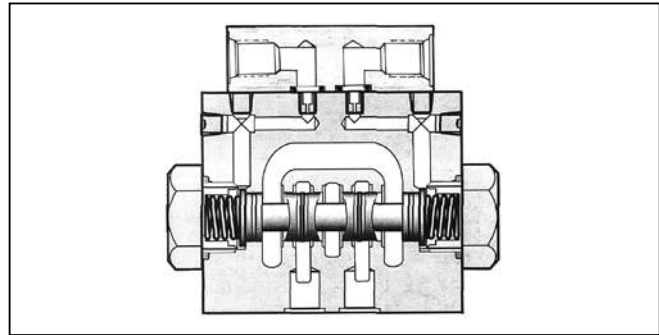
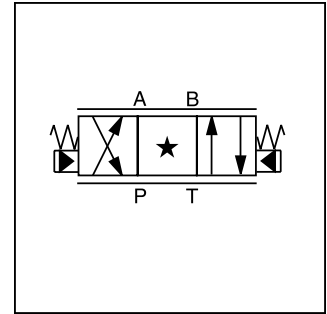
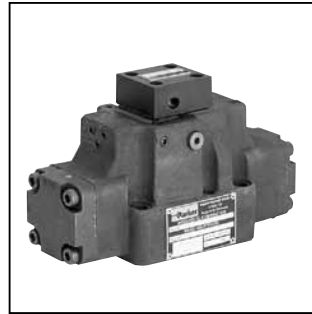


General Description

Series D*9FF main-stage, pilot operated, proportional directional control valves are operated with remote hydraulic hand controllers. Valves are available in sizes NG10 (CETOP 5), NG16 (CETOP 7), NG25 (CETOP 8) and NG32 (CETOP 10).

Typical applications include reproducible control of actuator speed in rapid/slow speed profiling, and smooth acceleration and deceleration performance.



Features

- Standard DIN/ISO/CETOP/NFPA interfaces.
- Progressive flow characteristics for improved low flow resolution.
- Spring centered main stage spool.
- 2:1 ratio spool options.

Specifications

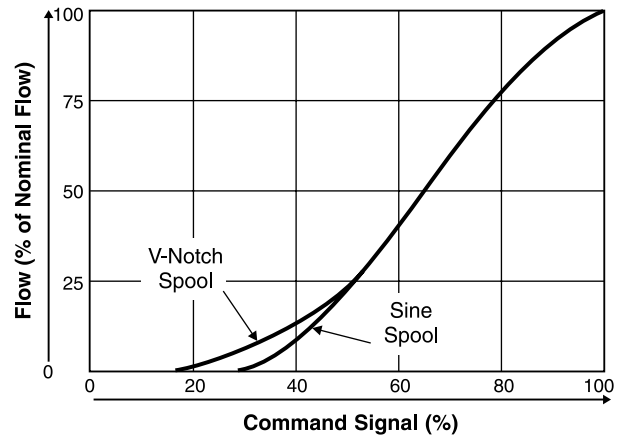
Interface DIN	NG10 (CETOP 5)	NG16 (CETOP 7)	NG25 (CETOP 8)	NG32 (CETOP 10)
Flow Rating @ 10 Bar (150 PSI) Δp (P→A, B→T) (Spool options up to) LPM (GPM)	75 (20)	200 (53)	400 (106)	1000 (264)
Pilot Flow – Continuous LPM (GPM)	1.2 (0.3)	1.2 (0.3)	1.2 (0.3)	1.2 (0.3)
Step Response (time to reach 90% of a 100% step command) ms	60	75	100	200

