

# iDP Valves

## 300 Series, 2-Port Inert Diaphragm-Poppet Valve



Introducing Humphrey's 300 series iDP 2-way inline and 2-way manifold valves. Inert solenoid valves are designed to control aggressive media in most harsh environments. When size and space require a more compact design consider the 300 series iDP. The flexing diaphragm-poppet design isolates the solenoid from media ensuring sustained performance and long life.

### FEATURES

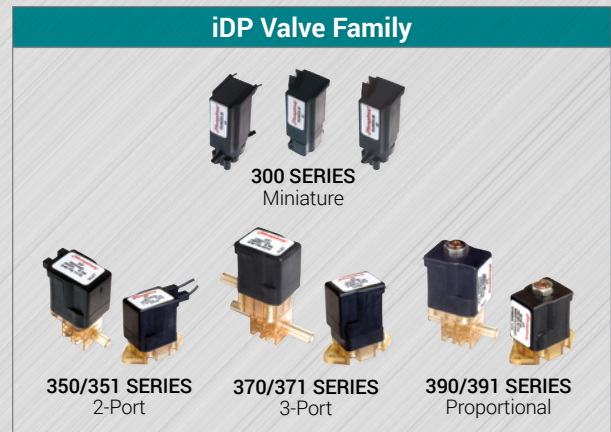
- Inert wetted materials provide broad chemical compatibility:  
Body/Fitting Elements – PEEK (Polyethylethylketone)  
Diaphragm-Poppet/Seals – Viton®-GF or EPDM
- Max pressure: 40 PSI [2.76 bar] standard
- Barb Valve, Flow rates @ 40 PSI: 50 SLPM air or 1.45 SLPM water
- Manifold Valve, Flow Rate @ 40 PSI: 62 SLPM air or 1.83 SLPM water.
- Coil encapsulation protects from corrosive external fluid exposure.
- Various port types and manifold mounting provides design flexibility.
- Robust design; Tested to beyond 20 million cycles.
- 300 Series, 3-Port Inline Barb Valve also available.



**300**  
2-Port  
Inline, Direct Piping



**300**  
2-Port  
Manifold Mount



**ACCESS ONLINE CATALOG**  
Obtain 3D CAD Download, CAD Viewer,  
2D Dimensional Drawings, Product Images,  
DataSheet PDFs, Product Accessories



## How to Order iDP 300 Series, 2-Port

300	7	1	1	3	0	30071130
<b>MODEL</b> 300	<b>BODY</b> 7. Viton®GF* 8. EPDM	<b>BODY STYLE (IN-OUT)</b> 1. 2-Port Inline, NC 4. 2-Port Manifold Mt, NC	<b>PORT TYPES</b> 0. Manifold (No Barbs) 1. 1/16" Tube Barbs 2. 3/32" Tube Barbs 3. 1/8" Tube Barbs	<b>SOLENOID</b> 1. 12 VDC – Pin Connector** 3. 24 VDC – Pin Connector** 5. 12 VDC – Wire Leads 7. 24 VDC – Wire Leads		<b>ORDER EXAMPLE</b>

