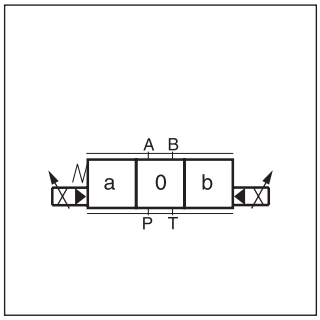
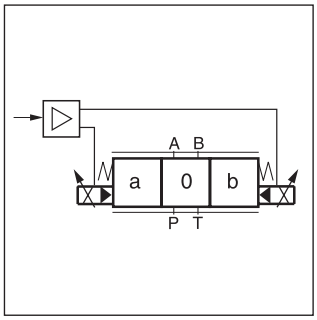
The D*1FW / D*1FT pilot-operated proportional DC valves are available in NG10 (CETOP5), NG16 (CETOP7) and NG25 (CETOP8).

These valves (D*1FW) are controlled electrically with the external power amplifiers PWD00A-400 or used as valves with integrated electronics (D*1FT).

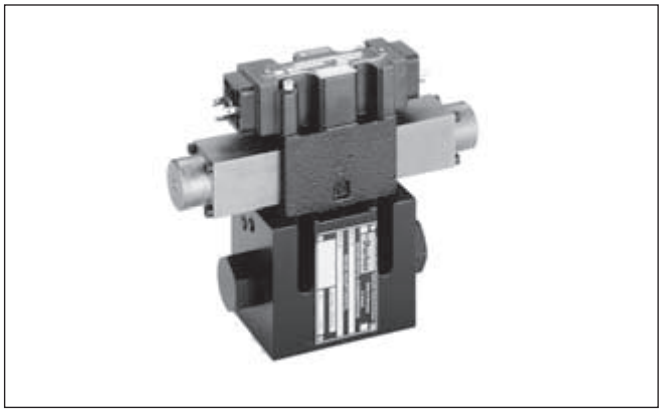
Typical applications include reproducible control of actuator speed in rapid / slow speed profiling, and smooth acceleration and deceleration performance.



