

ENGINEERING
TOMORROW

Danfoss

Reference Guide

Danfoss Hansen® Quick Disconnect Couplings

From traditional industry standards to custom couplings.



Customizing solutions for the future...hydraulics and beyond.

For over 90 years, Danfoss has continued to manufacture and supply the highest performing quick disconnect couplings globally for many different market segments including agriculture, construction, transportation, and fire and rescue just to name a few. Danfoss' quality and performance have never been compromised when it comes to engineering and manufacturing its full line of quick disconnect couplings.

From traditional industry standards to custom couplings for the next generation of emerging markets and new advanced technologies, Danfoss continues to provide quick disconnect coupling solutions to meet your demands.

Selection and Use

It's important to understand where and why couplings are used. Couplings provide a means of quickly connecting and disconnecting a line without a loss of fluid or entrance of air into a system. If equipment needs to be assembled quickly or if it needs routine servicing or repair, then a coupling is a better choice for a fluid connection. Otherwise, you could end up bleeding the entire system, damaging the system due to contaminants, or dealing with a lengthy tear down and rebuild.

Connection types

Ball Lock uses a series of balls inside the socket to lock down in a groove on the plug. The benefit of this style is the manual or automatic push to connect that results in a firm connection. This is the most commonly used locking style. We don't recommend this for heavy vibration applications that can cause the locking balls to become damaged, a condition known as brinelling.

Flat Face is technically a ball lock coupling. Its flat face design makes many think as if it is another type of locking mechanism. This product has gained popularity due to its ability to be wiped clean and retain fluids. While it takes more force to connect, it remains a simple and effective design.

Screw To Connect is commonly used for high pressure applications. This locking style can handle pressures in the 3,500 – 10,000 psi range. It takes more time to connect, but threads provide the connection strength.

Rings and Pins are other locking styles typically used for pneumatic couplings.

Types

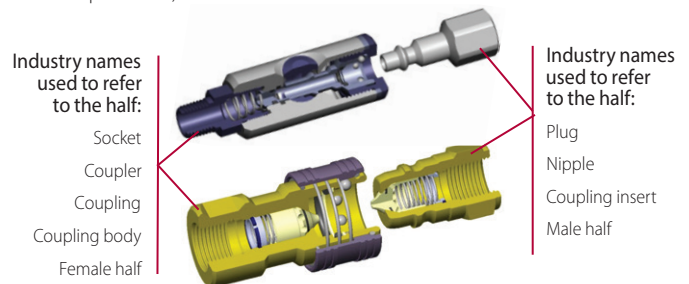
Two-Way / Hydraulic	valves in each section; can be used for all media
One-Way / Pneumatic	valve in female part; used to control flow from the source
Straight-Thru	no valves; used when high flow is required



Couplings composition

An insert (male part), a coupling (female part), a locking mechanism and a shut-off system.

(Unless it is a non-valved coupling, such as the ST series. This is used when high flow is a requirement.)



Selection criteria

When choosing couplings, there are a few key selection criteria to keep in mind: the pressure rating of the system, if there are pressure spikes, the media or fluid being used for seal compatibility, and temperature.

- Pressure
- Fluid compatibility
- Temperature
- Size
- Sleeve lock
- Environment
- External loads
- Connect/Disconnect under pressure

Quick Disconnect Couplings

For more information on quick disconnect couplings, go to **Danfoss PowerSource** for literature AF435258198969en-000102.

