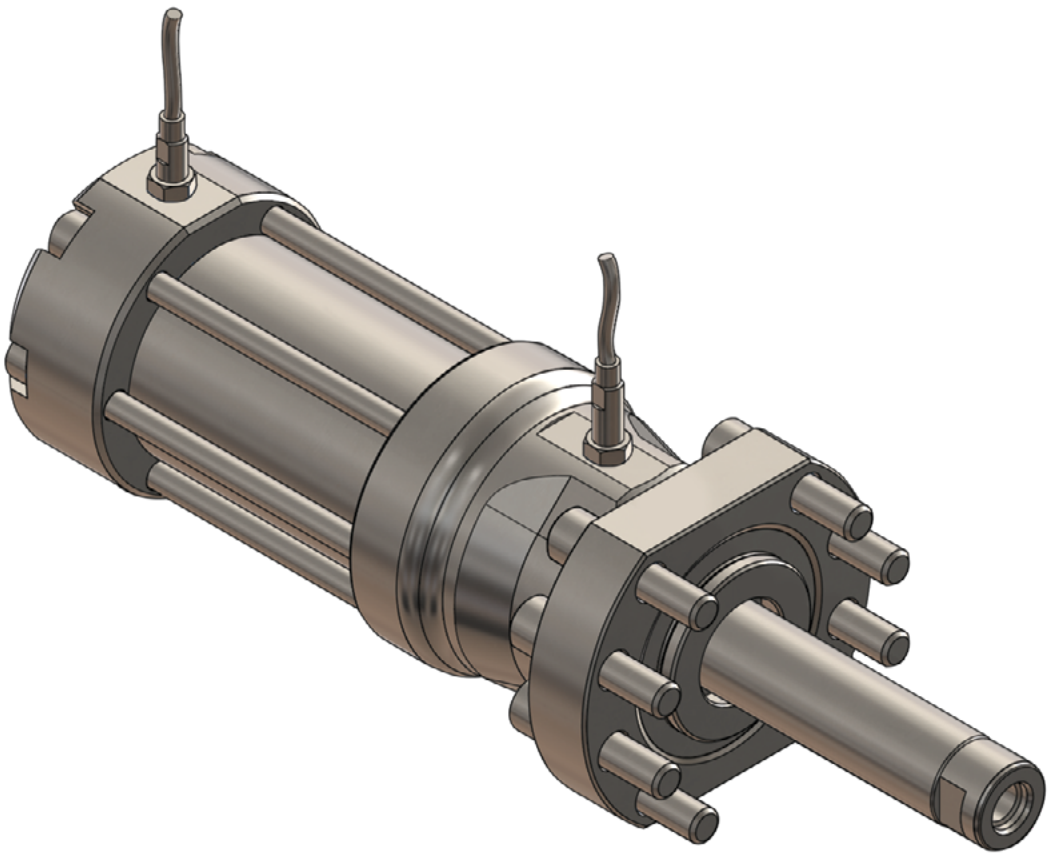
HYDRAULIC LOCKING CORE PULL CYLINDERS FOR PLASTICS AND DIE CAST TOOLS



HYDRAULIC LOCKING CORE PULL CYLINDERS INTERLOCKING CYLINDER

HLCP

Product Benefits
Withstands high loads
Large locking surfaces promote extended service life
Pulls sliding cores in injection moulds and die cast tools
Withstands temperatures up to 180°C*
Proximity sensors recognize full forward and full reverse
*Refer to Note #1.

System Cost Savings
Cost savings achieved when the Hydraulic Locking Core Pull Cylinder is used instead of traditional methods:
Mould design and manufacturing time
Mould fitting and assembly time
Mould maintenance time
Material cost (smaller mould base required)
Cycle time reduction

NOTES:
1. When using proximity sensors standard to Core Pull Cylinders, the cylinder assembly will withstand temperatures up to 100°C (212F°)
2. When an external method for sensing sliding core position is used, the cylinder assembly will withstand temperatures up to 180°C (356F°)
3. Proximity sensors are replaced by plugs, REF **WD81NANON**

Product Overview
When designing moulds with sliding cores, the mould designer is often faced with the challenge of fitting all traditional components in as small a mould base as possible. There are different methods of actuating a sliding core, the most common of which uses horn or angle pins (Fig. 1) to move the slide when the mould opens or closes. Heel blocks are normally used behind the sliding core to withstand injection pressure acting on the sliding core. Not only do these components use up precious mould space, but they are tied to the movement of the platen. Some moulded parts also require that the sliding core be moved prior to opening a mould. While it is possible to use standard cylinders (Fig. 2) to actuate the sliding core or heel block, typical designs require additional mould design and machining, and waste mould space.

