Hydraulic Cylinders
Vérins Hydrauliques
Hydraulikzylinder

SERIE VCE

Cylinders with mechanical sensors
Vérins avec capteurs mécaniques
Zylinder mit mechanischen Schaltern

Working Pressure / **Pression de Service** / *Betriebsdruck:* 500 Bar
Bores / **Alésages** / *Kolben*: Ø25 ...100 mm

HPS International

02/21

GENERAL CHARACTERISTICS / **CARACTÉRISTIQUES GÉNÉRALES** / *ALLGEMEINE EIGENSCHAFTEN*

Working Pressure **Pression de Service** *Betriebsdruck*	500 Bar Max (7200 PSI Max)			
Test Pressure **Pression d'épreuve** *Prüfdruck*	750 Bar (10850 PSI)			
Seals **Joints** *Dichtungen*	N (Standard)	V (Viton)	G (Glycol)	P (PTFE)
Material **Matière** *Material*	Nitrile	FPM	Nitrile	FPM / PTFE
Temperature **Température** *Temperatur*	-20° … +80°C	-20° … +200°C	-20° … +90°C	-20° … +240°C
Operating Speed **Vitesse de Fonctionnement** *Kolbengeschwindigkeit*	0.5 m/s Max			
Fluids / **Fluides** *Flüssigkeiten* ISO 6743/4-1982	Oil Mineral **Huile Minérale** *Mineralöl* HH, HM, HL, HLP, HLP-D, ML-H	No-combustible fluid with Ester Phosphate (HFD-R) **Fluides incombustibles à base d'Esters Phosphates (HFD-R)** *Unbrennbare Flüssigkeit Phosphat (HFD-R)*	Water Glycol (HFC) **Eau-Glycol (HFC)** *Wasser Glykol (HFC)*	No-combustible fluid with Ester Phosphate (HFD-R) **Fluides incombustibles à base d'Esters Phosphates (HFD-R)** *Unbrennbare Flüssigkeit Phosphat (HFD-R)*
Filtering **Filtration** *Filterung*	ISO 4406 19/17/14			
Counterbore **Lamage** *Senkung*	DIN 912 / DIN EN ISO 4762			
Mounting Screw **Classe de Vis de Fixation** *Befestigungsschraube*	12.9 (DIN 912 / DIN EN ISO 4762)			
Advisable Tightening Torque **Couple de Serrage Recommandé** *Empfohlenes Anzugsmoment*	Normes NF E25-030			

*HPS reserves the right to modify the materiel technically: dimensions, conception without notice.
***HPS se réserve le droit d'apporter des modifications techniques aux matériels: côtes et conception sans préavis.**
**HPS behält sich das Recht vor, Produktspezifikationen ohne vorherige Ankündigung zu ändern.*

TABLE OF FORCES / **TABLEAU DES FORCES** / *LEISTUNGSTABELLE*

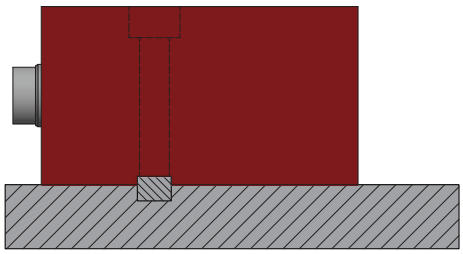
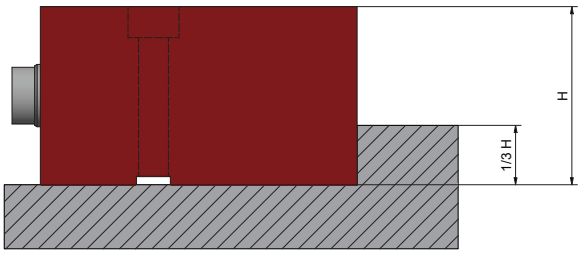
- Forces developed by pushing (daN)
- **Forces développées en poussant (daN)**
- *Schubkraft (daN)*

Ø Bore **Ø Alésage** *Ø Kolben*	Piston Surface (cm²) **Section (cm²)** *Kolbenfläche (cm²)*	Pressure / **Pression** / *Druck (bar)*					
		80	100	160	200	250	500
		Pushing force / **Force poussée** / *Schubkraft (daN)*					
25	4,91	392	490	785	981	1227	2454
32	8,04	643	804	1286	1608	2010	4021
40	12,57	1005	1256	2010	2513	3141	6283
50	19,63	1570	1963	3141	3926	4908	9817
63	31,17	2493	3117	4987	6234	7793	15586
80	50,27	4021	5026	8042	10053	12566	25132
100	78,54	6283	7853	12566	15707	19634	39269

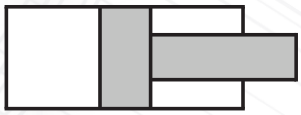
- Forces developed by pulling (daN)
- **Forces développées en tirant (daN)**
- *Zugkraft (daN)*

Ø Bore **Ø Alésage** *Ø Kolben*	Ø Rod **Ø Tige** *Ø Stange*	Ring Section (cm²) **Section Annulaire (cm²)** *Ringfläche (cm²)*	Pressure / **Pression** / *Druck (bar)*					
			80	100	160	200	250	500
			Pulling force / **Force tirée** / *Zugkraft (daN)*					
25	16	2,90	231	289	463	579	724	1449
32	18	5,50	439	549	879	1099	1374	2748
40	22	8,77	701	876	1402	1753	2191	4382
50	28	13,48	1078	1347	2156	2695	3369	6738
63	36	20,99	1679	2099	3358	4198	5248	10496
80	45	34,36	2748	3436	5497	6872	8590	17180
100	56	53,91	4312	5390	8625	10781	13477	26954

MOUNTING POSSIBILITIES / **POSSIBILITÉS DE MONTAGE** / *BAUFORM*

Pressure < 160 Bar with key way **Pression < 160 Bar avec clavetage** *Druck < 160 Bar mit Nut*	Pressure > 160 Bar without key way **Pression > 160 Bar sans clavetage** *Druck > 160 Bar ohne Nut*
	

OPERATING MODE / **MODE DE FONCTIONNEMENT** / *BETRIEBSART*



No cushioning / **Non amorti**
Keine Endlagendämpfung
L1

SENSORS / **CAPTEURS** / *SCHALTER*

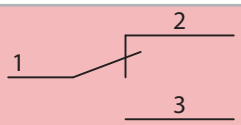
This microswitch of the HP220 series is distinguished from other products on the market by its small size and mechanical life thanks to the choice of materials, which allow it to withstand temperatures up to +105°C.

Ce microrupteur de la série HP220 se distingue des autres produits sur le marché par sa petite taille et sa durée de vie mécanique grâce au choix des matériaux, qui lui permettent de résister à des températures jusqu'à +105°C.

Die Mikroschalter der HP220 Serie zeichnen sich durch eine lange Lebensdauer aus. Sie halten Temperaturen bis 105°C aus und bauen außerdem sehr klein.

SERIE HP220

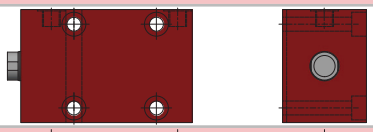
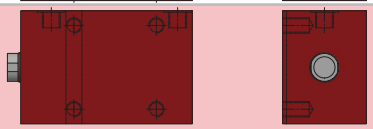
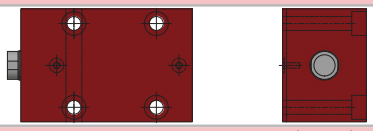
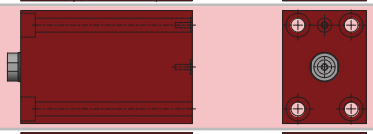
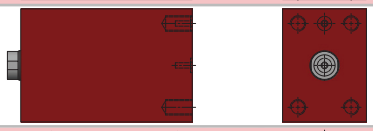
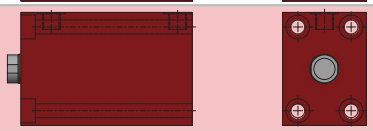
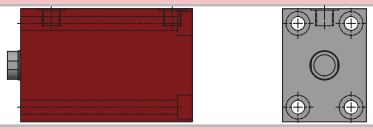
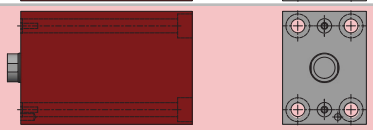
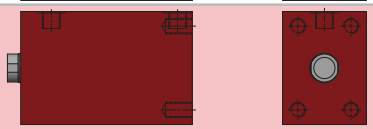
GENERAL CHARACTERISTICS - SENSORS
CARACTÉRISTIQUES GÉNÉRALES - CAPTEURS
ALLGEMEINE EIGENSCHAFTEN - SCHALTER

