DESIGN | ENGINEERING | OEM API LICENSE MANUFACTURING | ELASTOMER MANUFACTURING USA | GLOBAL REPAIR & REMANUFACTURING SERVICES | GLOBAL PRODUCT DISTRIBUTION

INTEGRATED®

OEM PULSATION DAMPENER CATALOG

INTEGRATED® is an established OEM manufacturer of API Monogrammed Pressure Control Equipment and Spare Parts that meets or exceed industry requirements. All products are designed, engineered, manufactured, and validated as per latest edition of API 6A, API 16A, API 16C, API 20E, ASME, CE & CRN Standards & Specifications (QMS -API Q1).

INTEGRATED® manufactures ASME U Pulsation Dampeners (PD) for use in Oil & Gas Drilling & Production applications. Additionally, our Pulsation Dampeners are used in the Pipeline sector as well as Petro Chemical, Mining and all associated pumping services (suction & discharge). Additional certifications are available (CE & CRN).










INTEGRATED® is an API licensed Original Equipment Manufacturer (OEM) of Pressure and Flow Control Equipment for the Global Drilling, Workover, Snubbing, Rental and Production sectors of the Oil and Gas Industry

INTEGRATED® holds the following Manufacturing Licenses & Certifications:
API 6A | API 16A | API 16AR | API 16C | API 20E (BSL 1,2 &3) | ASME U | CRN | NATIONAL BOARD | API Q1 (10th Edition) | ISO-9001-2015

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INTEGRATED® ORIGINAL EQUIPMENT MANUFACTURE (OEM)

API Monogrammed Equipment & Products – Licenses and Certifications

API 6A-0851 | API 16A-0197 | API 16AR-0015 | API 16C-0564 | API 20E-0087 | ASME U-59670 | CRN (Canadian)

API Q1-4952 (10th Edition) | ISO 9001:2015-RQ91/4505 | ISO 9001:2015 188908-2015-AQ-USA-ANAB | ISO 9001:2015 188908-2015-AQ-USA-ANAB-CC1

API 6A	API 6A	API 16A	API 16A	API 16C	API 20E	ASME U	API 16AR	API Q1 / ISO
PRESSURE CONTROL VALVES	PRESSURE MANIFOLDS WELLHEAD COMPONENTS	BLOWOUT PREVENTERS (RAM BOPS)	BLOWOUT PREVENTERS (ANNULAR BOPS)	WELL CONTROL CHOKES & BUFFER TANKS	EQUIPMENT BOLTING (BSL)	PULSATION DAMPENERS (PD)	REMANUFACTURING (Recertification)	EQUIPMENT & ELASTOMERS
IFC™ (Slab Gate Valve) 2-1/16" to 4-1/16"	Choke & Kill Manifolds	IU™ Ram Forged BOP Single | Double Shear & Non-Shear 7-1/16" to 21-1/4"	ISA™ Spherical Annular Forged BOP Studded Top x Flanged Bottom 7-1/16" to 21-1/4"	Well Control Chokes Positive Choke Adjustable Choke	Ram & Annular BOP Bolting (BSL1, 2 & 3)	IDPD™ Drilling Pulsation Dampener 10 & 20 GALLON Up to 7,500 psi	Ram & Annular BOP Repair and/or Remanufacture All Major Brands	Certified Quality Management System (QMS)
IFLS™ (Slab Gate Valve) 2-1/16" to 7-1/16"	Standpipe & Managed Pressure Drilling Manifolds	IWS™ Ram Forged BOP Single | Double 7-1/16" to 13-5/8"	IK™ Annular Forged BOP Studded Top x Flanged Bottom 7-1/16" to 13-5/8" & 29" - MSP	Well Control Choke Actuators	Valve Bolting	IPPD™ Production Pulsation Dampener 1 to 20 GALLON 285 to 6,180 psi	Choke & Kill Manifolds	Corporate ERP Manufacturing System (JDE)
AceFlow™ (Expanding Gate Valve) 2-1/16" to 4-1/16"	Cement Manifolds	IE™ Ram Forged BOP Single | Double | Triple 7-1/16" to 9"	ISA™ & IK™ Annular Spare Parts	Choke & Kill Manifold Buffer Cambers (tanks)	Pulsation Dampener Bolting	Pulsation Dampener Diaphragm & Kits	API Valves FC & FLS Styles	Global System to connect all Manufacturing, Distribution & Services
Surface Safety Valves (SSV) (PSL 2 & 3)	Kill Wing Valve Manifold	IWP™ Ram Forged BOP Single | Double 9"	ISA™ & IK™ Packing Elements Natural (NR) | Nitrile (NBR)		Customized Bolting	IDPD™ Drilling NBR | HNBR | FKM	Pulsation Dampeners Drilling & Production Only Major Brands	QMS for Pressure Control Elastomer Manufacturing as per API 16A
Ball Valves	Hydraulic Fail-Safe Surface Safety Valve Skid Manifold	IU™ Ram Blocks & Assemblies CSO, Pipe, VBR, IFlex™ & SBR	ISA™ & IK™ Seal Kits			IPPD™ Production NBR | HNBR | FKM		
Plug Valves	Chokes	170™ (IWS™) Ram Blocks Full Assemblies CSO, Pipe & Multi Ram				Emsco Style PD45 | PD55 | PD55A NBR | HNBR | FKM		
Minor & Major Repair Kits	Tubing & Casing Spools	IE™ Ram Blocks Full Assemblies CSO, Pipe & IFlex™				PD Parts Stabilizers, Gaskets & Kits		
Ball Valves	Tubing & Casing Hangers	IWP™ Ram Blocks Full Assemblies CSO & Pipe						
	Adapter Spools	Ram Blocks - Forgings						
	Spacer Spools	IU™, IWS™, IE™ & IWP™ Ram Spare Parts						
	Cross-Over Connectors	Ram Elastomers Front Packers, Top Seals, VBR, IFlex™, SBR, Door Seal & Seal Kits						
	Tree Caps							
	Flanges Blind, Companion & Test							
	PE Seals							

