

Emerson Piggable Valves

Valves, Pigs, Pig Loading/Removing Stations



Overview

Piggable valves are instruments designed to add or remove product from a piggable line, direct product flow to the correct destination, and control the movement of pigs which clean out the line after the transfer is complete.

The Emerson HLDV/ILDV series of piggable valves combine a stainless steel piggable body with a specially designed flush mounted ball valve to insert or remove product from the pigged line. Accessories to control the pigging such as pig stoppers, pig detectors, and pigging air inlet/exhaust manifolds are securely mounted to the piggable body. The resulting design is modular to cover a wide variety of pigging operations while utilizing common components for ease of maintenance.

The modular HLDV/ILDV design is robust as each component is specifically designed for the function it serves. This isolates valve sealing functions from the forces of stopping the pig. The result is increased overall equipment reliability and durability while allowing ease of maintenance and spare part uniformity.

Emerson piggable valves come fully equipped with sensors to detect the presence of a pig, the valve position, and the pig stopper position, and with solenoids to actuate the valves and pig stopper. The I/O systems offered are conventional I/O signals or AS-i network I/O modules.

Piggable 3-way valves and full bore valves direct the flow of product and pigs through the line. Emerson piggable ball valves are robustly built to handle the forces of pig transit with precise and trouble free alignment.

Conventional I/O piggable valves come with all I/O signals marshalled onto terminal strips located in a flange-mounted junction box. Valves with the AS-i I/O system come with sensors securely connected to the I/O modules using M12 connector cables, and with the modules mounted to a flange-mounted plate with protective cover.

Applications

Blending Plants

- Raw material receipts and distribution to storage
- Finished product transfer to holding tanks
- Transfer to filling and packaging lines

Chemical/Petrochemical Industry

- Organic chemistry
- Basic plastics
- Coats and varnishes
- Chemical products for industrial use
- Soaps, detergents and cleaning products
- Paints

Features and Benefits

- Highly efficient, automated pipe cleaning solution utilizing low residual equipment design and the efficient cleaning capability of the Emerson pig
- Minimize cross contamination between different batches. This increases operational flexibility and reduces flushing
- Optimized equipment utilization. Use of common lines for transferring several products
- Maximize the efficiency of batch production operations by meeting demanding production specifications in smaller batch sizes with high turnover rates, all while maintaining a high quality of product
- Enhanced safety of equipment and staff compared to open pigging. The system is automatic and the operator does not have to take the pigs out of the line after each operation

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Specifications

These specifications are for typical equipment. For additional options consult Emerson.

Basic Data

Design information about the pigged line

- Pigged Diameter: SCH 10, SCH 40, Tarif 10, others on request
- Flanges: ASME Class 150 RF, PN 16, or PN 20
- Surface protection: Primer + top coat for carbon steel parts only

Electrical Data

Piggable valves are offered with either conventional I/O or AS-i network I/O modules.

- I/O System: Conventional I/O or AS-i network I/O modules
- Electric power: 24 VDC, 110-120 VAC¹, 220-240 VAC¹
- Area Classification: Safe Area or Hazardous¹ (For hazardous inquire for additional details)
- Ingress protection²: IP 65 per IEC 529
- Wiring: Conventional I/O: junction box; AS-i: AS-Interface flat cable
- Junction box material: Non-metallic reinforced polymer, none, (Steel on special request)

Piggable Valve Body

The piggable valve body connects to the pigged line and serves as a mounting point for the product outlet valve, pig stopper, pig sensor, and pigging air manifold valves.

- Material: ASTM A351-CF8M (316 Stainless)
- Pig detection: Magnetic inductive sensors, 10-30 VDC PNP. (Manual detectors available on special request)

Product Valve

The specially designed product valve fits flush with the inside pipe diameter for efficient cleaning by the pig.

- Material: ASTM A216-WCB (Carbon Steel) or ASTM A351-CF8M (316 Stainless)
- Leakage Class: Exceeds API 598 for ball valve leakage
- Seals: Stainless seat with PTFE seals
- Connection: ASME Class 150 RF or PN 16
- Actuator: Pneumatic, double acting piston, normally closed (Manual actuator on special request)
- Solenoids: AS-i: Airbox, Conventional: Asco solenoid valves

1. Conventional I/O only

2. AS-i I/O modules mounted on valve under a protective cover

- Limit switches: Magnetic inductive sensors, 10-30 VDC PNP, for open and closed position. (Dry contacts on special request)
- Instrument Air Tubing: Polyurethane for AS-i I/O, Stainless steel for conventional I/O

Pig Stopper

The pig stopper is a solid stainless steel rod which extends and retracts from the cylinder and is designed to stop the pig on command

- Type: Linear cylinder, pneumatic operation, normally active (rod inside the pigged line)
- Material: Stainless steel, 304L body and 630 (17-4 PH) hardened stem. FPM/PU seals
- Operation: Double acting pneumatic
- Solenoids: Asco Monostable spool valve
- Limit switches: Magnetic inductive sensors, 10-30 VDC PNP, for open and closed position

Pigging Manifold

The pigging manifold controls the pigging air inlet and exhaust valves used to push the pig through the pipe.

- Manifold type: Standard pipe fittings (APEM) or Compact stainless steel block (CAPEM)
- Functions: One to five valve manifold with inlet check valve and exhaust flow reducer
- Manifold size by valve size:

Valve	3"/DN80	4"/DN100	6"/DN150
Manifold	¾"/DN20	¾"/DN20	1"/DN25

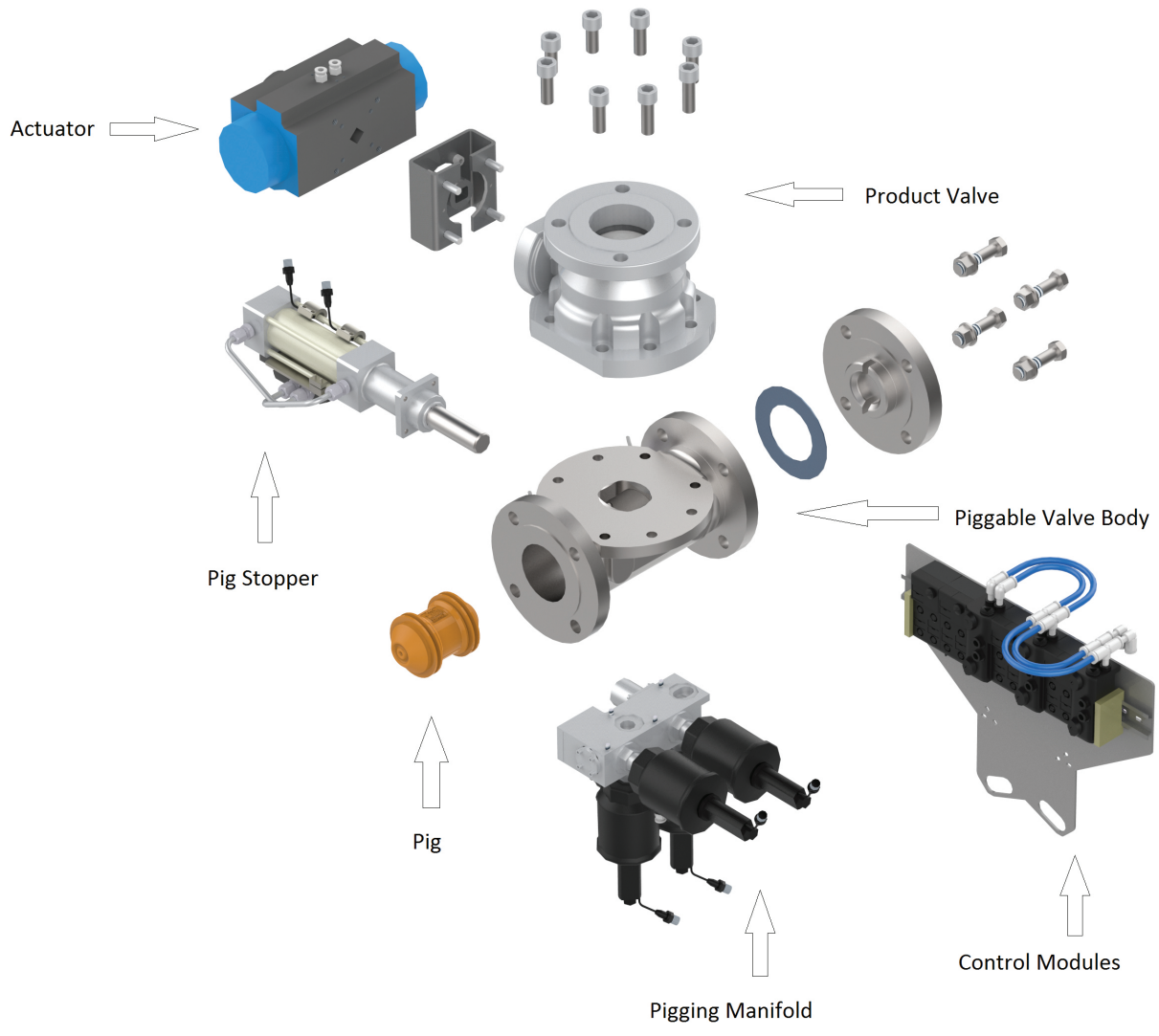
- Valve type: Piston valve with pneumatic actuator. (Manual ball valves on request)
- Solenoid: 3/2 Spool valve, direct operated
- Limit switches: Magnetic inductive sensors, 10-30 VDC PNP, for closed position

Pig Loading/Removing Station

Device used to safely load or unload a pig from the pipeline

- Type: Portable Loading/Removing Station (PLRS) with quick coupling flange connection or standard flange. Fixed in place Loading/Removing Station (LRS) with pigging manifold
- Material: Stainless steel
- Pig detection: For fixed in place system, one pig or two pigs
- Pigging Air Connection: NPT tapped connections, piped manifold (4 or 5 valves)

Typical Piggable Valve Components



Head Line Distribution Valves

Head Line Distribution Valves (HLDV) are located at either end of the pigged line and function as a fluid inlet (launcher) or outlet (receiver) station. A pig is typically stored in the HLDV until it is time to start a pigging operation. The pigging manifold is used to inject compressed air to launch the pig and to vent exhaust air to receive a pig.

Accessory configurations will differ for applications in a one or two pig system and whether it serves as a fluid inlet (launcher) or outlet (receiver) valve. The appropriate model of HLDV can be selected by following the model code selections.



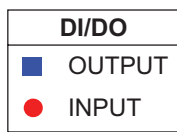
Specifications

Table 1: Standard Process Data	
Lines Sizes (Other available on request)	DN 80 / DN 100 / DN 150 (3" / 4" / 6")
Flanges	PN 16 or ASME CL 150
Instrument Air (min/max)	5.5 barg / 8 barg (80 psig / 116 psig)
Pigging Air (min/max)	3 barg / 7 barg (43 psig / 101 psig)
Power Supply	24 VDC, 110-120 VAC, 220-240 VAC
Maximum Process Pressure	16 barg, (24 barg test)
Design Temperature	-10°C to +70°C
Material of Construction	Carbon steel/Stainless steel

Table 2: HLDV Standard Models *									
Model*	2"	3"	4"	6"	Function	Pig Stopper	Pigging Manifold	Output Signals	Input Signals
HLDV –	201	301	401	601	Inlet HLDV for two pig system	Yes	Compact 4V/5V	6	10
HLDV –	204	304	404	604	Outlet HLDV for one pig system	No	Compact 4V/5V	5	8
HLDV –	221	321	421	621	Inlet HLDV for one pig system	Yes	Standard 2V	4	7
HLDV –	224	324	424	624	Outlet HLDV for one pig system	No	Standard 2V	3	5

* For sizes 8" and larger consult Emerson.

Table 3: HLDV Schematic Diagrams *			
HLDV – 301 / 401 / 601	HLDV – 304 / 404 / 604	HLDV – 321 / 421 / 621	HLDV – 324 / 424 / 624



HLDV Dimensions and Weight

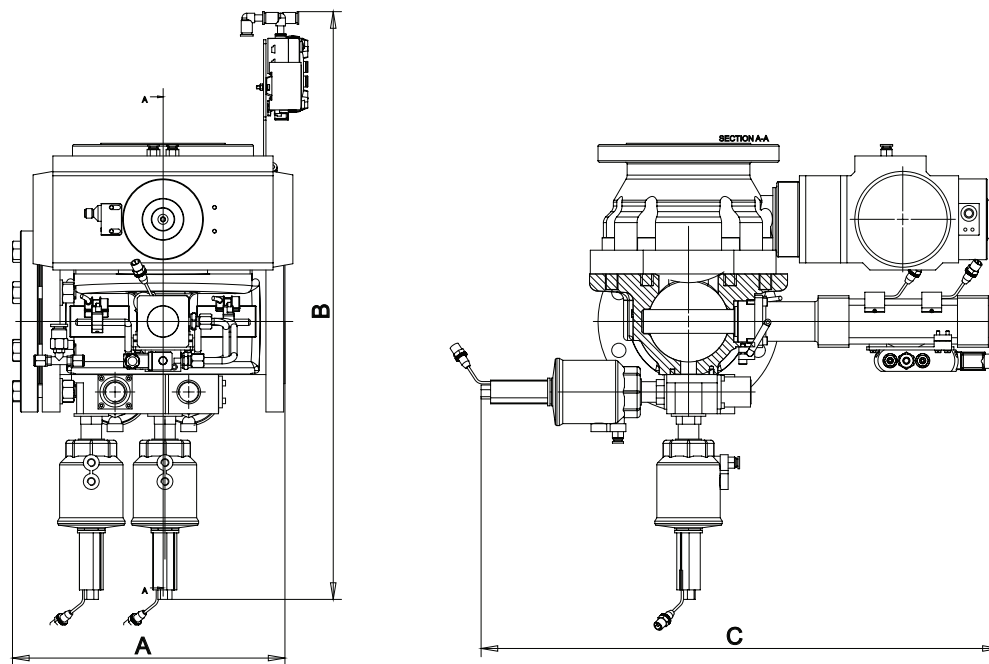


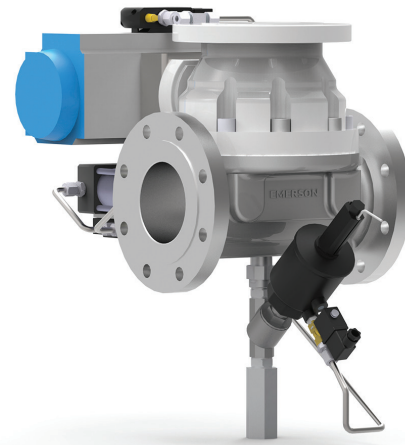
Table 4: Typical Weights and Dimensions: HLDV (AS-i)									
X	A		B		C		Weight		
	in	mm	in	mm	in	mm	lb	kg	
3"	12.4	316	26.9	682	24.6	625	154.3	70	
4"	13.54	344	28.9	735	25.4	645	209	95	
6"	22.4	570	46.6	1170	29.5	750	458.6	208	

* For sizes 8" and larger consult Emerson.