Standards / **Normes** / *Normen* Resistive load / **Charge Ohmique** / *Wirklast*		UL61058-1 EN 61058-1	250 VAC / 5A	25'000 **cycles**/ Zyklen
			250 VAC / 2A	50'000 **cycles**/ Zyklen
			24 VDC / 0.1 A	50'000 **cycles**/ Zyklen
Material **Matière** *Material*	Housing – Tappet / **Boîtier – Poussoir** / *Gehäuse - Drucktaste*	Steel / **Acier** / *Stahl*		
	Switch / **Bouton** / *Schalte*	PES		
	Membrane / **Membrane** / *Membran*	Fluorsilicone / **Fluorsilikon** / *Floursilikon*		
Mechanism / **Mécanisme** / *Mechanismus*		Reverser / **Inverseur** / *Wechsler* Snap action with copper beryllium blade and stainless steel spring **Action brusque avec lame en cuivre Bérylium et ressort en Acier Inox** *Zugfeder aus nichtrostendem Stahl mit Kontaktzunge aus Beryllium-Kupfer*		
Level of protection / **Degré de protection** / *Schutzart*		IP67		
Dimensions / **Dimensions** / *Maße*		30x27x16 mm		
Cable length / **Longueur de Câble** / *Kabellänge*		1 m		
Operating temperature / **Température de fonctionnement** / *Betriebstemperatur*		-40 ... +105°C		
Protection class / **Classe de protection** / *Schutzklasse*		I	250 V	
		II / III	24 V	
Operating force range / **Plage de force d'actionnement** / *Betätigungskraftbereich*		1.0 ... 2.5 N		
Differential stroke / **Course différentielle** / *Differenzialhub*		0.05 mm		
Electrical plan **Schéma Electrique** *Stromlaufplan*	1 – Black / **Noir** / *Schwarz* 2 – Grey / **Gris** / *Grau* 3 – Blue / **Bleu** / *Blau*			

SPECIAL SENSORS / **CAPTEURS SPÉCIAUX** / *SPEZIELLE SCHALTER*

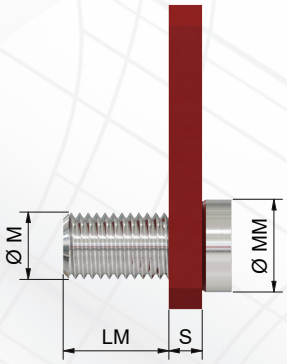
Telemecanique	XCMA 102	-25 ... +70°C	IP68
Balluff	BNS054L	5 ... +150°C	IP67
Under request / **Sur demande** / *Auf anfrage*		+150°C	IP40

MOUNTING TYPES / **TYPE DE FIXATIONS** / *BEFESTIGUNGSMÖGLICHKEITEN*

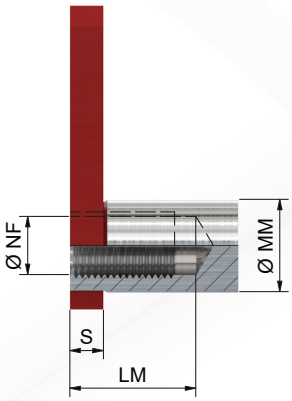
Mounting types **Type de fixations** *Befestigungsmöglichkeiten*	Symmetrical oil port **Alimentation symétrique** *Spiegelbildliche Ölzufuhr*	Drawing **Plan** *Darstellung*	Pages **Pages** *Seiten*
M1	SYM		8-9
M2	SYM		8-9
M3	-		10-11
M4	-		12-13
M5	-		12-13
M6	-		14-15
M7	-		14-15
M8	-		12-13
M9	-		13
M10	-		16-17
M11	-		16-17
M12	-		10-11

ROD END / **EXTRÉMITÉ DE TIGE** / *AUSFÜHRUNGEN DER KOLBENSTANGE*

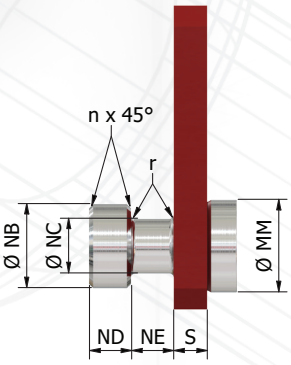
EXTERNAL THREAD / **FILETÉE** / *AUSSENGEWINDE*
(CODE ET)



INTERNAL THREAD / **TARAUDÉE** / *INNENGEWINDE*
(CODE IT)



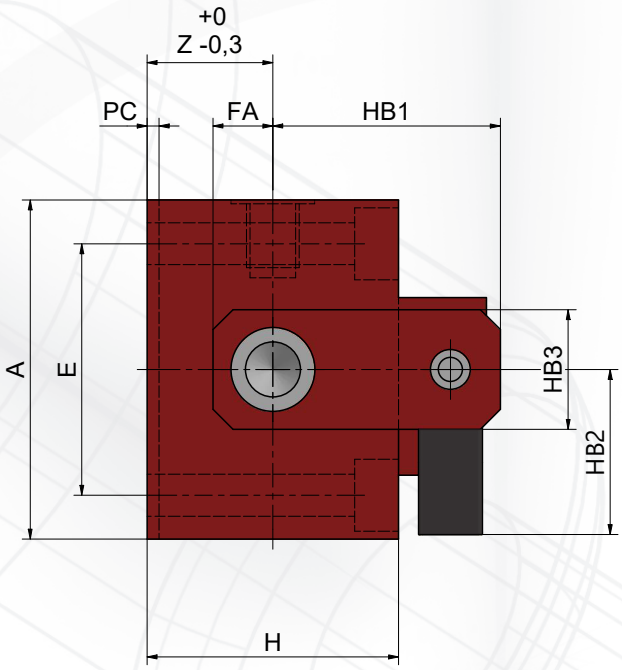
TENON / **TENON** / *ZAPFEN*
(CODE TT)

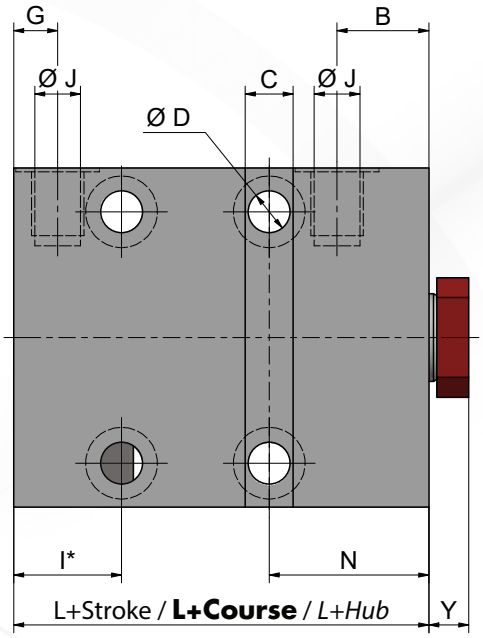


Ø Bore / **Ø Alésage** / *Ø Kolben*	25	32	40	50	63	80	100
Ø MM (Rod) / **Ø MM (Tige)** / *Ø MM (Stange)*	16	18	22	28	36	45	56
LM	20	20	25	30	40	50	60
Ø M	M10x1,5	M12x1,75	M12x1,75	M16x2	M20x2,5	M27x3	M36x4
n	0,5	1	1	1	2	2	2
Ø NB	14	16	20	25	33	42	53
Ø NC	8	10	13	16	22	30	36
ND	6	8	10	13	16	20	30
NE	6	8	10	13	16	20	30
Ø NF	M10x1,5	M12x1,75	M12x1,75	M16x2	M20x2,5	M27x3	M36x4
r	1	1	1	1	2	2	2
S	5	6	8	8	11	10	12

All dimensions are in mm / **Toutes les dimensions sont en mm** / *Alle Angaben sind in mm*

