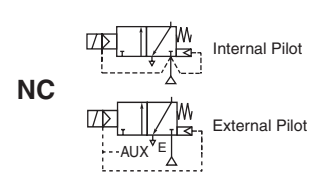




# SOLENOID VALVES

pressure assisted, zero minimum, high flow  
floating diaphragms  
1/4 to 1/2



3/2

Series

316

## FEATURES

- Brass and stainless steel bodied high flow pilot valves with two spring return floating diaphragms for larger single actuators
- Can be internally piloted, or externally piloted to convert valve to zero minimum pressure differential operation by flipping a gasket
- The internal piloting mode is default
- When externally piloted, loss of electrical power or auxiliary air exhausts air from the actuator and shifts process valve to its original position
- The solenoid valves satisfy all relevant EC Directives

**Zero minimum pressure is only achieved if external pressure is applied**

## GENERAL

Differential pressure 0 / 1,0 - 10 bar [1 bar = 100kPa]  
Response times 40 - 120 ms

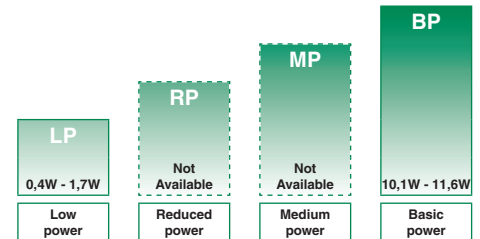
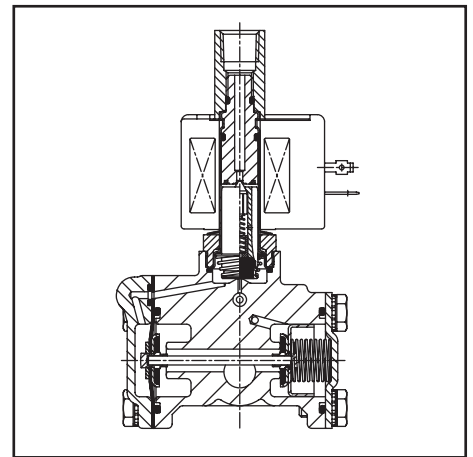
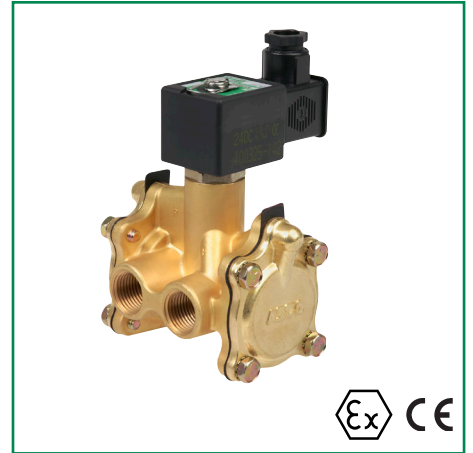
fluids (*)	temperature range (TS)	seal materials (*)
air, inert gas	-20 to + 80°C (**) -0 to +120°C (**)	NBR (nitrile) FPM (fluoroelastomer)

(\*\*) Maximum ambient temperature for low power executions is 60°C

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

	Brass body	Stainless steel body
Body	Brass	AISI 316 SS
Core tube	Stainless steel	Stainless steel
Core and plugnut	Stainless steel	Stainless steel
Core spring	Stainless steel	Stainless steel
Sealings & discs	NBR	NBR
Diaphragms	NBR	FPM
Cartridge	Welded, packless AISI 430 SS	Welded, packless AISI 430 SS
Shading coil	Copper	Silver
Rider ring	PTFE	PTFE



POWER LEVELS - cold electrical holding values (watt)