Integrated's API Certified – Licensed OEM plants provide state-of-the-art manufacturing of our Engineered-Designed Pressure Control Equipment and Elastomeric Products

INTEGRATED® Oracle - JD Edwards Enterprise Resource Planning (ERP) system integrates our global manufacturing, distribution facilities and service centers

PULSATION DAMPENER GENERAL INFORMATION

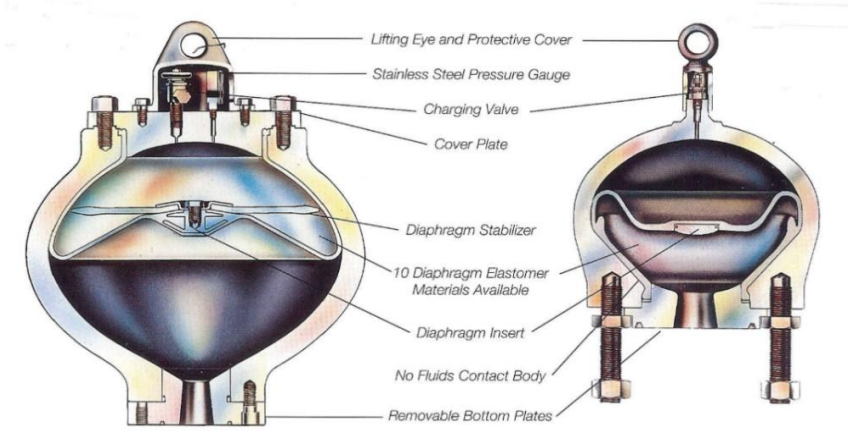
➢ IPD™ – Product Pulsation Dampeners (IP Style)
➢ IKD™ – Drilling Pulsation Dampeners (K Style)

A Pulsation Dampener is an accumulator designed to absorb pressure pulsations created by reciprocating pumps. Pulsation Dampeners are used to reduce wear and tear on all system components including the pump.

INTEGRATED® (OEM) manufactures Pulsation Dampeners for use with all makes and types of reciprocating pumps in the upstream sector - Oilfield Service sector (Workover, Drilling, Production – Suction & Discharge, Fluid End Pumping and Pipeline), Mining, Petro Chemical and Reverse Osmosis markets as well as Mid-Stream Pipeline.

DRILLING PULSATION DAMPENER (DPD - IKD™)

PRODUCTION PULSATION DAMPENER (DPD - IPD™)



PRODUCT FEATURES AND BENEFITS

➢ PRODUCTION PULSATION DAMPENER - IPD™ STYLE:

- ASME Code Stamping, ABS, CE (European), CRN (Canadian) & DNV

- Short, compact design requires no external bracing or other support structure
- Isolated body cavity keeps the fluid in the diaphragm
- Replaceable SS (Stainless Steel), CS (Carbon Steel) or Duplex style bottom plates
- Fully enclosed and protected charging valve assembly
- Oil & Gas Production, Saltwater Injection & Disposal, Reverse Osmosis, Petro-Chemical & Mining
- High pre-charge capability delivers excellent dampening performance. A minimum of 85% reduction in peak-to-peak pressure performance is achieved

➢ DRILLING PULSATION DAMPENER - IKD™ STYLE:

- ASME Code Stamping, ABS, CE (European), CRN (Canadian) & DNV

- Forged body construction designed in accordance with ASME codes
- Inside surface machined for smooth diaphragm movement
- Field replaceable top and bottom plates reducing downtime
- Diaphragm equipped with stabilizer to eliminate possible folding and entrapment of fluids
- Field replaceable diaphragms reduce maintenance time
- Diaphragms can be replaced without removing the unit from line
- All PD Elastomer components (original or spare parts) are under the direct INTEGRATED® engineering design and quality control (standard OEM warranty).

PULSATION DAMPENER STYLE, SIZES, PRESSURE RATING AND PART NUMBERS

➢ PRODUCTION PULSATION DAMPENER (PPD)