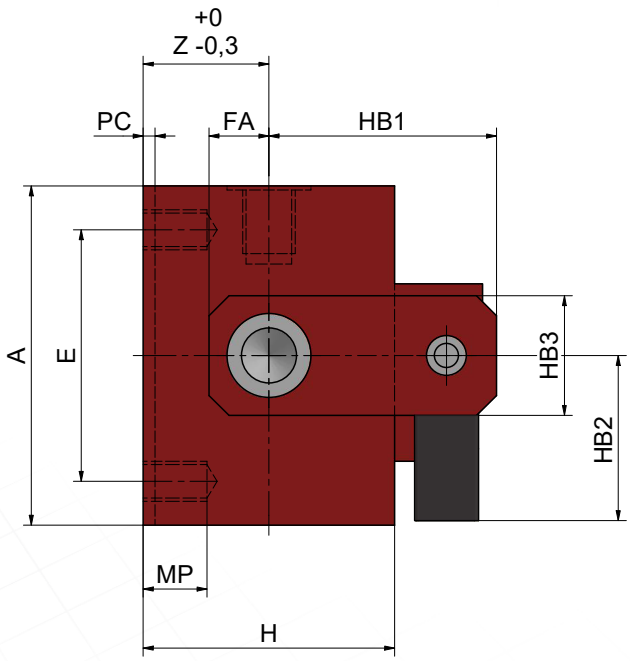
MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M1

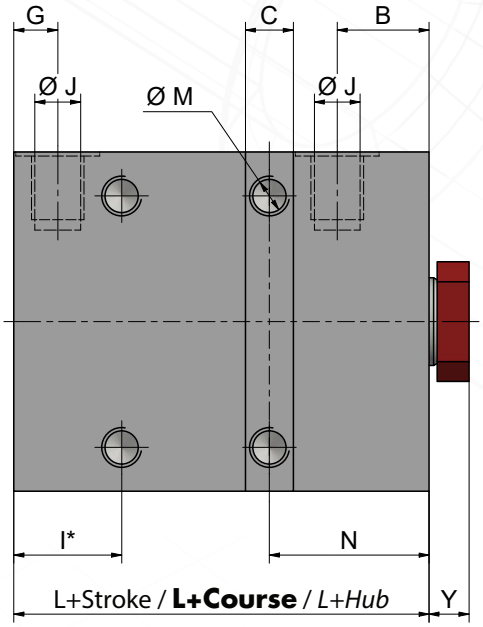




I* Possible from stroke ≥ than W
I* Réalisable à partir de course ≥ à W
I Realisierbar ab einem Hub ≥ als W*

MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M2





I* Possible from stroke ≥ than W
I* Réalisable à partir de course ≥ à W
I Realisierbar ab einem Hub ≥ als W*

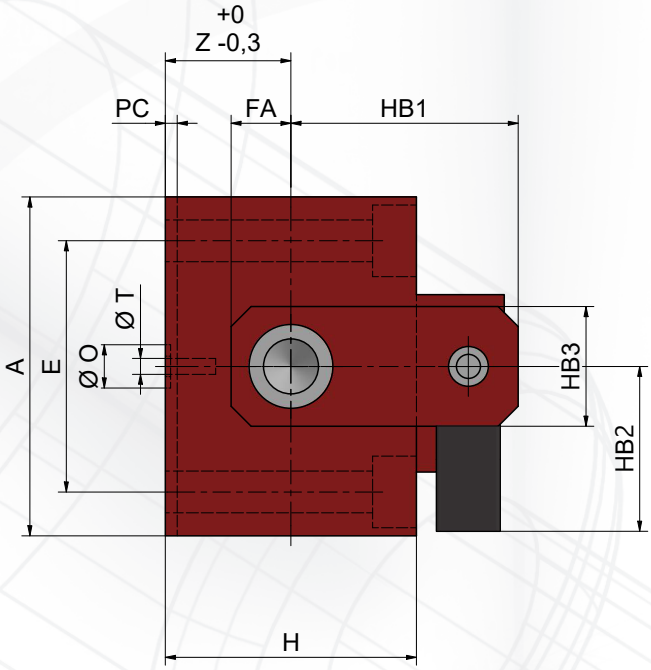
MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M1 - M2

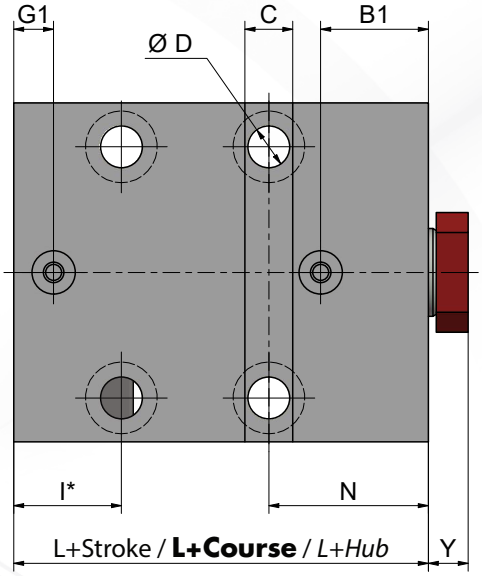
Ø Bore / **Ø Alésage** *Ø Kolben*	25	32	40	50	63	80	100
Ø MM (Rod) / **Ø MM (Tige)** *Ø MM (Stange)*	16	18	22	28	36	45	56
A	65	75	85	100	125	160	200
B	17	22	23	27	25	32	36
C	10	12	12	15	20	24	28
Ø D	8,5	10,5	10,5	13	17	21	25
E	50	55	63	76	95	120	158
FA	10	12,5	15	20	25	30	40
H	45	55	63	75	95	120	150
HB1	47	53	57	69	85	94	110
HB2	41	41	41	46	46	46	46
HB3	20	25	30	34	45	54	65
Ø J	1/4 G	1/4 G	1/4 G	1/4 G	1/2 G	1/2 G	1/2 G
Ø M	M8x1,25	M10x1,5	M10x1,5	M12x1,75	M16x2	M20x2,5	M24x3
MP	16	20	20	24	32	35	50
N	33	38	40	44	50	60	64
PC	2	3	3	5	5	7	7
W	50	50	50	50	50	60	80
Y	7	10	10	10	14	14	15
Z	22,5	27,5	31,5	37,5	47,5	60	75
Minimum Stroke **Course min** / *Hub min*	10	10	10	10	15	15	15
P	110	140	200	190	220	210	210

Stroke **Course** / *Hub* ≤ P	L	44	50	54	65	72	85	90
	G	11	11	11	12	17	20	20
	I	26	27	27	30	41	47	54
Stroke **Course** / *Hub* > P	L	58	66	74	82	92	109	106
	G	17	20	23	27	25	32	36
	I	33	38	40	44	50	60	64

All dimensions are in mm / **Toutes les dimensions sont en mm** / *Alle Angaben sind in mm*

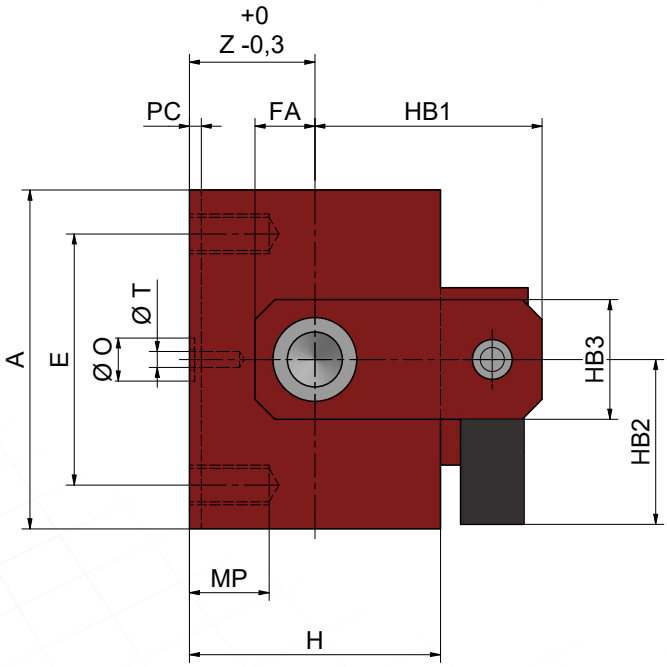
MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M3