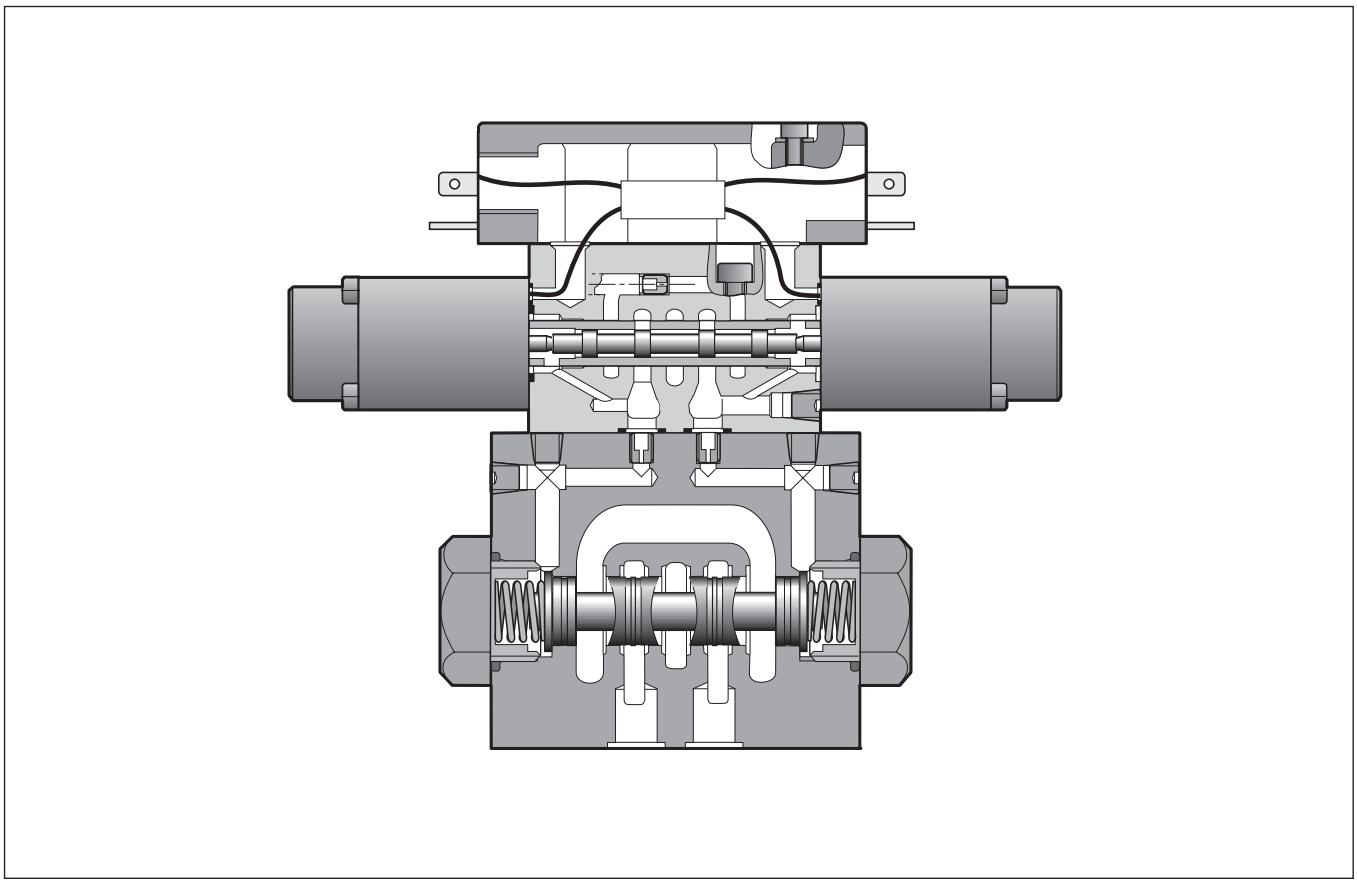


Technical features

- Low leakage
- Progressive flow characteristics for sensitive adjustment of flow rate
- Fail safe centre position
- Optional: centre position monitoring
- D*1FT version with integrated power amplifier with ramp adjustment



D31FW

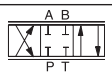
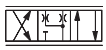
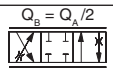
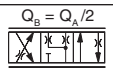


D31FW

D		1	F	W			C		N		W		
DC valve	**Nominal size**		**Flow control**		**Spool type**	**Flow**		**Pilot connection**	**Seal NBR** (different seal compound by request)	**Solenoid**		**Valve accessories**	**Design series**

Code	Nominal size
3	**NG10 / CETOP 5**
4	**NG16 / CETOP 7**
9[1)]	**NG25 / CETOP 8**

[1)] with enlarged connections Ø32mm

Code	Spool type
E01	
E02	
B31	
B32	

Code	Flow [l/min] at Δp = 5bar per metering edge		
	D31	D41	D91
C	**75**	-	-
F	-	**200**	-
H	-	-	**400**

Code	Valve accessories
0	**Standard**
8	Monitor switch (plug included)

Code	Solenoid
L	**6 VDC**
X	16 VDC

Code	Inlet	Drain
1	internal	external
2	external	external
4	**internal**	**internal**
5	external	internal

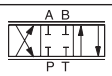
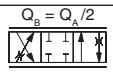
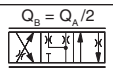
Please order plug/s separately.
See chapter 3 accessories.

Bold letters =
Short-term availability

D		1	F	T			C		N		0		
DC valve	Nominal size		Flow control	Integrated electronics	Spool type	Flow		Pilot connection	Seal NBR (different seal compound by request)	Electronic variation	Electronic accessories	Valve accessories	Design series

Code	Nominal size
3	**NG10 / CETOP 5**
4	**NG16 / CETOP 7**
9[1)]	**NG25 / CETOP 8**

[1)] with enlarged connections Ø32mm

Code	Spool type
E01	
E02	
B31	
B32	

Code	Flow [l/min] at Δp = 5bar per metering edge		
	D31	D41	D91
C	**75**	-	-
F	-	**200**	-
H	-	-	**400**

Code	Valve accessories
0	**Standard**
8	Monitor switch (plug included)

Code	Electronic variation
F	**Voltage input 0...±10V, with reference output +10V/-10V**
G	Current input 0...±20mA

Code	Inlet	Drain
1	internal	external
2	external	external
4	**internal**	**internal**
5	external	internal