## SPECIFICATIONS

pipe size	orifice size	flow coefficient kv		operating pressure differential (bar)			power level	prefix optional solenoids					basic catalogue number		
				min.	max. (PS)			NEMA 7 & 9	ATEX / IECEx			IP65			
					air (*)	~			=	Ex d	Ex e mb				Ex mb
❖	(mm)	(m³/h)	(l/min)				~/=	EF	NF	EM	PV	SC	brass	stainless steel	
<b>NC - Normally closed</b>															
1/4	8,0	1,3	21,6	0 / 1,0	10	8	BP	●	●	●	●	●	❖316A001	B316A081V	
1/4	8,0	1,3	21,6	0 / 1,0	10	10	LP	○	●	●	○	●	❖316A301	B316A381V	
3/8	8,0	1,5	25,7	0 / 1,0	10	8	BP	●	●	●	●	●	❖316A002	B316A082V	
3/8	8,0	1,5	25,7	0 / 1,0	10	10	LP	○	●	●	○	●	❖316A302	B316A382V	
3/8	16,0	3,4	56,6	0 / 1,0	10	8	BP	●	●	●	●	●	❖316A003	-	
3/8	16,0	3,4	56,6	0 / 1,0	10	10	LP	○	●	●	○	●	❖316A303	-	
1/2	16,0	3,4	56,6	0 / 1,0	10	8	BP	●	●	●	●	●	❖316A004	B316A084V	
1/2	16,0	3,4	56,6	0 / 1,0	10	10	LP	○	●	●	○	●	❖316A304	B316A384V	

- ❖ Select B for NPT ANSI 1.20.3
- Available feature in DC only
- Select E for ISO Rp (7/1)
- Not available
- Available feature

All leaflets are available on: [www.asco.com](http://www.asco.com)



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地址：中国·青岛市重庆南路99号海尔云街甲3号楼7F

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网址：<http://www.asco.store>

传真：(86-532)585-10-365  
Email：[sales@bechinas.com](mailto:sales@bechinas.com)

### PREFIX TABLE

prefix							description	power level			
1	2	3	4	5	6	7		LP	RP	MP	BP
E	F						Explosionproof - NEMA 7, 9 - Zinc plated steel conduit	○	-	-	●
E	V						Explosionproof - NEMA 7, 9 - 316 SS conduit	○	-	-	●
E	M						Waterproof IP66/67 - Metal enclosure (EN/IEC 60079-7,-18 and -31)*	●	-	-	●
		E	T				Threaded conduit/hole (M20 x 1,5)	●	-	-	●
N	F						Flameproof - Aluminium (EN/IEC 60079-1, 60079-31)*	●	-	-	●
N	V						Encapsulated epoxy moulded (EN/IEC 60079-18)*	○	-	-	●
S	C						Solenoid with spade plug connector (EN/IEC 60730)	●	-	-	●
W	P						Waterproof IP67 - Metal enclosure	●	-	-	●
W	S						Waterproof IP67 - 316 SS enclosure	●	-	-	●
W	S	E	M				Waterproof IP66/67 - 316 SS enclosure (EN/IEC 60079-7,-18 and -31)*	●	-	-	●
W	S	N	F				Flameproof - 316L SS (EN/IEC 60079-1, 60079-31)*	●	-	-	●
					H	C	Threaded conduit (1/2" NPT)	●	-	-	●
					H	T	Class H - Battery charging circuit	-	-	-	●
					H	T	Class H - High temperature	-	-	-	●

### SUFFIX TABLE

suffix					description	power level			
1	2	3	4	5		LP	RP	MP	BP
E					EPDM (ethylene-propylene)	●	-	-	●
J					CR (chloroprene)	●	-	-	●
N					Oxygen service (CR (chloroprene))	●	-	-	●
N	V				FPM (fluoroelastomer) and parts cleaned for oxygen service	●	-	-	●
V					FPM (fluoroelastomer)	●	-	-	●
	C	O			Epoxy coating on all external surfaces	●	-	-	●
	M	B			Mounting bracket	●	-	-	●
		Q			Long life, quiet operation construction	-	-	-	○
			M	O	Push type manual operator	●	-	-	●

- Available feature
- Available feature in DC only
- Not available
- \* ATEX/IECEx valves using these solenoids are approved according to EN 13463-1 (non electrical)

### PRODUCT SELECTION GUIDE

#### STEP 1

Select basic catalogue number, including pipe thread identification letter. Refer to the specifications table on page 1.