\* Highly Fluorinated Viton®

\*\* Mating Option: Tyco 640442-2  
Molex 22-01-2027

# iDP Valves

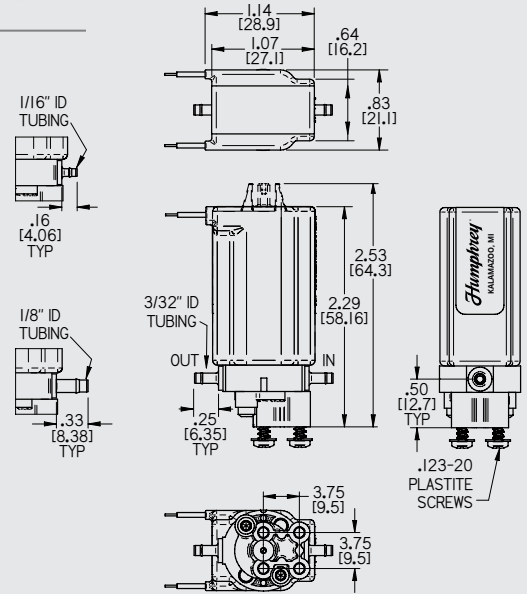
## 300 Series, 2-Port

SPECIFICATIONS	IDP 300 INLINE	IDP 300 MANIFOLD
TYPE OF OPERATION	Direct Solenoid, Media Separated	
NUMBER OF POSITIONS	2	
FUNCTION	Normally Closed	
MEDIA	Aggressive Liquids and Gases	
WETTED PARTS: BODY AND DIAPHRAGM-POPPET	PEEK, Viton®GF or EPDM	
PRESSURE RANGE – PSI (BAR)	Vacuum to 40 PSI (2.76)	
PIPING TYPE	Inline, Direct Piping	Manifold Mount, Sub-base Piping
WATER FLOW @ 40 PSI (TYP)	1.45 SLPM	1.83 SLPM
AIR FLOW @ 40 PSI (TYP)	50 SLPM	62 SLPM
FLUID TEMPERATURE	-20°C to 95°C	
AMBIENT TEMPERATURE	-20°C to 65°C	
CYCLES/MIN	300	
RESPONSE TIME @ 40 PSI (TYP)	25 msec	
PORT SIZE	1/16", 3/32" or 1/8"	--
ELECTRICAL ENTRY	Plug-In or Lead Wires	
VOLTAGES	12VDC, 24VDC	
VOLTAGE TOLERANCE	±10%	
POWER CONSUMPTION (WATTS)	3.5	
WEIGHT	0.22 lbs	0.27 lbs

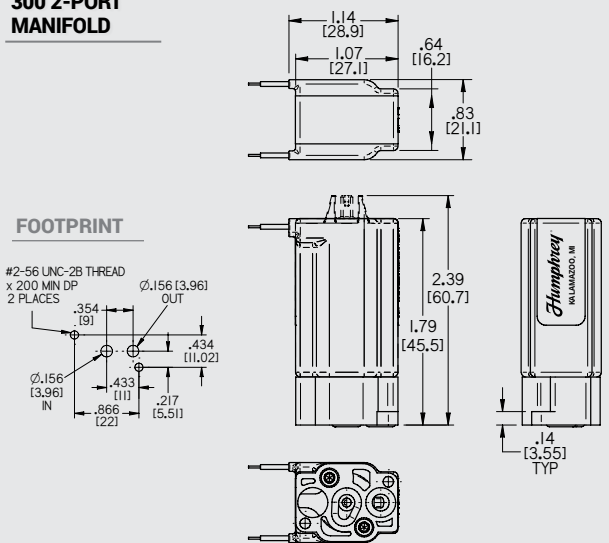
300 SERIES, 2-WAY INTERNAL VOLUMES	1/16" Barb Body	3/32" Barb Body	1/8" Barb Body	Manifold
UNACTUATED UNDER POPPET	0.007in <sup>3</sup>	0.007in <sup>3</sup>	0.009in <sup>3</sup>	0.004in <sup>3</sup>
ACTUATED	0.013in <sup>3</sup>	0.014in <sup>3</sup>	0.017in <sup>3</sup>	0.012in <sup>3</sup>

### DIMENSIONAL DRAWINGS

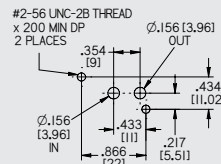
#### 300 2-PORT INLINE



#### 300 2-PORT MANIFOLD



#### FOOTPRINT



#### RECOMMENDED MOUNTING HARDWARE

**Screws:**  
SHCS #2-56 x 5/16 with 5/64 Hex Head

**Screw Install Tool:**  
5/64 Hex Head Ball End Screw Driver  
(McMaster-Carr 5497A24; Grainger 29RU75)

[ ] = mm

**RECOMMENDED MATING ELECTRICAL CONNECTION** || **For Pins:** Tyco 640442-2; Molex 22-01-2027  
**Lead Wires:** Connect to 22 AWG x 24" length