Inline Distribution Valves

Inline Distribution Valves (ILDV) insert or remove product from a middle point along the pigged highway. The pig must be allowed to pass directly through an ILDV and therefore it does not have the pig catching flange at one end.

The instrumentation requirements of the ILDV will depend upon whether the valve is a product inlet or outlet and the pigging sequence. The correct configuration can be identified by function in the model code.



Specifications

Table 5: Standard Process Data	
Lines Sizes (Other available on request)	DN 80 / DN 100 / DN 150 (3" / 4" / 6")
Flanges	PN 16 or ASME CL 150
Instrument Air (min/max)	5.5 barg / 8 barg (80 psig / 116 psig)
Pigging Air (min/max)	3 barg / 7 barg (43 psig / 101 psig)
Power Supply	24 VDC, 110-120 VAC, 220-240 VAC
Maximum Process Pressure	16 barg, (24 barg test)
Design Temperature	-10°C to +70°C
Material of Construction	Carbon steel/Stainless steel

Table 6: HLDV Standard Models *									
Model*	2"	3"	4"	6"	Function	Pig Stopper	Pigging Manifold	Output Signals	Input Signals
ILDV –	202	302	402	602	Inlet ILDV for two pig system.	No	None	1	2
ILDV –	222	322	422	622	Inlet ILDV for one pig system.	No	None	1	2
ILDV –	203	303	403	603	Inlet/Outlet ILDV for two pig system	Yes	Standard 1V	3	7

* For sizes 8" and larger consult Emerson.

Table 7: HLDV Schematic Diagrams *	
<p>ILDV – 302 / 402 / 602 ILDV – 322 / 422 / 622</p>	<p>ILDV – 303 / 403 / 603</p>

DI/DO
■ OUTPUT
● INPUT

* Consult Emerson for other sizes.

ILDV Dimensions and Weight

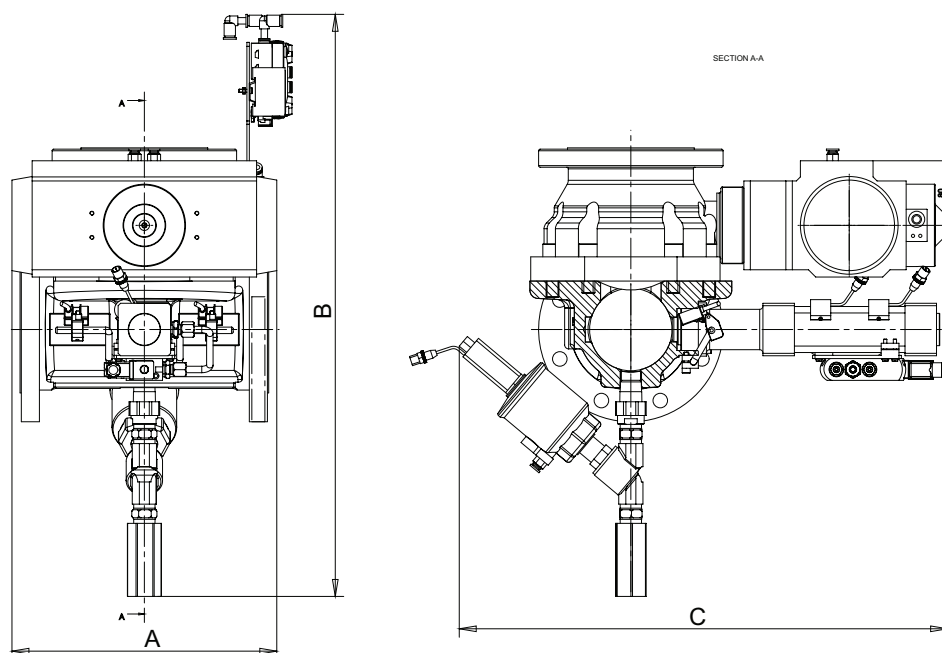


Table 8: Typical Weights and Dimensions: ILDV (AS-i)

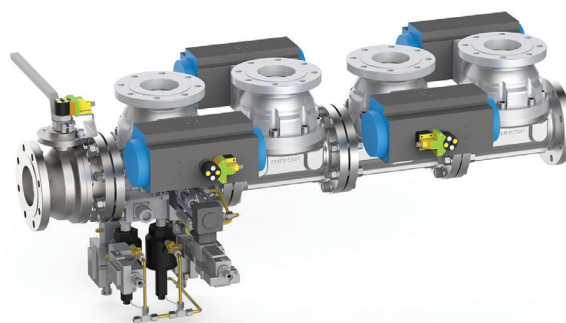
X	A		B		C		Weight	
	in	mm	in	mm	in	mm	lb	kg
3"	11.0	280	28.1	714	23.1	588	132.3	60
4"	12.9	328	28.3	721	23.6	599	176.4	80
6"	20.5	520	34.4	875	29.3	745	396.8	180

* For sizes 8" and larger consult Emerson.

Piggable Clarinet Manifolds

Clarinets consist of a pig launching or receiving station with multiple inlets/outlets to the pigged line, connected end-to-end and mounted on a frame with common wiring. It provides for a compact and easy to install solution for multiple inlets or outlets to a piggable line in a compact space.

All of the wiring terminations and/or modules are factory marshalled to the equipment on skid for much simplified field installation of the equipment. Consult Emerson for additional information regarding piggable Clarinets.



Twin HLDV and ILDV

Emerson's Twin HLDV and ILDV piggable valve consists of a single stainless steel piggable body section with a product inlet/outlet valve mounted on both sides. This design allows a single piggable valve body house two inlet/outlet connections. It applies to HLDVs, ILDVs and Clarinets.

The twin valve concept works exceptionally well in applications delivering product to two adjacent tanks, or anywhere there are two product destinations in close proximity.

