

Petrochemical Life Cycle ③ Terminal to Retail

The content in this phase of the Petrochemical Life Cycle (see pages 22-23) is focused on the numerous transfer applications in the oil and gas field. Featured are the Dixon™ products used within the Terminal to Retail segment.

Please refer to the Dixon™ Price List or dixonvalve.com for specific part numbers and various other products used in the transfer and control of liquids, gases and dry materials.

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Safety

Dixon™ couplings and retention devices are designed to work safely for their intended use. The selection of the proper hose, coupling and retention device, and the proper application of the coupling to the hose are of utmost importance.

Users must consider the size, temperature, application, media, pressure and hose and coupling manufacturer's recommendations when selecting the proper hose assembly components. Dixon™ recommends that all hose assemblies be tested in accordance with the Association for Rubber Products Manufacturer's (ARPM) recommendations and be inspected regularly (before each use) to ensure that they are not damaged or have become loose. Visit ARPMINC.com for more information.

Where safety devices are integral to the coupling, they must be working and utilized. The use of supplementary safety devices such as safety clips or safety cables are recommended.

If any problem is detected, couplings must be removed from service immediately.

Dixon™ is available to consult, train and recommend the proper selection and application of all fittings we sell. We strongly recommend that distributors and end users make use of Dixon™ Testing and Recommendation Services. Call 877.963.4966 or click dixonvalve.com to learn more.

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Dixon™ Terminal Products

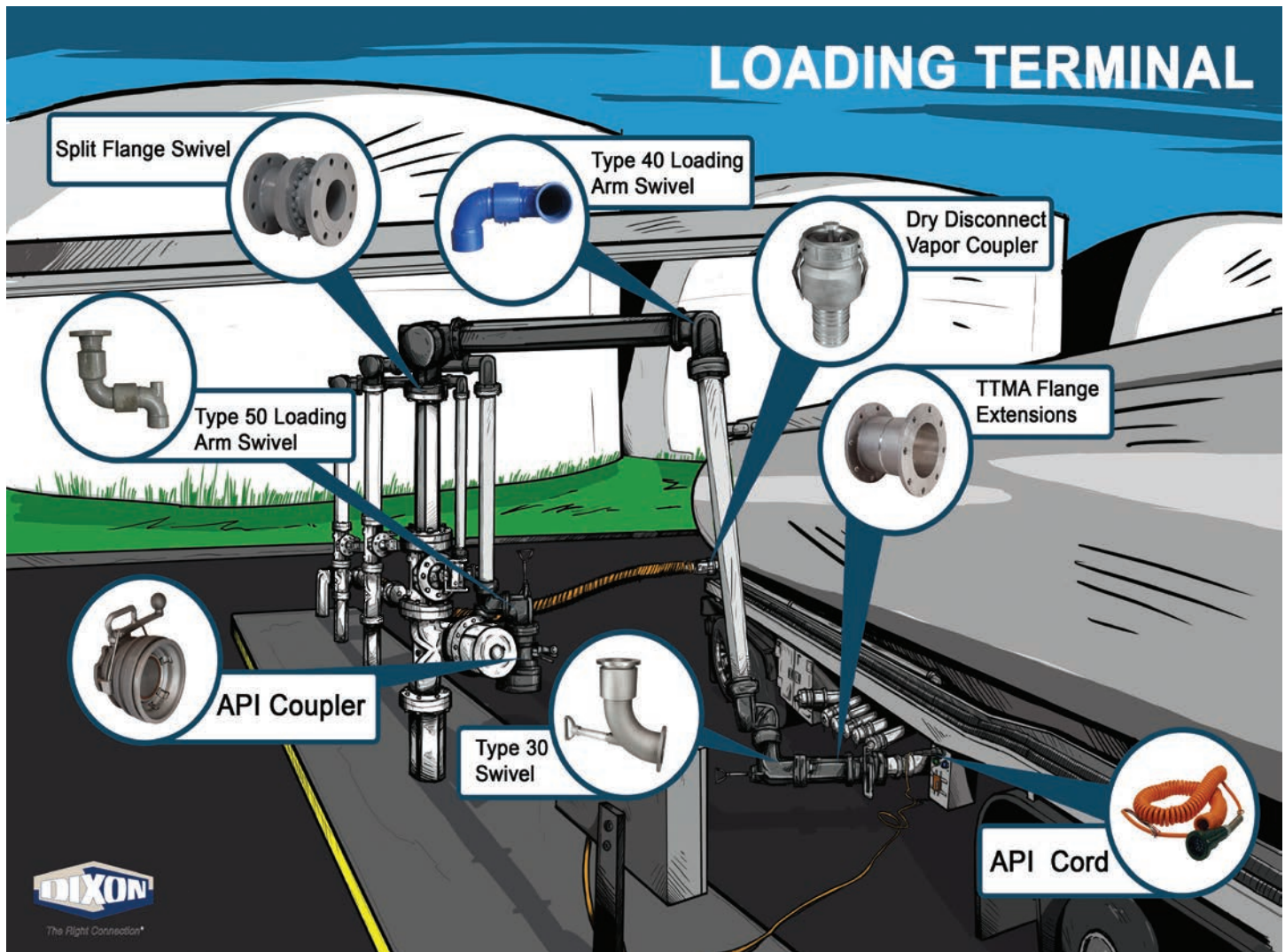
Through innovation, superior product design, and application expertise our objectives are to be the easiest company to do business with in the Terminal market. We will maintain the best inventory levels and lead times in the industry while providing training and support before, during, and after the sale. The on site training at the end user level will focus on high quality manufactured products that extend service life and minimize business interruption.



