Thermal Management

Liquid Cooling Solutions for Electronics, Data Centers, Servers and Supercomputers

November 2023

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Parker

ENGINEERING YOUR SUCCESS.

We Developed a Cool Solution!

Quick connect coupling system – efficient components in the area of thermal management

The requirements for quick connect couplings for thermal management are extremely high.

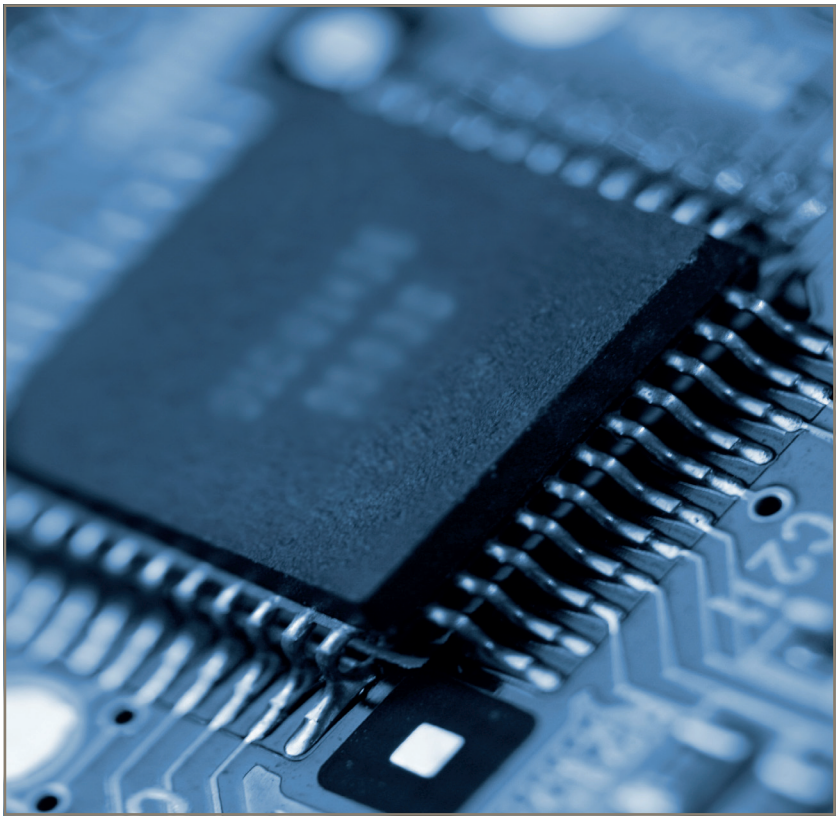
Our systems stand out for their high level of compatibility with the broadest range of liquids and the application environment.

Likewise, their resistance to mechanical stresses is vital. One of the most important requirements in the cooling of electronic systems is the avoidance of any fluid loss, as this is the only way to guarantee fault-free function of the installation.

Our Value added:

- Wide experience on various thermal management applications
- A global presence
- Customer engineering intimacy
- In-house engineering and manufacturing

Liquid Cooling Solutions
Leak-Free Connections.
Reliable Performance.



▲ Flat-sealing valve design prevents spillage.