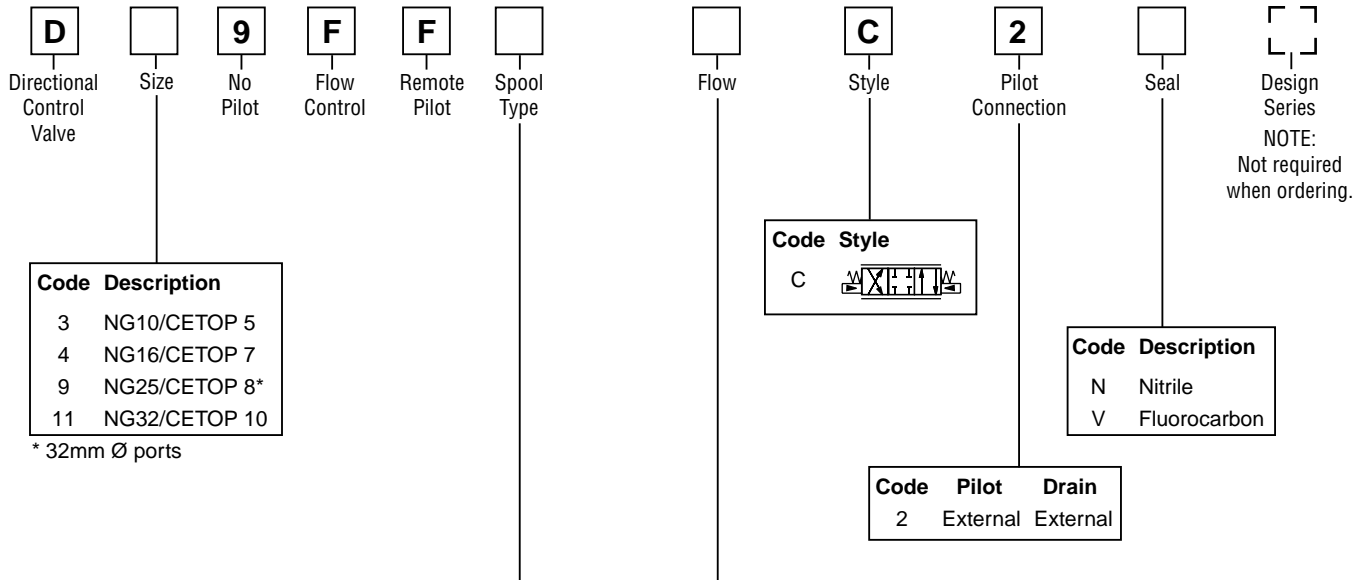
Hysteresis %	<5
Repeatability %	<2
Operating Pressure	
Port P, A, B, T Bar (PSI)	345 (5000) max.
Pilot Pressure Ranges Bar (PSI)	0-25 (0-363 PSI)
Fluid Cleanliness Level	ISO Class 16/13
Fluid Viscosity, Recommended	80 – 1000 SSU
Fluid Temperature, Recommended	0°C to +60°C (+32°F to +140°F)
Ambient Operating Temperature	-50°C to +100°C (-58°F to +212°F)



Performance Curves

D*9FF Flow Characteristics
 at $\Delta p = 5$ Bar (72.5 PSI) per metering edge





Sine Spool Options - Spool Type and Flow Codes

Code	Sine		Flow at Δp 5 Bar (72.5 PSI) per metering edge				
	Q _A =Q _B	Q _A >Q _B ¹⁾	Spool Type	D39 LPM (GPM)	D49 LPM (GPM)	D99 LPM (GPM)	D119 LPM (GPM)
E01	B31		C	75 (20)	-	-	-
E02	B32		F	-	200 (53)	-	-
			H	-	-	400 (106)	-
			L	-	-	-	1000 (264)

V-Notch Spool Options - Spool Type and Flow Codes

Code	V-Notch		Flow at Δp 5 Bar (72.5 PSI) per metering edge				
	Q _A =Q _B	Q _A >Q _B ¹⁾	Spool Type	D39 LPM (GPM)	D49 LPM (GPM)	D99 LPM (GPM)	D119 LPM (GPM)
E21	B41		B	-	-	-	-
E22	B42		D	-	120 (32)	-	-
			F	-	-	300 (79)	-
			L	-	-	-	1000 (264)