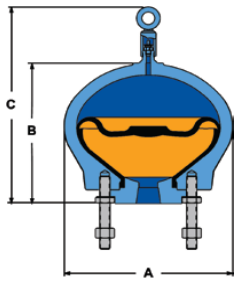
Part Description	Part Number	PPD Component Description				
		Size (gals)	Pressure Rating	Bottom Plate	Diaphragm Material	ASME U Stamped
PPD-1-285-HNBR-SS-3”-ANSI 150 RF-ASME-U1	73-010285-211-1-U1	1	285	SS-3”-ANSI 150-RF	HNBR	Yes
PPD-1-285-HNBR-DUPLEX-3”-ANSI 150 RF-ASME-U1	73-010285-211-3-U1	1	285	DUPLEX-3”-ANSI 150-RF	HNBR	Yes
PPD-1-1480-HNBR-SS-3”-ANSI 600 RF-ASME-U1	73-011480-211-1-U1	1	1480	SS-3”-ANSI 600-RF	HNBR	Yes
PPD-1-1480-HNBR-DUPLEX-3”-ANSI 600 RF-ASME-U1	73-011480-211-3-U1	1	1480	DUPLEX-3”-ANSI 600-RF	HNBR	Yes
PPD-1-3705-HNBR-SS-3”-ANSI 1500 RF-ASME-U1	73-013705-211-1-U1	1	3705	SS-3”-ANSI 1500-RF	HNBR	Yes
PPD-1-3705-HNBR-DUPLEX-3”-ANSI 1500 RF-ASME-U1	73-013705-211-3-U1	1	3705	DUPLEX-3”-ANSI 1500-RF	HNBR	Yes
PPD-1-6170-HNBR-SS-3”-ANSI 2500 RTJ-ASME-U1	73-016170-221-1-U1	1	6170	SS-3”-ANSI 2500-RF	HNBR	Yes
PPD-1-6170-HNBR-DUPLEX-3”-ANSI 2500 RTJ-ASME-U1	73-016170-221-3-U1	1	6170	DUPLEX-3”-ANSI 2500-RF	HNBR	Yes
PPD-2.5-285-HNBR-SS-4”-ANSI 150 RF-ASME-U1	73-250285-211-1-U1	2.5	285	SS-4”-ANSI 150-RF	HNBR	Yes
PPD-2.5-285-HNBR-DUPLEX-4”-ANSI 150 RF-ASME-U1	73-250285-211-3-U1	2.5	285	DUPLEX-4”-ANSI 150-RF	HNBR	Yes
PPD-2.5-1480-HNBR-SS-4”-ANSI 600 RF-ASME-U1	73-251480-211-1-U1	2.5	1480	SS-4”-ANSI 600-RF	HNBR	Yes
PPD-2.5-1480-HNBR-DUPLEX-4”-ANSI 600 RF-ASME-U1	73-251480-211-3-U1	2.5	1480	DUPLEX-4”-ANSI 600-RF	HNBR	Yes
PPD-2.5-3705-HNBR-SS-4”-ANSI 1500 RF-ASME-U1	73-253705-211-1-U1	2.5	3705	SS-4”-ANSI 1500-RF	HNBR	Yes
PPD-2.5-3705-HNBR-DUPLEX-4”-ANSI 1500 RF-ASME-U1	73-253705-211-3-U1	2.5	3705	DUPLEX-4”-ANSI 1500-RF	HNBR	Yes
PPD-2.5-6170-HNBR-SS-4”-ANSI 2500 RTJ-ASME-U1	73-256170-221-1-U1	2.5	6170	SS-4”-ANSI 2500-RF	HNBR	Yes
PPD-2.5-6170-HNBR-DUPLEX-4”-ANSI 2500 RTJ-ASME-U1	73-256170-221-3-U1	2.5	6170	DUPLEX-4”-ANSI 2500-RF	HNBR	Yes
PPD-5-285-HNBR-SS-4”-ANSI 150 RF-ASME-U1	73-050285-211-1-U1	5	285	SS-4”-ANSI 150-RF	HNBR	Yes
PPD-5-285-HNBR-DUPLEX-4”-ANSI 150 RF-ASME-U1	73-050285-211-3-U1	5	285	DUPLEX-4”-ANSI 150-RF	HNBR	Yes
PPD-5-1480-HNBR-SS-4”-ANSI 600 RF-ASME-U1	73-051480-211-1-U1	5	1480	SS-4”-ANSI 600-RF	HNBR	Yes
PPD-5-1480-HNBR-DUPLEX-4”-ANSI 600 RF-ASME-U1	73-051480-211-3-U1	5	1480	DUPLEX-4”-ANSI 600-RF	HNBR	Yes
PPD-5-3705-HNBR-SS-4”-ANSI 1500 RF-ASME-U1	73-053705-211-1-U1	5	3705	SS-4”-ANSI 1500-RF	HNBR	Yes
PPD-5-3705-HNBR-DUPLEX-4”-ANSI 1500 RF-ASME-U1	73-053705-211-3-U1	5	3705	DUPLEX-4”-ANSI 1500-RF	HNBR	Yes
PPD-5-6170-HNBR-SS-4”-ANSI 2500 RTJ-ASME-U1	73-056170-221-1-U1	5	6170	SS-4”-ANSI 2500-RF	HNBR	Yes
PPD-5-6170-HNBR-DUPLEX-4”-ANSI 2500 RTJ-ASME-U1	73-056170-221-3-U1	5	6170	DUPLEX-4”-ANSI 2500-RF	HNBR	Yes
PPD-10-285-HNBR-SS-4”-ANSI 150 RF-ASME-U1	73-100285-211-1-U1	10	285	SS-4”-ANSI 150-RF	HNBR	Yes
PPD-10-285-HNBR-DUPLEX-4”-ANSI 150 RF-ASME-U1	73-100285-211-3-U1	10	285	DUPLEX-4”-ANSI 150-RF	HNBR	Yes
PPD-10-1480-HNBR-SS-4”-ANSI 600 RF-ASME-U1	73-101480-211-1-U1	10	1480	SS-4”-ANSI 600-RF	HNBR	Yes
PPD-10-1480-HNBR-DUPLEX-4”-ANSI 600 RF-ASME-U1	73-101480-211-3-U1	10	1480	DUPLEX-4”-ANSI 600-RF	HNBR	Yes
PPD-10-3705-HNBR-SS-4”-ANSI 1500 RF-ASME-U1	73-103705-211-1-U1	10	3705	SS-4”-ANSI 1500-RF	HNBR	Yes
PPD-10-3705-HNBR-DUPLEX-4”-ANSI 1500 RF-ASME-U1	73-103705-211-3-U1	10	3705	DUPLEX-4”-ANSI 1500-RF	HNBR	Yes
PPD-10-6170-HNBR-SS-4”-ANSI 2500 RTJ-ASME-U1	73-106170-221-1-U1	10	6170	SS-4”-ANSI 2500-RF	HNBR	Yes
PPD-10-6170-HNBR-DUPLEX-4”-ANSI 2500 RTJ-ASME-U1	73-106170-221-3-U1	10	6170	DUPLEX-4”-ANSI 2500-RF	HNBR	Yes
PPD-20-285-HNBR-SS-4”-ANSI 150 RF-ASME-U1	73-200285-211-1-U1	20	285	SS-4”-ANSI 150-RF	HNBR	Yes
PPD-20-285-HNBR-CS-4”-ANSI 150 RF-ASME-U1	73-200285-211-1-U1	20	285	CS-4”-ANSI 150-RF	HNBR	Yes
PPD-20-2250-HNBR-SS-4”-ANSI 900 RF-ASME-U1	73-202250-211-1-U1	20	2250	SS-4”-ANSI 900-RF	HNBR	Yes
PPD-20-2250-HNBR-CS-4”-ANSI 900 RF-ASME-U1	73-202250-212-1-U1	20	2250	CS-4”-ANSI 900-RF	HNBR	Yes