The use of twin valves offers the following main advantages:

- Compact installation and lower overall installed cost
- Simplification of the piping
- Reduction in the quantity of instrumentation I/O and field wiring



Specifications

Table 9: Standard Process Data	
Lines Sizes (Other available on request)	DN 80 / DN 100 / DN 150 (3" / 4" / 6")
Flanges	PN 16 or ASME CL 150
Instrument Air (min/max)	5.5 barg / 8 barg (80 psig / 116 psig)
Pigging Air (min/max)	3 barg / 7 barg (43 psig / 101 psig)
Power Supply	24 VDC, 110-120 VAC, 220-240 VAC
Maximum Process Pressure	16 barg, (24 barg test)
Design Temperature	-10°C to +70°C
Material of Construction	Carbon steel/Stainless steel

Table 10: Twin HLDV and ILDV Standard Models *								
Model*	3"	4"	6"	Function	Pig Stopper	Pigging Manifold	Output Signals	Input Signals
THLDV –	301	401	601	Twin Inlet HLDV for two pig system	Yes	Compact 4V	7	12
THLDV –	304	404	604	Twin Outlet HLDV for two pig system	No	Compact 4V	6	10
THLDV –	321	421	621	Twin Inlet HLDV for one pig system	Yes	Standard 2V	5	9
THLDV –	324	424	624	Twin Outlet HLDV for one pig system	No	Standard 2V	4	7
TILDV –	302	402	602	Twin Inlet ILDV for two pig system	No	None	2	4
TILDV –	303	403	603	Twin Inlet/Outlet ILDV for two pig system	Yes	Standard 1V	4	9

* For sizes 8" and larger consult Emerson.

Table 11: Standard Twin HLDV and ILDV Schematic Diagrams *			
THLDV – 301/401/601	THLDV – 304/404/604	THLDV – 321/421/621	THLDV – 324/424/624
		<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>DI/DO</p> <p>■ OUTPUT</p> <p>● INPUT</p> </div>	
* Consult Emerson for other sizes.			

Twin HLDV and ILDV Dimensions and Weight

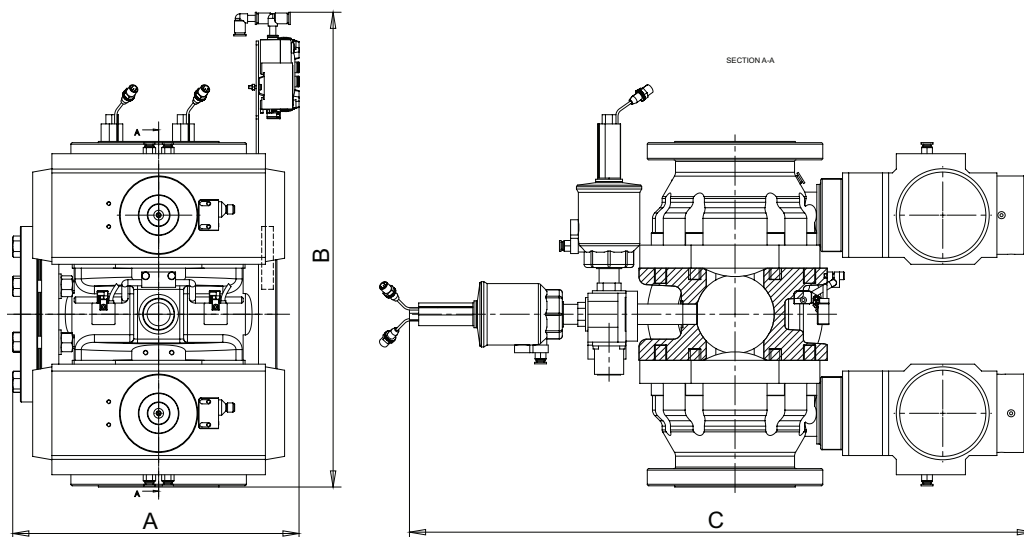


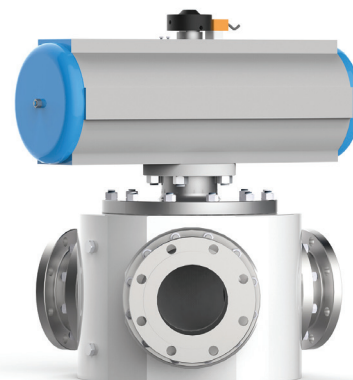
Table 12: Typical Weights and Dimensions: ILDV (AS-i)								
X	A		B		C		Weight	
	in	mm	in	mm	in	mm	lb	kg
3"	12.4	316	22.2	563	29.6	752	209.4	95
4"	13.5	344	24.2	615	31.7	804	297.6	135
6"	22.2	565	29.1	740	60.0	1320	C/F	C/F

* For sizes 8" and larger consult Emerson.

3-Way Valves

A piggable 3-Way Valve switches the passage of flow from a single common point to one of two alternate destinations. This allows for the construction of a branch line in a piggable highway. 3-Way Valves offer a seamless transition between piggable line branches with a minimum of instrumentation and complexity.

Emerson piggable valves are full bore and designed for the forces of pig passage. Piggig through the valve is clean and efficient with a minimum of residual left in the line.

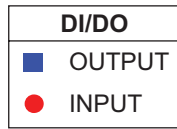
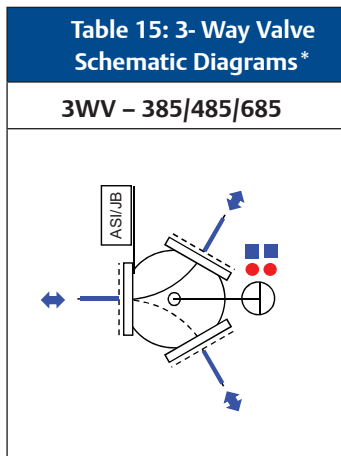


Specifications

Table 13: Standard Process Data	
Lines Sizes (Other available on request)	DN 80 / DN 100 / DN 150 (3" / 4" / 6")
Flanges	PN 16 or ASME CL 150
Instrument Air (min/max)	5.5 barg / 8 barg (80 psig / 116 psig)
Power Supply	24 VDC, 110-120 VAC, 220-240 VAC
Maximum Process Pressure	16 barg, (24 barg test)
Design Temperature	-10°C to +70°C
Material of Construction	Carbon steel/Stainless steel

Table 14: 3-Way Valve Standard Model*									
Model*	2"	3"	4"	6"	Function	Pig Stopper	Pigging Manifold	Output Signals	Input Signals
3WV-	285	385	485	685	3- way valve, two position	No	No	2	2

* For sizes 8" and larger consult Emerson.



* Consult Emerson for other sizes.