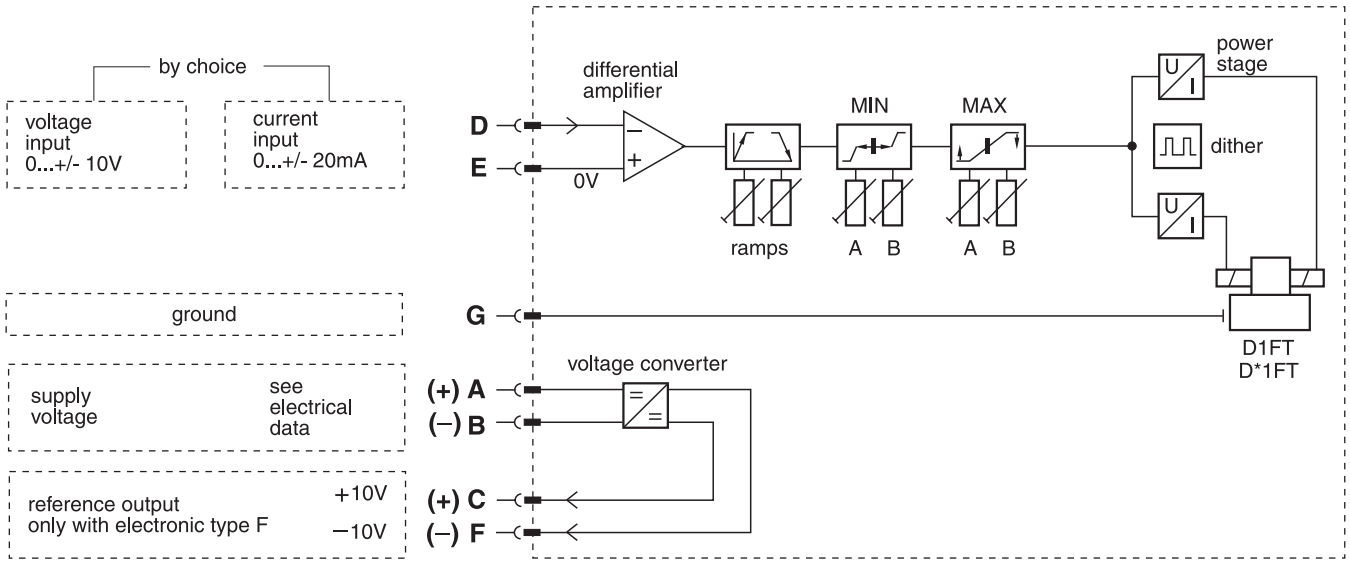
Please order plug/s separately.
See chapter 3 accessories.

Bold letters =
Short-term availability

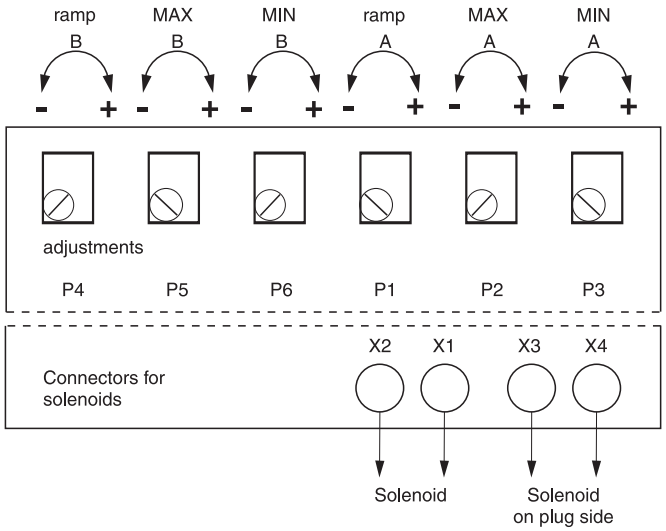
General				
Design		Pilot-operated DC Valve with integrated power amplifier		
Actuation		Proportional solenoid		
Mounting position		optional		
Environmental temp.	[°C]	-20...60		
Hydraulics				
Pressure medium		Hydraulic oil as per DIN 51 524 ... 535, other fluids by request		
Viscosiy, recommended	[mm²/s]	30 ... 80		
max. admiss.	[mm²/s]	20 ... 380		
Pressure fluid temperature	[°C]	0 ... 60		
Filtration		Permissible contamination class of pressure medium as per NAS 1638 ...	to achieve with filter β x = 75	
Pilot stage		Class 7	X = 5	
Main stage		Class 9	X = 15	
Mounting pattern		DIN 24340 / ISO 4401 / CETOP RP121 / NFPA		
Operating pressure	[bar]	Port P, T, A, B, X max. 350 bar, port Y max. 10 bar		
Nominal size	DIN	NG10	NG16	NG25
	CETOP	05	07	08
Weight	[kg]	7.1	10.8	19
Nominal flow at Δp=5 bar per metering edge	[l/min]	75	200	400
Drain (140bar)	[l/min]	0.1	0.2	0.6
Pilot stage				
Pilot pressure	[bar]	20 - 350 (optimal dynamics at 50)		
Pilot volume req. (constant)	[l/min]	< 1.2		
Static / Dynamic				
Hysteresis	[%]	< 5		
Repeatability	[%]	< 1		
Response time	[ms]	60	75	100
Solenoid				
Type		Code L		
Protection class, DIN 40050		IP 54		
Nominal resistance	[Ohm]	2.2		
Nominal current (100%ED)	[A]	2.5		
Voltage	[V]	6		
Electrical connection		EN 175301-803		
Integrated electronics (D*1FT)				
Supply voltage	[V]	14.5 ... 30		
Power consumption	[VA]	22		
Input signal				
Polarity *		D against E positive corresponds to P-B, A-T, negative corresponds to P-A, B-T		
Voltage	[V]	±10		
Impedance	[kOhm]	100		
Current	[mA]	±20		
Impedance	[Ohm]	500		
Reference output (10mA max.)	[V]	+10 / -10		
Ramp time	[s]	0...3		
Plug		6 + PE DIN 43563		

