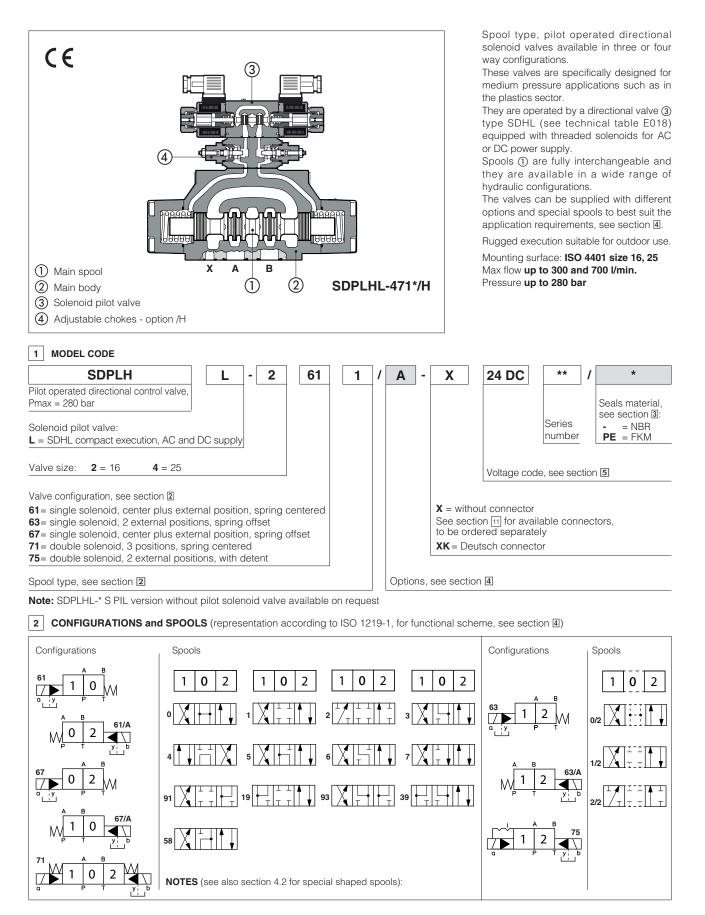
Table E080/NA-0/E

atos 🛆

Solenoid directional valves type SDPLHL

pilot operated, ISO 4401 size 16 and 25, max pressure 280 bar



3 MAIN CHARACTERISTICS, SEALS AND HYDRAULIC FLUID - for other fluids not included in below table, consult our technical office

Assembly position / location	Any position for all valves except for type -*70 (without springs) that must be installed with hori- zontal axis if operated by impulses.					
Subplate surface finishing	Roughness index Ra 0,4 - flatne	ess ratio 0,01/100 (ISO 1101)				
MTTFd values according to EN ISO 13849	75 years, for further details see	technical table P007				
Ambient temperature	Standard = $-30^{\circ}C \div +70^{\circ}C$; /P	E option = $-20^{\circ}C \div +70^{\circ}C;$				
Seals, recommended fluid temperature	NBR seals (standard) = -20°C - FKM seals (/PE option)= -20°C	 +80°C, with HFC hydraulic fluids +80°C 	= -20°C ÷ +50°C			
Recommended viscosity	15÷100 mm²/s - max allowed ra	inge 2.8 ÷ 500 mm²/s				
Max fluid contamination level	ISO4406 class 20/18/15 NAS16	ISO4406 class 20/18/15 NAS1638 class 9, see also filter section at www.atos.com or KTF catalog				
Hydraulic fluid	Suitable seals type	Classification	Ref. Standard			
Mineral oils	NBR, FKM	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524			
Flame resistant without water	FKM	HFDU, HFDR				
Flame resistant with water	NBR	HFC	ISO 12922			
Flow direction	As shown in the symbols of tab	le 2				
Operating pressure	P, A, B, X = 280 bar T = 210 bar for external drain (standard) T with internal drain (option /D) and port Y = 210 bar SDPLHL (DC); 160 bar SDPLHL (AC) Minimum pilot pressure = 8 bar					
Rated flow	See diagrams Q/Ap at section	See diagrams Q/Ap at section 6				
Maximum flow	SDPLHL-2: 300 I/min; SDPLHL-4: 700 I/min; (see rated flow at section () and operating limits at section ()					

3.1 Coils characteristics

Insulation class	H (180°C) for DC coilsF (155°C) for AC coilsDue to the occuring surface temperatures of the solenoid coils, the European standardsEN ISO 13732-1 and EN ISO 4413 must be taken into account
Protection degree to DIN EN 60529	IP 65 (with connectors 666, 667 correctly assembled)
Relative duty factor	100%
Supply voltage and frequency	See electric features 5
Supply voltage tolerance	± 10%

4 NOTES

4.1 Options

- /A = Solenoid mounted at side of port A of main body (only for single solenoid valves). In standard version, solenoid is mounted at side of port B.
- **/D** = Internal drain (standard configuration is external drain)
- /E = External pilot pressure (standard configuration is internal pilot pressure).
- **/R** = Pilot pressure generator (4 bar on port P) see section 4.2
- **/S** = Main spool stroke adjustment.
- /WP = Prolonged manual override protected by rubber cap.