Type / Markets	Agriculture/Forestry	Construction/Mining	Mat Handling	Oil & Gas	Discrete Manufacturing	Alternative Energy	Commercial Vehicle	Specialty	Material
Hydraulics/Fluid Transfer	HK ISO 7241-1B	• • • • • •	• • • • • •	• • •	• • • • • •	• • •	• • • •	• • • • • • • • • • • • • • • •	• • •
	HKFR			• •					• •
	5600 ISO 7241-1A	• • • • • •	• • • • • •		•		• •		• •
	H5000	• • • • • •	• • • • • •	•	•				• • •
	FF ISO 16028	• • • • • •	• • • • • •	• • •	•		• • • •		• •
	MLFF	• • • • • •	• • • • • •	• • •	•		• • • •		•
	Multi FF	• • • • • •							•
	FFCUP	•	• • •	•					•
	ADB						•		•
	FD96			•	• • •	•	• •		•
	FD49				•	•			•
	MLDB							•	• •
	5100	•	• •	•	• •	•	• •		•
	FD85				• •				•
	FD86	• •	• •	•					•
	W6000				• • •	•			• •
	HP3				•	•			•
	WA56000				• •	•			•
	FD35				•	•			•
	FD48	• • • •							•
FD72/76	• • • •							•	
Pneumatic	1000/400/500				• • • •				• •
	3000/4000/5000/6000				• • • •	•			•
	Auto-Flo 23/24				• • • •				•
	Safeline				• • • •				• •
	180/280						•	•	•
	100				•				•
	600/700 Oxyacetylene				•			• • •	•
	2RL/3RL				• • •			• •	•
	Full-Bore				• • •				•
	210/310				• • •				•
Specialty	FD14								• •
	FD17								• •
	FD69							•	•
	FD83							•	•
	2HKIG/2HKIL							• • •	•
	ST				• • • • •			• • • •	• • •
	Flo-Temp™				•				•
	Gas-Mate™				•				•
	Flex-Air™				• • • •				• •
	In-Line Check Valves				• • • •				•
	FS Flow Sensor				• • •				•
	FD15							•	•
	FD90							•	•
	FF14802 Pressure Gauge							•	•
	5400							•	•
UQD							•	•	

Quick Disconnect Couplings

Agriculture/Forestry

Equipment types

Self propeller sprayer
 Low HP tractor
 Harvester
 Combine
 Planters
 Specialty harvesters
 Tree harvesters

Hydraulic/Fluid transfer couplings

FF ISO 16028 (Steel)
 MLFF ISO 16028 (Stainless Steel)
 Multi-FF (Stainless Steel)
 5600 ISO A (Steel, Stainless Steel)
 FD70, FD72
 FD76

Pneumatic couplings

Auto Flow
 Safeline
 G700



Agriculture/Forestry

FF



Brush removal & ground clearance – Mobile, ground based equipment with attachments for clearing road-side trees, shrubs, and ground cover. Differing attachments are used to account for item(s) removed. Quick couplings are used for changing of the attachments.

5600



Tractor attachments – Attachment for tractors used prior to planting and preparation of field.

Safeline



Planting and seeding – Most interchangeability across pneumatics, Safeline and G700 offer a pressure relief option to eliminate a second intermediate manual valve and hose whip.

MLFF



Harvesting equipment – Header and attachments for hydraulic circuits on combines and harvesters. Allows for quick change out, while stainless steel MLFF extends life and integrity of connection.

Construction/Mining

Equipment types

Excavator
 Wheel Loader
 Concrete Pump
 Backhoe Loader
 Skid Steer Loader
 Jack System
 Hydraulic Drill
 Trench Shoring

Hydraulic/Fluid transfer couplings

FF ISO 16028 (Steel)
 MLFF ISO 16028 (Stainless Steel)
 HK ISO B (Steel, Stainless Steel)
 5600
 5100
 FD96
 FD86



Construction/Mining

FF



Backhoe loader attachments – Couplings serve as quick access to change out various rear attachments such as hydraulic breakers, augers, tilting buckets, rippers.

FD86/FD96



Excavator boom attachments – Screw to connect couplings for hydraulic bucket and tooth attachments and supply and return lines provide safe and secure assembly. Connect under pressure feature improves serviceability and reduces fluid loss.

5600/HK



Motor grader attachments – Front mounted scarifier - breaks up and aerates compacted material, asphalt and rocky subgrade. Dozer Blade is ideal for bulldozing gravel, tree stumps, fallen rock debris and other blading applications more suited for access from a front mounted tool.

FD90



Hydraulic system diagnostics & testing – Ability to check system pressures while under full operating pressures without system shut down and permanent gages.

Material handling

Equipment types

Lift trucks
Booms
Telehandlers
Truck mounted cranes
Scissor lifts
Sweepers

Hydraulic/Fluid transfer couplings

FF ISO 16028 (Steel)
H5000
5600 ISO A (Steel, Stainless Steel)
FD35



Material handling

FF



Skid steer loaders – Hydraulic attachments for skid steer loader ranging from asphalt tools, angle boom, auger, backhoe, and bale fork.

FD35



Telehandlers – The transport of coal, whether by rail, truck or boat, requires loading and unloading from the storage yard, with 10,000 psi capacity.

5600



Hydraulic winches/Cable pulleys – Connection points for hydraulic hose power supply. Easy for connection and disconnection to service hose assemblies.