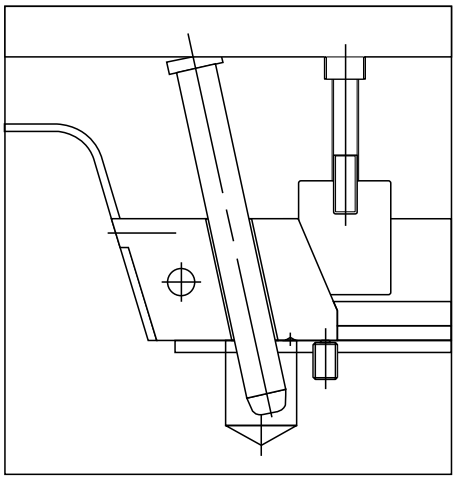


Fig. 1. Slide Movement example using an angle pin and locking with a heel block (wedge).

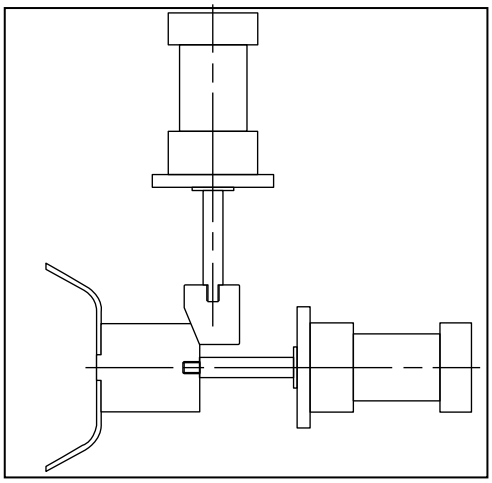
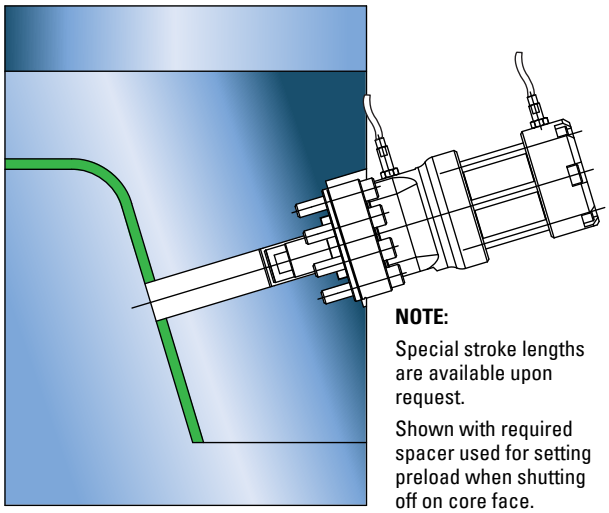


Fig. 2. Slide Movement example using a hydraulic cylinder to actuate slide, and a separate cylinder to actuate the heel block.

CAD reference point

HYDRAULIC LOCKING CORE PULL CYLINDERS
THE HLCP CYLINDER ADVANTAGE



NOTE:

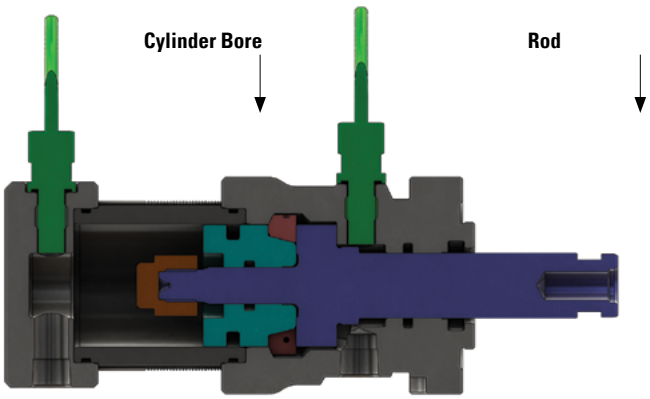
Special stroke lengths are available upon request.

Shown with required spacer used for setting preload when shutting off on core face.

Fig. 3. Slide Movement example using the Hydraulic Locking Core Pull Cylinder.