➢ DRILLING PULSATION DAMPENER (DPD)

Part Description	Part Number	DPD Component Description				
		Size (gals)	Pressure Rating	Bottom Plate	Diaphragm Material	ASME U Stamped
DPD-10-5000-NBR-4-1/16”-API RTJ-ASME-U1	70-105000-121-U1	10	5000	SS-4-1/16”-API RTJ	NBR	Yes
DPD-10-5000-HNBR-4-1/16”-API RTJ-ASME-U1	70-105000-221-U1	10	5000	SS-4-1/16”-API RTJ	HNBR	Yes
DPD-20-5000-NBR-SS-4-1/16”-API RTJ-ASME-U1	71-205000-121-U1	20	5000	SS-4-1/16”-API RTJ	NBR	Yes
DPD-20-5000-HNBR-SS-4-1/16”-API RTJ-ASME-U1	71-205000-221-U1	20	5000	SS-4-1/16”-API RF	HNBR	Yes
DPD-20-5000-HNBR-SS-4-1/16”-API RTJ-ASME-U1	71-205000-003-U1	20	5000	SS-4-1/16”-API RTJ	HNBR	Yes
DPD-20-7500-NBR-SS-4-1/16”-API RTJ-ASME-U1	71-207500-121-U1	20	7500	SS-4-1/16”-API RTJ	NBR	Yes
DPD-20-7500-HNBR-SS-4-1/16”-API RTJ-ASME-U1	71-207500-221-U1	20	7500	SS-4-1/16”-API RTJ	HNBR	Yes
DPD-20-7500-NBR-CS-4-1/16”-API RTJ-ASM-U1	71-207500-005-U1	20	7500	CS-4-1/16”-API RTJ	NBR	Yes
DPD-20-7500-HNBR-CS-4-1/16”-API RTJ-ASME-U1	71-207500-005	20	7500	CS-4-1/16”-API RTJ	HNBR	Yes

SS – Stainless Steel | CS – Carbon Steel

PULSATION DAMPENER DIMENSIONS AND WEIGHTS -ENGINEERING DATA

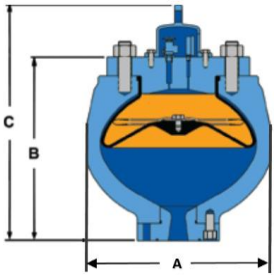


Integrated Manufactured Production Pulsation Dampener

IPD™

Integrated Manufactured Drilling Pulsation Dampener

IKD™



➢ PRODUCTION PULSATION DAMPENER (PPD): 1 GALLON

Model Number	Size gals	Pressure			Product Dimensions						Weight	
					Width (A)		Shell Height (B)		Overall Height (C)			
		psi	mPa	bar	in.	mm	in.	mm	in.	mm	lbs	kg
PPD-1-285	1	285	1.965	19.65	10.50	287	9.50	241	16.50	419	65	29.5
PPD-1-1480	1	1480	10.204	102.04	10.50	267	9.75	248	16.75	425	70	31.8
PPD-1-3705	1	3705	25.545	255.45	11.50	292	10.00	254	17.00	432	160	72.6
PPD-1-6705	1	6705	46.223	462.29	12.90	328	11.24	286	19.58	497	248	112.5

➢ PRODUCTION PULSATION DAMPENER (PPD): 2.5 GALLON

Model Number	Size gals	Pressure			Product Dimensions						Weight (lbs)	
					Width (A)		Shell Height (B)		Overall Height (C)			
		psi	mPa	bar	in.	mm	in.	mm	in.	mm	lbs	kg
PPD-2.5-285	2.5	285	1.965	19.65	12.75	324	9.50	241	17.25	438	80	36.3
PPD-2.5-1480	2.5	1480	10.204	102.04	14.25	362	12.50	318	19.25	489	210	95.3
PPD-2.5-3705	2.5	3705	25.545	255.45	14.25	362	12.50	318	19.25	489	210	95.3
PPD-2.5-6705	2.5	6705	46.223	462.29	15.69	399	14.47	368	22.49	571	445	201.8