#### MEDIA COMPATIBILITY

- Citric Acid
- Formaldehyde
- Biological Solutions
- Sodium Hypochlorite
- Dextrose/Sugars
- Dialysate
- Hydrogen Peroxide
- Acetic Acid
- Bleach/Lye
- Most aggressive medias

#### APPLICATIONS & MARKETS

- Kidney Dialysis
- Analytical Chemistry
- Diagnostic Systems
- Agent Detection
- Environmental Monitoring
- Food and Beverage
- Gaseous Flow Control
- Water Purification
- Clinical Diagnostics

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# iDP Controls Aggressive Media for Dialyzer Reprocessing



**Humphrey**

**Kidney Dialysis | Life Science Group | Engineered Solutions**

MEDICAL | SIC:3841

## THE CUSTOMER'S PRODUCT

The customer had developed an improved reprocessing machine to restore dialyzer function between treatments in hemodialysis. This machine is a major advancement as it streamlines clinical operations and replaces outdated processes. It is fully automated, does not require pre-cleaning, and extends dialyzer life up to 40 treatments.

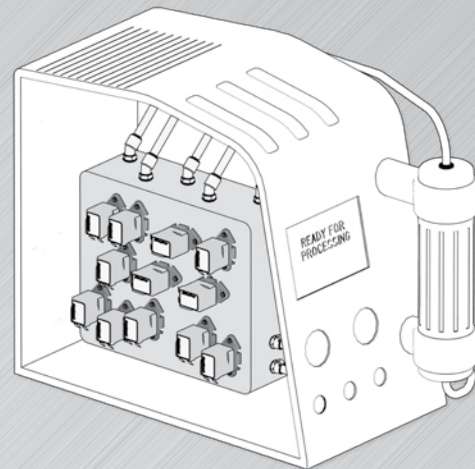
The machine cleans the dialyzer to near baseline performance for each reuse. It's proven to maintain optimal small and middle-molecule clearance for ideal treatment.

## THE PROBLEM

- The machine's original valve and manifold design resulted in system leakage, unsatisfactory performance relating to handling the aggressive media and temperature, and unreliable critical disinfectant cycles.
- An aggressive disinfection cycle used a solution of water, acetic acid and other proprietary aggressive agents at temperatures higher than 90°C (194°F).
- Consequently, the customer was unable to enter its equipment in the qualifications stage of clinical trials.

## REQUIREMENTS

- Inert design that incorporates FDA-approved materials for resistance to bodily fluids, hazardous liquids and aggressive cleaning agents.
- Zero leakage
- A minimum of four SLPM flow for various liquids at a pressure of 40 PSI.
- Quiet operation for patient comfort.
- Compact design while maintaining performance and reliability at elevated temperatures.
- Encapsulated coil to protect against outside moisture.



**Dialyzer Reprocessing Machine**



**351 iDP Valve**

## THE CHALLENGE

The complexity of the device requires 22 valves for media control, but in a small space. This created an abundance of leak points that were problematic for inline valves and traditional barbed or push-to-connect valve fittings.

## THE PROCESS

### Engineer to Engineer Collaboration

- Understand current problems and issues.
- Understand current interface and control logic.
- Understand physical parameters and constraints of the existing machine.
- Develop a series of prototypes to dial in valves to the exact performance required.

### Develop Production Readiness

- Initial pre-production valves identified a difference in Humphrey test and machine performance.
- A second pre-production quantity corrected the inconsistency and performance.
- Machine was qualified with FDA and released for production.