1) Reduced Flow Rate on Port B, Nominal Flow Rate on Port A
 Code A* for spool Q_B>Q_A optional

- Bolt Kits:**
- D39FF BK98 (4) 1/4-20x1.62 SHCS
 - D49FF BK160 (4) 3/8-16x2.5 SHCS
(2) 1/4-20x2.5 SHCS
 - D99FF BK228 (6) 1/2-13x3.0 SHCS
 - D119FF BK150 (6) 3/4-10x3.5 SHCS

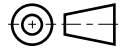
- Weight:**
- D39FF 7.1 kg (16.0 lbs.)
 - D49FF 10.8 kg (25.0 lbs.)
 - D99FF 19.0 kg (42.0 lbs.)
 - D119FF 62.0 kg (136.0 lbs.)



Dimensions

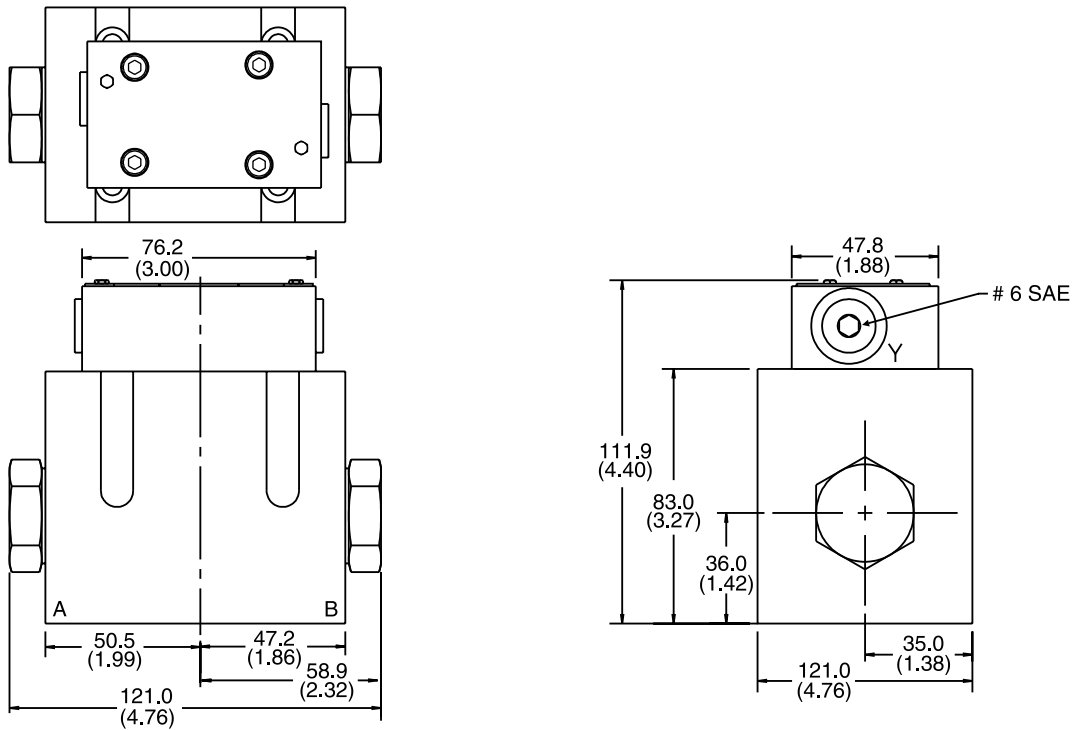
Series D39FF and D49FF

Inch equivalents for millimeter dimensions are shown in (**)