The Hydraulic Locking Core Pull (HLCP) Cylinder replaces traditional slides and heel blocks, enabling independent movement of the sliding core while eliminating the need for a heel block. By using a segmented ring that presses into an internal groove inside the cylinder assembly while in closed position, the injection pressure from the part cavity acts against the cross section of the segmented ring, eliminating the need for heel blocks.
Eliminating separate heel blocks or additional cylinders can result in a smaller mould base size, simplifying mould designs and increasing cost savings!

The HLCP Cylinder is a robust, compact design. Available in seven sizes, each size has two available standard strokes. Due to the modular design of the HLCP Cylinder, special strokes are available upon request with quick delivery. The cylinder is constructed of hardened steel for extra long service life. Because of the cylinder's special design and breadth of assembly sizes available, a wide range of holding forces are possible with a hydraulic holding pressure of only 60 bar minimum.

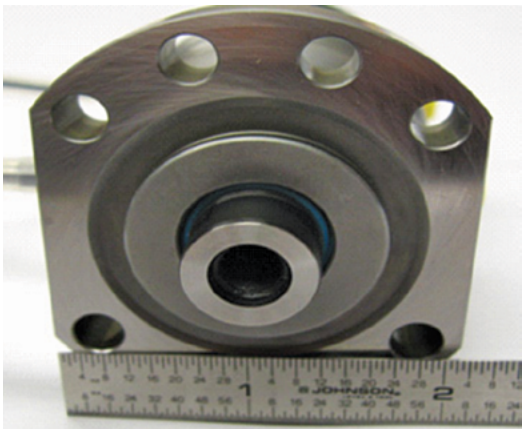


REF		Stroke (mm)	Rod Dia. (mm)	Cylinder Bore Dia. (mm)
NPN TYPE	PNP TYPE			
HLCP060-1000DW	HLCP060-1000DWP	25	16	30
HLCP060-2000DW	HLCP060-2000DWP	50		
HLCP100-1250DW	HLCP100-1250DWP	31	20	36
HLCP100-2500DW	HLCP100-2500DWP	63		
HLCP150-1375DW	HLCP150-1375DWP	35	25	45
HLCP150-2750DW	HLCP150-2750DWP	69		
HLCP200-1750DW	HLCP200-1750DWP	44	32	56
HLCP200-3500DW	HLCP200-3500DWP	88		
HLCP300-2000DW	HLCP300-2000DWP	50	42	71
HLCP300-4000DW	HLCP300-4000DWP	100		
HLCP500-2500DW	HLCP500-2500DWP	63	50	84
HLCP500-5000DW	HLCP500-5000DWP	127		
HLCP750-3000DW	HLCP750-3000DWP	76	60	105
HLCP750-6000DW	HLCP750-6000DWP	152		