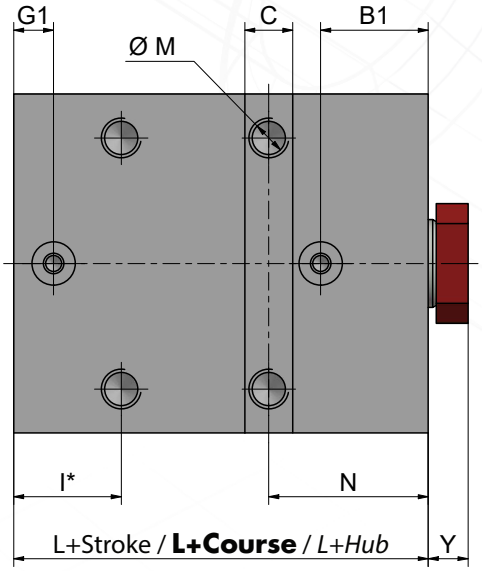




I* Possible from stroke ≥ than W
I* Réalisable à partir de course ≥ à W
I Realisierbar ab einem Hub ≥ als W*

MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M12





I* Possible from stroke ≥ than W
I* Réalisable à partir de course ≥ à W
I Realisierbar ab einem Hub ≥ als W*

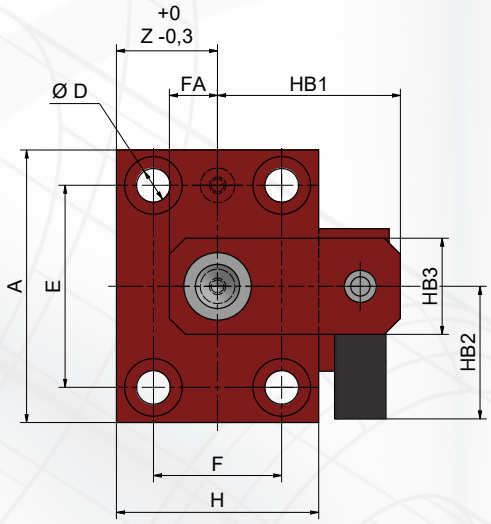
MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M3 - M12

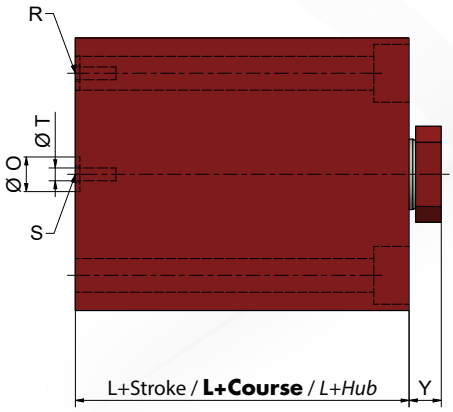
Ø Bore / **Ø Alésage** *Ø Kolben*	25	32	40	50	63	80	100
Ø MM (Rod) / **Ø MM (Tige)** *Ø MM (Stange)*	16	18	22	28	36	45	56
A	65	75	85	100	125	160	200
B1	21	25	27	29	32	39	40
C	10	12	12	15	20	24	28
Ø D	8,5	10,5	10,5	13	17	21	25
E	50	55	63	76	95	120	158
FA	10	12,5	15	20	25	30	40
H	45	55	63	75	95	120	150
HB1	47	53	57	69	85	94	110
HB2	41	41	41	46	46	46	46
HB3	20	25	30	34	45	54	65
Ø M	M8x1,25	M10x1,5	M10x1,5	M12x1,75	M16x2	M20x2,5	M24x3
MP	16	20	20	24	32	35	50
N	33	38	40	44	50	60	64
ØO (O-Ring)	R6	R6	R6	R7	R7	R7	R9
PC	2	3	3	5	5	7	7
Ø T	4	4	4	5,5	5,5	5,5	6,5
W	50	50	50	50	50	60	80
Y	7	10	10	10	14	14	15
Z	22,5	27,5	31,5	37,5	47,5	60	75
Minimum Stroke **Course min** / *Hub min*	10	10	10	10	15	15	15
P	110	140	200	190	220	210	210

Stroke **Course** / *Hub* ≤ P	L	44	50	54	65	72	85	90
	G1	8	10	10	13	16	21	25
	I*	26	27	27	30	41	47	54
Stroke **Course** / *Hub* > P	L	58	66	74	82	92	109	106
	G1	21	25	27	29	32	39	40
	I*	33	38	40	44	50	60	64

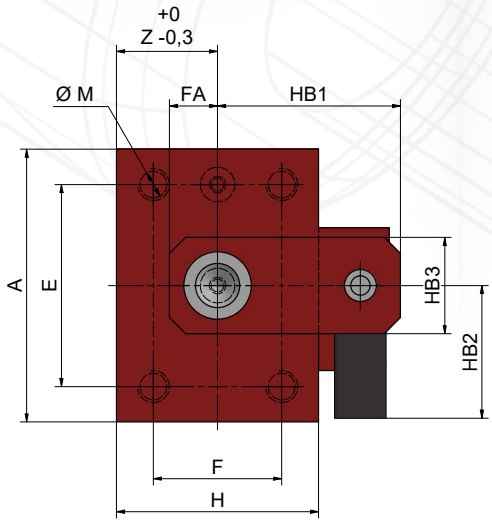
All dimensions are in mm / **Toutes les dimensions sont en mm** / *Alle Angaben sind in mm*

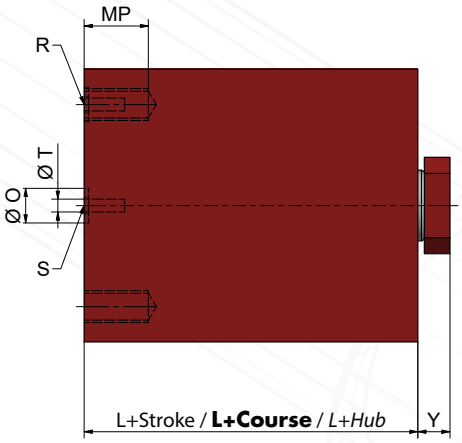
MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M4



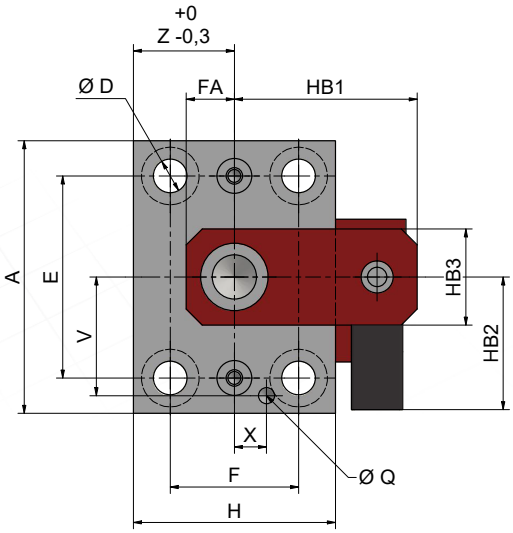


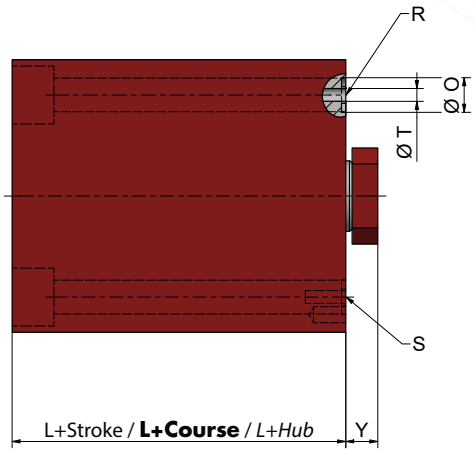
MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M5





MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M8



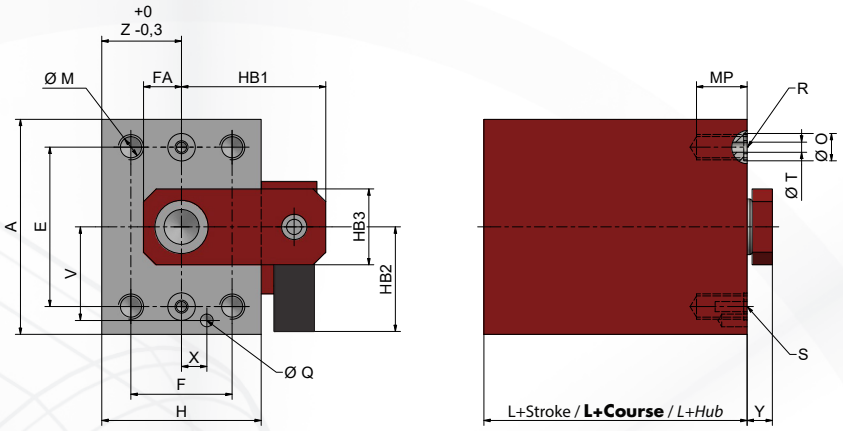


All dimensions are in mm / **Toutes les dimensions sont en mm** / *Alle Angaben sind in mm*

MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M9

S = Oil feeding for pushing movement
S = Alimentation sortie de tige
S = Ölzufuhr für Schubkraft

R = Oil feeding for pulling movement
R = Alimentation rentrée de tige
R = Ölzufuhr für Zugkraft

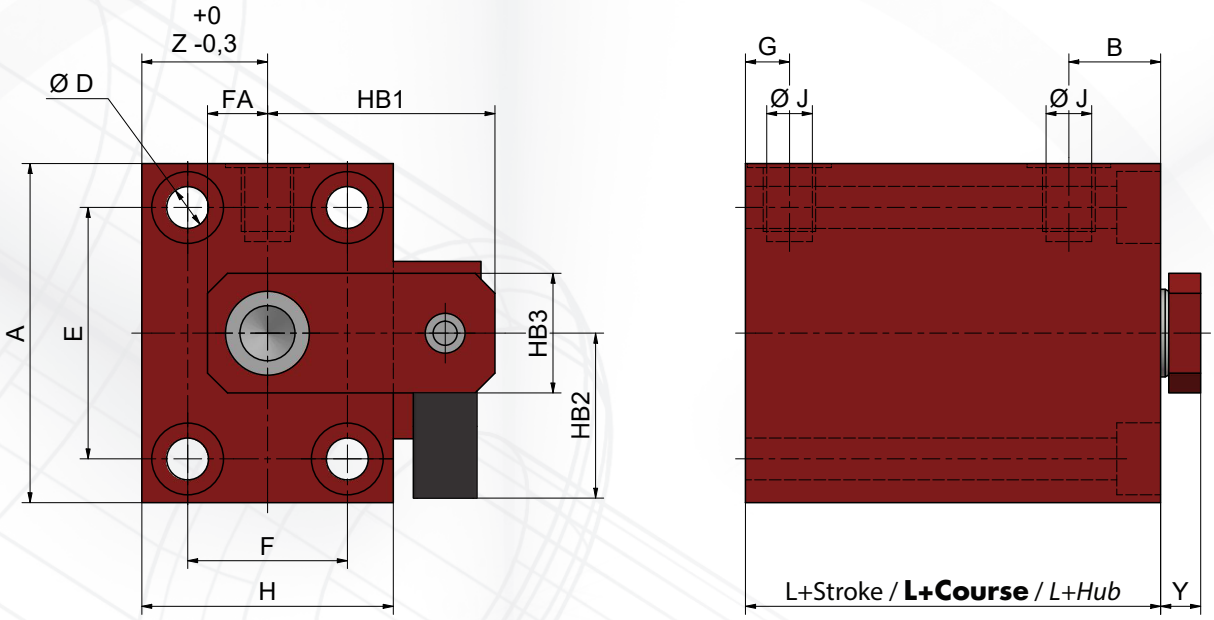


M4 - M5 - M8 - M9

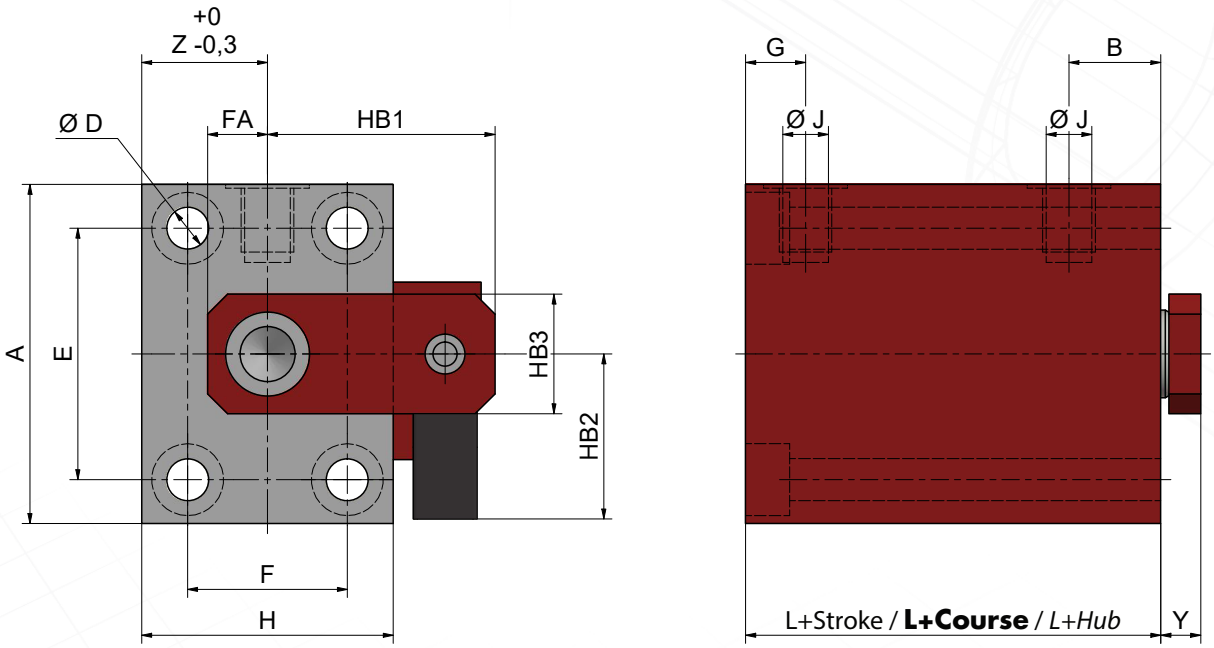
Ø Bore / **Ø Alésage** *Ø Kolben*	25	32	40	50	63	80	100
Ø MM (Rod) / **Ø MM (Tige)** *Ø MM (Stange)*	16	18	22	28	36	45	56
A	65	75	85	100	125	160	200
Ø D	8,5	10,5	10,5	13	17	21	25
E	50	55	63	76	95	120	158
F	30	35	40	45	65	80	108
FA	10	12,5	15	20	25	30	40
H	45	55	63	75	95	120	150
HB1	47	53	57	69	85	94	110
HB2	41	41	41	46	46	46	46
HB3	20	25	30	34	45	54	65
Ø M	M8x1,25	M10x1,5	M10x1,5	M12x1,75	M16x2	M20x2,5	M24x3
MP	16	20	20	24	32	35	50
ØO (O-Ring)	R6	R6	R6	R7	R7	R7	R9
Ø Q	Ø3 ↧6	Ø3 ↧6	Ø5 ↧10	Ø6 ↧10	Ø8 ↧10	Ø10 ↧10	Ø10 ↧15
Ø T	4	4	4	5,5	5,5	5,5	6,5
V	29	33	37	44	55	70	90
X	8	9	10	11	15	18	25
Y	7	10	10	10	14	14	15
Z	22,5	27,5	31,5	37,5	47,5	60	75
Minimum Stroke **Course min** / *Hub min*	10	10	10	10	15	15	15
P	110	140	200	190	220	210	210

Stroke / **Course** / *Hub ≤ P*	L	44	50	54	65	72	85	90
Stroke / **Course** / *Hub > P*	L	58	66	74	82	92	109	106

