads at the time of connection.
- Structure uses internal pressure to maintain packing in the entire surface of the screw.
- Alleviates troublesome tightening work thereby greatly shortening pipe laying work.

## ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests



For Inner Diameter Tip Work

# Pipe Cupla PCBI Type

**Employs a ball to lock the leading end in the inner diameter of the work. Greatly improves workability!**

- For direct one-touch connection to the inner diameter of work
- Presses into the inner diameter of the work to connect. Connection is easy by simply pressing the back side of the Cupla. Employs an inner ball locking system that securely fastens the balls to the leading end in the inner diameter of the work at the time of connection.
- Structure uses internal pressure to increase the seal with the work.
- Alleviates troublesome pipe laying work thereby greatly shortening working hours.

## ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests



For Inner Diameter Tip Work

# Pipe Cupla PCI Type

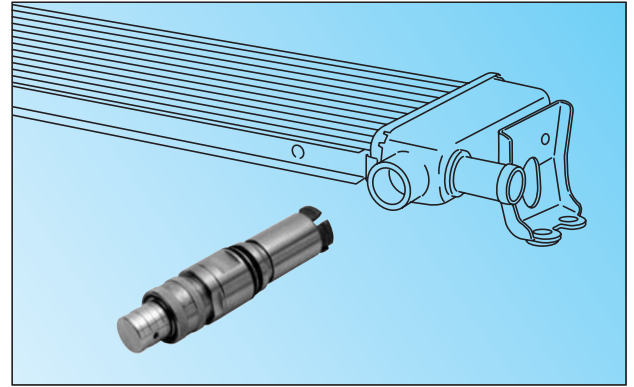
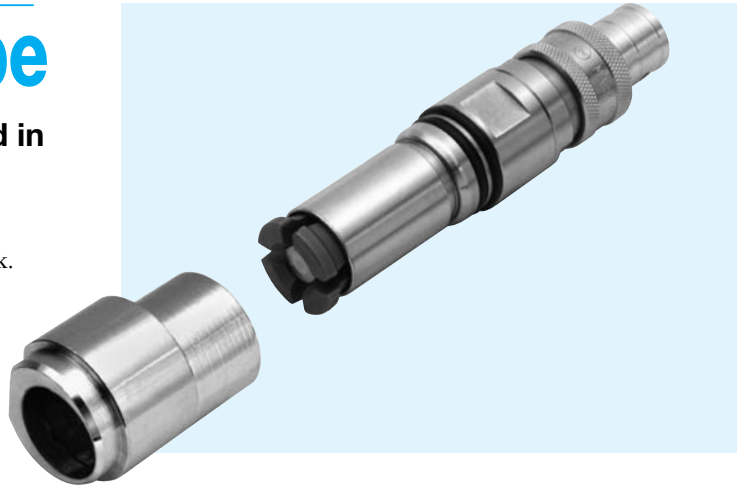
**Employs a clamp to lock the leading end in the inner diameter of the work.**

**Greatly improves workability!!**

- For direct one-touch connection to the inner diameter of work.
- Presses into the inner diameter of the work to connect. Connection is easy by simply pressing the back side of the Cupla. Employs an inner clamp system that securely fastens the clamp to the leading end of the inner diameter of the pipe as it is connected.
- Structure uses internal pressure to increase sealing.
- Alleviates troublesome pipe work.