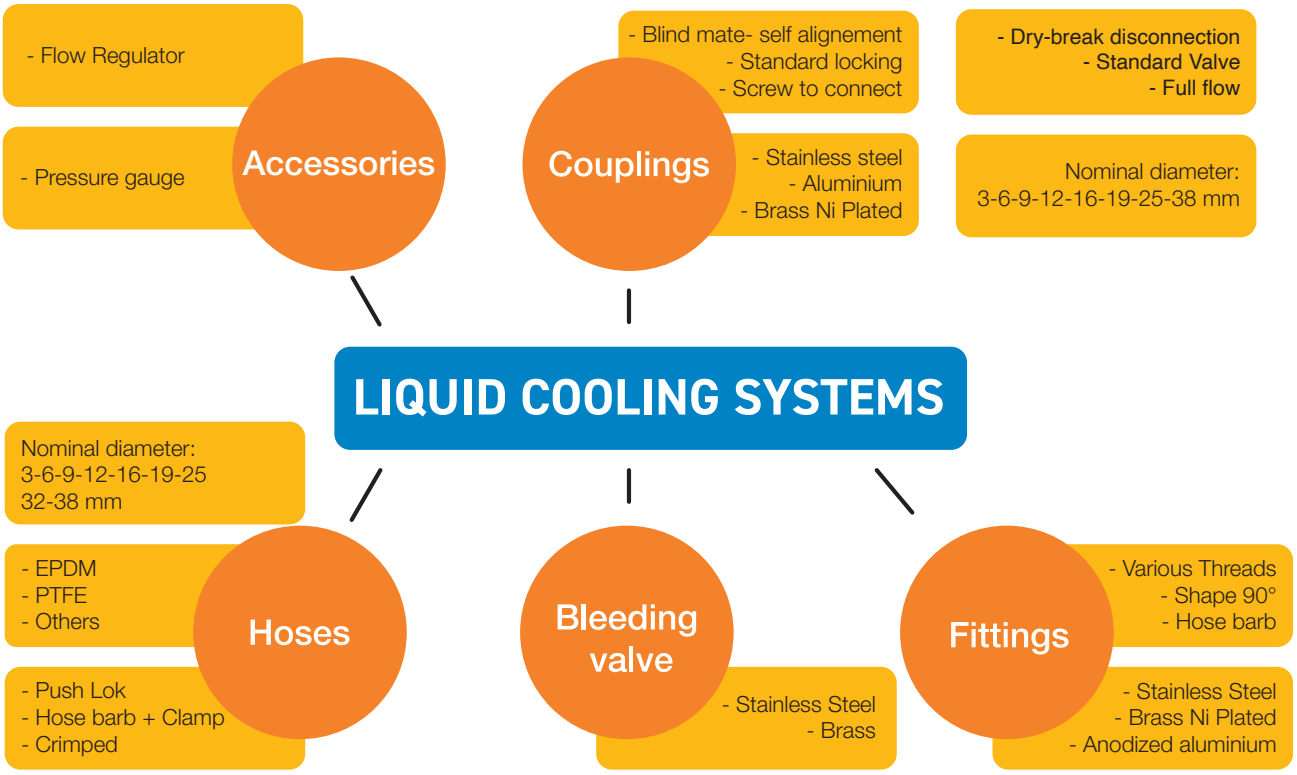
60 Years of Know-How

From standard product to customized solution – we meet your requirements

Energy efficiency and compact design play a major role in thermal management applications. As a result of the low pressure drop of our coupling systems, we take energy saving into account at the same time as optimal performance. Reducing the sizes of our couplings allows their use in the most confined spaces.

The flat-sealing valve design reliably prevents any fluid loss during the coupling and uncoupling process, thereby protecting the sensitive electronics and all electrical connections.

You can be sure that the know how we have acquired from over 60 years in the development and production of quick connect couplings guarantees a reliable and efficient solution for your requirement.



Thermal Management Range at a Glance

Find the ideal product for your application

	NSG Series	NSI Series	NSP1 Series	UQD Series
Working Pressure	150 psi / 10.3 bar	290 psi / 20 bar	150 psi / 10.3 bar	150 psi / 10.3 bar
Working Temperature	0°C to 70°C	-40°C to 70°C -20°C to 200°C (FKM)	0°C to 70°C	0°C to 70°C
Storage Temperature	-40°C to 120°C		-40°C to 120°C	-40°C to 120°C
Nominal Diameter	3mm	3/6/9/12mm	6mm	02/04/06/08in
Materials	**Body:** Stainless Steel **Seals:** EPDM	**Body:** Brass, Stainless Steel **Seals:** FKM/EPDM	**Body:** Stainless Steel **Seals:** EPDM	**Body:** Stainless Steel **Seals:** EPDM
Functionality	• Two-hand operation	• Two-hand operation	• Push to connect	• Push to connect • Fully interchangeable with other Intel-approved UQD suppliers

UQDB Series	ORV Series	CDT Series	NSE Series
150 psi / 10.3 bar	50 psi / 3.4 bar	174 psi / 12 bar	217 psi / 15 bar
0°C to 70°C	0°C to 60°C	10°C to 60°C	-20°C to 200°C (FKM)
-40°C to 120°C	-40°C to 120°C	-40°C to 120°C	
02/04/06/08in	5mm	25mm	16/19/25mm
Body: Stainless Steel, Zinc Plated Steel **Seals:** EPDM	**Body:** Stainless Steel **Seals:** EPDM	**Body:** Stainless Steel **Seals:** EPDM	**Body:** Stainless Steel **Seals:** FKM/EPDM
• Blind connection • Fully interchangeable with other Intel-approved UQDB suppliers	• Blind connection • ± 5mm misalignment allowed • 2.7˚ angular misalignment allowed	• Two-hand operation • Screw-to-Connect	• Two-hand operation • Reduced dimensions compared to flow capacities

NSG Series

Nominal Diameter 3mm

Dry-Break

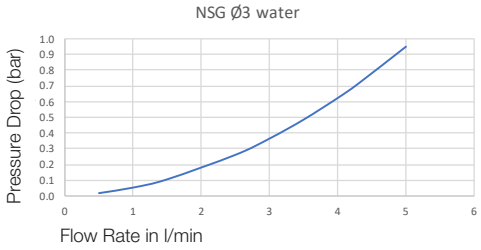
Max. Working Pressure	Working Temperature
150 psi / 10.3 bar	0°C to 70°C (Extended temperature range is possible, contact Parker for more information.)

Material	Connect Force
Coupling: Stainless Steel **Plug:** Stainless Steel **Seals:** EPDM	14 psi = 15 lbs 100 psi = 19 lbs

CV Values	Spillage/Air Inclusion
Socket to Plug - .363 Plug to Socket - .414 Average - .392	.002 mL

Flow diagrams

Water



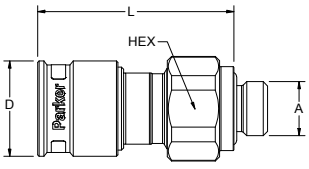
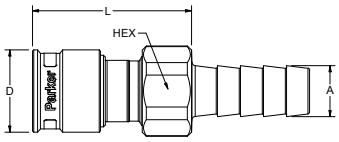
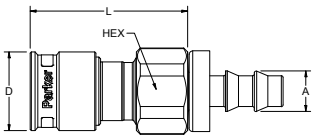
Technical Description

The NSG are dry-break couplings with flat face valves. The compact design makes them suitable for reduced spaces. Coupling system with two-hand operation, i.e. both hands are required when connect/disconnect.