Terminal Process

Various refined petroleum products are distributed through Terminals to either tanker truck, barge or rail car. Dixon™ products are successfully utilized in many of these transfer applications, from dry disconnects and API couplers to rack cords and vapor recovery couplers.

Dixon™ is the right connection!



API Fittings

5300/5400 Series Couplers



Application:

- combined with valves, these couplers are suitable for rail car and tank truck loading or unloading

Features:

- modular design allows various face seal combinations to be compatible with different alternative fuels, performance levels and applications
- locking 5 cam design provides easy alignment and tight connection
- ball-end handle for easy, comfortable operation
- no special tools needed for maintenance
- shaft seals can be changed without removing coupler from loading arm
- fully interlocked collar cannot be opened when connected and cannot be disconnected when opened
- fully compliant with API RP1004:2003 specifications
- choice of a bonded nose seal, which offers long life and cannot be washed out, or a replaceable nose seal which allows quick seal replacement without removal from the loading arm
- 4" TTMA inlet mounting flange connection

Materials:

- body: hard coated anodized 356T6 aluminum
- shroud: hard coated anodized 356T6 aluminum with stainless steel insert
- link, shaft, pin and crank: hardened 17-4PH stainless steel
- cam: CF8M stainless steel
- poppet and bearing: ZA-12
- seals: Buna, FKM-B, FKM, GFLT

Size:

- 4"



5300 series shown

Load / Unload Valves



load only valve

Application:

- combined with couplers, these valves are suitable for rail car and tank truck loading or unloading

Features:

- when used with an API coupler (above) can be used as a high volume dry-disconnect connection
- unique fluid flow sight level on load only models
- chemical resistant crank seals
- rotate nose for a new connection surface
- 4" TTMA inlet mounting flange connection
- ergonomically curved handles operate on a short 62° degree stroke
- can be rebuilt without removing from tanker

Materials:

- body: aluminum
- shroud: hard coated anodized 356T6 aluminum with stainless steel insert
- link, shaft, pin and crank: hardened 17-4PH stainless steel
- cam: CF8M stainless steel
- poppet and bearing: ZA-12
- seals: Buna, FKM-B, FKM, GFLT

Size:

- 4"



load/unload valve

Dixon™ Dry Disconnect Couplings

Application:

- applications where it is important to minimize product loss when connecting / disconnecting hose assemblies

Features:

- no need to drain hoses or pipe systems
- no loss or spillage of liquids at connection or disconnection
- valve cannot be opened until the unit is coupled
- safe and reliable due to rugged construction
- produced according to NATO, standards STANAG 3756 and ATOFINA SGM 2049.TUY.C
- compatible with Mann-Tek, and Todo-matic® and other products produced according to NATO, standards STANAG 3756
- working pressure:
 - aluminum: **230 PSI** up to 4"
 - brass/ gunmetal : **230 PSI** up to 4"
 - stainless steel: **360 PSI**

Materials:

- aluminum, brass / gunmetal or stainless steel

Seal Materials:

- EPDM, NBR - Buna / Nitrile, Kalrez®, Chemraz®, FKM

Sizes:

- ¾", 1", 1½", 2", 3", 4" and 6"



3" coupler pictured



Cam and Groove Style Dry Disconnects

Application:

- helps prevent spillage from normal or accidental disconnects

Features:

- compatible with most cam and groove style dry disconnects
- spring loaded sealing device "snaps" closed should the valve become disconnected with the poppet open
- two-piece adapter design allows easy rebuilding of adapters
- EZ Boss-Lock™ cam arms provide security against accidental opening
- automatic closing poppet assembly
- stainless steel handle allows product exposure to corrosive chemicals or wash down service
- fully interchangeable with Kamvalok® style fittings

Materials:

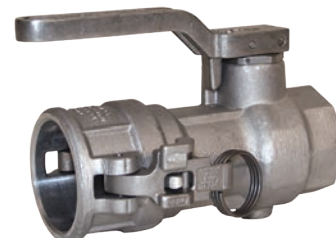
- stainless steel or aluminum
- call Dixon™ for information on chemical compatibility, size, material selection and special configurations

Seal Materials:

- NBR - Buna / Nitrile, FKM, PTFE, EPDM

Sizes:

- 1½", 2" and 3" female NPT x 2", 2½" and 4" coupler and adapter



straight configuration coupler



DBA adapter

Dry Disconnect Couplings, Bayonet Style



coupler x straight female NPT
- BC62-200

Applications:

- Dixon™ BA and BS series bayonet dry disconnect fittings are designed for use in the fuel and lube oil service industry.