Oil & Gas

Equipment types

Cranes
Winches / Mooring
Material handling
Fracking
BOP
Off shore drilling
Hydraulic tongs
ROV

Hydraulic/Fluid transfer couplings

FF ISO 16028 (Steel)
MLFF ISO 16028 (Stainless Steel)
HK ISO B (Steel, Brass, Stainless Steel)
5600 ISO A (Steel, Stainless Steel)
HKFR
5100
W6000
FD96
ML2H



Oil & Gas

HKFR



Blow Out Preventer – Hydraulic lines that are on, or within 7 meters of, the blow out preventer must perform to 1,300F for a minimum of five minutes. Exceeds API 16D and EUB Directive 36. Lloyd's Register certified. Color coded for visual compliance. "BOP" identifier stamped on parts.

HK (Stainless)



Offshore oil rigs – Test panels for high pressure valves on offshore oil & gas wells. All valves must be tested by an outside contractor and documented every 3 months. Valves must be operational in case of emergency shut down.

W6000



Deep sea remote operated vehicles (ROV) – Deep Sea Rover is connected to an umbilical line that includes a hydraulic line. The lengths of the line are connected using stainless steel high pressure quick disconnect coupling.

HK (Steel)



Hydraulic fracturing systems – Hydraulic fracturing: mobile trucks equipped to reach remote areas. Hydraulic systems are connected to various equipment for the fracturing process.

Quick Disconnect Couplings

Discrete manufacturing/Processing

Equipment types	Hydraulic/ Fluid transfer couplings
Plastic IMM	FF ISO 16028 (Steel)
Blow molding	MLFF ISO 16028 (Stainless Steel)
Injection molding	HK ISO B (Steel, Stainless Steel, Brass)
Press brake	Pneumatic couplings
Metal cutting/machining	3000/4000/5000/6000
Down press	Specialty couplings
Forging	ST
Image scanners	Flo-Temp™
Transformers	4EC
	Gas-Mate™



Discrete manufacturing/Processing

**3000/4000/
5000/6000**



Industrial pneumatic tools and service – Pneumatic hoses and lines in service of equipment, field location, and facility. Sizes range from ¼" to ¾". Quick couplings are used for maintenance, tooling, and equipment used in the facility.

Gas-Mate™



Industrial fryer and gas lines – Used on industrial fryers and ovens as the connection and disconnection point for gas supply lines. CSA certified with special self-sealing function that seals off gas supply when fire or excessive heat is present

HK (Brass)



Wire and rod mill – Processing of steel involves many operations, one being annealing. Furnaces contain cooling lines. The quick couplings are being used to deliver water for the base seal on the inner cover of the heat treating furnace

ST / Flo-Temp



Plastics and mold processing – Danfoss' Flo-Temp™ quick disconnect couplings provide the flow needed to cool or heat molds and die casting dies. ST series Straight Through coupling provides full flow for inlet and outlets.

Alternative energy

Equipment types	Hydraulic/ Fluid transfer couplings
Wind – Utility grade	HK ISO B (Steel, Brass, Stainless Steel)
Hydro – Small & large	Full Bore
MHK – Wave devices	FD96
Solar panels	FF ISO 16028 (Steel)
Thermal management	MLFF ISO 16028 (Stainless Steel)
	ADB (Aluminium)
	Pneumatic couplings
	3000/4000/5000/6000



Alternative energy

ADB



Wind turbines cooling systems – The ADB is lightweight and compact. Aluminium construction enhances operations in demanding applications with heat and vibration compared to plastic couplings.

**3000/4000/
5000/6000**



Hydro power: Facility maintenance and tooling – Pneumatic lines in service of generators and facility. Sizes of lines range from ¼" to ¾". Quick couplings are used for start-up and maintenance of generators as well as attaching tooling and equipment used in the facility.

HK (Steel)



Flexible solar panels: Vacuum lines – A high level purity Nitrogen gas is used in the vacuum stage of production while the glass collectors are interwoven and layered on a backing. Brass HK valve has a second seal for greater vacuum performance

FD96 / FF



Wind power: Offshore – Vibration hammers are used to drill foundation supports in deep sea in support of offshore wind turbines. Available color coded sleeves and connect under pressure improve serviceability and assembly accuracy.