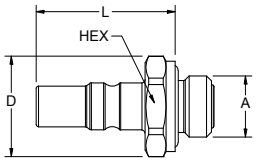
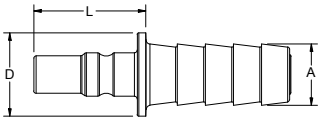
Advantages

- No spillage during connection/disconnection
- Low pressure drop
- Advanced internal design for cooling applications

Couplings — Series NSG

	Size	Connection A	HEX mm	L mm	D mm	Part Number
 Male Thread	3mm	G 1/8	17.5	34.8	17.0	NSG-121-2MB
 Hose Barb	3mm	3/8“ Hose Barb	17.5	33.3	17.0	NSG-121-6HB
 Parker Push-Lok	3mm	1/4“ Pushlok	17.5	34.1	17.0	NSG-121-4PL

Plugs — Series NSG

	Size	Connection A	HEX mm	L mm	D mm	Part Number
 Male Thread	3mm	G 1/8	14.3	22.7	15.9	NSG-122-2MB
 Hose Barb	3mm	3/8 Barb	N/A	19.3	14.3	NSG-122-6HB

All parts available in Red (-RD) or Blue (-BU)

To request custom port configuration please contact qcd.support@support.parker.com.

NSI Series

Nominal Diameter 3/6/9/12mm

Technical Description

The NSI are dry-break couplings with flat face valves. The compact design make them suitable for reduced spaces. Coupling system with two-hand operation, i.e. both hands are required when connect/disconnect.

Push to connect version available on request: NSP series

Advantages

- No spillage during connection/disconnection.
- Low pressure drop.
- Advanced internal design for cooling applications.
- Can be used either with water and heat transfer oils.
- Excellent resistance to vibrations and mechanical stresses.

Dry-Break

Max. Working Pressure*

290 psi / 20 bar
* maximum static working pressure with design factor 4 to 1.

Working Temperature

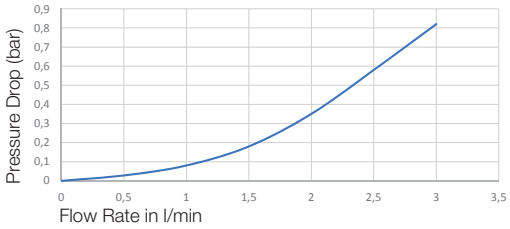
-40°C to 70°C
-20°C to 200°C (FKM)

Material

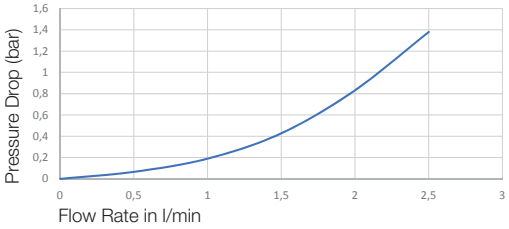
Coupling: Brass/Stainless Steel
Plug: Brass/Stainless Steel
Seals: FKM
Other materials available on request

Flow diagrams

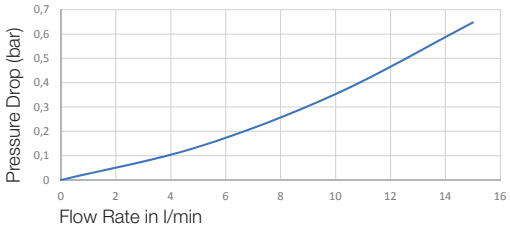
Water NSI Ø3 water



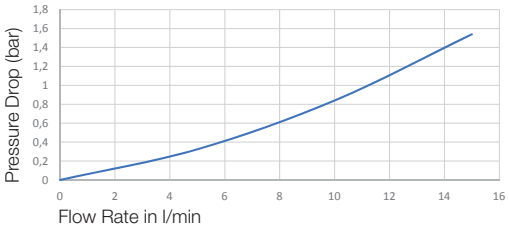
Oil NSI Ø3 oil (32 cSt)



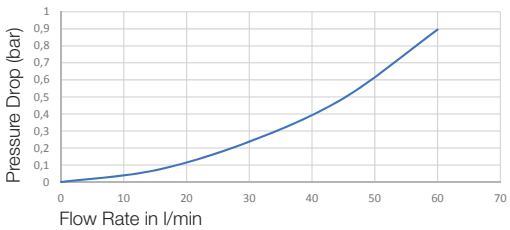
Water NSI Ø6 water



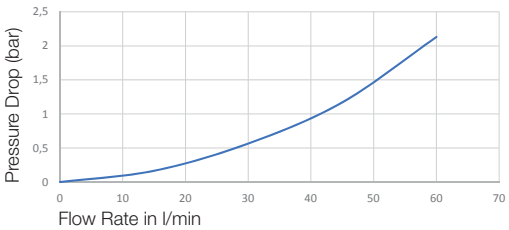
Oil NSI Ø6 oil (32 cSt)



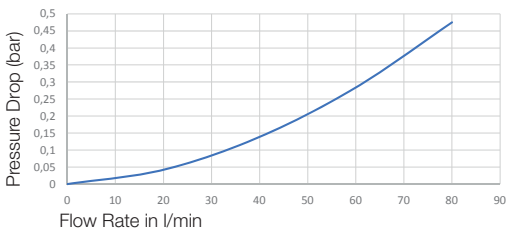
Water NSI Ø9 (water)