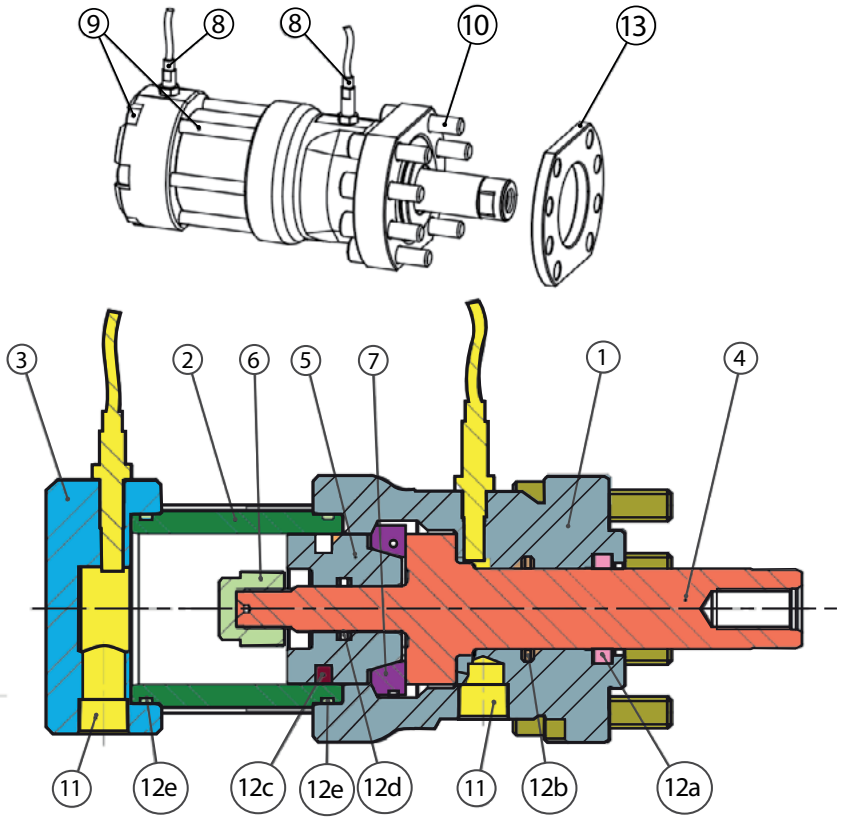
REF		at 160 Bar (2321 PSI) Preload [mm]	Holding Force in kilo Newton [kN]		Holding Force in Pound Force [bf]		Holding Force in Metric ton [ton]		Holding Force in UK (troy) ton [ton]		Holding Force in US (avdp) ton [ton]	
NPN TYPE	PNP TYPE		Without Preload	With Preload	Without Preload	With Preload	Without Preload	With Preload	Without Preload	With Preload	Without Preload	With Preload
HLCP060-1000DW	HLCP060-1000DWP	0.15	60	35	13,488	7,868	6.12	3.57	5.46	3.19	6.74	3.93
HLCP060-2000DW	HLCP060-2000DWP	0.20	60	35	13,488	7,868	6.12	3.57	5.46	3.19	6.74	3.93
HLCP100-1250DW	HLCP100-1250DWP	0.15	100	50	22,480	11,240	10.2	5.10	9.11	4.55	11.24	5.62
HLCP100-2500DW	HLCP100-2500DWP	0.20	100	50	22,480	11,240	10.2	5.10	9.11	4.55	11.24	5.62
HLCP150-1375DW	HLCP150-1375DWP	0.10	150	65	33,720	14,612	15.3	6.63	13.65	5.91	16.86	7.31
HLCP150-2750DW	HLCP150-2750DWP	0.15	150	65	33,720	14,612	15.3	6.63	13.65	5.91	16.86	7.31
HLCP200-1750DW	HLCP200-1750DWP	0.15	200	110	44,960	24,728	20.39	11.21	18.20	10.01	22.48	12.36
HLCP200-3500DW	HLCP200-3500DWP	0.20	200	110	44,960	24,728	20.39	11.21	18.20	10.01	22.48	12.36
HLCP300-2000DW	HLCP300-2000DWP	0.15	300	160	67,440	35,968	30.59	16.31	27.31	14.57	33.72	17.98
HLCP300-4000DW	HLCP300-4000DWP	0.20	300	160	67,440	35,968	30.59	16.31	27.31	14.57	33.72	17.98
HLCP500-2500DW	HLCP500-2500DWP	0.20	500	300	112,400	67,440	50.98	30.59	45.51	27.31	56.20	33.72
HLCP500-5000DW	HLCP500-5000DWP	0.30	500	300	112,400	67,440	50.98	30.59	45.51	27.31	56.20	33.72
HLCP750-3000DW	HLCP750-3000DWP	0.20	750	400	168,600	89,920	76.48	40.79	68.27	36.41	84.30	44.96
HLCP750-6000DW	HLCP750-6000DWP	0.30	750	400	168,600	89,920	76.48	40.79	68.27	36.41	84.30	44.96

CAD reference point

HYDRAULIC LOCKING CORE PULL CYLINDERS
THE HLCP CYLINDER ADVANTAGE



The HLCP Cylinder operates between fully opened and fully closed positions, both of which are sensed by high pressure proximity sensors without any mechanical contact. The HLCP Cylinder has a built-in cushion at the fully retracted end of the piston stroke, extending the service life of the cylinder.
The HLCP Cylinder's integral flange allows easy installation and mounts to the mould using socket head cap screws. Socket head cap screw sizes used for mounting the HLCP Cylinder to the mould are UNC-type. A spacer plate (shim) is supplied with the HLCP Cylinder for installation beneath the HLCP Cylinder flange, enabling fine adjustment in the mould. The spacer plate also provides important preload on the cylinder rod, particularly when the sliding core must shut off against the opposing wall of the core. Hydraulic fittings are NPTF-type fittings.
Due to the nature of the flange mounting design, the same size HLCP Cylinders are easily interchangeable. The cylinder's flange and screw mounting method ensures that the proximity sensors will always be positioned in the same orientation when the HLCP Cylinder is installed to the side of the mould.