The manual override operation can be possible only if the pressure at T port is lower than 50 bar

Devices for main spool switching control and to reduce the hydraulic shocks at the valve operation

- /H = Adjustable chokes (meter-out to the pilot chambers of the main valve).
- /L1, /L2, /L3 = calibrated restrictors on A and B ports of the pilot valve: L1 =0,8mm, L2 =1mm, L3 =1,25mm)
- /L9 = plug with calibrated restictor in P port of pilot valve see section 9

Suggested for pilot pressure higher than 210 bar or to limit the hydraulics shocks caused by the fast main spool switching

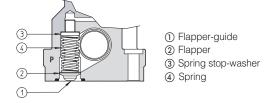
4.2 Special shaped spools

- spools type 0 and 3 are also available as 0/1 and 3/1 with restricted oil passages in central position, from user ports to tank.
- spools type 1, 4 are also available as 1/1 and 4/8 that are properly shaped to reduce water-hammer shocks during the switching (to use with option /L*).

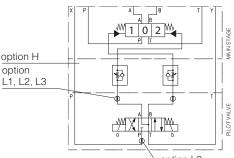
Shaped spool availability	0/1	3/1	1/1	4/8
SDPLHL-2, SDPLHL-4	•	•	•	•

4.3 Pilot pressure generator (option /R)

The device /R generates an additional pressure drop, in order to ensure the minimum pilot pressure, for correct operation of the valves with internal pilot and fitted with spools type 0, 0/1, 4, 4/8, 5, 58. The device /R has to be fitted when the pressure drop in the valve, verified on flow versus pressure diagrams, is lower than the minimum pilot pressure value.









5 ELECTRIC FEATURES

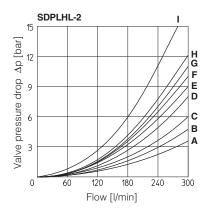
Valve	External supply nominal voltage	Voltage	Type of connector	Power consumption (2)	Code of s	pare coil
	± 10% code	code	CONNECTOR		X version	XK version
	12 DC	12 DC			COL-12DC	COLK-12DC
	14 DC	14 DC	000	29 W	COL-14DC	COLK-14DC
SDPLHL	24 DC	24 DC	666	2011	COL-24DC	COLK-24DC
SUPLAL	28 DC	28 DC		COL-28DC	COLK-28DC	
	110/50 AC	110/50/60 AC		COL-110/50/60AC (1)	-	
	230/50 AC	230/50/60 AC		COL-230/50/60AC (1)	-	

(1) Coil can be supplied also with 60 Hz of voltage frequency: in this case the performances are reduced by 10÷15% and the power consumption is 58 VA

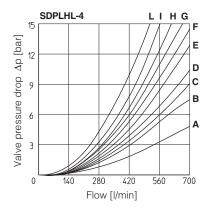
(2) Average values based on tests performed at nominal hydraulic condition and ambient/coil temperature of 20°C.

(3) When solenoid is energized, the inrush current is approx 3 times the holding current. Inrush current values correspond to a power consumption of about 150 VA.

6 FLOW VERSUS PRESSURE DIAGRAMS Based on mineral oil ISO VG 46 at 50°C



Flow direction Spool type		P→B	A→T	B→T	P→T
0/2, 1, 3, 6, 7	Α	Α	D	Α	-
1/1, 1/2	В	В	D	E	-
0	Α	Α	D	E	С
0/1	Α	Α	D	-	-
2	Α	Α	-	-	-
2/2	В	В	-	-	-
3/1	Α	Α	D	D	-
4	С	С	Н	Ι	F
4/8	С	С	G	Ι	F
5	Α	В	F	Н	G
19	С	-	-	G	-
39	С	-	-	Н	-
58	В	Α	F	Н	Н
91	С	С	E	-	-
93	-	С	D	-	-



Flow direction Spool type	₽→А	P→B	A→T	B→T	P→T
1	В	В	В	D	-
1/1	D	E	Ε	F	-
1/2	Е	D	В	С	-
0	D	С	D	E	F
0/1, 3/1, 6, 7	D	D	D	F	-
0/2	D	D	D	E	-
2	В	В	-	-	-
2/2	E	D	-	-	-
3	В	В	D	F	-
4	С	С	Н	L	L
5	Α	D	D	D	Н
19	F	-	-	E	-
39	G	F	-	F	-
58	E	Α	В	F	Н
91	F	F	D		
93	-	G	D	-	-

7 OPERATING LIMITS For a correct valve operation do not exceed the max recommended flow rates (I/min) shown in the below tables