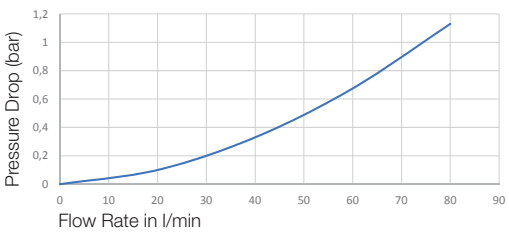
Oil NSI Ø9 oil (32 cSt)



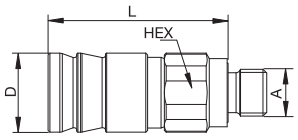
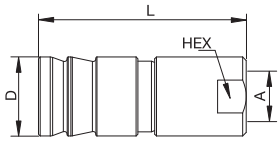
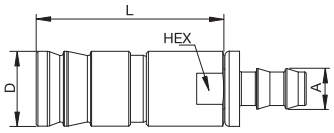
Water NSI Ø12 water



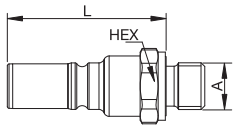
Oil NSI Ø12 oil (32 cSt)



Couplings — Series NSI

	Size	Connection A	HEX mm	L mm	D mm	Part Number
 Male Thread	3mm	G 1/8	14	38	17	NSI-121-2MBE [1]
	6mm	M 16 x 1.5	20	44.8	22	NSI-251-16MCL-2 [2]
	9mm	G 3/8	27	63	30	NSI-371-6MBO
	12mm	G 1/2	35	90.4	42	NSI-501-8MBO
 Female Thread	6mm	G 1/4	20	57.9	22	NSI-251-4FB
	9mm	G 3/8	27	72	30	NSI-371-6FB
	12mm	G 1/2	35	99.4	42	NSI-501-8FB
 Parker Push-Lok	6mm	10 mm	20	55.2	22	NSI-251-6PL

Plugs — Series NSI

	Size	Connection A	HEX mm	L mm	D mm	Part Number
 Male Thread	3mm	G 1/8	14	36.5		NSI-122-2MBE [1]
	6mm	G 1/4	19	44		NSI-252-4MBE [1]
	6mm	9/16-18 UNF	20.6	72		NSP-252-6MO
	9mm	G 3/8	24	60.2		NSI-372-6MBO
	12mm	G 1/2	32	79.1		NSI-502-8MBO

[1] End connection according to ISO1179-2 ED seal
[2] End connection according to DIN 2353 24°cone

All parts available in Red (-RD) or Blue (-BU)

To request custom port configuration please contact qcd.support@support.parker.com.

NSP1 Series

Nominal Diameter 6mm

Dry-Break

Max. Working Pressure*	Working Temperature
150 psi / 10.3 bar	0°C to 70°C

Material		Connect Force
Coupling:	Stainless Steel	0 psi = 25 lbs
Plug:	Stainless Steel	100 psi - 45 lbs
Seals:	EPDM	

CV Values	Spillage
Socket to Plug - 1.11 Plug to Socket - 1.22 Average - 1.16	.01 mL

Technical Description

The NSP1 are dry-break couplings with flat face valves. The compact design make them suitable for reduced spaces. NSP1 features a push-to-connect design for ease of operation, and is offered in red and blue colors for system identification.

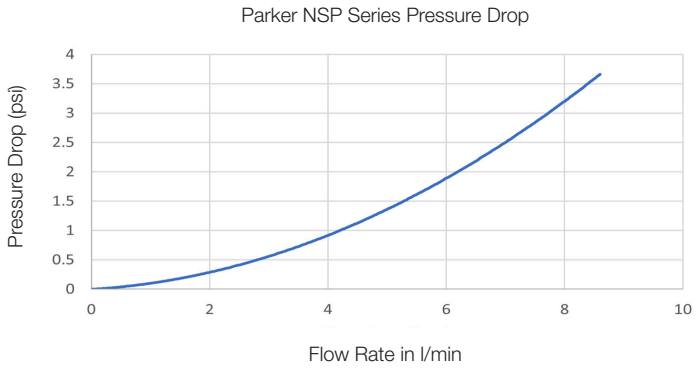
NSP (Parker HPCE) and NSP1 (Parker QCD) are fully interchangeable.

Advantages

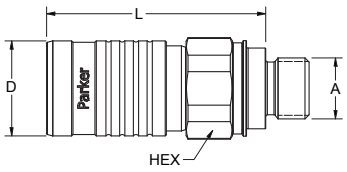
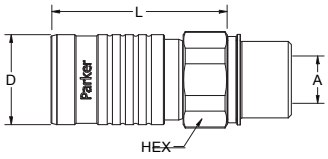
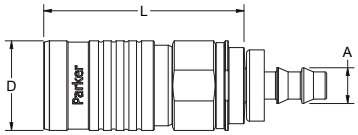
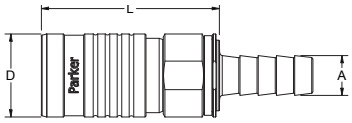
- No spillage during connection/disconnection.
- Low pressure drop.
- Push-to-connect design for one-handed operation.
- Advanced internal design for cooling applications.