Features:

- these fittings are compatible with Emco Wheaton™ Dry Break™
- the maximum pressure rating for fittings is **85 PSI** at 70°F (21°C), for pressure ratings at other temperatures contact Dixon™
- for information on repair kits visit us on-line at dixonvalve.com



coupler x 90° swivel female
NPT - BS62-200

Materials:

- anodized aluminum coupler
- aluminum adapter
- brass adapter
- stainless steel adapter

Seal Materials:

- NBR - Buna / Nitrile, FKM

Sizes:

- 2" and 3"



adapter x female NPT
- BA32-200

Loading Arm Swivel Joints

Application:

- used to transfer fuel from storage to tank trucks

Features:

- TTMA flanges on both sides
- D style shovel handle
- long radius elbow improves the flow into the API load coupler and provides spacing between the load arm and the tank truck
- can be used with flange extensions

Materials:

- aluminum
- seals: Buna or FKM

Size:

- 4"



Vapor Recovery Adapters

Application:

- used on tank trucks to connect to vapor hose couplings

Features:

- for use with dual point vapor elbows (VR6200 series)
- can also be used as vapor valve on tanker but does not have air interlock mount
- poppeted vapor collar at station vapor outlet
- low profile design
- replacement parts are available, contact Dixon™ for more information

Materials:

- bronze and ZN-AL alloy

Size:

- 4"



VR4086

Vapor Recovery Couplers

Applications:

- for use with 3" vapor hose
- not intended for liquid service, for vapor recovery *only*

Features:

- Dixon™ replacement handle assemblies will not work on these fittings, contact Dixon™ for replacements.
- VR4030CS-AL has an FKM O-ring poppet seal

Materials:

- body: cast aluminum
- arms: bronze with stainless steel pins and finger rings
- gasket: Buna-N

Sizes:

- VRC3000AL: 3"
- VR4030CS-AL: 3" and 4"
- VR4040CS-AL: 4"
- VR4040CS-4MNPT: 4"



VRC3000AL



VR4030CS-AL



VR4040CS-4MNPT

Low Pressure Swivels



Applications:

- V-ring: loading arm, floating roof drain, floating suction
- O-ring: loading arm, hose loaders

Features:

- full 360° rotational movement offers maximum flexibility
- wide spacing between dual ball bearing raceways ensures greater load-bearing capacity
- precision-machined design ensures alignment and years of trouble-free service
- an O-ring dust seal protects the ball races and seal chamber from outside elements.
- radius elbow design ensures a smooth flow pattern

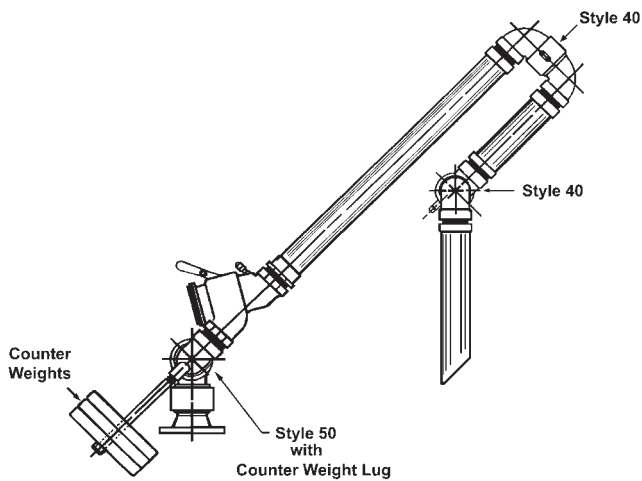
Materials:

- V-ring: carbon steel, stainless steel or aluminum
- O-ring: carbon steel, stainless steel, aluminum brass or iron

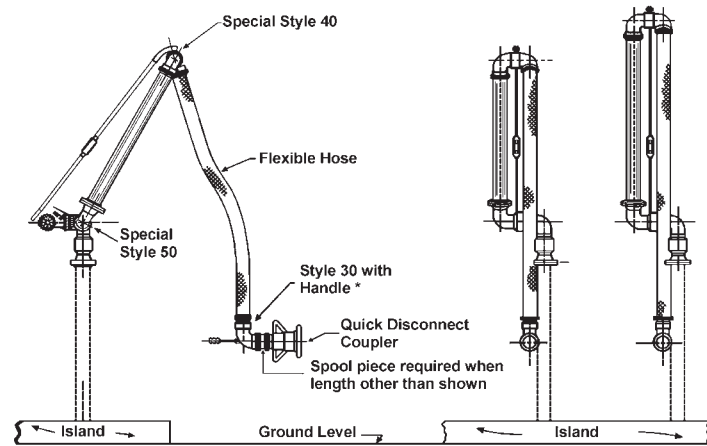
Sizes:

- V-ring: 2" through 8"
- O-ring: 1" through 4"

Typical Applications



loading arm



hose loaders

Safety Breakaway Couplings

Application:

- used most commonly on tank trucks, railcars and barges to limit the possibility of environmental impact and loss of product resulting from a break in a connection

Features:

- coupling automatically senses an excessive load, closes the valves and disconnects
- high flow rate / low pressure drop
- female NPT is standard, optional ANSI / DIN flanges or male NPT are available
- working pressure: stainless steel **360 PSI** and aluminum (industrial version) **230 PSI** at ambient temperature (70°F)

Materials:

- industrial version: 316 stainless steel or aluminum
- marine version: 316 stainless steel
- FKM (FPM) is standard seal

Sizes:

- 2", 3", 4", 5", 6" and 8"



How it Works



industrial version designed to be installed between a fixed point (pipe, pump, manifold) and a hose

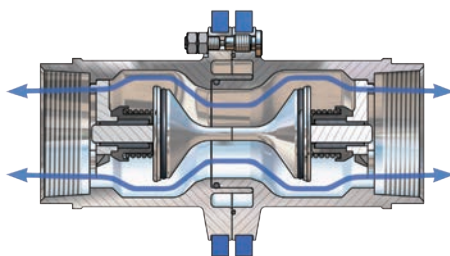


marine version designed to be installed between two hoses

Safety break-away couplings have three external break bolts. In the case of axial tension all of the bolts take up the force corresponding to the break force on the hose with a safety margin. Non-axial forces concentrate the tension forces more strongly on one bolt, so that the safety break-away coupling reacts in a natural way to the reduction of the hose break forces.