**Example: E316A303**

#### STEP 2

Select prefix (combination). Refer to the specifications table on page 1 and the prefix table on page 2, respect the indicated power level.

**Example: EM**

#### STEP 3

Select suffix (combination) if required. Refer to the suffix table on page 2, respect the indicated power level.

**Example: J**

#### STEP 4

Select voltage. Refer to standard voltages on page 3.

**Example: 115V / 50Hz**

#### STEP 5

Final catalogue / ordering number.

**Example:**

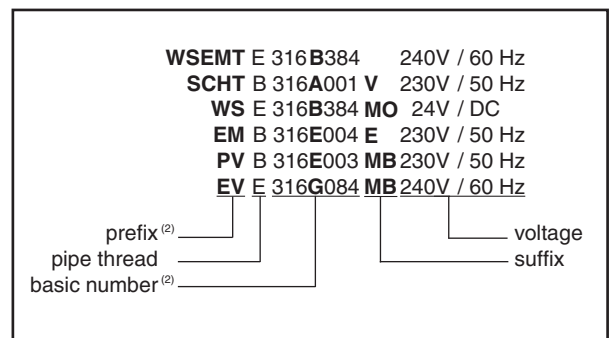
**EM E316A303 J 115V / 50 Hz**

### OPTIONS & ACCESSORIES

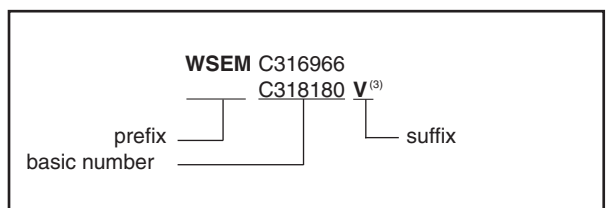
catalogue number	spare parts kit no. <sup>(1)</sup>		mounting bracket no.
	~	=	
SC ❖316A001	C318180	C318181	268975-002
SC ❖316A002	C318180	C318181	268975-002
SC ❖316A003	C318182	C318183	180748-003
SC ❖316A004	C318182	C318183	180748-003
SC B316A081	C318180	C318181	268975-002
SC B316A082	C318180	C318181	268975-002
SC B316A084	C318400	C318401	180748-003
SC ❖316A301	-	C316982	268975-002
SC ❖316A302	-	C316982	268975-002
SC ❖316A303	-	C316966	180748-003
SC ❖316A304	-	C316966	180748-003
SC B316A381	-	C316982	268975-002
SC B316A382	-	C316982	268975-002
SC B316A384	-	C318399	180748-003

- <sup>(1)</sup> Standard prefixes/suffixes are also applicable to kits  
❖ Select **B** for NPT ANSI 1.20.3 or select **E** for ISO Rp (7/1)  
- Not available

### ORDERING EXAMPLES:



### ORDERING EXAMPLES KITS:



- <sup>(2)</sup> Prefix EF and EV should always be used in conjunction with change letter G in the basic number  
<sup>(3)</sup> Basic kit number applies to SC coil construction

All leaflets are available on: [www.asco.com](http://www.asco.com)

**EXPLANATION OF TEMPERATURE RANGES OF SOLENOID VALVES**

Valve temperature range                      The valve temperature range (TS) is determined by the selected seal material, the temperature range for proper operation of the valve and sometimes by the fluid (e.g. steam)

Operator ambient temperature range        The operator ambient temperature range is determined by the selected power level and the safety code

Total temperature range                      The temperature range of the complete solenoid valve is determined by the limitations of both temperature ranges above