MOUNTING / **FIXATION** / *BEFESTIGUNGSART M6*



MOUNTING / **FIXATION** / *BEFESTIGUNGSART M7*



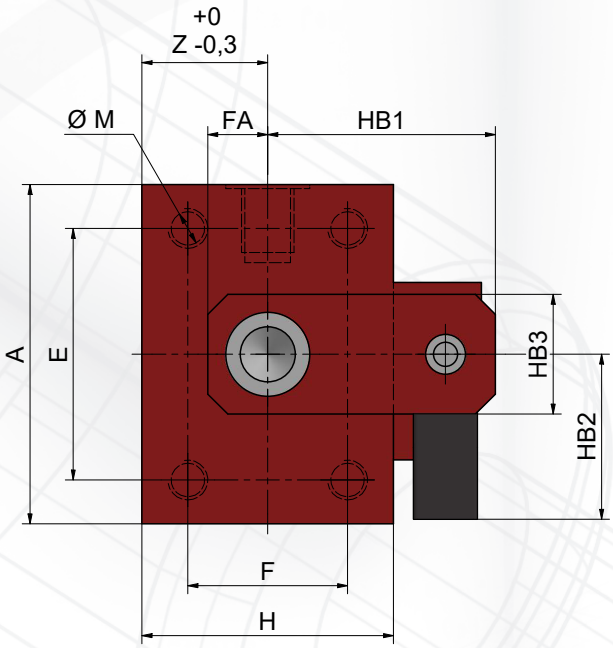
MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M6 - M7

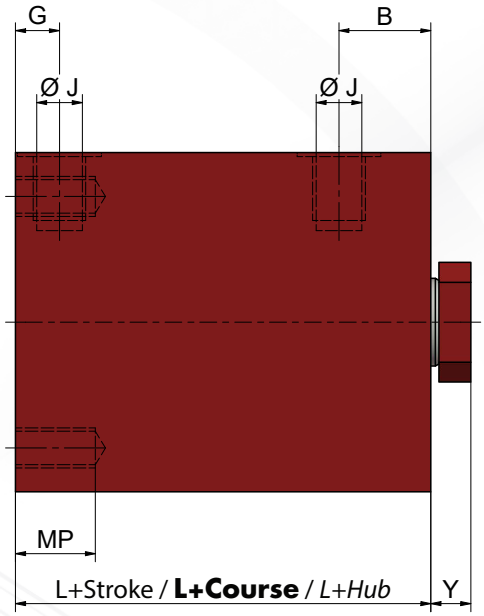
Ø Bore / **Ø Alésage** *Ø Kolben*	25	32	40	50	63	80	100
Ø MM (Rod) / **Ø MM (Tige)** *Ø MM (Stange)*	16	18	22	28	36	45	56
A	65	75	85	100	125	160	200
B	17	22	23	27	25	32	36
Ø D	8,5	10,5	10,5	13	17	21	25
E	50	55	63	76	95	120	158
F	30	35	40	45	65	80	108
FA	10	12,5	15	20	25	30	40
H	45	55	63	75	95	120	150
HB1	47	53	57	69	85	94	110
HB2	41	41	41	46	46	46	46
HB3	20	25	30	34	45	54	65
Ø J	1/4 G	1/4 G	1/4 G	1/4 G	1/2 G	1/2 G	1/2 G
Y	7	10	10	10	14	14	15
Z	22,5	27,5	31,5	37,5	47,5	60	75
Minimum Stroke **Course min** / *Hub min*	10	10	10	10	15	15	15
P	110	140	200	190	220	210	210

Stroke **Course** / *Hub* ≤ P	L	44	50	54	65	72	85	90
	G	11	11	11	12	17	20	20
Stroke **Course** / *Hub* > P	L	58	66	74	82	92	109	106
	G	17	20	23	27	25	32	36

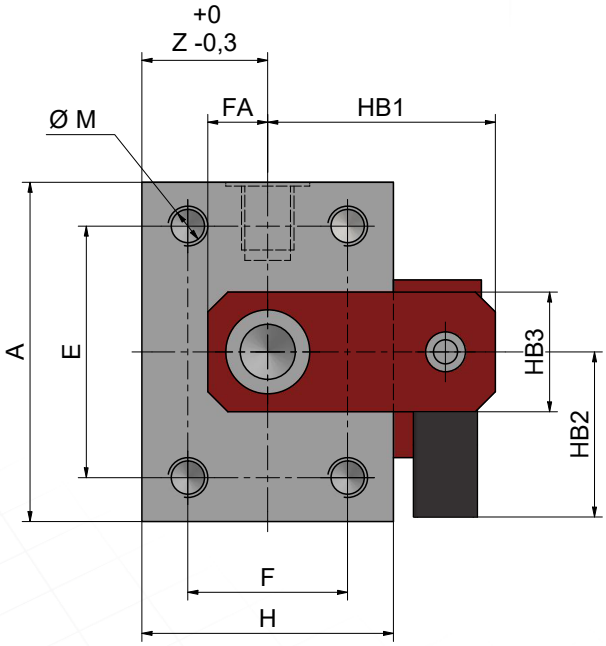
All dimensions are in mm / **Toutes les dimensions sont en mm** / *Alle Angaben sind in mm*

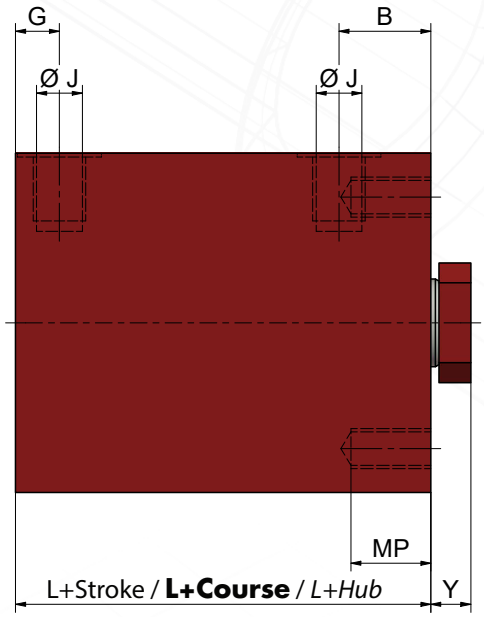
MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M10





MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M11





MOUNTING / **FIXATION** / *BEFESTIGUNGSART* M10 - M11

Ø Bore / **Ø Alésage** *Ø Kolben*	25	32	40	50	63	80	100
Ø MM (Rod) / **Ø MM (Tige)** *Ø MM (Stange)*	16	18	22	28	36	45	56
A	65	75	85	100	125	160	200
B	17	22	23	27	25	32	36
E	50	55	63	76	95	120	158
F	30	35	40	45	65	80	108
FA	10	12,5	15	20	25	30	40
H	45	55	63	75	95	120	150
HB1	47	53	57	69	85	94	110
HB2	41	41	41	46	46	46	46
HB3	20	25	30	34	45	54	65
Ø J	1/4 G	1/4 G	1/4 G	1/4 G	1/2 G	1/2 G	1/2 G
Ø M	M8x1,25	M10x1,5	M10x1,5	M12x1,75	M16x2	M20x2,5	M24x3
MP	16	20	20	24	32	35	50
Y	7	10	10	10	14	14	15
Z	22,5	27,5	31,5	37,5	47,5	60	75
Minimum Stroke **Course min** / *Hub min*	10	10	10	10	15	15	15
P	110	140	200	190	220	210	210

Stroke **Course** / *Hub* ≤ P	L	44	50	54	65	72	85	90
	G	11	11	11	12	17	20	20
Stroke **Course** / *Hub* > P	L	58	66	74	82	92	109	106
	G	17	20	23	27	25	32	36

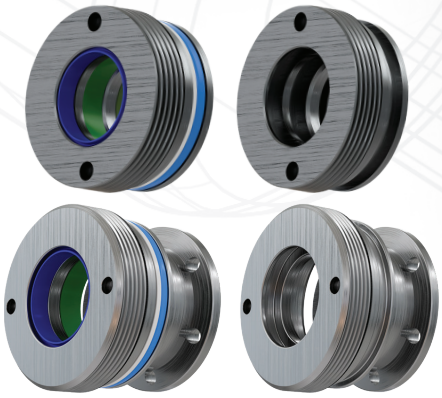
All dimensions are in mm / **Toutes les dimensions sont en mm** / *Alle Angaben sind in mm*

SPARE PARTS / **PIÈCES DE RECHANGE** / *ERSATZTEILE*

You can order your spare parts
Vous pouvez également commander des pièces détachées
Sie können auch unsere Ersatzteile bestellen

Seal kit / **Pochette de joints** / *Dichtungen*
Example / **Exemple** / *Beispiel*:
VITON VCE Ø50
STD VCE Ø63