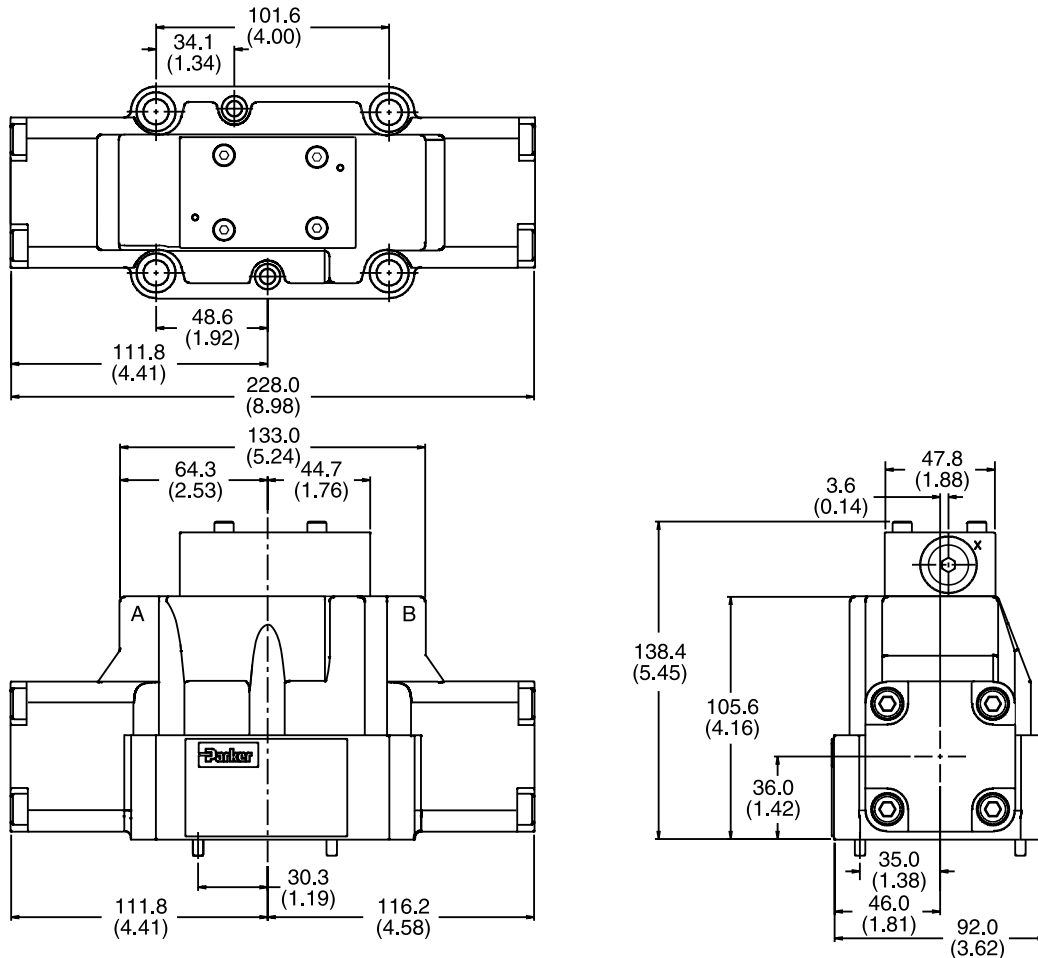


A

D39FF



D49FF



D_9FF.indd, dd