## ■ Usage

- Filling Works
- Pressure Tests
- Leak Tests



For Pipe Inner Wall Lock

# Pipe Cupla PCIF Type

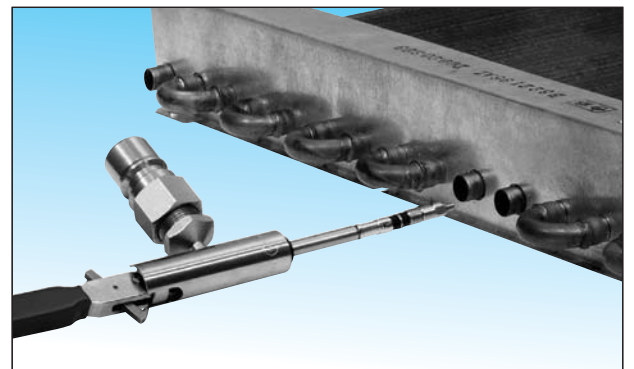
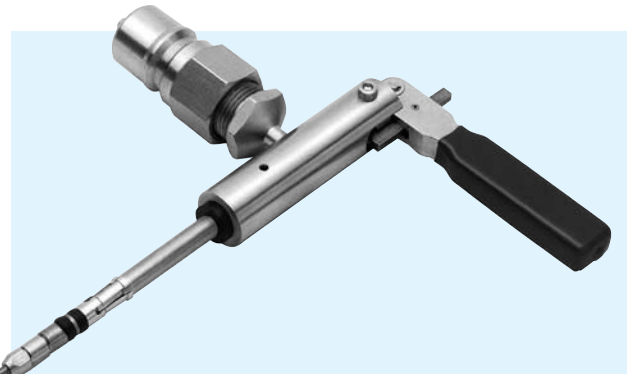
**Employs a clamp to lock the inner wall of the work.**

**Shows its power in narrow spaces!!**

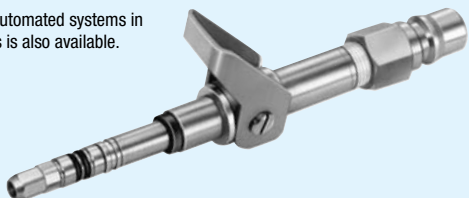
- For direct one-touch connection to the inner wall of work.
- Pushes inside of the work for connection. Employs an inner wall clamping system that securely fastens the clamp to the inner wall of the work by folding the lever over on the back of the Cupla.
- Structure simultaneously seals the inner wall and the leading end of the work with the operation of the lever.
- Alleviates troublesome pipe work.

## ■ Usage

- Filling Works
- Pressure Tests
- Leak Tests
- Vacuum Pull Tests



\* A PCIF type for use in automated systems in fin coil production lines is also available.



For Automatic Pipe Separation

## Auto-Cupla APCB Type

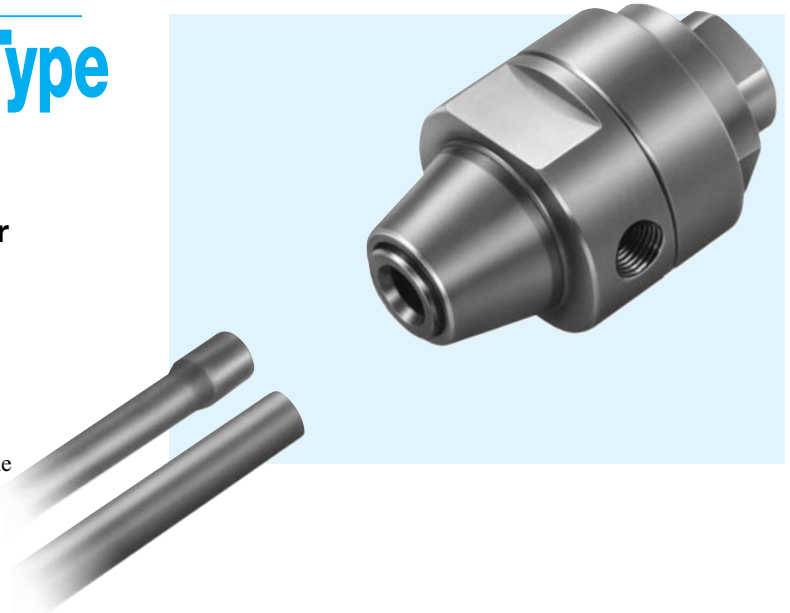
**Detachable type that automatically separates from the pipe!!**