Equipped piston (with seals) or piston (without seals)
Piston équipé (avec joints) ou piston nu (sans joint)
Kolben mit Dichtungen oder Kolben ohne Dichtungen



Head + guide with or without seals
Tête + guide avec ou sans joint
Monoblock Kopf oder Kopfmutter
+ Führung mit oder ohne Dichtungen

Rod-piston kit fitted with Viton, Nitrile, PTFE or Glycol seals, according to your request
Kit tige-piston équipé de joints Viton, Nitrile, PTFE ou Glycol, selon vos exigences
Kolben und Stange mit Viton Dichtungen, Nitril, PTFE oder Glykol, entsprechend Ihrer Wahl

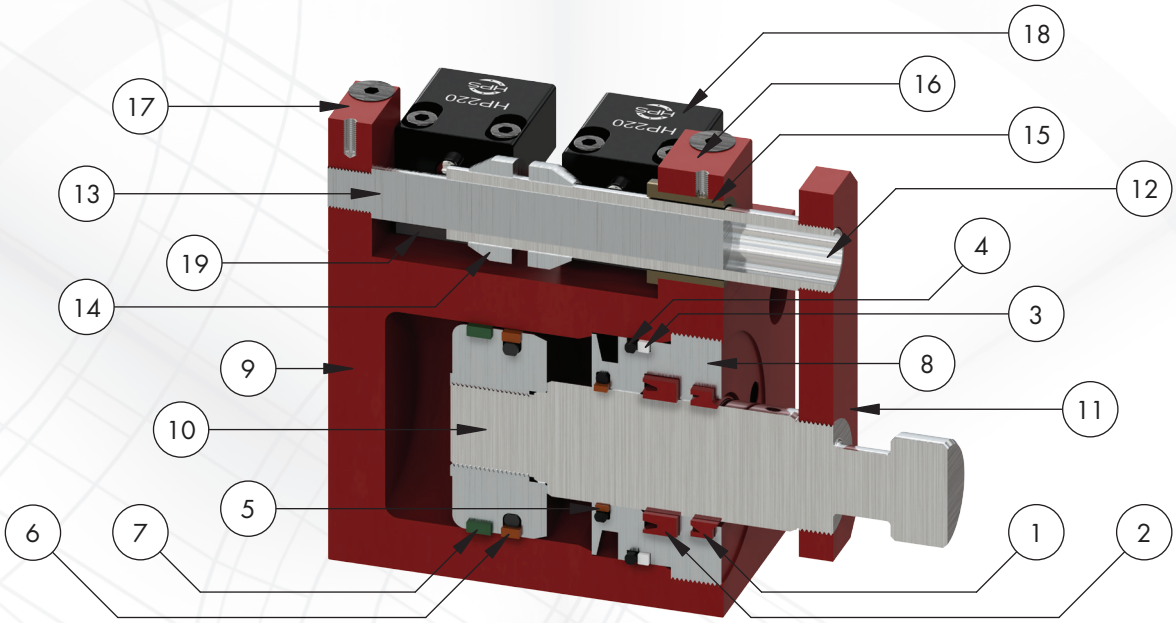
OPERATING CONDITIONS / **CONDITIONS D'UTILISATION** / *BETRIEBSBEDINGUNGEN*

- Beware of radial efforts, especially for long strokes.
- The oil quality must comply with the HPS recommendation (Page 2) and must be exempt of particles.
- The optimal working pressure of the cylinders is between 20 and 500 bar.

- **Attention aux efforts radiaux, notamment pour les grandes courses.**
- **La qualité d'huile doit être conforme aux préconisation HPS (Page 2) et doit être exemptes de particules.**
- **Le fonctionnement optimum des vérins se fait entre 20 et 500 bar.**

- *Bitte berücksichtigen Sie die Radialkräfte besonders bei langen Hüben.*
- *Die Ölqualität muß entsprechend den Empfehlungen von HPS (Seite 2) sein.*
- *Optimaler Betriebsdruck zwischen 20 und 500 bar.*

You can order your spare parts
Vous pouvez également commander des pièces détachées
Sie können auch unsere Ersatzteile bestellen



1	Wiper Seal / **Joint Racleur** / *Abstreifring*	Shipping in 24/48H **Expédition en 24/48H** *Versand in 24/48H*
2	Rod Seal / **Joint de Tige** / *Stangendichtung*	
3	Anti-Extrusion Bearing / **Bague Anti Extrusion** / *Stützring*	
4	Head O-Ring / **Joint Torique Tête** / *Kopf-Dichtung (O-Ring)*	
5	Rod Composite Seal / **Joint Composite Tige** / *Dichtring Stange*	
6	Piston Composite Seal / **Joint Composite Piston** / *Dichtring Kolben*	
7	Strip Guide / **Bande de Guidage** / *Führungsstreifen*	
8	Nut Head / **Ecrou Tête** / *Kopfmutter*	
9	Body / **Corps** / *Gehäuse*	
10	Rod + Piston / **Tige + Piston** / *Stange + Kolben*	
11	Rod bridge / **Patte Fixation** / *Verbindungselement*	
12	Guiding tube / **Tube** / *Führungsrohr*	
13	Guiding Rod / **Tige** / *Führungsstange*	
14	Contact Rings / **Demi Noix** / *Positionsnocken*	
15	Metafran bushing / **Bague Metafran** / *Metafran Buchse*	
16	Support Tube / **Support tube** / *Befestigungsplatte für Führungsrohr*	
17	Support Rod / **Support Tige** / *Befestigungsplatte für Führungsstange*	
18	Micro Sensor / **Micro Capteur** / *Mikro Schalter*	
19	Shim Plate / **Plaque Réhausseur** / *Zwischenplatte*	

HOW TO ORDER / **COMMENT COMMANDER** / *REFERENZANGABE*

Serie / **Série** / *Serie*	Cylinder / **Vérin** / *Zylinder*	VCE
Ø Bore **Ø Alésage** Ø Kolben	Indicate the diameter in mm: **Indiquer le diameter en mm:** *Geben Sie den Durchmesser des Kolbens in mm an:* 25, 32, 40, 50, 63, 80, 100	***
Mounting **Fixation** *Bauform*	Mounting plan with key way **Plan de pose claveté** *Installation mit Nut stangenseitig*	M1
		M2
		M3
		M12
	Longitudinal mounting plan **Plan de pose longitudinal** *Installation ohne Nut, Befestigungsschrauben in Längsrichtung*	M4
		M5
		M6
		M7
		M8
		M9
		M10
		M11
Rod end **Extrémité de tige** *Stangenende*	External thread / **Filetée** / *Außengewinde*	ET
	Internal thread / **Taraudée** / *Innengewinde*	IT
	Tenon / **Tenon** / *Zapfen*	TT
Seals **Joints** *Dichtungen*	Standard	N
	Viton	V
	Glycol	G
	PTFE	P
Operation mode **Mode de fonctionnement** *Beriebsart*	No cushioning **Non amorti** *Keine Endlagendämpfung*	L1
Rod / **Tige** / *Stange*	Single rod / **Simple tige** / *Einzelstange*	S
	Double rod / **Double tige** / *durchgängige Stange*	DT
Stroke **Course** *Hub*	Indicate real stroke in mm **Indiquer la course réelle en mm** *Bitte geben Sie den Hub an*	***
Option / **Option** / *Optionen*	M1- M2 : Oil port / **Alimentation Symétrique** *Spiegelbildliche Ölzufuhr*	SYM