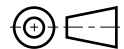
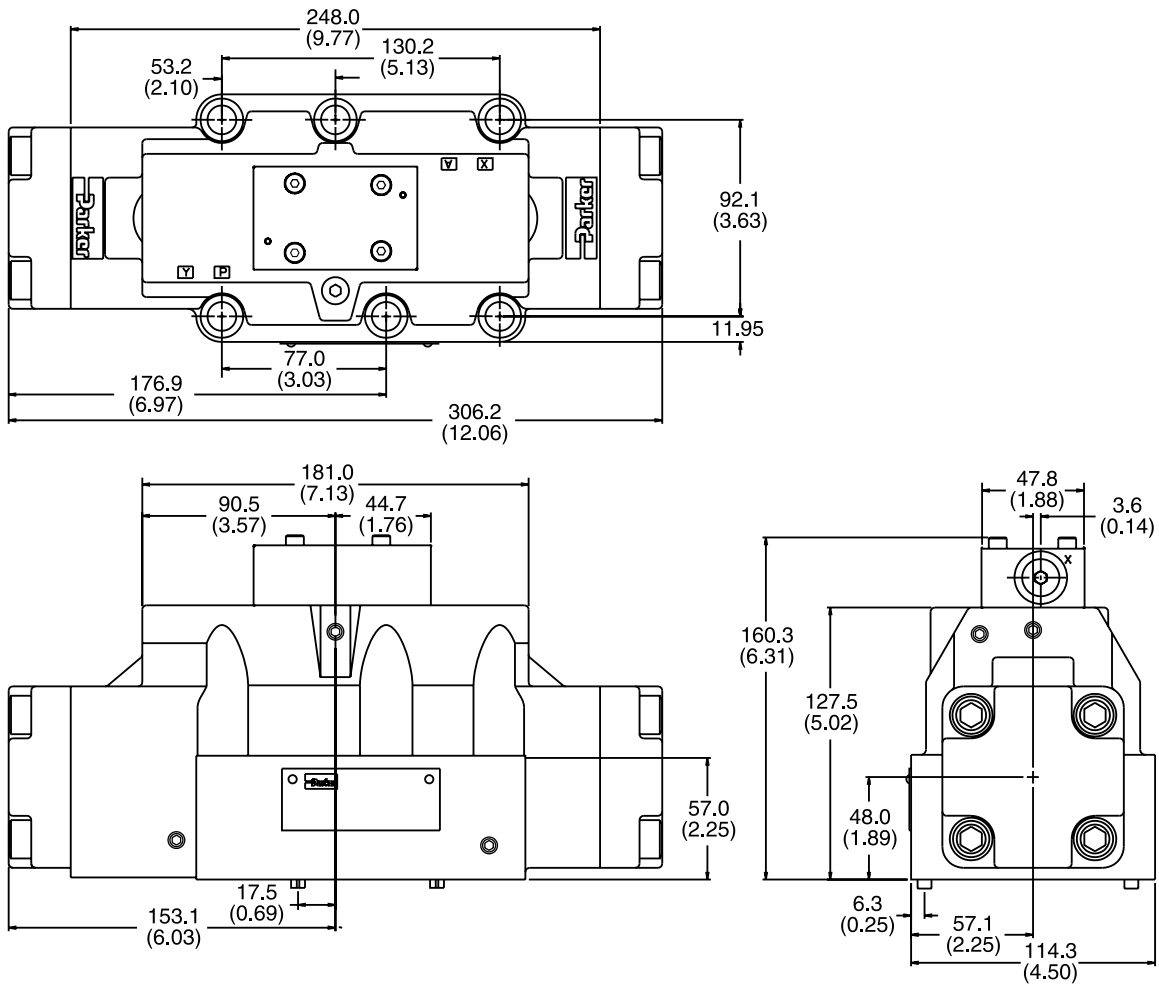