**Contributes to energy and manpower conservation on the production line.**

- Connection possible simply by inserting the pipe.
- A detachment mechanism is built-in to the main unit. When compressed air of 0.5MPa - 0.6MPa {5kgf/cm<sup>2</sup> to 6kgf/cm<sup>2</sup>} pressure is applied to section A, the pipe automatically separates by air drive.
- Contributes to energy and manpower conservation on the production line.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests



For New Refrigerant Charge Valves Used in Vehicle Air Conditioners

## Charge Valve PCB Type

**One-touch connecting and detaching to vehicle air conditioner new coolant charge valves!!**

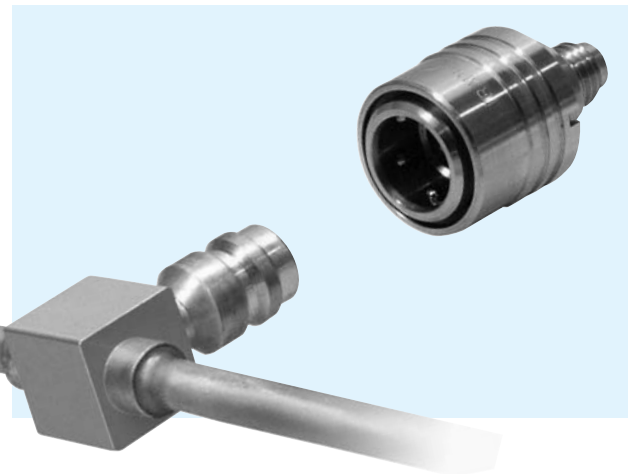
**Greatly improves workability!!**

- One-touch connection and separation to vehicle air conditioner new coolant charge valves (JRA2009 standard).
- Realizes efficiency in refilling and vacuum pulling work for new refrigerants.

### ■ Usage

- Filling Work
- Pressure Tests
- Leak Tests
- Vacuum Pull Tests

\* Types with valves are also available.



For high pressure

For low pressure



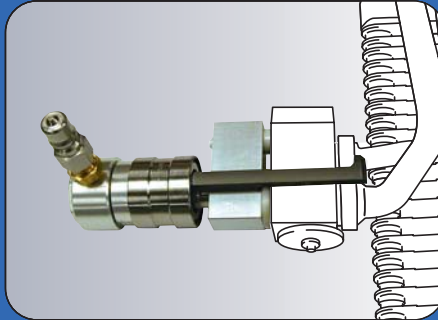


# Special Cupla products contribute to energy conservation in all industries

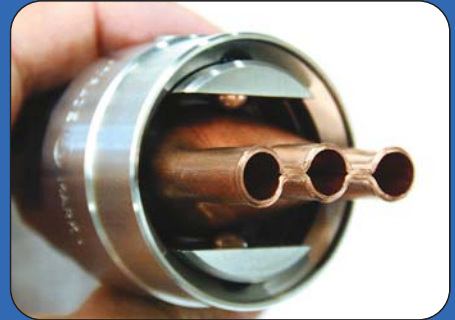
(\* Introducing a small sample of possible usages)