3- Way Valve Dimensions and Weight

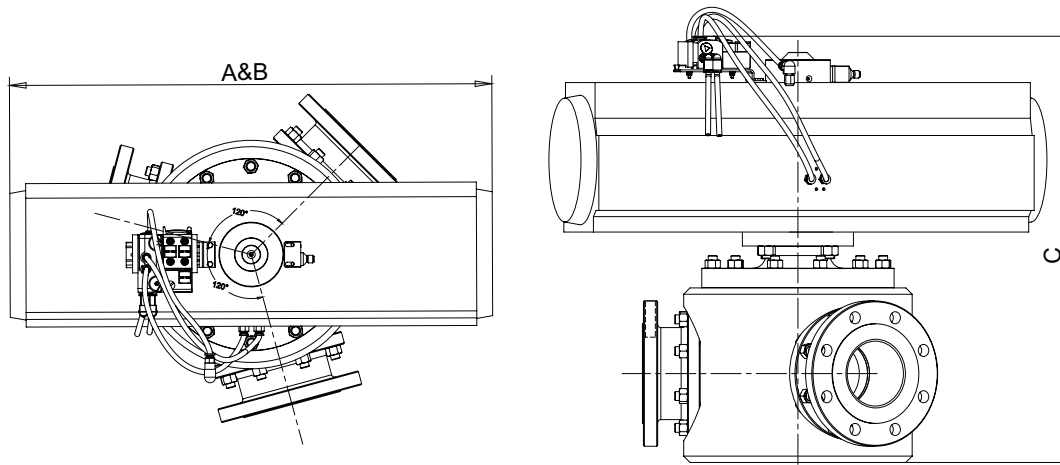


Table 16: Typical Weights and Dimensions: 3-Way Valve (AS-i)

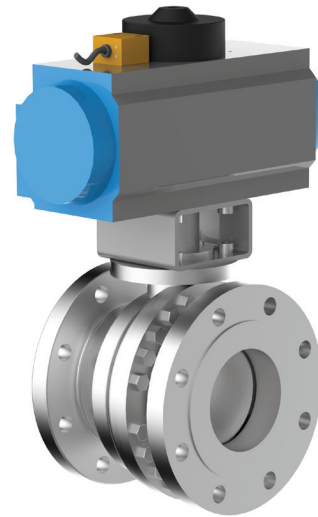
X	A		B		C		Weight	
	in	mm	in	mm	in	mm	lb	kg
3"	22.4	570	22.4	570	21.4	545	275.6	125
4"	29.9	760	29.9	760	26.6	675	661.4	300
6"	31.1	790	31.1	790	33.1	840	C/F	C/F

* For sizes 8" and larger consult Emerson.

Full Bore Piggable Valves

Emerson's full bore piggable ball valves are used to isolate fluid flow and the passage of pigs inside of a piggable line. The bore of the valve is machined to exactly match to the pipe ID so that the pig can pass directly through the valve when open.

Full bore valves are commonly located between two IL DVs in order to create a piggable bypass around non-piggable equipment such as a pump. A manual full bore valve is often included with the pig Loading/Removing Station (LRS) in order to isolate the operator from the piggable header when changing a pig.

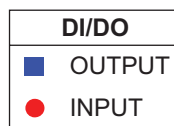
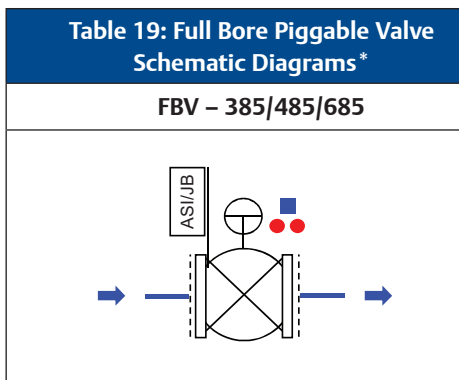


Specifications

Table 17: Standard Process Data	
Lines Sizes (Other available on request)	DN 80 / DN 100 / DN 150 (3" / 4" / 6")
Flanges	PN 16 or ASME CL 150
Instrument Air (min/max)	5.5 barg / 8 barg (80 psig / 116 psig)
Power Supply	24 VDC, 110-120 VAC, 220-240 VAC
Maximum Process Pressure	16 barg, (24 barg test)
Design Temperature	-10°C to +70°C
Material of Construction	Carbon steel/Stainless steel

Table 18: Full Bore Valve Standard Model *									
Model*	2"	3"	4"	6"	Function	Pig Stopper	Pigging Manifold	Output Signals	Input Signals
FBV –	285	385	485	685	Piggable ball valve	No	No	1	2

* For sizes 8" and larger consult Emerson.



* Consult Emerson for other sizes.

Full Bore Valve Dimensions and Weight

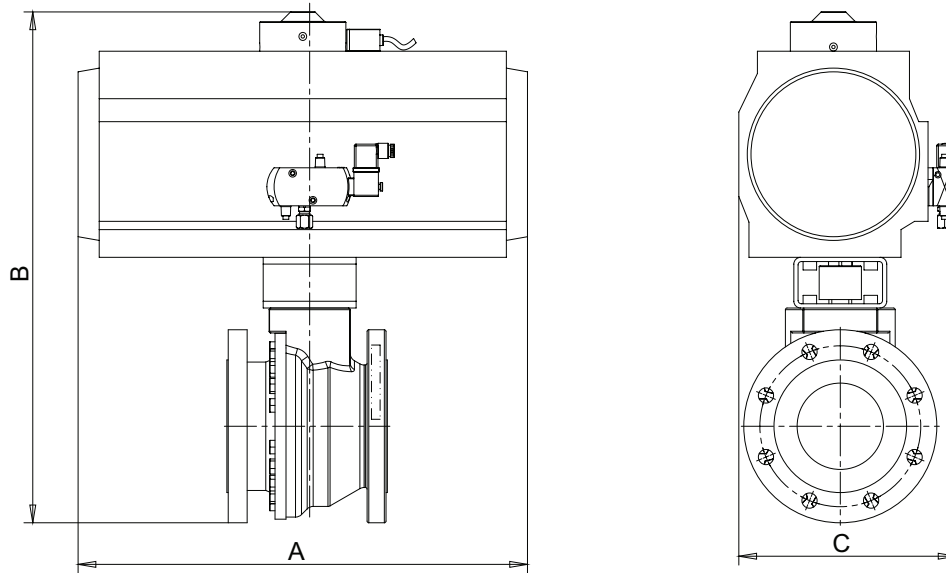


Table 20: Typical Weights and Dimensions: FBV (AS-i)

X	A		B		C		Weight	
	in	mm	in	mm	in	mm	lb	kg
3"	15.7	400	18.1	460	7.9	200	C/F	C/F
4"	13.2	335	19.5	495	9.5	240	C/F	C/F
6"	26.3	670	32.5	825	14.0	355	C/F	C/F

* For sizes 8" and larger consult Emerson.

Pig Loading/Removing Stations

Pig Loading/Removing Stations (LRS) permit the pig to be safely inserted or removed from the pipeline with a minimum of exposure to the process fluid. The pipe bore is oversized so that the operator is not required to compress the pig fins to insert the pig. The pig loads easily and the fins are compressed as the pig is launched from the chamber into the pigged line.

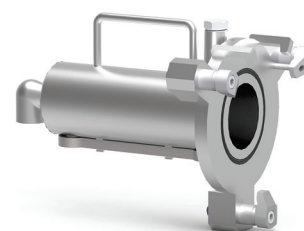
Unloading the pig is similar to the loading process. Pigging air pushes the pig into the LRS. Once in the chamber the pressure is released and the pig can be removed safely.

There are two varieties of Emerson's Pig Loading/Removing Stations. A fixed loading station is designed to stay in place permanently. It has a five valve manifold to control pigging air and a full bore isolation valve to isolate the station from the pigged line.