➢ PRODUCTION PULSATION DAMPENER (PPD): 5 GALLON

Model Number	Size gals	Pressure			Product Dimensions						Weight (lbs)	
					Width (A)		Shell Height (B)		Overall Height (C)			
		psi	mPa	bar	in.	mm	in.	mm	in.	mm	lbs	kg
PPD-5-285	5	285	1.965	19.65	16.00	406	13.75	349	20.75	527	120	54.4
PPD-5-1480	5	1480	10.204	102.04	18.00	457	15.50	394	22.50	572	300	136.1
PPD-5-3705	5	3705	25.545	255.45	18.00	457	15.50	394	22.50	572	300	136.1
PPD-5-6705	5	6705	46.223	462.29	20.10	511	17.67	449	25.67	652	700	317.5

➢ PRODUCTION PULSATION DAMPENER (PPD): 10 GALLON

Model Number	Size gals	Pressure			Product Dimensions						Weight (lbs)	
					Width (A)		Shell Height (B)		Overall Height (C)			
		psi	mPa	bar	in.	mm	in.	mm	in.	mm	lbs	kg
PPD-10-285	10	285	1.965	19.65	521	19.25	489	26.00	660	521	400	181.4
PPD-10-1480	10	1480	10.204	102.04	521	19.25	489	26.00	660	521	400	181.4
PPD-10-3705	10	3705	25.545	255.45	546	21.25	540	28.00	711	546	700	317.5

➢ PRODUCTION PULSATION DAMPENER (PPD): 20 GALLON

Model Number	Size gals	Pressure			Product Dimension						Weight (lbs)	
					Width (A)		Shell Height (B)		Overall Height (C)			
		psi	mPa	bar	in.	mm	in.	mm	in.	mm	lbs	kg
PPD-20-285	20	285	1.965	19.65	24.00	610	21.00	533	27.50	699	835	378.7
PPD-20-2250	20	2250	15.513	155.13	25.50	648	24.00	610	30.75	781	981	445.0

➢ DRILLING PULSATION DAMPENER (DPD): 10 GALLON

Model Number	Size gals	Pressure			Product Dimensions						Weight (lbs)	
					Width (A)		Shell Height (B)		Overall Height (C)			
		psi	mPa	bar	in.	mm	in.	mm	in.	mm	lbs	kg
PPD-10-5000	10	5000	34.473	344.74	23.75	603.25	22.68	576.07	29.44	747.78	940	426.38

➢ DRILLING PULSATION DAMPENER (DPD): 20 GALLON

Model Number	Size gals	Pressure			Product Dimensions						Weight (lbs)	
					Width (A)		Shell Height (B)		Overall Height (C)			
		psi	mPa	bar	in.	mm	in.	mm	in.	mm	lbs	kg
PPD-20-5000	20	5000	34.473	344.74	28.25	717.55	29.62	752.35	41.38	1051.05	2120	961.62
PPD-20-7500	20	7500	51.710	517.11	28.75	730.25	31.27	794.26	43.32	1100.33	3100	1406.14

INTEGRATED OEM MANUFACTURED PULSATION DAMPENER DIAPHRAGMS

INTEGRATED K STYLE (IKD™) | **INTEGRATED IP STYLE (IPD™)** | **INTEGRATED EMSCO STYLE**



➢ IPD™ - PPD (Production Pulsation Dampener Diaphragms)

Part Description	Size	Material	Part Number	Weight	
				lbs	kgs
1 Gallon PPD Diaphragm	1 gal	NBR	73-011004	4.00	1.80
1 Gallon PPD Diaphragm	1 gal	HNBR	73-012004	4.00	1.80
1 Gallon PPD Diaphragm	1 gal	FKM	73-013004	4.00	1.80
2.5 Gallon PPD Diaphragm	2.5 gal	NBR	73-251004	7.00	3.20
2.5 Gallon PPD Diaphragm	2.5 gal	HNBR	73-252004	7.00	3.20
2.5 Gallon PPD Diaphragm	2.5 gal	FKM	73-253004	7.00	3.20
5 Gallon PPD Diaphragm	5 gal	NBR	73-051004	10.00	4.50
5 Gallon PPD Diaphragm	5 gal	HNBR	73-052004	10.00	4.50
5 Gallon PPD Diaphragm	5 gal	FKM	73-053004	10.00	4.50

➢ IPD™ - PPD (Production Pulsation Dampener Diaphragms) | IKD™ - DPD (Drilling Pulsation Dampener Diaphragms)

Part Description	Size	Material	Part Number	Weight	
				lbs	kgs
10 Gallon PPD Diaphragm	10 gal	NBR	73-101004	17.00	7.70
10 Gallon PPD Diaphragm	10 gal	HNBR	73-102004	17.00	7.70
10 Gallon PPD Diaphragm	10 gal	FKM	73-103004	17.00	7.70
20 Gallon PPD Diaphragm	20 gal	NBR	73-201004	28.00	12.70
20 Gallon PPD Diaphragm	20 gal	HNBR	73-202004	28.00	12.70
20 Gallon PPD Diaphragm	20 gal	FKM	73-203004	28.00	12.70

➢ EMSCO (PD Diaphragms)