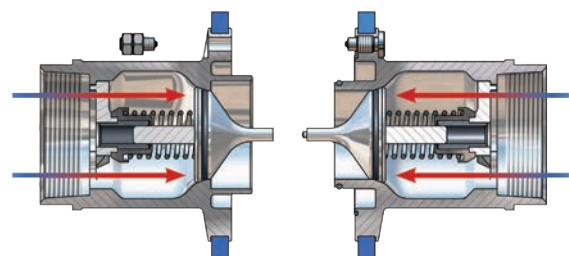
BEFORE emergency disconnect

The safety break-away valve consists of two halves, each with a valve that has an O-ring seal.



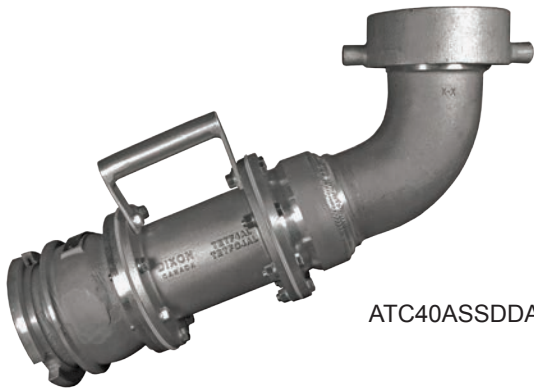
AFTER emergency disconnect

When the safety break-away couplings separate, it allows the valves to close. The two valves close rapidly, minimizing exposure to personnel and the environment.

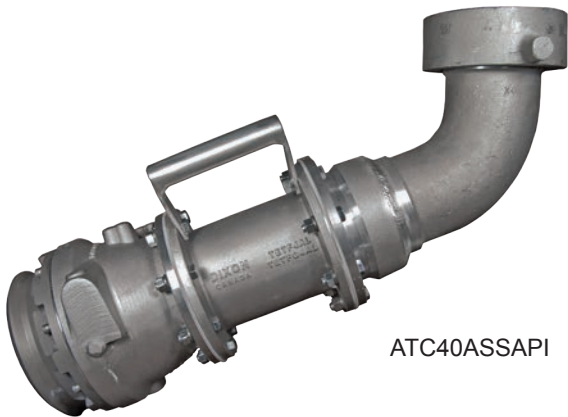


Rail Car Unloading

Rail Car Unloading/Loading Assemblies



ATC40ASSDDA



ATC40ASSAPI

Application:

- used with rail cars for bottom loading and unloading of crude oil and other media used in the petrochemical industry

Features:

- rugged body construction
- easy carry handle allows one person ability to install/disconnect
- safe and reliable - valves will not open unless fittings are properly connected
- API configuration uses a stainless steel spring on the adapter and coupler for corrosion resistance
- drain and sample ports and many other configurations are available, call Dixon™ for information

Materials:

- body: aluminum
- components: aluminum, brass, steel

Size:

- 4"

Build It Your Way



- multiple configurations available, consult Dixon™ for pricing and availability

Components for Custom Assemblies

- additional components are available, please email sales@dixonvalve.com or call 800.355.1991 for more information



4" transfer hose fittings



4" dry disconnect and API fittings



4" sight glass



4" flange extension



ball valve



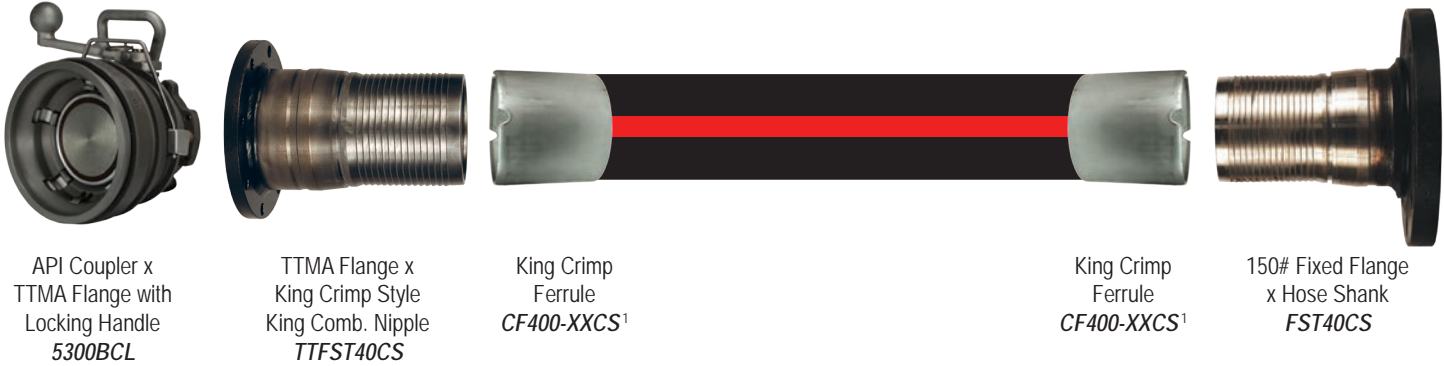
mates to a tank car with
5" male tank car thread