The portable loading station is a simpler solution for loading a pig that clamps directly onto the back of an HLDV with the end flanged removed. The pig launching air supply is connected to a quick connect coupling. After the pig is inserted into the line the portable loading station is removed and the HLDV end flange put back in place.



Fixed Loading/Removing Station



Portable Loading Station with Quick Connect Flange



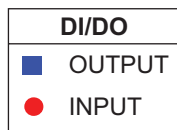
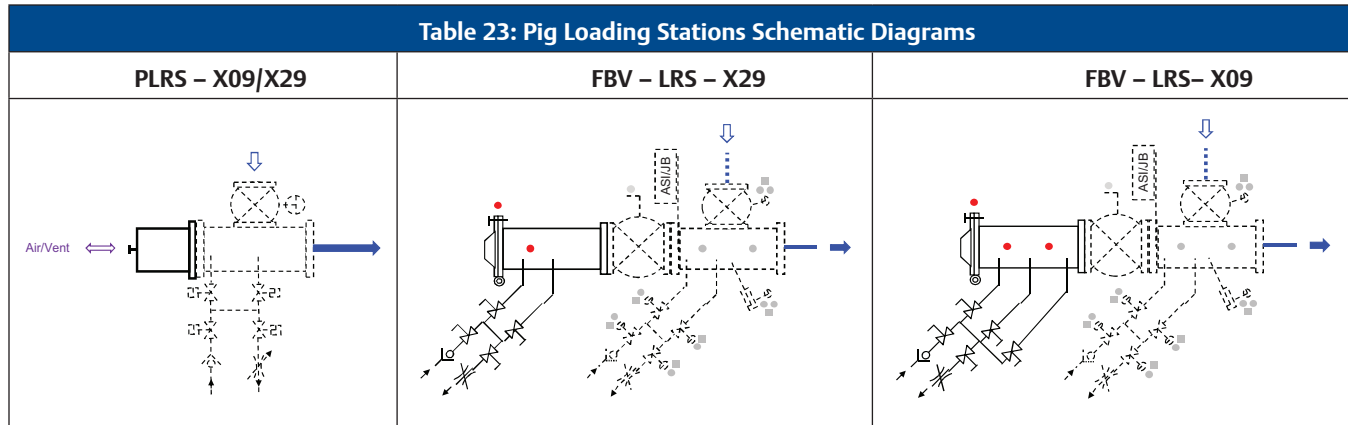
Portable Loading Station with Standard Flange

Specifications

Table 21: Standard Process Data	
Lines Sizes (Other available on request)	DN 80 / DN 100 / DN 150 (3" / 4" / 6")
Flanges	PN 16 or ASME CL 150
Pigging Air (min/max)	3 barg / 7 barg (43 psig / 101 psig)
Maximum Process Pressure	16 barg, (24 barg test)
Design Temperature	-10°C to +70°C
Material of Construction	Carbon steel/Stainless steel

Table 22: Piggable Valve Standard Model *					
Model*	Function	Pig Stopper	Pigging Manifold	Output Signals	Input Signals
PLRS – X09	Portable Pig Loading Station, Two pig system	No	No	0	0
FBV – LRS – X29	Pig Loading/Removing Station, One pig system	No	Manual 4V	0	2
FBV – LRS – X09	Pig Loading/Removing Station, Two pig system	No	Manual 5V	0	3

* where X equals the line size, 3", 4", 6". Consult Emerson for other sizes.



PLRS Typical Dimensions and Weight

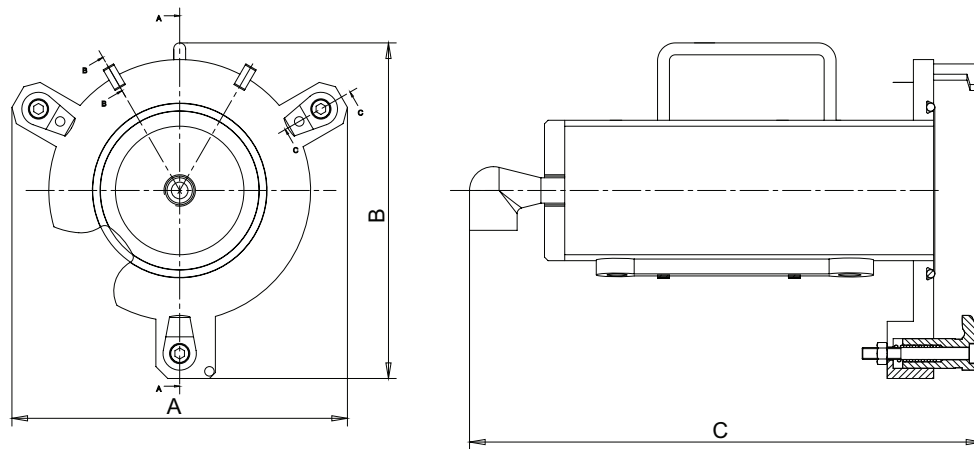


Table 24: Typical Weights and Dimensions: FBV (AS-i)

X	A		B		C		Weight	
	in	mm	in	mm	in	mm	lb	kg
3"	9.4	240	10.4	265	15.3	390	33	15
4"	11.4	290	11.4	290	17.3	440	39	18
6"	11.2	285	14.0	355	20.5	520	C/F	C/F

Operation Sequences

Pigging operations can be controlled in a wide variety of ways to suit the needs of the operation. Emerson’s modular design ensures there is a piggable valve to suit all applications. In general, pigging can be segregated into one pig systems or two pig systems.

In a one pig system the piggable header has a single outlet destination at the end of the header. A simple pigging sequence can be performed to clean the line by pushing the pig from the inlet Head Line Distribution Valve (HLDV) to the outlet HLDV after a product transfer and back again.

A two pig system is required for multiple inlet and outlet destinations. This type of system is most common for fully automated and integrated blending plant designs.

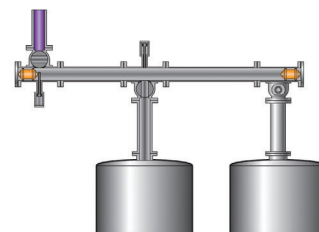
The piggable transfer sequence in a two pig system typically involves one pig residing at each end of the pigging line prior to the transfer sequence. To initiate a fluid transfer the destination valve is opened and then product inserted. After the fluid transfer has been completed the control system begins the pipe cleaning sequence by inserting a pig stopper at the destination In-Line Distribution Valve (ILDV) and launching pigs from both sides to clean the line. The pigs advance to the open valve sweeping product into the destination as they travel. After both pigs are detected at the destination valve they are returned home to the Head Line Distribution Valves (HLDV) at either end of the line.

Two pig systems are flexible in design to meet alternate process requirements. For example, the sequence may be modified to begin the fluid transfer with both pigs at the inlet valve. The resulting plug flow vents the air from the pigged line prior to beginning the product transfer. This may be desirable if an initial air/liquid mix is problematic such as for the inlet to flowmeters, fillers or products that foam up. The sequence can also be modified to push the fluid pushed back to the source after the transfer. This can be useful when transferring a fixed quantity from a dedicated tank. Consult Emerson for special requirements to ensure the valves are equipped with the necessary accessories.