Part Description	Size	Material	Part Number	Weight	
				lbs	kgs
PD 45 Diaphragm	10 gal	NBR	71-6922-4503	16.00	7.26
PD 45 Diaphragm	10 gal	HNBR	71-6922-4507	16.00	7.26
PD 45 Diaphragm	10 gal	FKM	71-6922-4509	16.00	7.26
PD 55 Diaphragm	20 gal	NBR	71-6922-5503	26.00	11.80
PD 55 Diaphragm	20 gal	HNBR	71-6922-5507	26.00	11.80
PD 55 Diaphragm	20 gal	FKM	71-6922-5509	26.00	11.80
PD 55A Diaphragm (w/insert)	20 gal	NBR	71-6922-5503A	28.00	12.70
PD 55A Diaphragm (w/insert)	20 gal	HNBR	71-6922-5507A	28.00	12.70
PD 55A Diaphragm (w/insert)	20 gal	FKM	71-6922-5509A	28.00	12.70

➢ K10 HNBR DIAPHRAGM KIT (Components)

- Kit Part Number: 73-1020041

Part Number	Description
73-102004*	10 Gallon HNBR Diaphragm
73-101005	10 Gallon NBR Stabilizer Rubber
73-100005	10/20 Gallon Stabilizer Plate
26-017-001	10 Gallon Lock Washer
26-016-000	10 Gallon Bolt

➢ K20 HNBR DIAPHRAGM KIT (Components)

- Kit Part Number: 73-2020041

Part Number	Description
73-202004*	20 Gallon HNBR Diaphragm
73-201005	20 Gallon NBR Stabilizer Rubber
73-100005	10/20 Gallon Stabilizer Plate
26-017-000	20 Gallon Lock Washer
26-012-151	20 Gallon Bolt

PULSATION DAMPENER MISCELLANEOUS ITEMS

INTEGRATED PPD | DPD STABILIZER PLATE

INTEGRATED PPD | DPD CHARGING HOSE ASSEMBLY

➢ PPD (Production Pulsation Dampener): 1 Gallon

Part Description	Size	Part Number	Weight	
			lbs	kgs
1 Gallon PPD Charging Valve	1 gal	71-210-014	0.25	0.11
1 Gallon PPD Charging Hose Assembly	1 gal	71-200-021	6.00	2.72

➢ PPD (Production Pulsation Dampener): 2.5 Gallon

Part Description	Size	Part Number	Weight	
			lbs	kgs
2.5 Gallon PPD Charging Valve	2.5 gal	71-210-014	0.25	0.11
2.5 Gallon PPD Charging Hose Assembly	2.5 gal	71-200-021	6.00	2.72

➢ PPD (Production Pulsation Dampener): 5 Gallon

Part Description	Size	Part Number	Weight	
			lbs	kgs
5 Gallon PPD Charging Valve	5 gal	71-210-014	0.25	0.11
5 Gallon PPD Charging Hose Assembly	5 gal	71-200-021	6.00	2.72

➢ PPD | DPD (Production Pulsation Dampener | Drilling Pulsation Dampener): 10 Gallon

Part Description	Size	Part Number	Weight	
			lbs	kgs
10 Gallon DPD Stabilizer Plate	10 gal	73-201005	2.00	0.91
10 Gallon Bottom Gasket, HSN	10 gal	71-100-002	0.50	0.23
10 Gallon PPD Charging Valve	10 gal	71-210-014	2.00	0.91
10 Gallon PPD Charging Hose Assembly	10 gal	71-200-021	6.00	2.72
10 Gallon DPD Charging Hose Assembly	10 gal	71-200-020	6.00	2.72

➢ PPD | DPD (Production Pulsation Dampener | Drilling Pulsation Dampener): 20 Gallon

Part Description	Size	Part Number	Weight	
			lbs	kgs
20 Gallon DPD Stabilizer Plate	20 gal	73-201005	2.00	0.91
20 Gallon Bottom Gasket, HSN	20 gal	71-100-004	0.50	0.23
20 Gallon PPD Charging Valve	20 gal	71-210-014	2.00	0.91
20 Gallon PPD Charging Hose Assembly	20 gal	71-200-021	6.00	2.72
20 Gallon DPD Charging Hose Assembly	20 gal	71-200-020	6.00	2.72

➢ EMSCO STYLE: PD-45

Part Description	Size	Part Number	Weight	
			lbs	kgs
PD-45 Charging Valve	PD-45	71-6922-402FMAC	3.00	1.36
PD-45 Charging Hose Assembly	PD-45	71-6922-040	6.00	2.72

➢ EMSCO STYLE: PD-55

Part Description	Size	Part Number	Weight	
			lbs	kgs
PD-55 Charging Valve	PD-55	71-6922-402FMAC	3.00	1.36
PD-55 Charging Hose Assembly	PD-55	71-6922-040	6.00	2.72

➢ EMSCO STYLE: PD-55A

Part Description	Size	Part Number	Weight	
			lbs	kgs
PD-55A Stabilizer	PD-55A	71-6922-0109	5.00	2.27

DIAPHRAGM MATERIAL OPTIONS

POLYISOPRENE: NR

- ASTM D1418 Designation

➢ Natural Rubber features high tensile strength, high resilience, high abrasion and high tear resistance properties, with a good friction surface and excellent adhesion to metals. Until the invention of synthetic elastomers in the 1930's, Natural Rubber was the only polymer available for O-ring manufacture. Natural Rubber features good resistance to organic acids and alcohols, with moderate resistance to aldehydes.