Flow diagrams

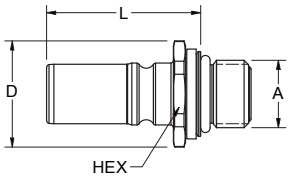
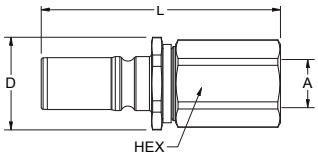
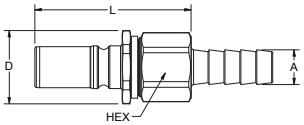
Water



Couplings — Series NSP1

	Size	Connection A	HEX mm	L mm	D mm	Part Number
 Male Thread	6mm	1/4-18 NPT	22.2	48.3	22	NSP1-251-4MP
	6mm	9/16-18 UNF-2A	22.2	50.7	22	NSP1-251-6MO
 Female Thread	6mm	1/4-18 NPTF	22.2	58.5	22	NSP1-251-4FP
 Parker Push-Lok	6mm	1/4“ Hose Barb	N/A	50.2	22	NSP1-251-4PL
 Hosebarb	6mm	3/8“ Hose Barb	N/A	47.1	22	NSP1-251-6HB

Plugs — Series NSP1

	Size	Connection A	HEX mm	L mm	D mm	Part Number
 Male Thread	6mm	G 1/4-19-A BSPP	20.6	50.9	22.2	NSP1-252-4MB
	6mm	1/4-18 NPTF	19.1	52.2	22.2	NSP1-252-4MP
	6mm	9/16-18 UNF - 2A	20.6	32.3	22.2	NSP1-252-6MO
 Female Thread	6mm	1/4-18 NPT	20.6	57.4	22.2	NSP1-252-FP
 Hosebarb	6mm	3/8“ Hose Barb	20.6	47.4	22.2	NSP1-252-6HB

To request custom port configuration please contact qcd.support@support.parker.com.

All parts available in Red (-RD) or Blue (-BU)

UQD Series

Nominal Diameter 1/8 - 1/2 inch

Technical Description

Universal Quick Disconnect (UQD) based on an Intel inspired open specification. Developed in collaboration with Intel Corporation.

Advantages

- Fully interchangeable with other Intel-approved UQD suppliers
- No spillage during connection/disconnection
- Low pressure drop
- Advanced internal design for cooling applications

Dry-Break

Max. Working Pressure

150 psi / 10.3 bar

Working Temperature

0°C to 70°C (Extended temperature range is possible, contact Parker for more information.)

Material

Coupling: Stainless Steel
Plug: Stainless Steel
Seals: EPDM

Connect Force

UQD02: 0 psi=14 lbs; 14 psi=15 lbs; 100 psi=20 lbs
UQD04: 0 psi=20 lbs; 14 psi=22 lbs; 100 psi=35 lbs
UQD06: Coming Soon
UQD08: Coming Soon

CV Values

	Plug-Coupling	Coupling-Plug
UQD02:	0.34	0.30
UQD04:	1.25	1.13
UQD06:	2.21	1.90
UQD08:	4.78	4.33

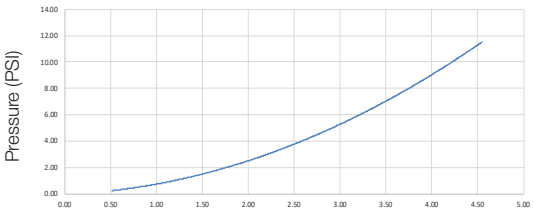
Spillage/Air Inclusion

UQD02: .002mL / .011mL
UQD04: .004mL / .08mL
UQD06: Coming Soon
UQD08: Coming Soon

Flow Diagrams

Water

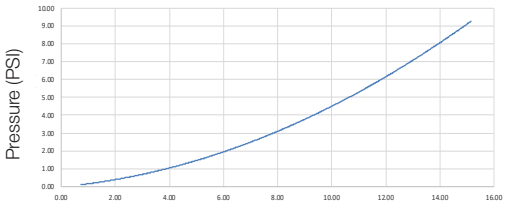
UQD02



Flow (LPM)

Water

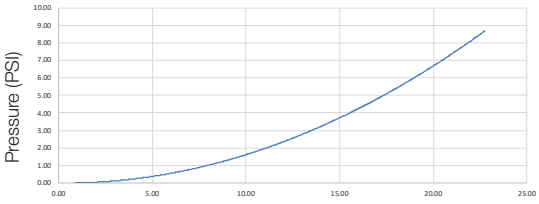
UQD04



Flow (LPM)

Water

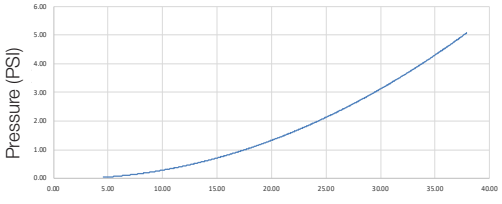
UQD06



Flow (LPM)

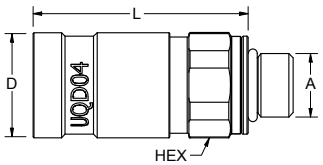
Water

UQD08



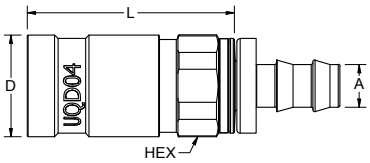
Flow (LPM)