Commercial vehicle

Equipment types	Hydraulic/ Fluid transfer couplings
Refuse vehicle	FF ISO 16028 (Steel)
Transit mixer	MLFF ISO 16028 (Stainless Steel)
HD/MD on Hwy trucks	HK ISO B (Steel, Brass, Stainless Steel)
Bus	MLDB
Ground based military vehicles	H5000
Sewer cleaners	Pneumatic couplings
Snow plow/salt spray	3000
Fire & rescue	1000/400/500
Bulk tank trailers	Specialty Couplings
Car hauler trailers	5400 (A/C & Refrigerant)



Commercial vehicle

MLFF/5600



Snow removal – Plow / blade operation and salt spreading equipment utilize QD's for quicker seasonal changes and maintenance. 316 stainless steel improves performance in harsh conditions.

MLDB



Portable fuel bladders – Refueling of ground based equipment while in transit. The fuel bladder is delivered by helicopter to a specific location. Upon retrieval of the bladder, a quick coupling is used for fuel transfer from the bladder to a vehicle.

H5000



Truck mounted fork lift – Delivery of construction materials, e.g. drywall and lumber, to a site requires off-loading. The delivery vehicle incorporates a forklift for this purpose. Quick couplings are used for the hydraulic supply and return lines.

1000/400/500



Cement mixer: Auxiliary panel – Auxiliary panel that provides access to pneumatic air connections and water supply.

Specialty

Equipment types	Specialty couplings
SCUBA	FD14
Waterblast	FD17
Electronic cooling	FD69
Food and beverage	FD83
Chemical	2HKIG/2HKIL
Injection molding	ST – Straight Through
Air conditioning	Flo-Temp™
Refrigeration	Flex-Air™
Data center	FD15 – Oil Sampling
	FD90 – Diagnostics
	Check Valves
	UQD
	ADB



Specialty

UQD



Data center cooling – UQD is specially designed for liquid cooling systems. Offers high flow and low pressure to improve efficiency, as well as a color coding on external components to help identify hot and cold fluid parts of the system.

FD83



Fluid transfer/Electronics cooling – The FD83 identical halves include two interlock features to eliminate spills and ensure maximum safety. Valves cannot be opened until the coupling halves are mated and coupling halves cannot be disconnected until both halves are closed.

Flex-Air™



Flexible industrial air tool – designed to rotate 360 degrees up to a 75° angle. These fittings help to alleviate Carpal Tunnel Syndrome and other stress related injuries in the workplace.

In-Line Check Valves



RA4000 series – Designed to allow flow of fluid in one direction only and limit the line's internal pressure (to the cracking pressure). They are rugged and reliable, offer low pressure drop and have elastomer valve seals for leak-free operation.

Descriptions Guide

Hydraulic/Fluid Transfer	
HK	ISO B
HKFR	Blow Out Preventer (BOP)
5600	ISO A
H5000	Pull to connect double shut-off coupling
FF	ISO 16028
MLFF	ISO 16028 (Stainless Steel)
FFCUP	ISO 16028 Connect Under Pressure
Multi FF	Agriculture applications
ADB	Wind power and electronics cooling
FD49	HTMA NFPA T3.20.15 Interchange
MLDB	PED 97/23 EC (Stainless Steel)
FD96	Flat Face Thread Together
5100	Thread Together
FD85	Thread Together (Oil and gas)
FD86	Thread Together 5,000 psi, Dry break
W6000	Thread Together PED 97/23 EC
HP3	10,000 psi Hydraulic tool
WA56000	10,000 psi Hydraulic tool
FD35	10,000 psi Hydraulic tool/jack
FD48	AG Interchange
FD72/76	AG Interchange
Pneumatic	
1000/400/500	Industrial Interchange
3000/4000/ 5000/6000	Industrial Interchange
Auto-Flo 23/24	Multiple Interchange
Safeline	Push button safety
180/280	Proprietary Interchange
100	Proprietary Interchange
600/700	Oxyacetylene service
2RL/3RL	Ring Lock proprietary interchange
Full-Bore	Pressure relief
210/310	Pin Lock

Specialty	
FD14	Oil Drain
FD17	SCBA
FD69	10,000 psi Waterblast
FD83	Fluid Transfer/Electronics Cooling
2HKIG/2HKIL	Chemical/Food and Beverage
ST	Straight Through, Non-restricted flow
Flo-Temp™	Injection molding
Gas-Mate™	Gas systems
Flex-Air™	Flexible industrial air tool
In-Line Check Valve	R4000, flow in one direction
FS	Flow sensor
FD15	Oil sampling
FD90	Diagnostics
FF14802 Pressure Gauge	Diagnostics
5400	Air Conditioning & Refrigeration
UQD	Data center liquid cooling



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