SCAN



for more  
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# iDP Controls Aggressive Media for Dialyzer Reprocessing

## THE CONCEPT

The manifold mount design, in contrast to a tube-barb valve design, reduced assembly time, eliminated potential leak paths and miniaturized the assembly.

## HUMPHREY ENGINEERED SOLUTION

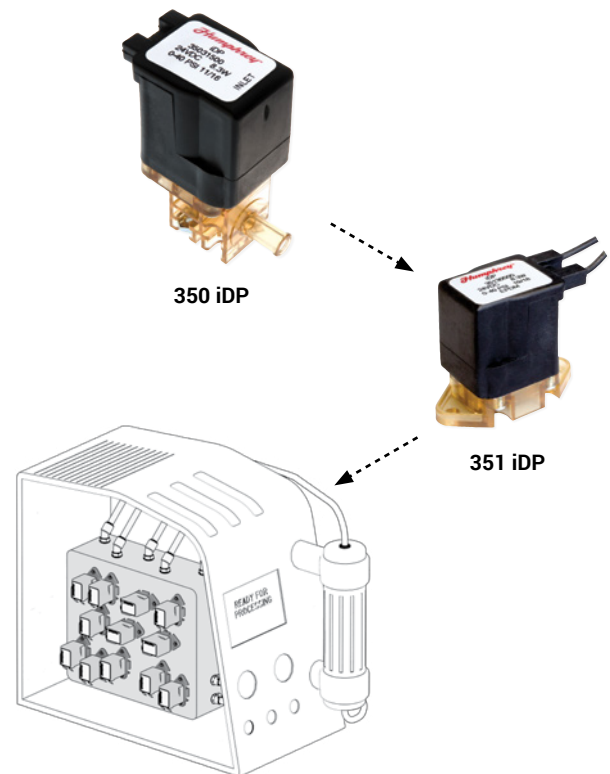
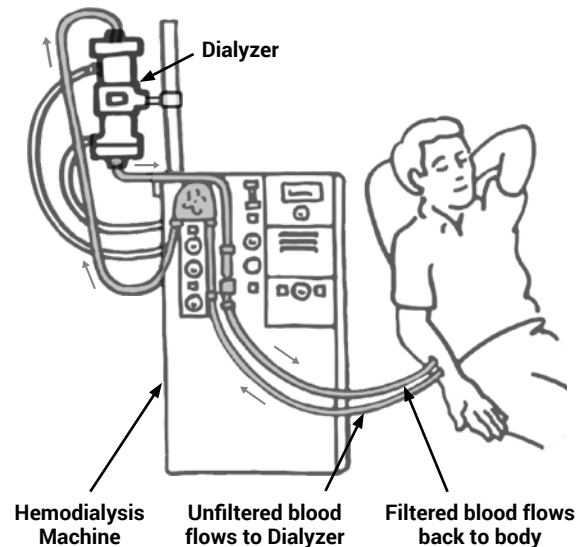
- Humphrey's industry-proven 350 iDP valve was purposely engineered to control aggressive media in harsh environments while maintaining critical performance and reliability.
- Using the 350 iDP valve as a foundation, Humphrey redesigned the liquid interface and reduced the overall valve profile. The size reduction maintained proven performance and accommodated the need for more valves in a small space. The revised design provided ideal valve integration, reduced leak points, improved reliability and allowed total media control.
- This new valve became Humphrey Products' 351 iDP valve.

## SOLUTION FEATURES

- New compact footprint allowing more valves in a smaller area.
- Soft seat diaphragm poppet design results in zero leakage.
- Design features allow for aggressive media use with no compromise in performance.
- A valve rated for 4 SLPM at working pressure of 40 PSI and working temperature of 90°C.
- Robust design allowing continuous duty for long periods reducing the PM cycle.

## RESULTS

- Improved chemical compatibility.
- Improved equipment performance and lifespan.
- Equipment passed clinical trials and received FDA approval.



Certified: ISO 9001:2015