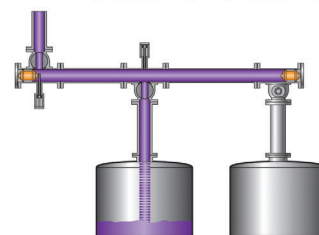
Emerson offers a proven piggable transfer system technology which is robust, flexible in operation, and easy to maintain. The advantages of piggable systems have been proven to reduce flushing, improved process efficiency and minimize component cross contamination. The result is a more efficient and profitable operations for the facility.

Typical Two Pig Operation Sequence

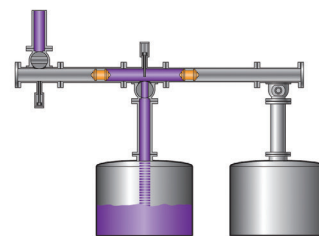
Step 1:
Ready to start operation



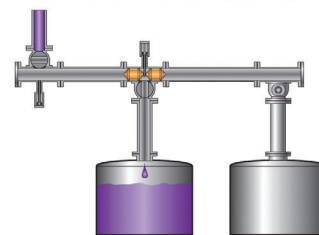
Step 2:
Begin fluid transfer



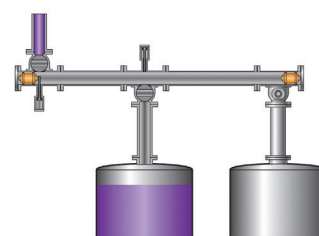
Step 3:
Transfer complete. Clean residual fluid



Step 4:
Piping cleaned. Pigs at destination



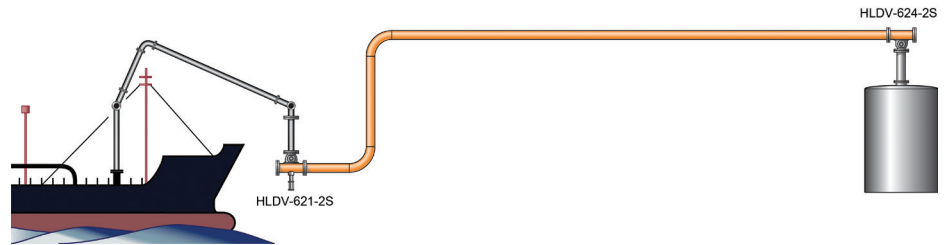
Step 5:
Return Pigs Home



Typical Piggaging Applications

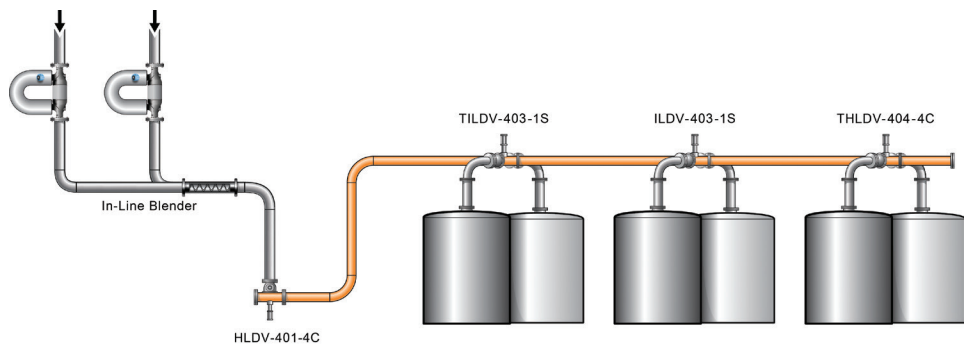
Single Pig

Ideal for a simple configuration of single inlet and outlet. With less I/O requirement than dual pig, the single pig system valves are reliable and cost effective.



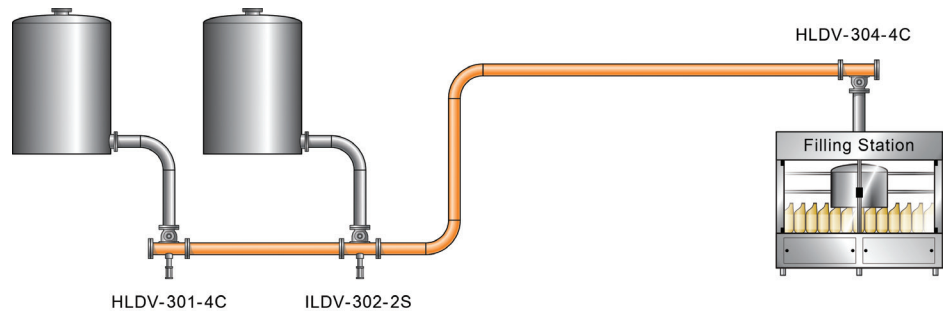
Dual Pig - Unidirectional

The dual pig system with twin valves excels at large distribution networks fed from a piggable line to storage tanks.



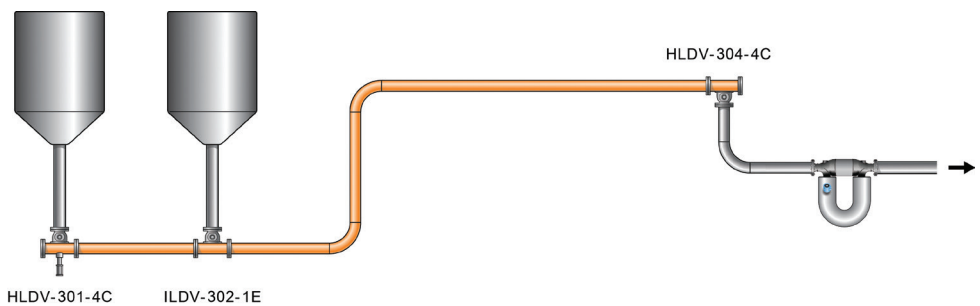
Dual Pig - Bidirectional

A properly equipped system can push unused product backwards to the source tank at the end of the transfer. This allows metering of an exact quantity of product to be used.



Dual Pig - Air free

Flow meters require a liquid-full line to read correctly. Flow begins with the pigs at the inlet valve. Air is vented until the line is liquid-full and the discharge valve can be opened.