Couplings — Series UQD



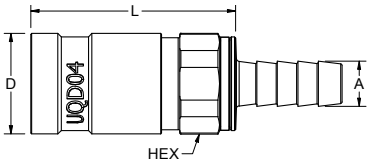
Male Thread

Size	Connection A	HEX mm	L mm	D mm	Part Number
02in	7/16-20 UNF-2A	15.9	36.2	18.5	UQD-121-4MO
04in	9/16-18 UNF-2A	22.2	48	23.4	UQD-251-6MO
04in	G 3/8-19-A BSPP	22.2	49.9	23.4	UQD-251-6MB
06in	G 3/8-19-A BSPP	25.4	53.9	27.4	UQD-371-6MB
06in	3/4-16 UNF-2A	25.4	52	27.4	UQD-371-8MO
08in	7/8-14 UNF-2A	28.6	62.5	32.6	UQD-501-10MO



Parker Push-Lok

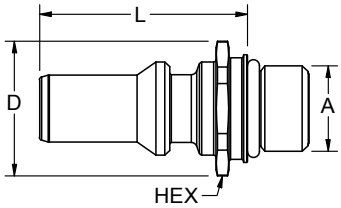
Size	Connection A	HEX mm	L mm	D mm	Part Number
02in	1/4“	14.3	35.6	18.5	UQD-121-4PL
04in	1/4“	22.2	47.7	23.4	UQD-251-4PL
04in	3/8“	22.2	47.7	23.4	UQD-251-6PL
06in	1/2“	25.4	52	27.4	UQD-371-8PL
08in	1/2“	28.6	62.5	32.6	UQD-501-8PL
08in	5/8“	28.6	62.5	32.6	UQD-501-10PL



Hosebarb

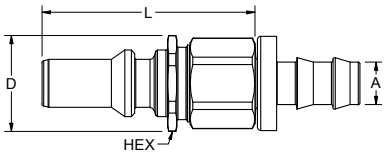
Size	Connection A	HEX mm	L mm	D mm	Part Number
04in	3/8“	22.2	47.8	23.4	UQD-251-6HB

Plugs — Series UQD



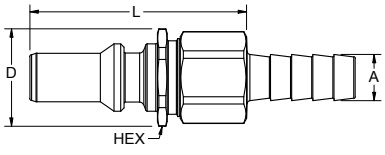
Male Thread

Size	Connection A	HEX mm	L mm	D mm	Part Number
02in	G 1/8-28-A BSPP	12.7	28.5	14.3	UQD-122-2MB
02in	G 1/4-19-A BSPP	14.3	29.0	18.5	UQD-122-4MB
02in	7/16-20-20 UNF-2A	14.3	26.7	15.5	UQD-122-4MO
04in	G 3/8-19-A BSPP	25.4	35.0	28.6	UQD-252-6MB
04in	9/16-18 UNF-2A	20.6	34.3	22.2	UQD-252-6MO
06in	G 3/8-19-A BSPP	25.4	65.0	29.3	UQD-372-6MB
06in	3/4-16 UNF-2A	23.8	40.4	26.7	UQD-372-8MO
08in	7/8-14 UNF-2A	28.6	43.4	31.4	UQD-502-10MO



Parker Push-Lok

Size	Connection A	HEX mm	L mm	D mm	Part Number
02in	1/4“	15.9	39.3	17.5	UQD-122-4PL
04in	1/4“	20.6	49.4	22.2	UQD-252-4PL
04in	3/8“	20.6	49.4	22.2	UQD-252-6PL



Hosebarb

Size	Connection A	HEX mm	L mm	D mm	Part Number
02in	1/4“	15.9	40.6	17.3	UQD-122-4HB
04in	3/8“	20.6	49.4	22.2	UQD-252-6HB

All parts available in Red (-RD) or Blue (-BU)

To request custom port configuration please contact qcd.support@support.parker.com.

UQDB Series

Nominal Diameter 02/04mm

Technical Description

Universal Quick Disconnect Blind Mate (UQDB) based on an Intel inspired open specification. Developed in collaboration with Intel Corporation.

Advantages

- Fully interchangeable with other Intel-approved UQDB suppliers
- No spillage during connection/disconnection
- Low pressure drop
- Advanced internal design for cooling applications
- Excellent resistance to vibrations and mechanical stresses

Dry-Break

Max. Working Pressure

150 psi / 10.3 bar

Working Temperature

0° C to 70° C (Extended temperature range is possible, contact Parker for more information.)

Material

Coupling: Stainless Steel
Plug: Stainless Steel and Zinc Plated Steel
Seals: EPDM

Connect Force

UQDB02: 0 psi=8 lbs; 14 psi=9 lbs; 100 psi=13 lbs
UQDB04: 0 psi=14 lbs; 14 psi=16 lbs; 100 psi=29 lbs
UQDB06: Coming Soon
UQDB05: Coming Soon

CV Values

	Plug-Coupling	Coupling-Plug
UQD02:	0.32	0.31
UQD04:	1.18	1.09
UQD06:	2.30	2.03
UQD08:	4.73	4.33

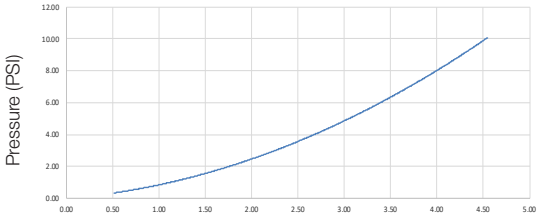
Spillage/Air Inclusion

UQDB02: .003mL / .013mL
UQDB04: .005mL / .08mL
UQDB06: Coming Soon
UQDB05: Coming Soon