SDPLHL-2

	Inlet pressure [bar]						
Spool	70	140	210	280			
	Flow rate [l/min]						
0, 1, 3, 6, 7, 8	300	300	300	300			
2, 4, 4/8	300	300	240	140			
5	260	220	180	100			
0/1, 0/2, 1/2	300	250	210	180			
58, *9, 9*	300	300	270	200			

SDPLHL-4

	Inlet pressure [bar]						
Spool	70	140	210	280			
	Flow rate [l/min]						
1, 6, 7, 8	700	700	700	600			
2, 4, 4/8	500	500	450	400			
5, 0/1, 0/2, 1/2	600	520	400	300			
0, 3	700	700	600	540			
58, *9, 9*	500	500	500	450			

					Piloting p	pressure			
			70	bar 140 ba		bar	bar 250 b		
Valve model	Configuration		Alternating current	Direct current	Alternating current	Direct current	Alternating current	Direct current	
	71, 61, 67, 61*/A, 67*/A	Switch ON	40	55	30	50	20	40	
SDPLHL-2	7 1, 01, 07, 01 /A, 07 /A	Switch OFF	60						
SUPLIC-2	63, 63*/A	Switch ON	55	80	45	70	35	55	
	05, 05 /A	Switch OFF	95						
	71, 61, 67, 61*/A, 67*/A	Switch ON	60	80	45	60	30	45	
SDPLHL-4		Switch OFF			80)			
SUPLIL-4	63, 63*/A	Switch ON	95	115	75	95	50	65	
	00,007A	Switch OFF	130						

Notes:

1) For configuration 75, times of switching ON and switching OFF are the same: this value is equal to time of switch ON of configuration 63. 2) TEST CONDITIONS

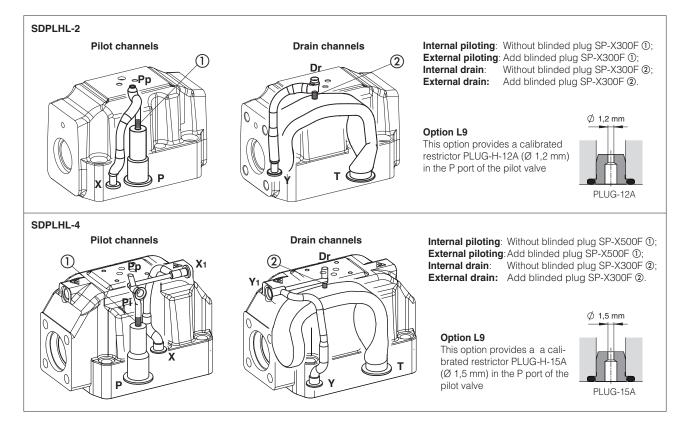
Nominal voltage supply DC (direct) and AC (alternating) with connector type SP-666. The use of other connectors can affect the switching time;
 2 bar of counter pressure on port T;

- mineral oil: ISO VG 46 at 50°C

3) The response time is affected by elasticity of the hydraulic circuit, by variation of hydraulic characteristics and temperature.

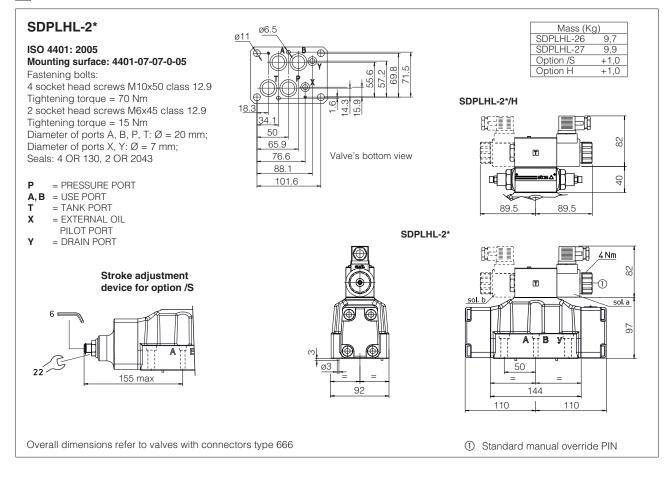
9 PLUGS LOCATION FOR PILOT/DRAIN CHANNELS

Depending on the position of internal plugs, different pilot/drain configurations can be obtained as shown below. To modify the pilot/drain configuration, proper plugs must only be interchanged. The plugs have to be sealed using loctite 270. Standard valves configuration provides internal pilot and external drain



10 ELECTRIC CONNECTORS ACCORDING TO DIN 43650 - the connectors must be ordered separately

Connector code	Function
666	Connector IP65, suitable for direct connection to electric supply source
667	As 666 connector IP65 but with built-in signal led, suitable for direct connection to electric supply source



12 DIMENSIONS FOR SDPLHL-4 [mm]