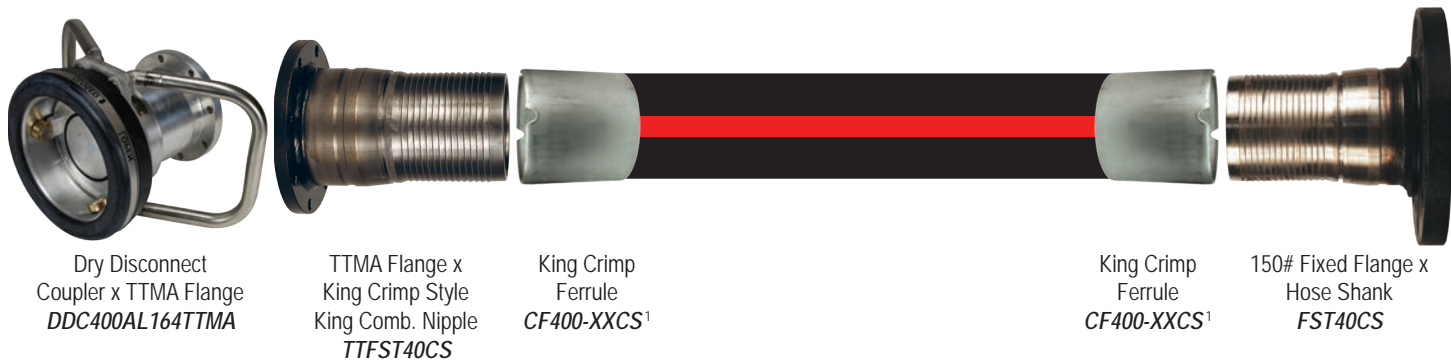
mates to a tank car with
4" cam and groove connections

Transfer Hose Connection Examples

Transfer Hose with API Coupler



Transfer Hoses with Dry Disconnect Couplers



• Other TTMA Flange Adapter configurations are available, contact Dixon™ for additional information.

¹ Ferrule part numbers shown are for placement purposes only, the actual part number depends on the hose OD.

Fittings

Application:

- compressed air transfer, pneumatic systems

Features:

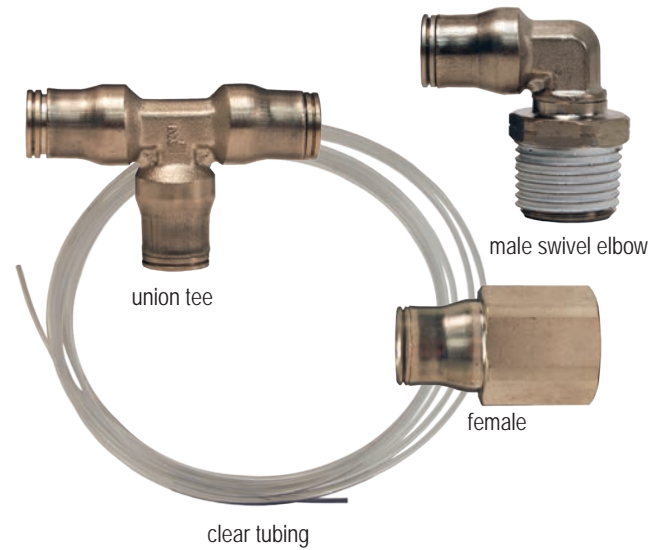
- Buna-N seal
- pre-applied thread sealant on all male NPT threads
- no silicone
- pressure up to **290 PSI**
- tube compatibility: urethane, nylon, polyethylene, PTFE, and metallic tubes when grooved

Material:

- body: brass with external and internal nickle plating

Sizes:

- tube OD 1/8" - 1/2"



Air & Water Utility Stations



Air King™ Coupling System and Bowes, Thor and Other Pneumatic Couplers couplers, ferrules and clamps



Filters, Regulators, and Lubricators combination units and repair kits



Gauges digital, liquid filled and dry



PTFE Assemblies hose, couplings and fittings

King Crimp™ Style Cam & Groove

Couplers and Adapters



brass



Application:

- when used in conjunction with Dixon™ crimp style sleeves and ferrules, creates a tight seal for hose connections

Features:

- all couplers supplied with safety clips (global only)
- supplied standard with a Buna-N gasket, other gasket types are available
- finger rings supplied on all coupling models except 1"
- available in Boss-Lock™, EZ-Boss Lock™ and Dixon™ locking styles

Materials:

- 356T6 aluminum, brass, 316 stainless steel, unplated iron, forged brass and 316 investment cast stainless steel

Sizes:

- 1" - 6"



aluminum



stainless steel



Dust Caps and Plugs with Pull Handles for Hose Tubes

Application:

- enables tanker operators to remove delivery hoses from the storage tubes; the operator simply grabs the handle and easily pulls the hose out of the storage tube.

Features:

- rugged construction protects the hose coupling and adapter from damage during transportation and the removal of hoses from the hose storage tube
- prevents possible environmental issues due to leaking residue left in an open hose

Materials:

- body: aluminum
- arms: brass
- seals: Buna

Sizes:

- 3" and 4"



400-DC-ALPH



400-DP-ALPH



Dust caps and dust plugs are not to be used in pressure applications for safety and environmental reasons.

Crimp Sleeves and Ferrules

Application:

- when used in conjunction with Dixon™ crimp style cam and groove couplers, creates a tight seal for hose connections

Materials:

- carbon steel, 304 stainless steel and aluminum

Sizes:

- 1" - 6"; larger sizes available, contact Dixon™



Only use the crimp style shanks with the crimp style sleeves and ferrules. Due to differences in dimensions and tolerances for safety reasons, do not interchange other manufacturer's products with Dixon™ products.