Air bleed under request / **Purge sur demande** / *Entlüftung auf anfrage*

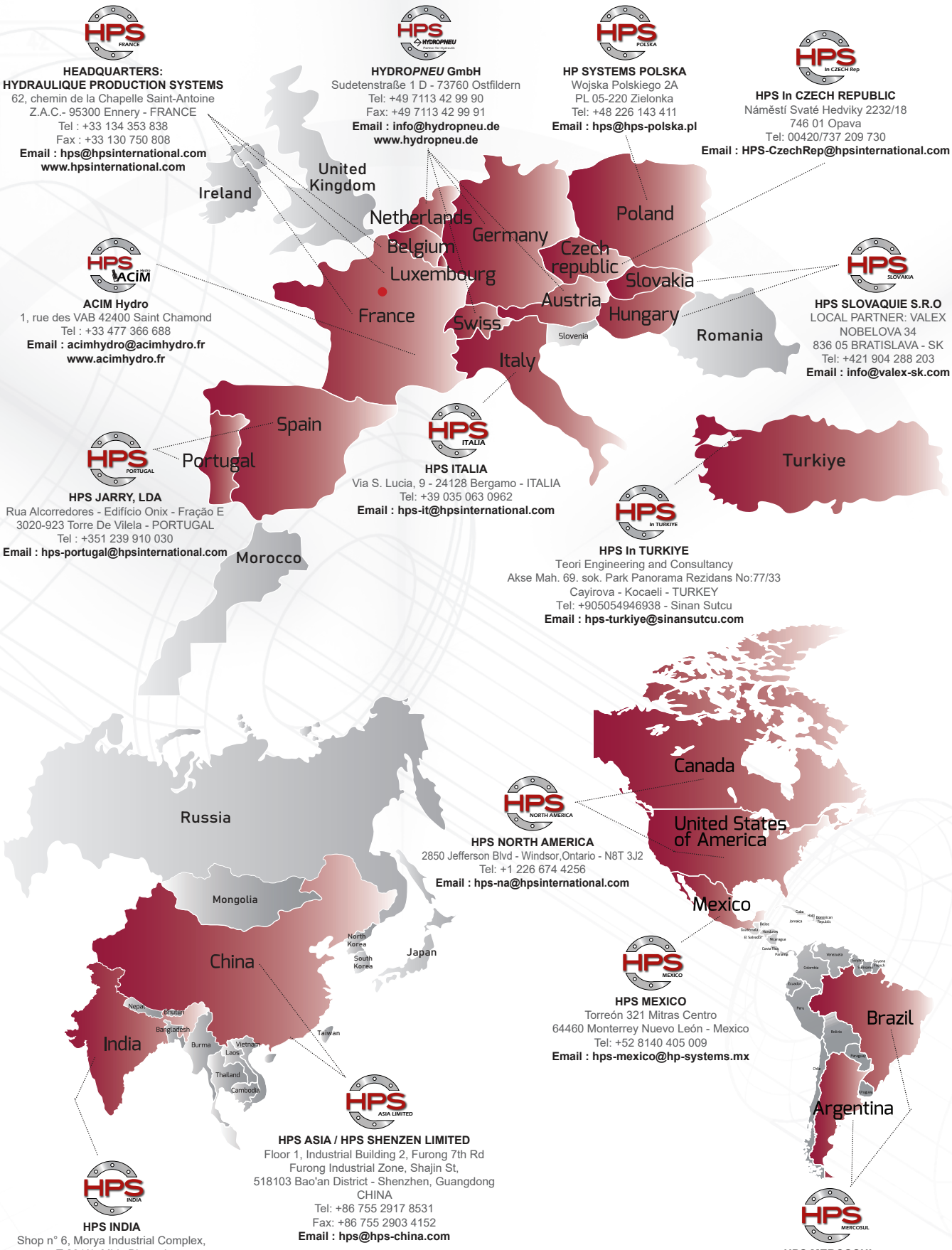
EXAMPLE / **EXEMPLE** / *BEISPIELANGABE*

Serie **Série** *Serie*	Ø Bore **Ø Alésage** *Ø Kolben*	Mounting **Fixation** *Befestigungsart*	Rod end **Extrémité de tige** *Stangenende*	Seals quality **Etanchéité** *Dichtungen*	Operation mode **Mode de fonctionnement** *Beriebsart*	Rod **Tige** *Stange*	Stroke **Course** *Hub*
VCE	50	M11	ET	N	L1	S	50

CONVERSION TABLE / **TABLE DE CONVERSION** / *UMRECHNUNGSTABELLE*

1 kg	2,20 lb	1 lb	0,454 kg	1 l	0,264 US gallon	1 US gallon	3,785 l
1 N	0,225 lbf	1 lbf	4,448 N	1 cm^3	0,061 cu in	1 cu in	16,387 cm^3
1 Nm	0,738 lbf ft	1 lbf ft	1,356 Nm	1 mm	0,039 in	1 in	25,4 mm
1 bar	14,5 psi	1 psi	0,068948 bar	1°C	5/9(°F-32)	1°F	9/5°C + 32

Pressure (bar) **Pression (bar)** *Druck (bar)*	P= F/S	F= Force / **Force** / *S= Kraft* (daN) S= Surface / **Surface** / *Fläche* (cm^2)
Force (daN) **Force (daN)** *Kraft (daN)*	F=PxS	P= Pressure / **Pression** / *Druck* (bar) S= Surface / **Surface** / *Fläche* (cm^2)
Volume (liters or dm^3) **Volume (litres ou dm^3)** *Volumen (Liter oder dm^3)*	V=(SxC)/10 000	S= Surface / **Surface** / *Fläche* (cm^2) C= Stroke / **Course** / *Hub* (mm)
Pushing surface (cm^2) **Suface de poussée (cm^2)** *Kolbenfläche (cm^2)* Rod surface (cm^2) **Surface de tige (cm^2)** *Fläche der Stange(cm^2)* Traction surface (cm^2) **Surface de traction (cm^2)** *Ringfläche (cm^2)*	$Sp=(Øp)^2x0,7854$ $St=(Øt)^2x0,7854$ S=Sp-St	Øp= Piston diameter / **Diamètre de piston** / *Kolbendurchmesser* (cm) Øt= Rod diameter / **Diamètre tige** / *Stangendurchmesser* (cm)
Hydraulic cylinder speed (m/s) **Vitesse du vérin hydraulique (m/s)** *Kolbengeschwindigkeit (m/s)*	V=Q/(6 x S)	Q= Flow / **Débit** / *Menge* (l/min) S= Traction surface / **Surface** / *Ringfläche* (cm^2)
Flow (l/min) **Débit (l/min)** *Menge (l/min)*	Q=6xSxV	V= Speed / **Vitesse** / *Geschwindigkeit* (m/s) S= Traction surface / **Surface** / *Ringfläche* (cm^2)
Torque (daN.m) **Couple (daN.m)** *Drehmoment (daN.m)*	C=Fxd	F= Force / **Force** / *Kraft* (daN) d= Distance / **Distance** / *Distanz* (m)
Hydraulic motor torque (daN.m) **Couple moteur hydraulique (daN.m)** *Drehmoment (daN.m)*	Cm=(pxcyl)/628	p= Pressure / **Pression** / *Druck* (bar) cyl= Cylinder / **Cylindrée** / *Zylinder* (cm^3 / tr)
Hydraulic motor rotation speed (N rpm) **Vitesse de rotation moteur hydraulique (N tr/min)** *Drehzahl*	N= 1000Q/cyl	Q= Flow / **Débit** / *Menge* (l/min) cyl= Cylinder / **Cylindrée** / *Zylinder* (cm^3 / tr)
Hydraulic pump drive power (kW) **Puissance d'entraînement pompe hydraulique (kW)** / *Pumpenleistung*	P=(pxQ)/600	p= Pressure / **Pression** / *Druck* (bar) Q= Flow / **Débit** / *Menge* (l/min)
Hydraulic motor power (kW) **Puissance moteur hydraulique (kW)** *Leistung Antriebsmotor*	$Pm=pVcyl/6x10^5$	p= Pressure / **Pression** / *Druck* (bar) cyl= Cylinder / **Cylindrée** / *Zylinder* (cm^3 / tr) V= Speed / **Vitesse** / *Geschwindigkeit* (m/s)



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TECHNICAL & COMMERCIAL REQUEST
DEMANDES TECHNIQUES & COMMERCIALES / *ANFRAGEN*

Main contact / **Contact principal** *Hauptkontakt*	**https://www.hpsinternational.com/en/worldwide**
2D/3D Data	
Quotation / **Devis** / *Anfrage*	
Specific cylinders / **Vérins spécifiques** *Spezialzylinder*	We are present in 26 countries / **Nous sommes présents dans 26 pays** / *Wir sind in 26 Ländern vertreten* : Argentina, Brazil, Canada, Czech Republic, China, France, Germany, Hong Kong, India, Italy, Japan, Mexico, Morocco, Poland, Portugal, Romania, Russia, Slovakia, South Africa, South Korea, Spain, Taiwan, Thailand, Turkey, United Kingdom, and USA.
Replace cylinders / **Remplacement de vérins** / *Ersatzzylinder*	