Flow diagrams

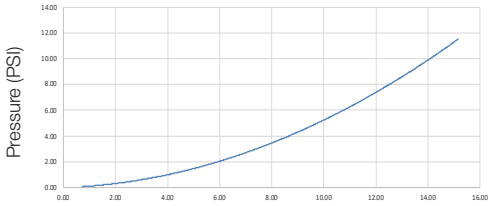
Water

UQDB02



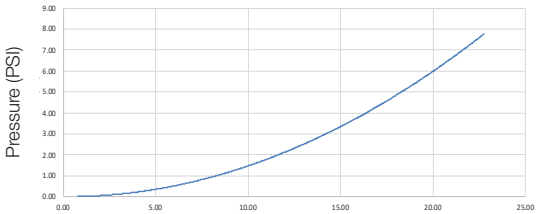
Water

UQDB04



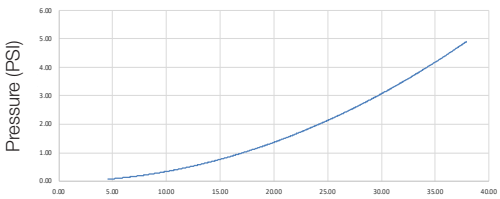
Water

UQDB06

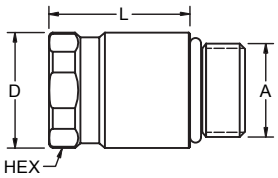


Water

UQDB08

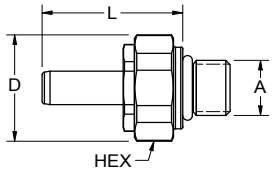


Couplings — Series UQDB



Size	Connection A	HEX mm	L mm	D mm	Part Number
02in	9/16-18 UNF-2A	17	23.6	18	UQDB-121-6MO
04in	3/4-16 UNF-2A	23.8	28.5	24.7	UQDB-251-8MO
06in	7/8-14 UNF-2A	27	31.8	28.3	UQDB-371-10MO
08in	1 1/16-12 UN-2A	28	35.5	31.2	UQDB-501-12MO

Plugs — Series UQDB



Size	Connection A	HEX mm	L mm	D mm	Part Number
02in	7/16-20 UNF-2A	20	27	21.2	UQDB-122-4MO
04in	9/16-18 UNF-2A	24	35.4	25.3	UQDB-252-6MO
06in	3/4-16 UNF-2A	27	38.9	28.3	UQDB-372-8MO
08in	7/8-14 UNF-2A	28	42.9	31.2	UQDB-502-10MO

ORV Series (BMQC)

Nominal Diameter 5mm

Dry-Break

Max. Working Pressure	Working Temperature
50 psi / 3.4 bar	0°C to 60°C

Material		Connect Force
Coupling:	Stainless Steel	
Plug:	Stainless Steel	
Seals:	EPDM	

CV Values	Spillage/Air Inclusion

Technical Description

ORV Series is based on OCP inspired BMQC open specification currently still under development. For more details, please use the link provided on this page.

For details on the technical guidelines for this product, please visit the OCP document located here:
https://drive.google.com/drive/folders/1-iLF98lebxls3CG2DRA3eAyN1cdc4c7y?usp=drive_link

Advantages

- High flow with low pressure drop.
- No spillage during connection/ disconnection.
- Blind mate connection with high degrees of float to accommodate angular and radial misalignment.
- Self-centering plug to ensure repeatable connection sequences.

CDT Series

Nominal Diameter 25mm

Dry-Break

Max. Working Pressure*	Working Temperature
174 psi / 12 bar * maximum static working pressure with safety factor 4 to 1.	0°C to 60°C

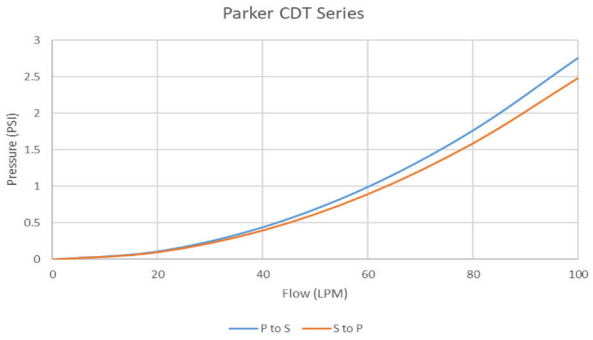
Material		Connect Force
Coupling:	Stainless Steel	0 psi: 31 in-lbs (3.5 Nm)
Plug:	Stainless Steel	
Seals:	EPDM	

CV Values	Spillage/Air Inclusion
15.9	0.10ml / 0.83ml

Technical Description

The CDT are dry-break, thread-to-connect quick disconnects for inlets and manifolds in liquid cooling systems. The threaded connection provides a mechanical advantage for safely connecting and disconnecting.

Flow diagrams



Advantages

- High flow with low pressure drop.
- No spillage during connection/ disconnection.
- Threaded connection and disconnection

NSE Series

Nominal Diameter 16/19/25mm

Dry-Break

Max. Working Pressure*	Working Temperature
217 psi / 15 bar * maximum static working pressure with safety factor 4 to 1.	-20°C up to 200°C (FKM) depending on the medium. Other seals materials are available on request.