API Compatible Rack Cords

Application:

- used to connect the loading rack monitor to the socket on a fuel tanker

Features:

- cords available in coiled or straight lengths
- plug body is coded optic blue or thermistor green
- wiring is compatible with Scully color codes and wiring configurations
- cord features heavy duty, highly visible orange jacket to meet trip hazard requirements

Materials:

- button contacts: 316 stainless steel
- plugs: reinforced nylon with stainless contact pins

API Thermistor Assemblies



FT600

API Optic Assemblies




FT620

Dispensing Nozzles

Farm and Consumer Nozzles


Application:

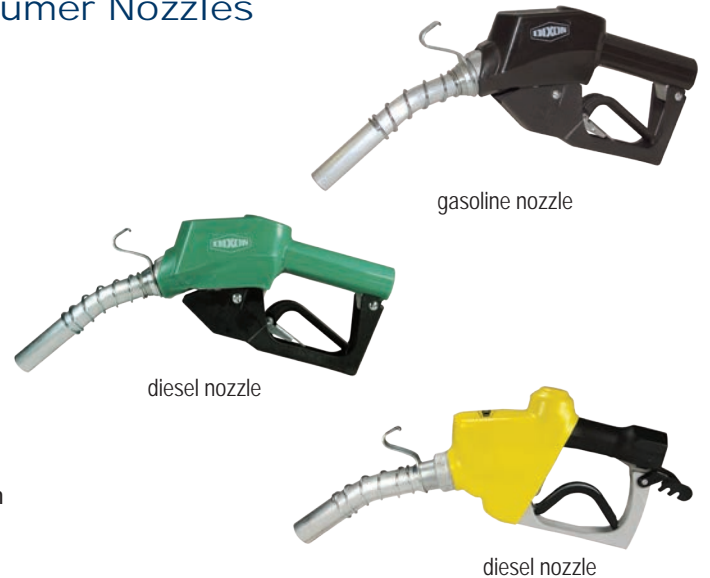
- small 12 volt or AC utility pumps, farm or consumer pumps  (not designed for use with gravity flow tanks)

Features:

- Micro-touch valve provides smooth operation and exceptional flow control
- pure PTFE stem packing eliminates leaks
- heavy duty, strong, secure hook makes it easy to hang the nozzle on the pump
- Roto-matic latch pin provides positive auto shut-off
- Smartguard snap-on scuff guard


Optional Features:

- Underwriters Listed versions 
- super tough nylon trigger hold-open clip
- 'no pressure, no flow' (NPNF) safety valve prevents the trigger from being held open if pressure is not present



Big Mouth™ Diesel Nozzle

Application:

- truck stops (not designed for use with gravity flow tanks, small 12 volt or AC utility pumps, farm or consumer pumps) 

Features:

- lightweight but strong
- Micro-touch valve provides smooth operation and exceptional flow control
- Roto-matic latch pin provides positive auto shut-off
- pure PTFE packing eliminates stem leaks
- super tough nylon hand guard
- snap-on handle cover makes changing scuff guards easy
- yellow scuff guard


Optional Features:

- Underwriters Listed versions 



Fuel Master™ Diesel Nozzles

Application:

- truck stops and terminal operations (not designed for use with gravity flow tanks, small 12 volt or AC utility pumps, farm or consumer pumps) 

Features:

- high flow capacity
- Micro-touch valve provides smooth operation and exceptional flow control.
- Roto-matic latch pin provides positive auto shut-off
- pure PTFE packing eliminates stem leaks
- super tough nylon hand guard
- automatic shutoff
- easy to change 'locknut style' spout assembly
- green scuff guard

Optional Features:

- Underwriters Listed versions 



• A fuel nozzle cross reference can be found on the next page.

Dispensing Nozzles

DEF Shutoff Nozzle



Application:

- automatic shutoff nozzle designed for diesel exhaust fluid

Features:

- aluminum body double coated inside and out with PTFE baked on at 500° F
- stainless steel spout
- maximum operating pressure: **50 PSI**
- wetted parts: stainless, acetal, PTFE
- FKM-A seals
- inlet is 3/4" BSPP
- spout diameter is 13/16"

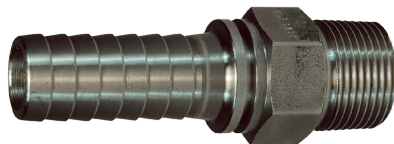
Fuel Nozzle Cross Reference

Dixon™	M. Carder	OPW	Emco	Husky	Catlow
DN7UOBF	N7UOBF	1AF-40FS	A2501F	XSF-33704	NENLF
DN7LOBF	N7LOBF	11APF-40FS	A2501LF	---	NELF
DFN100HF	N4-Fuelmaster	7H	A6000	V111-173310	MAX1
DFN100	N3-BigMouth	N/A	N/A	1HS.026810	MAC-1AH

External Swage/Crimp Uni-Range Male Couplings



For Crimping



For Use With Clamps

Applications:

- for use on most one or two wire braid reinforced hoses, fiber reinforced with or without helical wire

Features:

- designed for 3/4" BSPT threads for DEF shutoff nozzle
- can be swaged, crimped or clamped

Materials:

- stem: 316 stainless steel
- ferrule: 304 stainless steel

Sizes:

- 3/4"