- Continuous Temperature Range: -40ºF to 158ºF (-40ºC to 70ºC) | Intermittent Maximum Temperature: 250ºF (121ºC)

ACRYLONITRILE BUTADIENE POLYMER: NBR

- ASTM D1418 Designation

➢ Nitrile rubber (NBR) is the general term for acrylonitrile butadiene copolymer. The acrylonitrile content of nitrile sealing compounds varies considerably (18% to 50%) and influences the physical properties of the finished material. The higher the acrylonitrile content, the better the resistance to oil and fuel. At the same time, elasticity and resistance to compression set is adversely affected. In view of these opposing realities, a compromise is often drawn, and a medium acrylonitrile content selected. NBR has good mechanical properties when compared with other elastomers and high wear resistance. NBR is not resistant to weathering and ozone.

- Continuous Temperature Range: 0ºF to 212ºF (-18ºC to 100ºC) | Intermittent Maximum Temperature: 250ºF (121ºC)

HYDROGENATED ACRYLONITRILE BUTADIENE POLYMER: HNBR

- ASTM D1418 Designation

➢ HNBR is widely used in oil industry and maintains excellent resistance to motor oils, sour gas, amine/oil mixtures, oxidized fuels, and lubricating oils. HNBR is resistant to mineral oil-based hydraulic fluids, animal and vegetable fats, diesel fuel, ozone, sour gas, dilute acids and bases. It also resists new bio-oils (biological oils). It is suitable for high dynamic loads and has a good abrasion resistance.

- Continuous Temperature Range: 0ºF to 250ºF (-18ºC to 121ºC) | Intermittent Maximum Temperature: 300ºF (149ºC)

FLUOROCARBON POLYMER: FKM

- ASTM D1418 Designation

➢ FKM has excellent resistance to high temperatures, ozone, oxygen, mineral oil, synthetic hydraulic fluids, fuels, aromatics and many organic solvents and chemicals. Low temperature resistance is normally not favorable and for static applications is limited. Gas permeability is very low and like that of butyl rubber. Special FKM compounds exhibit an improved resistance to acids and fuels.

- Continuous Temperature Range: 20ºF to 375ºF (-7ºC to 191ºC) | Intermittent Maximum Temperature: 400ºF (204ºC)

POLYURETHANE: URETHANE

➢ Polyurethane elastomers, as a class, have excellent wear resistance, high tensile strength and high elasticity in comparison with any other elastomers. Permeability is good and comparable with butyl.

- Continuous Temperature Range: 0ºF to 250ºF (-18ºC to 121ºC) | Intermittent Maximum Temperature: 300ºF (149ºC)

ELASTOMER COMPATIBILITY GUIDE

Application	Natural Rubber (NR)	Nitrile (NBR)	Carboxylated Nitrile (XNBR)	Hydrogenated Nitrile (HNBR)	Viton (FKM)
Tensile Strength (Psi)	Over 3000	Over 2000	Over 3000	Over 3000	Over 1000
Hardness (Shore A)	30 - 90	40 - 90	40 - 90	40 - 90	40 - 90
Adhesion to metals	Excellent	Excellent	Good	Excellent	Fair to Good
Adhesion to fabrics	Excellent	Good	Good	Good	Good
Tear Resistance	Good	Fair	Excellent	Good	Fair to Good
Abrasion Resistance	Excellent	Good	Excellent	Excellent	Good
Compression Set	Excellent	Good	Excellent	Good	Good
Resilience - Hot	Excellent	Fair	Good	Good	Good
Resilience - Cold	Excellent	Fair	Good	Good	Fair
Dielectric Strength	Excellent	Poor	Good	Good	Good
Electrical Insulation	Good to Excellent	Poor	Good	Good	Good
Impermeability to Gases	Good	Excellent	Excellent	Excellent	Excellent
Acid Resistance - Dilute	Fair to Good	Good	Good	Good	Good - Excellent
Acid Resistance - Concentrated	Fair to Good	Good	Good	Good	Excellent
Solvent Resistance – Aliphatic Hydrocarbons	Poor	Excellent	Excellent	Excellent	Excellent
Solvent Resistance – Aromatic Hydrocarbons	Poor	Good	Good	Excellent	Excellent
Solvent Resistance – Oxygenated	Poor	Poor	Good	Excellent	Poor
Solvent Resistance – Lacquer	Poor	Fair	Good	Good	Poor
Solvent Resistance – Lubricating Oils	Poor	Good	Good	Excellent	Excellent
Resistance – Oil & Gas	Poor	Excellent	Excellent	Excellent	Excellent
Resistance – Water Absorption	Good	Good	Good	Good	Excellent
Resistance - Oxidation	Good	Good	Good	Excellent	Excellent
Resistance - Ozone	Poor	Poor	Poor	Excellent	Excellent
Resistance – H2S	Poor	Poor	Fair	Fair	Good
Resistance – CO2	Poor	Poor	Fair	Fair	Good
Resistance – Sunlight Aging	Poor	Poor	Good	Excellent	Excellent
Resistance – Heat Aging	Fair	Good	Excellent	Excellent	Excellent
Resistance – Low Temperature	Good	Fair	Good	Good	Fair
Resistance - Flame	Poor	Poor	Good	Good	Excellent
Resistance – Chlorinated Hydrocarbons	Poor	Fair	Poor	Good	Good - Excellent

ELASTOMER RECOMMENDED OPERATING TERMPERATURE

Elastomer Material	Recommended Operating Range			
	Low Temperature		High Temperature	
	°C	°F	°C	°F
Natural (NR)	4	40	82	180
Carboxylated Nitrile Rubber (XNBR)	4	40	82	180
Nitrile Rubber (NBR)	4	40	82	180
Hydrogenated Nitrile Butadiene Rubber (HNBR)	4	40	107	225

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ELASTOMER STORAGE AND AGE CONTROL GUIDELINES

The following outlines the proper storage of elastomeric products to achieve maximum acceptable condition and their storage shelf life as defined in Table A & B. ISO 2230:2002 provides guidelines for the storage and for determining the shelf life of vulcanized rubber products.