* Piggable Pipe shown in orange

Piggable Valve Model Code Selection Guide

	XXXXX	- X	XX	- XX	X X	X X	XX	XXX	X	X	
Equipment Type											Valve Accessories
Head Line Distribution ValveHLDV											P.....Emerson standard (see specifications)
Inline Distribution ValveILDV											X.....Other, to be specified
Twin Head Line Distribution Valve.....THLDV											Instrument Voltage
Twin Inline Distribution Valve.....TILDV											1.....AS-i/Conventional, 24 VDC
Three Way Valve.....3WV											2.....Conventional, 110 – 120 VAC
Full Bore Piggable Ball Valve.....FBV											3.....Conventional, 220 – 240 VAC
Pig Loading Station.....LRS											4.....None, manual only
Portable Pig Loading Station.....PLRS											Flange Connection
											A15.....ASME Class 150 RF
											P16.....PN 16
											P20.....PN 20
											Q15.....Optional quick connect tabs for PLRS
Equipment Diameter											Pipe Schedule
3" / DN80.....3											S1.....Schedule 10
4" / DN100.....4											S4.....Schedule 40
6" / DN150.....6											T1.....Tarif 10
Others, on request.....X											Material of Construction
											8.....Stainless steel*
											9.....Carbon steel*
											* The piggable body of the (T)HLDV and (T)ILDV comes standard in stainless steel and this option then refers to the product valve material of construction.
Pigging Equipment Function											I/O Version
(T)HLDV launching station at product inlet for dual pig system. Equipped with pig stopper and compact pigging manifold.....01											A.....AS-i with plate mounted I/O modules. (safe area only)
(T)ILDV product inlet only for dual pig system.....02											C.....Conventional with terminations in junction box
Equipped with no pig stopper and no pigging manifold.....02											D.....Conventional without junction box
(T)ILDV product inlet/outlet for dual pig system.....03											M.....Manually operated valves
Equipped with pig stopper and Standard pigging manifold.....03											X.....Other, for non-standard I/O options to be specified
(T)HLDV launching station at product outlet for dual pig system. Equipped with compact pigging manifold and no pig stopper.....04											Z.....Not Applicable
(T)HLDV launching station at product inlet for single pig system. Equipped with pig stopper and standard pigging manifold.....21											Approval
(T)ILDV product inlet only for single pig system. Equipped with no pig stopper and no pigging manifold.....22											1.....None
(T)HLDV launching station at product outlet for single pig system. Equipped with no pig stopper and standard pigging manifold.....24											2.....CSA/US, non-hazardous
Pig loading or unloading station, 2 pig system.....09											3.....CSA/US Class 1 Div 2, Groups B, C, D
Pig loading or unloading station, 1 pig system.....29											4.....CE, non-hazardous
FBV or 3-Way.....85											5.....CE, Atex Zone 1
Pigging Manifold (Refer to recommended manifold for the Pigging System Function, Option 3)											
4 valve compact pigging manifold (CAPEM) for (T)HLDV Functions 01 and 04 with pigging air inlet and exhaust at two pig positions.....4C											
5 valve compact pigging manifold (CAPEM) for (T)HLDV Functions 01 and 04 with additional flushing fluid inlet/outlet valve.....5C											
1 valve pigging manifold (APEM) for (T)ILDV Function 03 with single pigging air inlet valve at single pig position.....1S											
1 valve pigging manifold (APEM) with single pigging air vent at single pig position.....1E											
2 valve pigging manifold (APEM) for (T)HLDV Function 21 and 24, with pigging air inlet and exhaust at single pig position.....2S											
4 valve pigging manifold (APEM) for pig loading station Function 29, with pigging air inlet and exhaust at two pig positions.....4S											
5 valve pigging manifold (APEM) for pig loading station Function 09, with pigging air inlet and exhaust at three pig positions.....5S											
No pigging fluid inlet/out connections, for (T)ILDV Function 02, 3WV, FBV, and PLRS.....NN											
Other, to be specified.....XX											

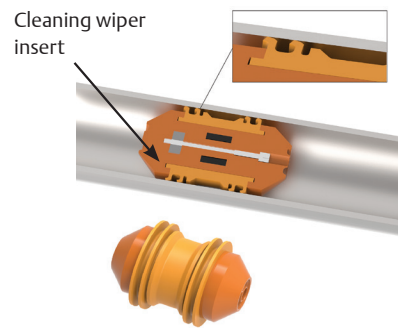
Available Piggable Valve Model Codes

Position											
1	2	3	4	5	6	7	8	9	10	11	
HLDV	3 4 6	01 04	4C 5C XX	1 2 3 4 5	A C D M X	8 9	S1 S4 T1	A15 P16 P20	1 2 3 4	P X	
		21 24	2S XX								
ILDV		02	1E NN XX								
		03	1E 1S XX								
THLDV		01 04	4C 5C XX								
		21 24	2S XX								
TILDV		02	1E NN XX								
		03	1E 1S XX								
3WV		85	NN XX								
FBV											
LRS		09	5S XX								M
		29	4S XX								
PLRS	09	5S NN XX	Z								
	29	4S NN XX									

Bi-Directional Pig

Emerson's bi-directional pig consists of a magnetic body with a replaceable cleaning wiper that inserts over it. The wiper insert utilizes specially designed fins that maintain compression with the pipe walls to thoroughly clean as the pig passes by.

The cleaning action of the wiper is far more efficient than a simple plug. In addition, only the wiper element needs replacement due to wear against the pipe wall.



Pig Components:

- **Cleaning wiper with two rows of polymer double lip wipers**

The flexible fins of the cleaning wiper perfectly conform to the variations of the inside diameter of the pipe. They are used to scrape clean any product residue deposited onto the inside diameter of the pipe.

- **Conical pig body**

Two piece body absorbs shocks when the pig is stopped at the end of the line or by a pig stopper. The conical pig body permits transit through pipe elbows with an optimized shape for stability and cleaning efficiency.

- **Magnetic core**

The magnet, molded into the pig body, permits detection of pigs in the valves.

The materials used for pig construction are determined according to the product conveyed. Consult Emerson for recommendations on suitable materials or on how to conduct a soak test to verify fluid compatibility.

Sizes

Table 25: Diameters							
Nominal Diameter*	Tarif 10		Sch 10		Sch 40		
	Inches	mm	Inches	mm	Inches	mm	
DN 80 3"	3.25	82.5	3.26	82.8	3.07	77.9	
DN 100 4"	4.22	107.1	4.26	108.2	4.02	102.2	
DN 150 6"	6.27	159.3	6.35	161.4	6.06	154	

* Consult Emerson for other sizes.

Materials

- Polyurethane
- FKM
- EPDM
- HNBR
- (Other materials available upon request. Consult Emerson for details.)

Transfer Pig Model Code Selection Guide

Transfer Pig Body

	TPB -	XX	X	X
		↓	↓	↓
Equipment Diameter				
2" / DN5002		
3" / DN8003		
4" / DN10004		
6" / DN15006		
8" / DN20008		
10" / DN25010		
12" / DN30012		
Material of Construction				
HNBR L2139			H	
EPDM L2294			E	
FKM 73801			F	
PolyUrethane 80S			C	
PolyUrethane 92S			P	
Other			Z	
Shape				
Round				0
Conical				7

Transfer Pig Wiper

	TPW -	XX	X	X	XX
		↓	↓	↓	↓
Equipment Diameter					
2" / DN50*02			
3" / DN8003			
4" / DN10004			
6" / DN15006			
8" / DN20008			
10" / DN25010			
12" / DN30012			
* 2" pig is a unibody design and the wiper cannot be ordered separately.					
Material of Construction					
HNBR L2139				H	
EPDM L2294				E	
FKM 73801				F	
PolyUrethane 80S				C	
PolyUrethane 92S				P	
Other				Z	
Fins					
Two (2)					2
Three (3)					3
Schedule					
Sch 10					S1
Sch 40					S4
T10					T1
Other					ZZ



Courtesy of Copton

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