* inverse polarity by request

Block diagram



Arrangement of the potentiometers



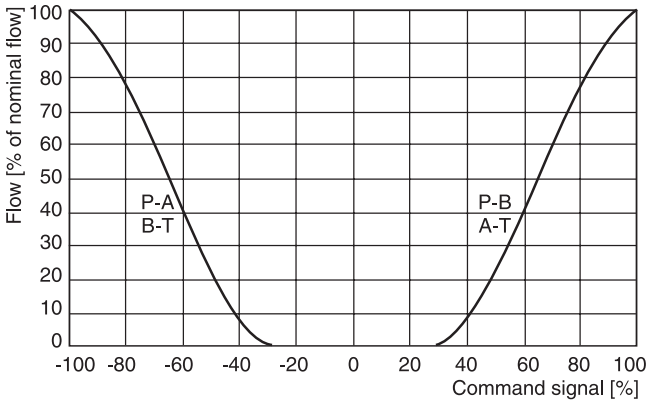
3

Flow characteristics

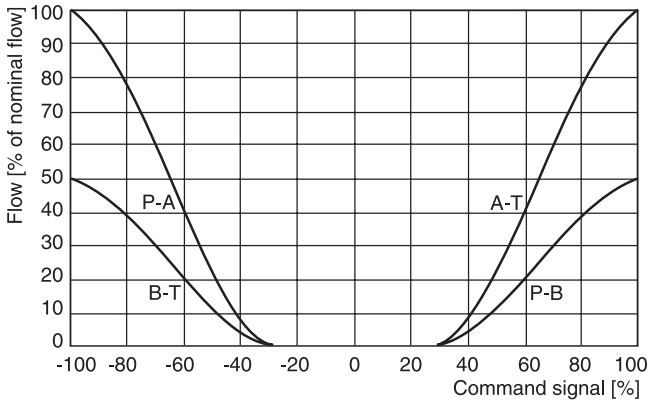
at Δp = 5bar per metering edge

D*1FW

Spool code E*

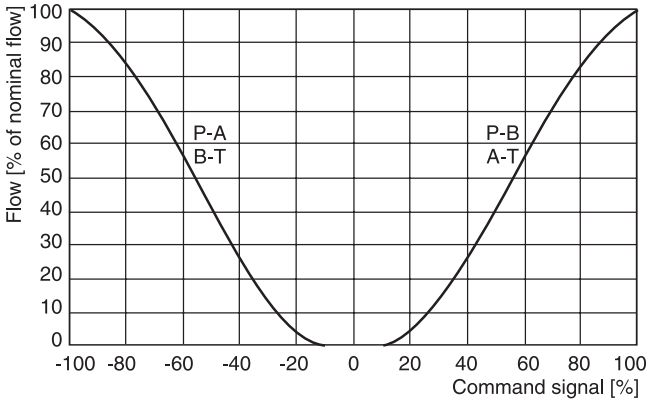


Spool code B*

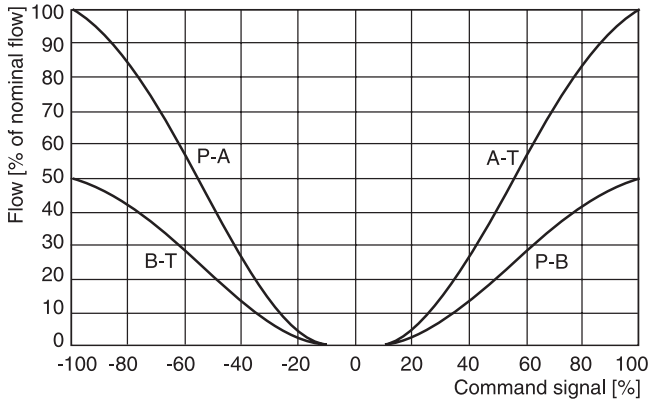


D*1FT

Spool code E*

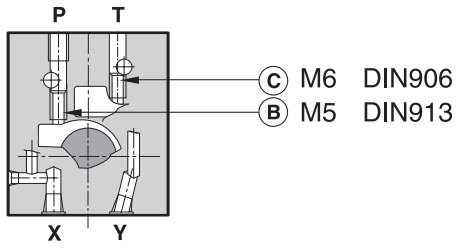


Spool code B*



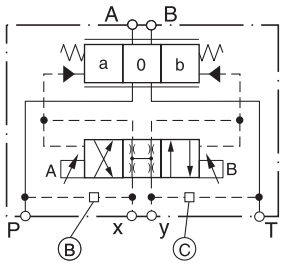
Pilot connection

D31F*

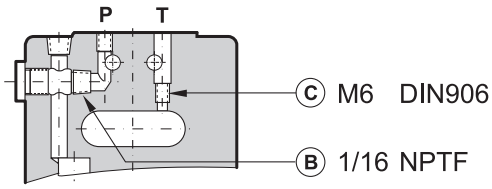


○ open, ● closed

Pilot oil Inlet	Pilot oil Drain	B	C
internal	external	○	●
external	external	●	●
internal	internal	○	○
external	internal	●	○

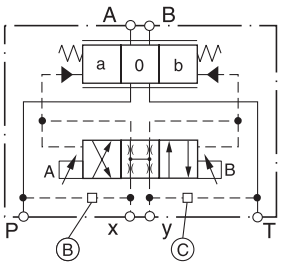


D41F*

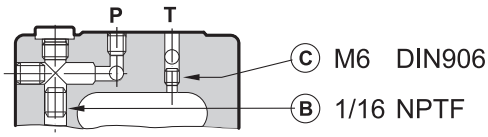


○ open, ● closed

Pilot oil Inlet	Pilot oil Drain	B	C
internal	external	○	●
external	external	●	●
internal	internal	○	○
external	internal	●	○