- Other sizes are available, contact Dixon™ for additional information

Nozzles for Bulk Delivery

Fueler 100™ Automatic Diesel Nozzles

Application:

- used at industrial fill stations to dispense fuel into trucks, busses, off road equipment and fuel oil delivery

Features:

- tough, lightweight and reliable easy to use
- flow rating: 75 GPM (at **30 PSI**)
- replaces older models of 1124D and 1144D
- also available in a lower cost rebuilt model

Material:

- Tenzaloy™ aluminum casting



Pressure Nozzles

Application:

- used at industrial fill stations to dispense fuel into trucks, busses, off road equipment and for fuel oil delivery

Features:

- high flow design, 1½" model provides 100 GPM at approximately **10 PSI**
- easy opening dash pot design with shock-less closing
- available with or without an aluminum spout (brass spouts optional)
- detachable and replaceable trigger ratchet

Material:

- aluminum



Ball Nozzles

Application:

- ideal for bulk oil and fuel deliveries

Features:

- high flow rate and low pressure drop
- full 1" flow path
- swivel design permits leak free service, even at temperatures as low as -40°F at **100 PSI**
- comes standard with a **3 PSI** check valve, helping to ensure residual fuels within the delivery hose and nozzle are contained
- available with field replaceable outlet spout or quick fill swivel nut

Materials:

- body: black anodized aluminum
- spout: aluminum
- handle and latch: polished stainless
- inlet swivel: bayloy
- swivel ball race: hardened carbon
- ball bearings: hardened chrome steel
- seals: Buna and PTFE



BL920



BL072NS

Hose Swivels



SWMF150



HS300AL



1580U

Application:

- used to attach fuel hoses by NPT or other threads at filling stations to avoid kinking and leakage

Features:

- heavy duty, standard and check valve swivel options
- automatic shut-off

Materials:

- aluminum, brass and Bayloy
- seals: Buna and PTFE

Sizes:

- 3/4" - 4"

Fuel Oil Delivery Couplings (Internally Expanded)

Application:

- recommended for discharge and suction service, most commonly used in the transfer of fuel to home, airplanes, ships, etc.

Features:

- both the male and female have octagonal facets for tightening with a wrench
- couplings are compact, lights and streamlined to eliminate catching on curbs and shrubbery
- couplings are pre-lubricated for assembly
- designed for internal expansion only - hand and electrically operated assembly equipment available, contact Dixon™ for details

Materials:

- stems: machined from bar stock or solid brass forgings
- ferrules: brass and stainless

Sizes:


- 3/4" - 3"

Curb Pump Hose Couplings

Application:

- used on curb pump hose

Features:

- two-piece construction
- streamlined design prevents damage to hose and fits well on new pump equipment
- wide, flat surfaces of body threads protect inside of hose from breaking
- tapered surface of sleeve and body cradle hose preventing one-point strain from flexing
- Hose is gripped on its full circumference in two places, ensuring a rigid leakproof connection.
- re-attachable: worn portion of hose can be removed and Dubl-Grip® can be reapplied
- easy assembly:
 - Hose is held in position by sleeve as body is threaded home.
 - Only a wrench is required to assemble the Dubl-Grip®.
- *Reattach static wire if required.* 

Material:

- chrome plated brass

Sizes:

- Dubl-Grip® swivel re-attachables: 3/4" and 1"
- Dubl-Grip® re-attachables: 5/8", 3/4" and 1"



Dubl-Grip® swivel re-attachables



Dubl-Grip® re-attachables

Dry Aviation Couplings & Adapters

Applications:

- designed for use in aviation refueling systems

Features:

- PTFE bearings between the coupling driving plate and piston guide eliminate risk of seizure
- riveted piston pin minimizes risk of failure under extreme conditions
- conical valve seat in adapter eliminates the risk of piston blow out when extreme pressure is used

Standard:

- accepts international standard 2½" point bayonet, hose end refueling nozzles according to: ISO45 / MS24484 / STANAG 3105 / British Aerospace Spec. 2C14, **they are not configured for under-wing refueling**

Materials:

- body: aluminum
- coupling ring: gunmetal
- bayonet flange and inner parts: stainless steel and aluminum
- wetted parts: aluminum and stainless steel
- bearings in coupler: stainless ball
- protective ring: specially formulated, weather resistant and electrically conductive rubber compound

Sizes:

- 2½" and 3"



coupler x female



adapter x flange



adapter x female NPT



dust plug

Aircraft Over Wing Nozzles

Application:

- used in aviation refueling systems to transfer fuel to plane

Features:

- manual operation (non-automatic) for high pressures and fuel flow up to 60 GPM at 20 PSI
- easy opening dash pot design with shock-less closing
- detachable trigger ratchet, packing gland and seal
- bronze trigger and plastic guard pad protect wing
- spout comes with cap, spring cord, fine mesh stainless screen filter, and screw attachment for grounding cable (cable not supplied)

