

INDUSTRIAL FITTINGS - couplings

Dry disconnect couplings - API



Material: Aluminium
Seals: Coupler - NBR (option Viton-B, Viton GFLT)
Adaptor - Baylast™ resistant to fuel, including biodiesel (option - Viton, PTFE)
Connection: 4" TTMA flange
Working temp.: From -20°C up to +50°C

Operation:

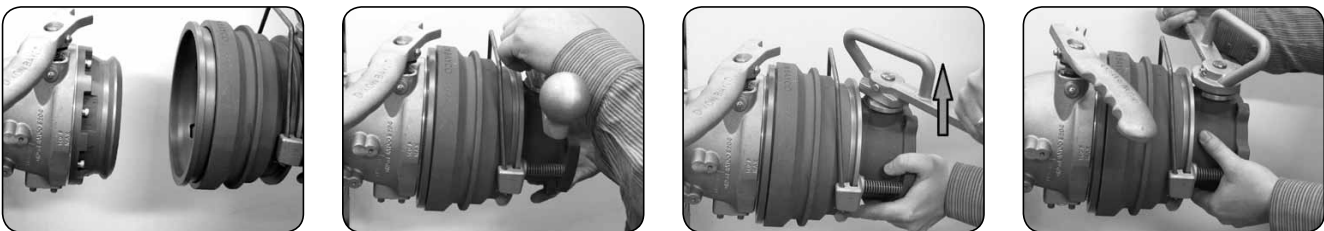
There are two types of API couplings: for liquid phase products (fuel) and gaseous phase (vapour). API couplings for liquid-phase are manufactured in one size, 4" API. Since API are dry disconnect couplings, a coupler (hose unit) and an adaptor (tank unit) are equipped with piston valves which open when the coupler lever is turned. However it cannot be turned unless the coupler is properly connected to the adaptor. If it is necessary, the valve of the adaptor on the tank can be opened separately, without connecting with the coupler. API vapour coupling is usually of CAMLOCK 4" type. It has a valve in the adaptor (tank unit), which opens with a pilot - a probe inside of the CAMLOCK coupler (hose unit). Along with the API range, gravity drop couplings are also available.

Application:

API couplings are designed for bottom loading and unloading of fuel tank trucks. They usually make a part of bottom loading arms at storage terminals (at fuel storage facility). The bottom loading method is widely used in petrochemical industry as its cost-effectiveness, safety and loading speed rate outperforms a top loading method. A bottom loading island is much cheaper to build than a top loading rack. A person operating the loading arm remains on the ground which is the safety advantage of the method. The bottom loading reduces the build-up of electrostatic charge and vapours. Tanks can be filled much faster (whole process is on the ground level) and a number of compartments can be loaded at the same time. All benefits of the method make it increasingly popular.

Standard:

API couplings are designed and manufactured in compliance with API RP-1004 (American Petroleum Institute). There are two counterparts of this standard: EN 13083 that applies to the coupling's adaptor for bottom loading and unloading and EN 13081 that applies to both adaptor and coupler for vapour recovery. The couplings are compatible with the couplings of other brands compliant with the standards.



Connecting API coupling - a coupler (hose unit) with an adaptor (tank unit).



The valve of the adaptor for bottom unloading can be opened with a lever
- separately without connecting with the coupler.

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Each bottom loading / unloading system can be divided into two parts:

- for liquid phase (fuel),
- for gaseous phase (vapour).

Liquid phase (fuel) - intended for fuel transfer. There is API coupling on a tank truck (tank unit - adaptor) which connects with API coupling of a hose assembly (hose unit - coupler). It **works as a dry disconnect coupling** and is usually used when there is a loading arm at the terminal.

The hose assembly with a standard CAMLOCK coupling (coupler) can also be connected to a tank truck. In this case, it is required to fit a gravity drop coupling on API tank truck coupling. However the application of such couplings **does not work as a dry disconnect coupling**.