Item	Part Name	Notes
1	Body	
2	Sleeve	
3	Cap	
4	Rod	
5	Piston	
6	Piston Bushing	
7	Segment kit	
8	Sensor	BHS006Y (NPN type) BHS006U (PNP type)
9	Assembly screw	
10	Mounting screw	
11	Oil cap	
12	Sealing kit	See installation Instructions on www.dme.net
12a	Excluder	
12b	Step seal	
12c	Glyd ring	
12d	O-ring	
12e	O-ring	
13	Spacer	

NOTES:
Sensors require power.
* NPN and PNP sensors function in a similar manner, except the power supply polarities are reversed for each type. NPN inductive sensors are more common in North America, while PNP is more common in Asia and Europe. If PNP is not requested, the cylinders will be delivered with NPN sensors, even for special orders.

CAD reference point

HYDRAULIC LOCKING CORE PULL CYLINDERS
INTERLOCKING CYLINDER - MOULD DESIGN & INSTALLATION CONSIDERATIONS

Available in several sizes, each size of the Hydraulic Locking Core Pull Cylinder has two available "standard" stroke lengths. If a stroke is required that is different than the available standard strokes, then a non-standard stroke design is required. When ordering this product, specify the required stroke if the available standard strokes are not suitable for the intended application.

Hydraulic Locking Core Pull Cylinder Assembly Sizes

REF		STROKE (mm)	ROD DIA. (mm)	CYLINDER BORE DIA. (mm)	NPTF TAP
NPN TYPE	PNP TYPE				
HLCP060-1000DW	HLCP060-1000DWP	25	16	30	1/8
HLCP060-2000DW	HLCP060-2000DWP	50			
HLCP100-1250DW	HLCP100-1250DWP	31	20	36	1/8
HLCP100-2500DW	HLCP100-2500DWP	63			
HLCP150-1375DW	HLCP150-1375DWP	35	25	45	1/4
HLCP150-2750DW	HLCP150-2750DWP	69			
HLCP200-1750DW	HLCP200-1750DWP	44	32	56	1/4
HLCP200-3500DW	HLCP200-3500DWP	88			
HLCP300-2000DW	HLCP300-2000DWP	50	42	71	3/8
HLCP300-4000DW	HLCP300-4000DWP	100			
HLCP500-2500DW	HLCP500-2500DWP	63	50	84	3/8
HLCP500-5000DW	HLCP500-5000DWP	127			
HLCP750-3000DW	HLCP750-3000DWP	76	60	105	1/2
HLCP750-6000DW	HLCP750-6000DWP	152			

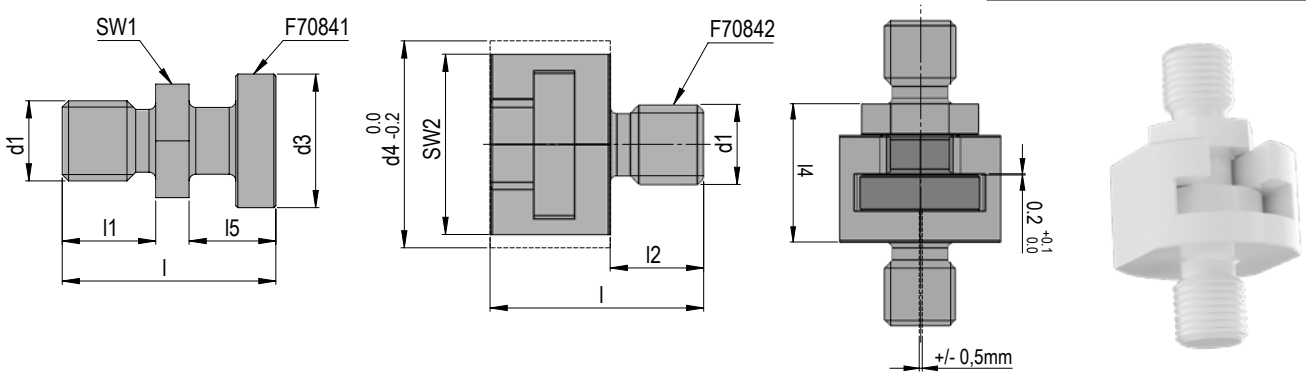
The HLCP Cylinder maintains a sliding core in full back (retracted) or full forward (extended) positions. In order for the cylinder assembly to "lock", the piston must be full extended forward. This product's provided spacer disk is placed between the front of the body flange and pocket installation. The spacer disk must be properly ground to ensure suitable fit at the desired mould operation temperature. The adjustment of the spacer disk is important for when the sliding core must "shut off" against an opposing core wall or face, so that plastic flashing is avoided.
Positional alignment of the cylinder assembly is achieved by aligning the forward collet of the cylinder body (protrudes forward of the mounting flange) into the mould plate via the outer diameter of the collet. The collet will protrude past the spacer disk. Rotational alignment of the overall assembly is achieved via the mounting screws, as rotational alignment is only used to position the proximity sensors and hydraulic fitting connections and/or hoses within the overall installation.
The piston may freely rotate; therefore, if rotational alignment of the sliding core is required, rotational alignment of the sliding core must be achieved via other means.
While recommended installation pocket details are based on the cylinder assembly being recessed into the side of the mould plate, it is possible to have the cylinder assembly mounted fully "proud" of the side of the mould plate. However, positional alignment of the cylinder assembly to the mould plate requires the forward collet (protruding forward of the mounting flange of the cylinder body) to be recessed partially into the side of the mould. An overall installation adjustment is required to fit each application, while maintaining minimum clearances for the hydraulic fitting connections and/or hoses, as well as maintaining clearances for the proximity sensors.