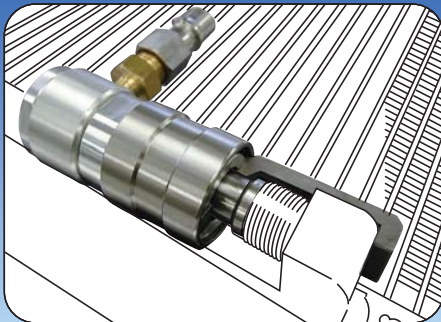
For Large-sized Cooler Hose Tests



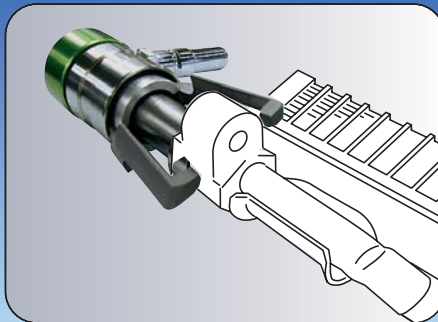
For Car Air Conditioner He Leak Tests



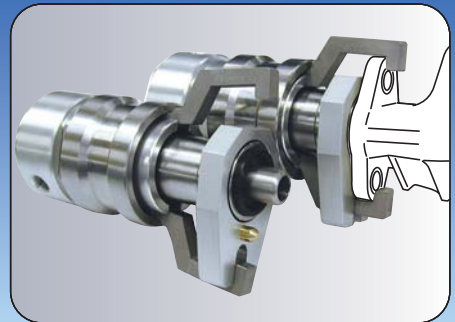
For Special Pipe Pressure Resistance and Leak Tests



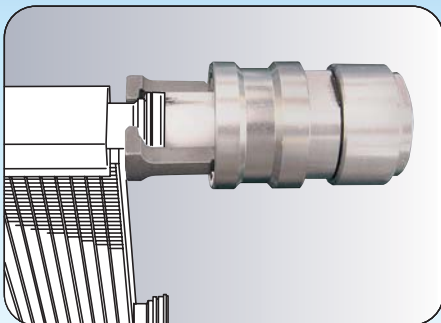
For Condenser He Leak Tests



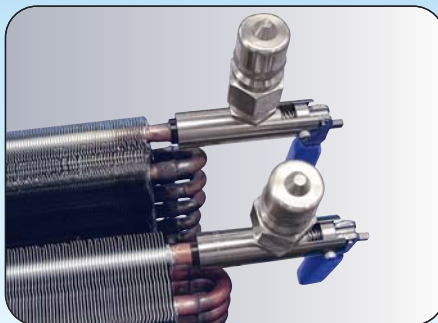
For Car Air Conditioner He Leak Tests



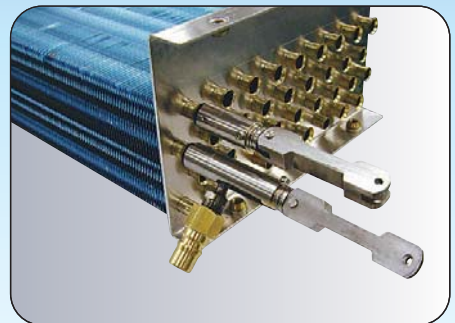
For Car Air Conditioner He Leak Tests



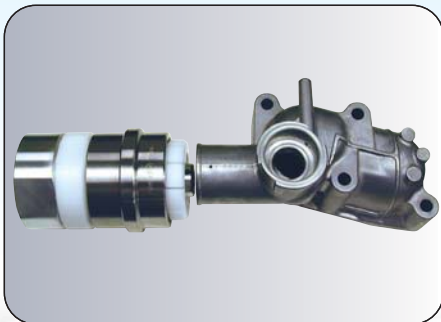
For Car Air Conditioner He Leak Tests



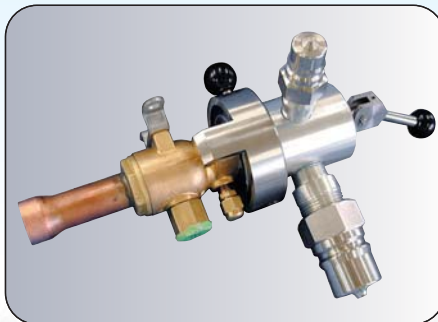
For Heat Exchanger He Leak Tests



For Heat Exchanger He Leak Tests



For Engine Bench Tests



For Package Air Conditioner He Leak Tests



For Condenser He Leak Tests





# Other Cupla Series

Nitto Kohki's Cupla — Wherever there are fluids



Semiconductor Cupla Series



Hydraulic Series



Multi-Cupla Series



Air Series



For Liquids and Gases (general use)



Line Collection Series



Fusing Series



Metallic Types and for Cooling Water

Nitto Kohki's Cupla series of couplers have been developed with usage and the user in mind to realize better convenience and ease of use. Today, our couplers play an active role in a wide variety of connections for fluids.