picture	code	connection 1 / 2	medium*	working pressure [bar]	seal	characteristics
	DX-API-5400B	4" TTMA flange / 4" API	1, 2, 3, 5, 6, 7, 8	10	Viton-B	Coupler(hose unit) for bottom loading and unloading. Max. flow: 2271 l/min. Pressure drop: 0.27 bar. DX-API-5300BC version is intended for crude oil.
	DX-API-5400G		1, 2, 3, 5, 6, 7, 8		Viton-GFLT	
	DX-API-5400		1, 2, 3, 5, 6, 7		NBR	
	DX-API-5300BC		1, 2, 3, 4, 5, 6, 7, 8		Viton-B	
	DX-API-5204LNG	4" TTMA flange / 4" API	1, 2, 3, 5, 6, 7, 8	6	Baylast™	Adaptor (tank unit) for bottom loading, without sight glass.
	DX-API-5204LSNG		1, 2, 3, 4, 5, 6, 7, 8		Baylast™	Adaptor (tank unit) for bottom loading, without sight glass. Version intended for crude oil.
	DX-API-5204L		1, 2, 3, 5, 6, 7, 8		Baylast™	Adaptor (tank unit) for bottom loading, with sight glass.
	DX-API-5204SNG	4" TTMA flange / 4" API	1, 2, 3, 4, 5, 6, 7, 8	6	Baylast™	Adaptor (tank unit) for bottom loading and unloading, without sight glass. Version intended for crude oil.
	DX-API-5204NG		1, 2, 3, 5, 6, 7, 8		Baylast™	Adaptor (tank unit) for bottom loading and unloading, without sight glass. Option - with removable handle (DX-API-5204NGC).
	DX-API-5204NGV		1, 2, 3, 7, 8		Viton	Adaptor (tank unit) for bottom loading and unloading, without sight glass.
	DX-API-5204	4" TTMA flange / 4" API	1, 2, 3, 5, 7, 8	6	Baylast™	Adaptor (tank unit) with sight glass for bottom loading and unloading (handle allows manual opening of valve when coupling is disconnected). Option - with removable handle (DX-API-5204C).
	DX-API-5000-25	- / 4" API		-	NBR	Adaptor cap (DX-API-5204 coupling). Material: nylon.
	DX-API-5000-24	- / 4" API		-	Baylast™	Adaptor cap (DX-API-5204 coupling). Material: aluminium.

* 1 - petrol, 2 - diesel, 3 - ULSD, 4 - crude oil, 5 - E20 (20% ethanol and 80% petrol), 6 - E100 (100% ethanol), 7 - B20 (20% biodiesel and 80% diesel), 8 - B100 (100% biodiesel).

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Vapour recovery couplings - API

Gaseous phase (vapour) - intended for vapour transfer (vapour tightness). A hose with a special vapour coupling (coupler with a pilot which opens a valve) is connected to an adaptor with a vapour valve on a tank truck.





picture	code	connection 1 / 2	medium*	working pressure [bar]	seal	characteristics
	ZP-VR-ZPO300-A	BSP 3" female / CAMLOCK 3"	1, 2, 3, 5, 6, 7, 8	6	NBR	Vapour recovery coupling with valve (CAMLOCK A with female thread).
	ZP-VR-ZPO400-A	BSP 4" female / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8		NBR	
	DX-API-VR4000	4" flange TTMA / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	1.4	Viton / NBR	Vapour valve (Viton) with drain plug and two sight glasses (NBR).
	DX-API-4050AL	- / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	-	NBR	Vapour valve cap. Material: aluminium.
	DX-API-4050ALC	- / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	-	NBR	Vapour valve cap with chain. Material: aluminium.
	DX-API-4050PL	- / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	-	NBR	Vapour valve cap. Material: nylon.
	DX-API-4050PLC	- / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	-	NBR	Vapour valve cap with chain. Material: nylon.
	ZP-VR-DVR300-A	BSP 3" female / CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	Vapour recovery coupling with pilot without valve (CAMLOCK D with female thread).
	ZP-VR-DRVR4030-A	BSP 3" female / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-VR-DVR400-A	BSP 4" female / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-VR-DARVR4030-A	CAMLOCK 4" / CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	Vapour recovery coupling with pilot without valve (CAMLOCK D / CAMLOCK A).
	ZP-VR-CVR300-A	CAMLOCK 3" / DN75	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	Vapour recovery coupling with pilot without valve (CAMLOCK C with hose fitting). Version with valve available as well.
	ZP-VR-CVR400-A	CAMLOCK 4" / DN100	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	DX-API-VR4030CS-AL	CAMLOCK 4" / DN75	1, 2, 3, 4, 7, 8	6	Viton / NBR	Vapour recovery coupling (NBR) with pilot and valve (Viton).

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6 - E100 (100% ethanol), 7 - B20 (20% biodiesel and 80% diesel), 8 - B100 (100% biodiesel).

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Gravity drop couplings (adapters to API couplings)

Gravity drop couplings are designed for gravity unloading. They allow for connection of API tank truck coupling with a regular reloading coupling e.g. CAMLOCK type.

picture	code	connection 1 / 2	medium*	working pressure [bar]	seal	characteristics
	ZP-API-OLS43-AI	4" API / CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	One-piece gravity drop coupling, angle 45°. AISI 316 steel version available (CAMLOCK coupling straight fitted).
	ZP-API-OLS44-AI	4" API / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-API-OLS4GZ3-AI	4" API / CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	One-piece gravity drop coupling, angle 45°. AISI 316 steel version available (thread connection straight fitted).
	ZP-API-OLS4GZ4-AI	4" API / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-API-OLSP43-AI	4" API / CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	One-piece gravity drop coupling with sight glass, angle 45°.
	ZP-API-OLSP44-AI	4" API / CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-API-OLS4GZ3-AI	4" API / -	1, 2, 3, 4, 5, 6, 7, 8	-	-NBR	Gravity drop coupling cap.

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