CAD reference point

ACCESSORIES
COUPLING SET FOR HYDRAULIC CYLINDER

F7084

Mat.: 1.6580 with black oxid finish

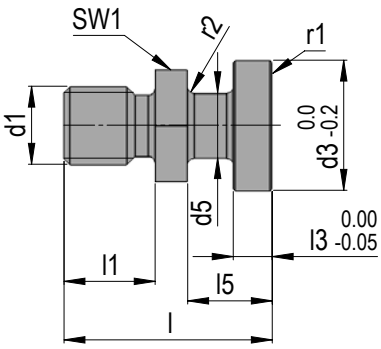


REF	d1	l4	l	l1	l5	SW1	d3	l2	SW2	d4
F7084006	M6	20,3	25	10	10	10	12	10	17	22
F7084008	M8	21,3	27	11	11	13	16	11	21	26
F7084010	M10	25,3	33	14	13	17	20	14	27	32
F7084012	M12	23,3	32	14	13	17	20	14	27	32
F7084016	M16	29,3	46	24	15	22	25	24	32	37
F7084020	M20	41,3	58	28	21	27	32	26	41	47
F7084027	M27	48,3	74	38	27	36	40	35	50	57

ACCESSORIES
COUPLING PIN FOR HYDRAULIC CYLINDER

F70841

Mat.: 1.6580 with black oxid finish



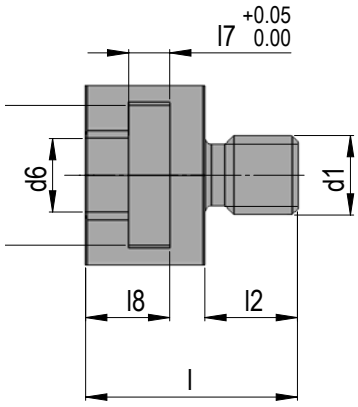
REF	d1	d3	l	l1	l5	SW1	d5	l3	r1	r2
F7084106	M6	12	25	10	6	10	6	5	230	1,0
F7084108	M8	16	27	11	8	13	8	6	240	1,0
F7084110	M10	20	33	14	10	17	10	6	320	1,0
F7084112	M12	20	32	14	10	17	10	6	320	1,0
F7084116	M16	25	46	24	16	22	16	7	400	1,0
F7084120	M20	32	58	28	18	27	18	10	500	1,5
F7084127	M27	40	74	38	24	36	24	13	630	1,5

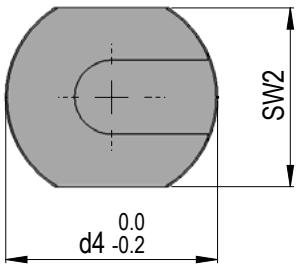
CAD reference point

ACCESSORIES
COUNTER PIECE FOR COUPLING PIN

F70842

Mat.: 1.6580 with black oxid finish





REF	d1	d4	l	l2	l8	SW2	d6	d7	l7
F7084206	M6	22	25	10	9,7	17	7	13	5,2
F7084208	M8	26	27	11	10,7	21	9	17	6,2
F7084210	M10	32	33	14	12,7	27	11	21	6,2
F7084212	M12	32	32	14	12,7	27	11	21	6,2
F7084216	M16	37	46	24	14,7	32	17	26	7,2
F7084220	M20	47	58	26	20,7	41	19	33	10,2
F7084227	M27	57	74	35	26,7	50	25	41	13,2

CAD reference point