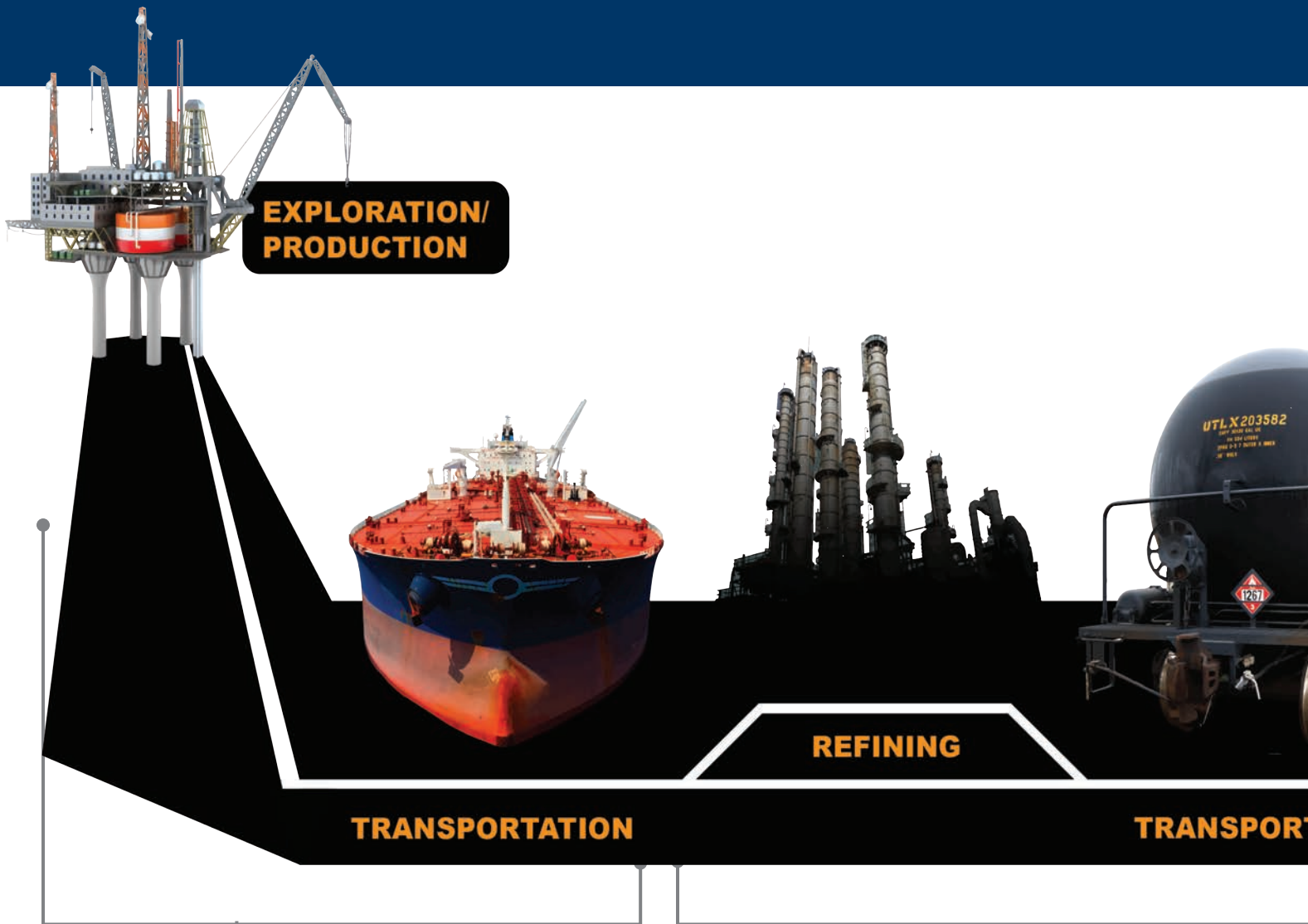
Material:

- aluminum

Sizes:

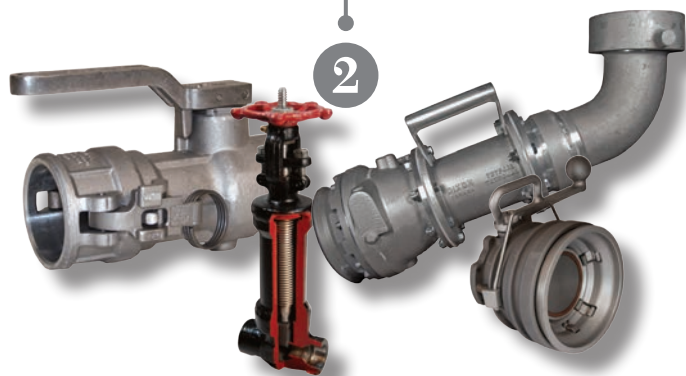
- 1¼" and 1½"





Exploration and Production

- Boss™ Low Pressure System Products
- Frac Fittings
- King Crimp™ System
- Hammer Unions
- Control Valves
- Holedall™ Couplings
- Tank Truck and Rail Car/API Fittings & Assemblies



Refining

- Dry Break Couplings
- Cam & Groove
- Dry Disconnects
- Ground Joint Systems
- Valves
- API Fittings

PETROCHEMICAL LIFE CYCLE



TRANSPORTATION



Terminal to Retail

- Overfill Protection
- Loading/Unloading
- Adapters
- Swivels
- Tank Truck and Rack Fittings
- Nozzles



Scan for more information on the petrochemical life cycle

Dixon™, founded in 1916, is a premier manufacturer and supplier of hose couplings, valves, dry-disconnects, swivels, and other fluid transfer and control products. The company's global reach includes a wide range of products for numerous industries including petroleum exploration, refining, transportation, chemical processing, food & beverage, steel, fire protection, construction, mining and manufacturing. Dixon™'s strategic objective is to create solutions that make products safer, leak-free, longer lasting, and always available.

dixonvalve.com • *Customer Service:* 877.963.4966



The Right Connection®

Dixon™

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