“Cupla” is a registered trademark of Nitto Kohki.

**CUPLA**



# NITTO KOHKI'S POWER

## From Development to Production, Quality Control and Marketing

Nitto Kohki stays focused on its mission to conceive and produce its world-renowned quality Cupla products and meet user needs. To attain that objective, Nitto Kohki has started an integrated "total product system" that encompasses research and development, quality control, production and marketing.

### Nitto Kohki's Total Product System

#### Research and Development

Nitto Kohki's perpetual drive to create new Cupla products and next generation concepts is made possible by implementation of a thorough system that collects and analyzes the real production needs of manufacturers the world over.



#### Quality Control

Every manufacturer knows that the high acclaim of being a world-class brand is only achieved and maintained through strict quality control that monitors every step of the manufacturing process. Nitto Kohki spares no effort in selecting prime materials, precise forming and durability tests that push each product to its limits.



#### Production

Production would not be complete without Nitto Kohki's system that includes product forming and assembly and the final testing of our finished products. A dazzling array of in-house robots and the industry's most advanced equipment empower Nitto Kohki to press forward to realize a "resilient production capacity."



#### Marketing

Nitto Kohki leaves no stone unturned in its efforts to advertise itself and to push its technical to the forefront of today's state of the art. Nitto Kohki's name is branded as a leader of technical know-how and can be found in industry-related newspapers and trade journals. Nitto Kohki also endeavors to be close to its customers by actively participating in exhibitions and study meetings both locally and around the world.



## Production Branches that Support Our Quality

### Resilient Production Capacity for a Complete Supply Organization

Our highly consistent system from product forming and assembly to testing of the finished products is the hallmark of our large-scale production operations. Nitto Kohki comprises a supply organization with its eye to maintaining a tight hold on the trust of its customers.



Other

# Guide to Nitto Kohki Products

Nitto Kohki's Energy Conservation Products

## Pneumatic, Electric, Hydraulic Devices and Tools

You can find Nitto Kohki's all-professional tools and devices anywhere, from one-man steel forming shops to the major high-rise scale construction sites of the world's leading metropolises. This is the finest testimony to their durability and the reliability entrusted in them by workers the world over. Nitto Kohki's industrial products are actively used for energy conservation, manpower conservation and as rationalizing equipment in a wide range of uses. You can find them in spatter and slag removal after welding and the forming of holes in steel materials, forming of angle materials, in soft steel materials, opening and chamfering of stainless steel. . . and the list goes on. . .

## Compressors and Vacuum Pumps

Our original linear drive free piston can never be mimicked. Using this innovative mechanism, a complete series has been formed from low and mid pressure compressors to vacuum pumps. There are ever growing fields of application of use as air supply and vacuum supply for a variety of machines and apparatuses with the excellent functions and features of these products. Applications range from medical equipment to control devices, vending machines, printing machines, combustion engines, OA equipment and maintenance equipment.

## Electric Screwdrivers

These electric tools quickly and securely fasten screws with a constant force for machine or apparatus assembly. Realizes highly precise torque control!

Select the product the best fits your needs from our world-class line of screwdrivers.

## Armless Door Closers

Our automatic hinges automatically and quietly close opened doors, and leave the room interior with a beautiful grace because they are armless. These products are in use from office buildings to private homes and other buildings such as telephone booths or even in trains.

# Conceiving Technology that Speaks to Man

Cupla is only one embodiment of the many leading technologies that Nitto Kohki uses to push the envelope for next generation energy-saving products.