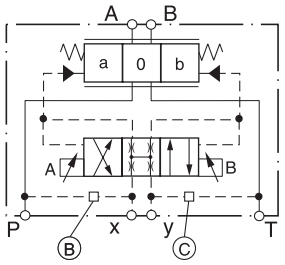


D91F*



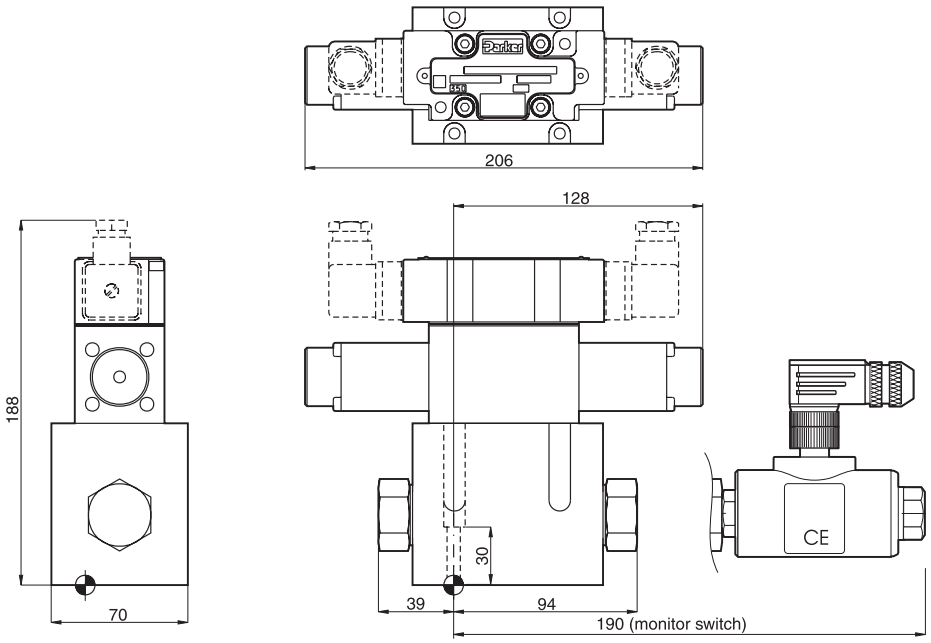
○ open, ● closed

Pilot oil Inlet	Pilot oil Drain	B	C
internal	external	○	●
external	external	●	●
internal	internal	○	○
external	internal	●	○



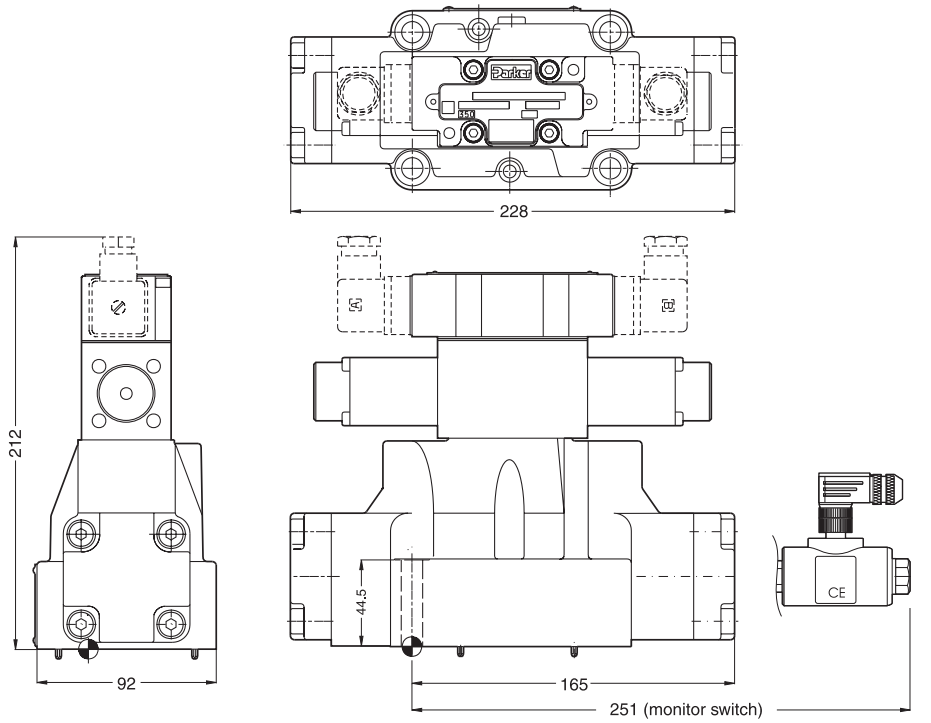
3

D31FW



Surface finish	Kit			Kit NBR
$\sqrt{R_{max}6.3}$ 0,01/100	BK385	4x M6x40 DIN 912 12.9	13.6 Nm	SK-D31FW-N20

