

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

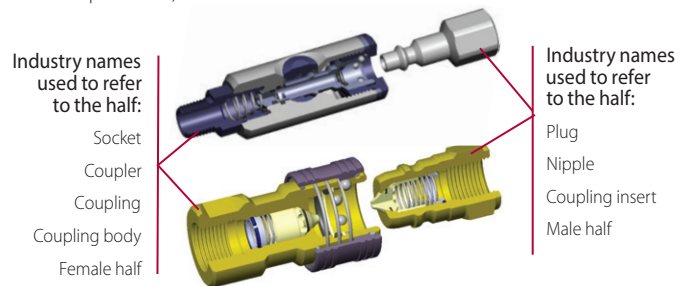
<b>Two-Way / Hydraulic</b>	valves in each section; can be used for all media
<b>One-Way / Pneumatic</b>	valve in female part; used to control flow from the source
<b>Straight-Thru</b>	no valves; used when high flow is required



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

# 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	<b>Pneumatic couplings</b>
Metal cutting/machining	3000/4000/5000/6000
Down press	<b>Specialty couplings</b>
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)
	<b>Pneumatic couplings</b>
	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		Specialty	
HK	ISO B	FD14	Oil Drain
HKFR	Blow Out Preventer (BOP)	FD17	SCBA
5600	ISO A	FD69	10,000 psi Waterblast
H5000	Pull to connect double shut-off coupling	FD83	Fluid Transfer/Electronics Cooling
FF	ISO 16028	2HKIG/2HKIL	Chemical/Food and Beverage
MLFF	ISO 16028 (Stainless Steel)	ST	Straight Through, Non-restricted flow
FFCUP	ISO 16028 Connect Under Pressure	Flo-Temp™	Injection molding
Multi FF	Agriculture applications	Gas-Mate™	Gas systems
ADB	Wind power and electronics cooling	Flex-Air™	Flexible industrial air tool
FD49	HTMA NFPA T3.20.15 Interchange	In-Line Check Valve	R4000, flow in one direction
MLDB	PED 97/23 EC (Stainless Steel)	FS	Flow sensor
FD96	Flat Face Thread Together	FD15	Oil sampling
5100	Thread Together	FD90	Diagnostics
FD85	Thread Together (Oil and gas)	FF14802 Pressure Gauge	Diagnostics
FD86	Thread Together 5,000 psi, Dry break	5400	Air Conditioning & Refrigeration
W6000	Thread Together PED 97/23 EC	UQD	Data center liquid cooling
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		



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