Material		Connect Force
Coupling:	Stainless Steel	
Plug:	Stainless Steel	
Seals:	FKM	

CV Values	Spillage/Air Inclusion

Technical Description

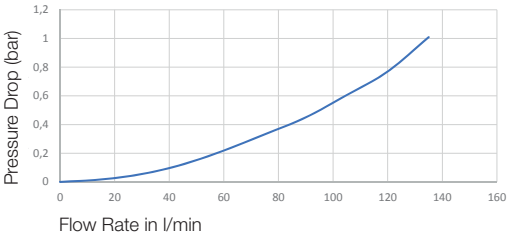
The NSE are dry-break couplings with flat face valves. The compact design makes it suitable for reduced spaces when high flow is needed. Coupling system with two-hand operation, i.e. both hands are required when connect/disconnect.

Advantages

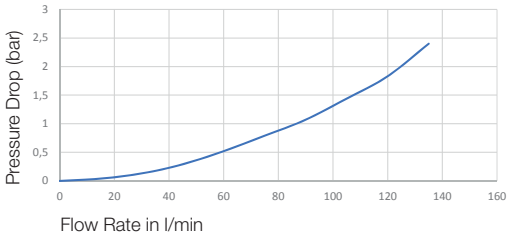
- High flow with low pressure drop.
- No spillage during connection/ disconnection.
- Specific design for cooling applications.
- Reduced dimensions compared to flow capacities.

Flow diagrams

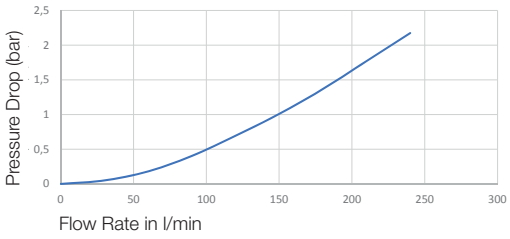
Water NSE Ø16 Water



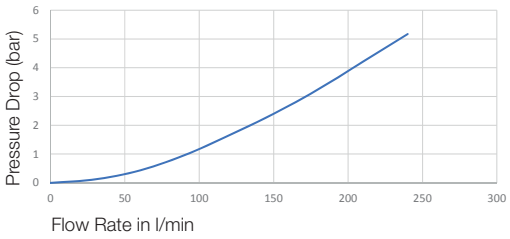
Oil NSE Ø16 Oil



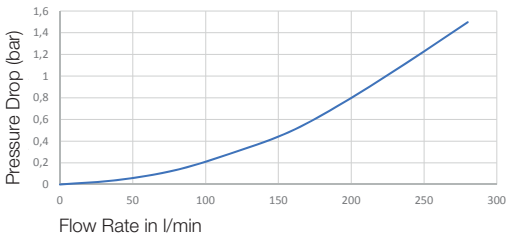
Water NSE Ø19 Water



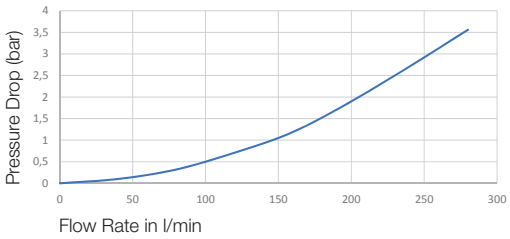
Oil NSE Ø19 Oil



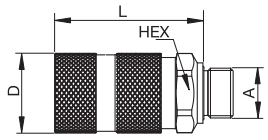
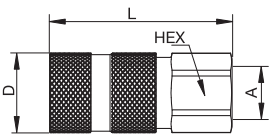
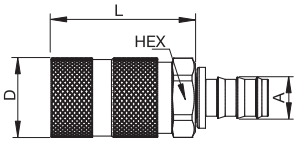
Water NSE Ø25 Water



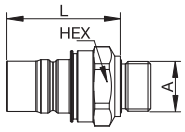
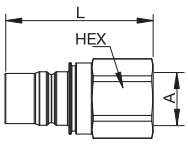
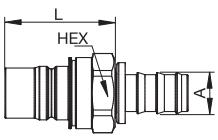
Oil NSE Ø25 Oil



Couplings — Series NSE

	Size	Connection A	HEX mm	L mm	D mm	Part Number
 Male Thread	16mm	G 3/4	34	68.8	37	NSE-621-12MBO
	19mm	G 3/4	38	78.5	42	NSE-751-12MBO
 Female Thread	19mm	G 1	38	96.6	42	NSE-751-16FB
	25mm	G 1 1/4	50	120.5	53	NSE-1001-20FB
 Parker Push-Lok	19mm	12,5 mm	38	76.4	42	NSE-751-8PL
	19mm	19 mm	38	76.4	42	NSE-751-12PL

Plugs — Series NSE

	Size	Connection A	HEX mm	L mm	D mm	Part Number
 Male Thread	16mm	G 3/4	34	56.5		NSE-622-12MBO
	19mm	G 3/4	38	60.3		NSE-752-12MBO
 Female Thread	19mm	G 1	38	78.4		NSE-752-16FB
	25mm	G 1 1/4	50	96.8		NSE-1002-20FB
 Parker Push-Lok	19mm	12 mm	38	58.2		NSE-752-8PL
	19mm	19 mm	38	58.2		NSE-752-12PL

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