TEMPERATURE:

- The optimum temperature for the storage of rubber products is between 50°F (10°C) and 80°F (27°C). Higher temperatures cause a gradual hardening of the rubber and accelerate the deterioration of rubber products, so sources of heat in storage rooms should be arranged such that the temperature of stored items never exceeds 100°F (38°C).
- Elastomers parts undergo several kinds of change when they are exposed to low temperatures. In temperatures of -20°F (-20°C), the rubber becomes brittle and will shatter when dropped or handled roughly. Some changes occur immediately, others after prolonged exposure. All are reversible; the rubber regains its original properties when it is returned to 65°F (18°C) or room temperature.

HUMIDITY:

- All elastomer products shall be stored in moisture proof bags, if not, the relative humidity level shall be less than 65%. Condensation should not be allowed to occur.

LIGHT:

- All elastomeric products must be protected from Ultraviolet radiation (either indoor lighting and/or sunlight). Polyethylene (PE) bags stored in large cardboard containers and polyethylene lined craft bags offer good protection against light. Integrated elastomer recommends 4 mil minimum thickness, opaque, polyethylene plastic wrap and/or sealed as far as practical.

OZONE (O3) AND OXYGEN (O2):

- Integrated parts must be stored in airtight containers to protect them from circulating air. Or else this will cause cracks, which can be formed in many different elastomers (Natural rubber, polybutadiene, Styrene-butadiene rubber and NBR) by ozone attack and causes a breaking of the carbon backbone polymer chain into smaller chains. This weakens the rubber by lowering its molecular weight, and cracks start to grow in the regions affected.

DEFORMATION:

- All elastomeric products should be stored in a relaxed state, free from tension, compression, or other deformation since these may lead to cracking or change of shape. Packing element should not be stored on pegs as this may cause severe deterioration.

EXPOSURE TO CHEMICALS:

- Chemical degradation can change polymers properties due to a chemical reaction such as breaking its double bonds (rubber more brittle followed by crack) or swelling of rubber. This can reduce product's overall functional life. So, all elastomer products shall not come in contact with any chemicals unless these materials are by design an integral part of the component or Integrated Elastomer's packaging.

STRUCTURAL DAMAGE TO PRODUCT:

- Permanent deformations (folds, wrinkles or flattening areas)
- Mechanical damage (cuts, cracks, worn or dissolved areas)
- Changes to the surface (stiffening, softness, stickiness, discoloration or dirtiness

The variations in size, composition and function of the rubber parts prevent defining a precise shelf life. Large rubber parts might suffer the same amount of deterioration as small parts and still be usable, whereas small parts become useless and should be thrown away. Both Natural and Synthetic rubber parts are susceptible to deterioration from various solvents such as oilfield liquid hydrocarbons, which causes swelling or shrinkage. In the final analysis, ownership judgement determines whether a rubber part should be used. If there is doubt, replace the part.

RECEIPROCATING PUMP – PULSATION DAMPENER SIZING DATA SHEET

Pulsation Dampener selection is a critical process which requires a thorough knowledge of a pressure system, the system components and the fluid characteristics. In order to assist in determining the proper PPD or DPD size and pressure rating, please fill out the following questionnaire:

Customer Information:

- Company Name:
- Company Address:
- Company Contact Number:
- Company Website:
- Client Name:
- Client Email Address:
- What is the primary purpose of your company (Agent, distributor, pump manufacturer or end user):
- What time frame are you requiring the PPD or DPD: Immediate | 1 month | 2 months | 3 months | 4 months
- Country / State the PPD / DPD will be sold into:

Pump Data:

- Pump Manufacturer:
- Pump Model and Type:
- Number of Cylinders:
- Bore – inches:
- Stroke – inches:
- Pumped Fluid:
- Discharge Pressure – psig:
- Suction Pressure – psig:
- Pumping Temperature – deg. F:
- Ambient Temperature – deg. F:

Dampener Data:

- Maximum Allowable Working Pressure (MAWP) – psig:
  - Discharge:
  - Suction:
- Allowable Peak to Peak Pulsation:
  - Percent (%):
  - Psi:
- Bottom Connection:
  - Discharge:
  - Suction:
- Applicable Codes and or Specifications:

PULSATION DAMPENERS

INTEGRATED®

INFORMATION

INTEGRATED®

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Pulsation Dampener Electronic Catalog

Elastomer Electronic Catalog

INTEGRATED® Licenses & Certifications

6A-0851 21st Edition

16A-0197 4th Edition

16AR-0015 2nd Edition

16C-0564 3rd Edition

20E-0087 3rd Edition

Q1-4952 (10th Edition)

RQ91/4505 (QMS Certification)

U59670 (Pressure Vessels – PD)

CE Marking Affirms Products are manufactured in Compliance with the Relevant EU Legislation (European Economic Area)

CE0062 (Europe)

the pressure equipment safety authority
TECHNICAL SAFETY BC
Technical Safety Authority of Saskatchewan

Canada Registration No. (CRN)

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