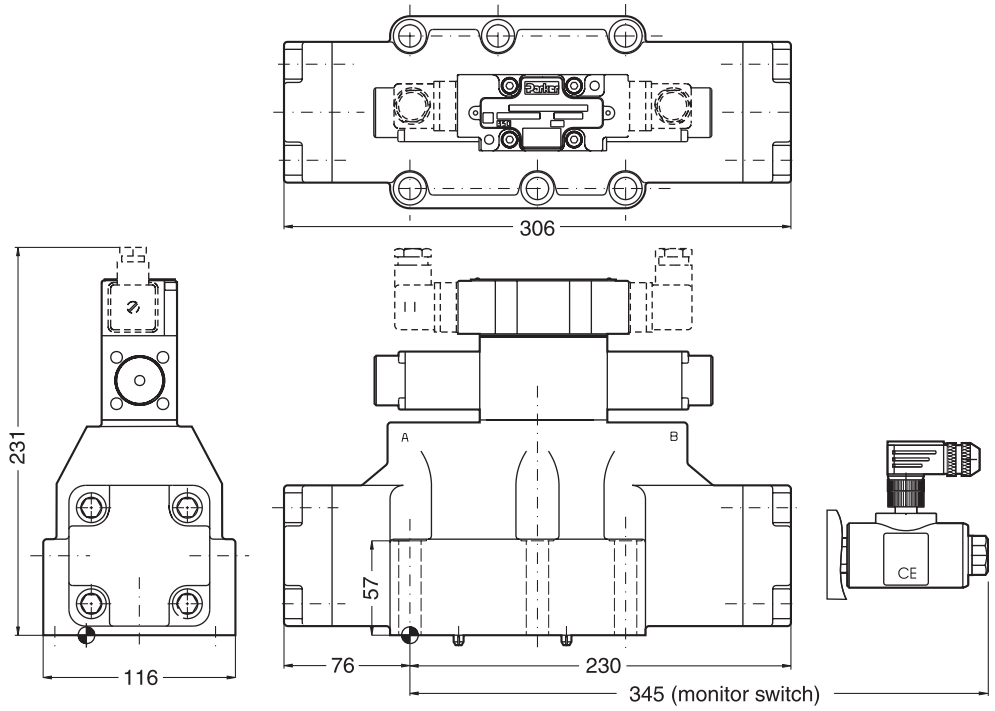
D41FW



Surface finish	Kit			Kit NBR
$\sqrt{R_{max}6.3}$ 0,01/100	BK320	2x M6x55 4x M10x60 DIN 912 12.9	13.6 Nm 65 Nm	SK-D41FW-N20

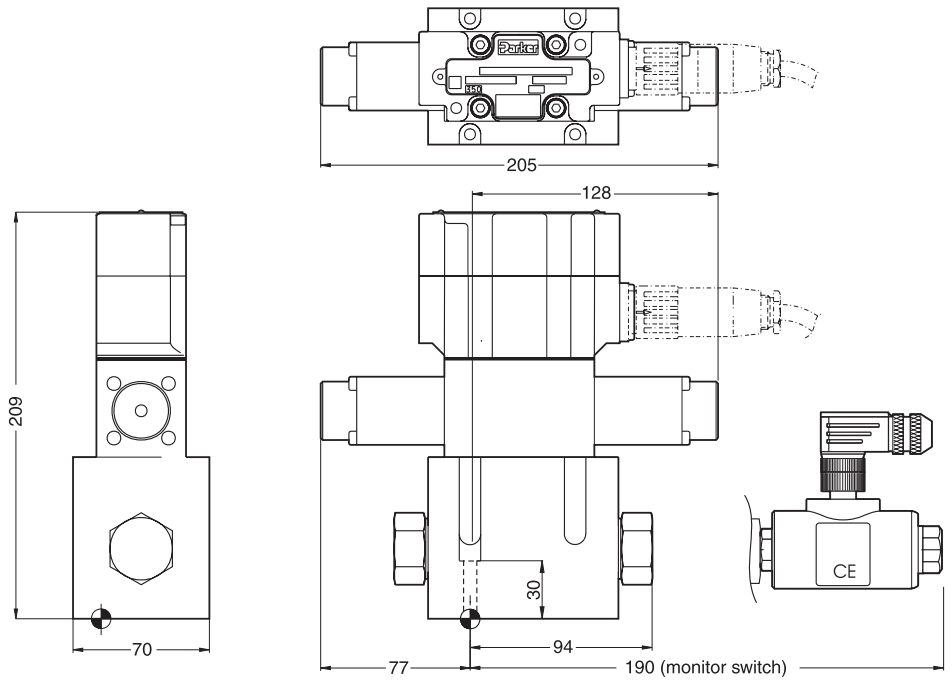
D_1FW-D_1FT.PM6.5 RH

D91FW



Surface finish	Kit			Kit NBR
$\sqrt{R_{max}6.3}$ 0,01/100	BK360	6 x M12x95 DIN 912 12.9	115 Nm	SK-D91FW-N20