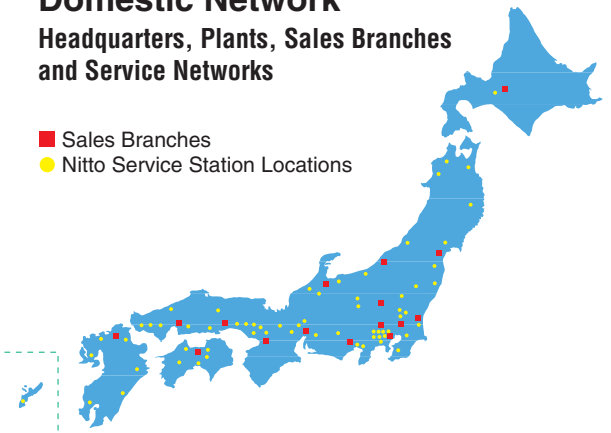


## Main Cupla Sales Branches Around the World



## Domestic Network Headquarters, Plants, Sales Branches and Service Networks

- Sales Branches
- Nitto Service Station Locations



## ⚠ Precautions of Use

**⚠ Danger** • Do not attach or detach under pressure.

**⚠ Warning**

- As a rule, there is no lubricant applied at the time of shipment to the socket O-rings on products whose sealing material is an HNBR product. Apply refrigerator oil before use.
- Do not step on or jar.
- Do not use outside of the range of specifications for fluids, temperature or atmosphere.
- Use in environments in which there are dramatic changes in temperatures can cause screws to loosen. It is dangerous if the lever slips or the pipe connection is incomplete. Do not use if screws are loose.
- Because the sealing portion with copper pipe is metallic because of its structure, its air-tightness is not absolute. Do not use flammable gas or fluids that have the danger of effecting humans.
- When not at room temperature, do not connect or separate or operate levers.
- When using new products, always connect the pipe, fold the lever and check the connection and the clamp.

**⚠ Caution**

- Check the pipe ends and insertion areas for burrs, odd shapes or the adherence of foreign matter before connecting to pipes.
- When connecting to pipes other than copper ones, durability decreases and there is a greater chance of slipping, and or detaching. Take proper care and precautions when connecting to such pipes.
- If the lever can be folded completely (without stopping partway) when connecting to a pipe, there is the possibility that the part is worn or deformed. Stop using the Cupla and adjust the clamping force according to the maintenance manual.
- If there is a limit to how much the clamp guide can be adjusted, it is possible that the Cupla or the part has reached the end of its life or is damaged or deformed. Stop using the Cupla and replace the Cupla or replace (perform maintenance) the part according to the maintenance manual.
- When connecting, manually apply an amount of tension to check that there is no slipping or removal of the pipe. If there is slipping or removal even if the lever is stopped at the appropriate angle, it is possible that the part is damaged or deformed. Stop using the Cupla and replace (perform maintenance) the part according to the maintenance manual.
- Do not store with the lever folded over when not in use.
- Do not operate levers except when connecting to pipes. (This can cause part failure.)
- When attaching the Cupla, tighten the adapter hexagonal surfaces using a spanner. (Do not use any other tool than a spanner.)
- Do not directly mount the Cupla to devices that experience vibrations or physical shocks.
- Do not use Cupla with deformed levers, cranks or springs.
- After performing maintenance, always check detachability and check for leaks.
- Cautions vary according to each individual product. Please contact us for details.
- Refer to the general catalog (Ck028a) for other precautions.



### ■ Overseas Affiliates/Offices

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REPRESENTATIVE OFFICE**  
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**NITTO KOHKI CO., LTD. SEOUL  
REPRESENTATIVE OFFICE**

**⚠ Caution**  
To use products properly, be sure to carefully read the "instructions" before use.  
The information contained in this catalog is from December 2002 and may be revised without notice.

DISTRIBUTED BY

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