Dimensions

Series D99FF

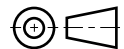
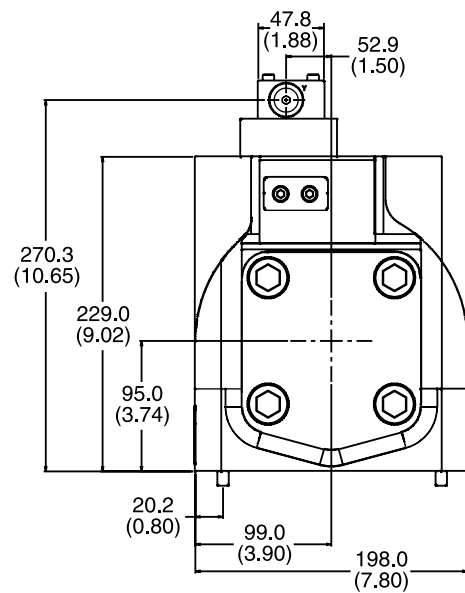
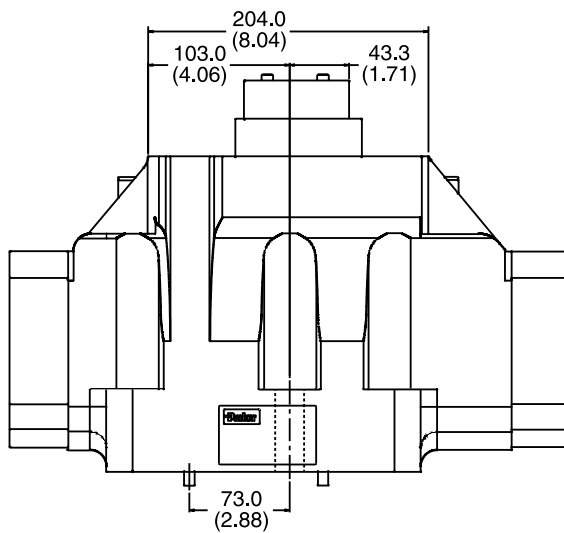
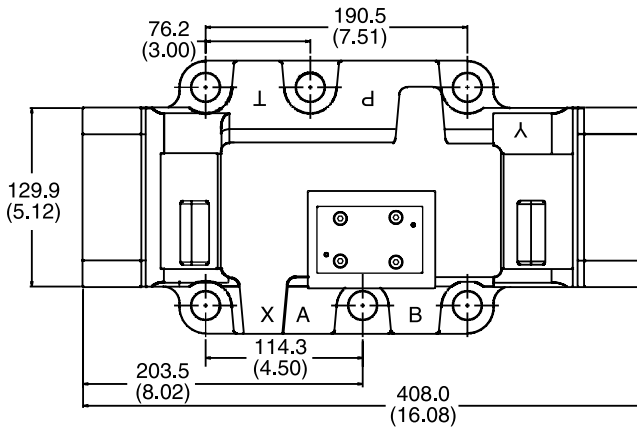
D99FF

Inch equivalents for millimeter dimensions are shown in (**)



D119FF

Inch equivalents for millimeter dimensions are shown in (**)



Bolt Kits, Subplates, Mounting Interface

Interface	Valve	Bolt Kit	Qty	Size	Subplate ⁽¹⁾	Port Size	Port Location
NG10 CETOP 5	D39F*	BK98	4	1/4-20 x 1.62"	SPD31D6NS35	3/4" NPTF	Bottom
		BK385	4	M6 x 40mm	SPD31D6NAS35	3/4" NPTF	Side
					SPD31D6SS35	#12 SAE	Bottom
					SPD31D6SAS35	#12 SAE	Side
NG16 CETOP 7	D49F*	BK160	4	3/8-16 x 2.5"	SPD46SA	#12 SAE	Side
			2	1/4-20 x 2.25"			
		BK320	4	M10 x 60mm			
			2	M6 x 55mm			
NG25 CETOP 8	D99F*	BK228	6	1/2-13 x 3"	SPD66NS35	3/4" NPTF	Bottom
		BK360	6	M12 x 75	SPD66NAS35	3/4" NPTF	Side
					SPD68NS35	1" NPTF	Bottom
					SPD68NAS35	1" NPTF	Side
					SPD610NS35	1 1/4" NPTF	Bottom
					SPD610NAS35	1 1/4" NPTF	Side
					SPD610SS35	#20 SAE	Bottom
					SPD610SAS35	#20 SAE	Side
NG32 CETOP 10	D119F*	BK150	6	3/4-10 x 3.5"	SPD1010N35	1 1/4" NPTF	Bottom
		BK386	6	M20 x 90	SPD1012N35	1 1/2" NPTF	Bottom

(1) Ductile iron; maximum operating pressure: 350 Bar (5075 PSI). Refer to valve specifications for actual recommended maximums.

Note: All subplates listed use SAE mounting bolt hardware. Refer to Catalog HY14-2500/US for metric options.