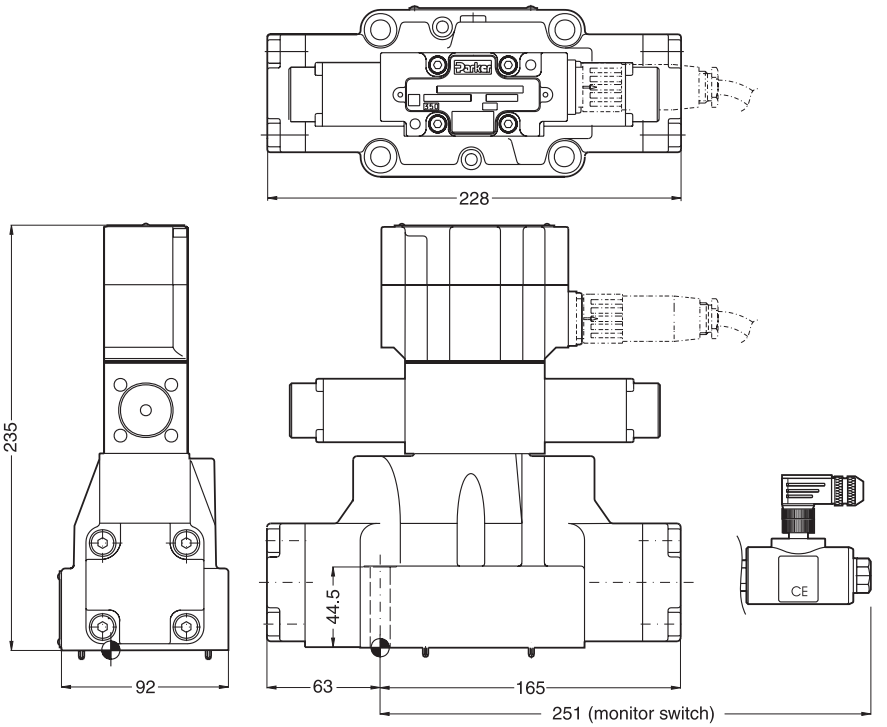
D31FT



Surface finish	Kit			Kit NBR
$\sqrt{R_{max}6.3}$ 0,01/100	BK385	4x M6x40 DIN 912 12.9	13.6 Nm	SK-D31FT-N30

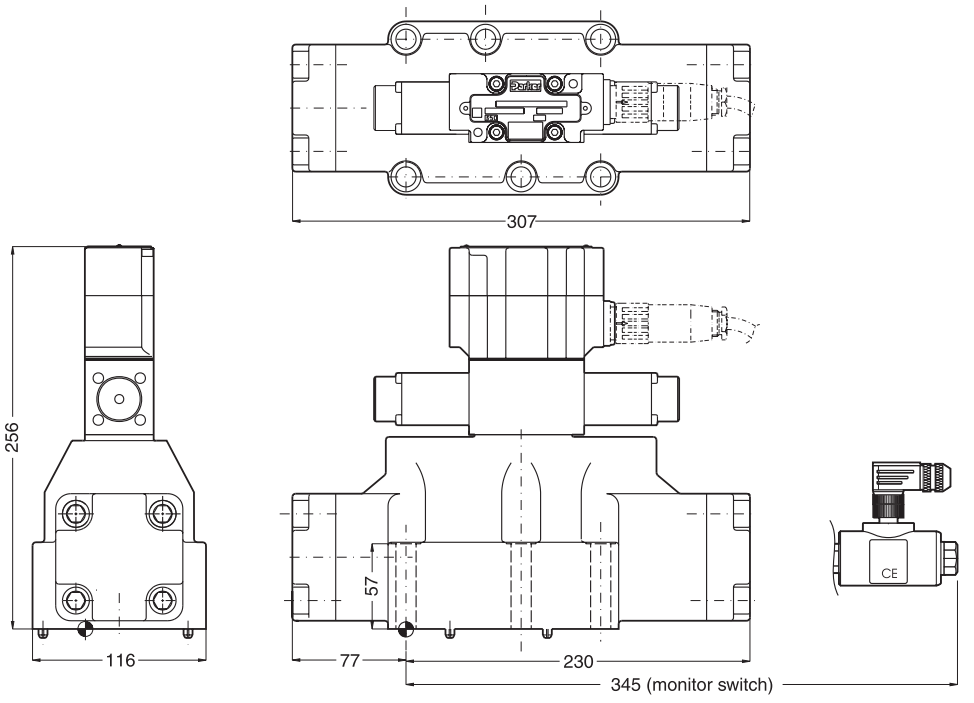
3

D41FT



Surface finish	Kit			Kit NBR
R_{max}6.3 0,01/100	BK320	2x M6x55 4x M10x60 DIN 912 12.9	13.6 Nm 65 Nm	SK-D41FT-N30

D91FT



Surface finish	Kit			Kit NBR
R_{max}6.3 0,01/100	BK360	6 x M12x95 DIN 912 12.9	115 Nm	SK-D91FT-N20