**ELECTRICAL CHARACTERISTICS**

**Coil insulation class**                      F

**Connector**                                      Spade plug

**Connector specification**                    ISO 4400 (cable Ø 6-10 mm)

**Electrical safety**                            IEC 335

**Standard voltages:**                        DC (=) 24V - 48V; Allowable voltage variation +10%, -15%

    AC (~) 24V - 48V - 115V - 230V/50Hz; Other voltages and 60Hz are available on request

prefix option	power ratings				operator amb. temp. range (TS) (C°) <sup>(1)</sup>	safety code	electrical enclosure protection (EN 60529)	replacement coil / kit		type <sup>(2)</sup>
	inrush	holding	hot/cold	=				~	=	
	(VA)	(VA)	(W)					(W)	230 V/50 Hz	
<b>Basic power (BP)</b>										
SC	55,0	23,0	10,5	9,0/11,2	-40 to +75	EN 60730	IP65, moulded	400425-117	400425-142	01
WP/WS	55,0	23,0	10,5	9,0/11,2	-40 to +75	EN 60730	IP67, steel/SS	400405-117	400405-142	03
NF/WSNF	55,0	23,0	10,5	-	-60 to +25/40/60	II2G Ex d IIC Gb T6/T5/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	400405-117	-	-
NF/WSNF	-	-	-	9,0/11,2	-60 to +40/60/75	II2G Ex d IIC Gb T6/T5/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	-	400405-142	-
EM/WSEM	55,0	23,0	10,5	9,0/11,2	-40 to +40	II2G Ex e mb IIC Gb T3, II2D Ex tb IIIC Db	IP66/67, steel/SS	400909-117	400913-142	03
PV	55,0	23,0	10,5	9,0/11,2	-40 to +65	II2G Ex mb IIC Gb T3(~)/T4(=), II2D Ex mb IIIC Db	IP67, moulded	- <sup>(3)</sup>	- <sup>(3)</sup>	05
EF	50,0	25,0	10,1	9,0/11,6	-40 to +52/40	NEMA type 7 and 9	NEMA 4X	238614-057D	238714-006D	07
<b>Low power (LP)</b>										
SC	1,5	1,5	1,5	1,7/1,7	-40 to +60	EN 60730	IP65, moulded	400925-097	400925-042	02
WP/WS	1,5	1,5	1,5	1,7/1,7	-40 to +60	EN 60730	IP67, steel/SS	400926-097	400926-042	04
NF/WSNF	1,85	1,85	1,85	1,5/1,8	-60 to +75/80	II2G Ex d IIC Gb T6, II2D Ex tb IIIC Db/T5	IP66/67, alu./SS	- <sup>(4)</sup>	400911-542	-
EM/WSEM	1,5	1,5	1,5	1,7/1,7	-40 to +40/55	II2G Ex e mb IIC Gb T6/T5, II2D Ex tb IIIC Db	IP66/67, steel/SS	400926-097	400926-042	04
PV	-	-	-	1,7/1,7	-40 to +60	II2G Ex mb IIC Gb T6, II2D Ex mb IIIC Db	IP67, moulded	-	- <sup>(3)</sup>	06
EF	-	-	-	1,4/1,4	-40 to +60	NEMA type 7 and 9	NEMA 4X	-	238714-902D	08

<sup>(1)</sup> Temperature range can be limited by sealings                      <sup>(3)</sup> Multiple coil kits are available under ATEX/IECEx, contact us                      - Not available

<sup>(2)</sup> Refer to the dimensional drawings on page 4 and 5                      <sup>(4)</sup> AC (~) limited to 127V/50/60Hz or 125V/DC

**ADDITIONAL OPTIONS**

- Other pipe threads are available on request
- Ex mb (prefix "PV") execution can be supplied in various cable lengths
- Compliance with "UL", "CSA" and other local approvals available on request
- 1/2" NPT (prefix "T") and M20 x 1,5 (prefix "ET") conduits (aluminium or 316 SS) available for steel solenoid housing
- Special moulded-in solid state components for peak voltage suppression and/or rectification (four diode bridge)

**INSTALLATION**

- Multi language installation/maintenance instructions are included with each valve
- The solenoid valves can be mounted in any position without affecting operation
- Threaded pipe connection identifier is B = NPT (ANSI 1.20.3); E = ISO-7
- Important: a minimum operating pressure differential must be maintained between the pressure and exhaust ports. Supply and exhaust piping must be full area and unrestricted
- Declarations of conformity are available on request
- Ex e mb (prefix "EM") execution: solenoid enclosure has a cable gland with integral strain relief for cables with an o.d. from 7 to 12 mm and is provided with an internal and external connection facility for an earthing or bonding conductor

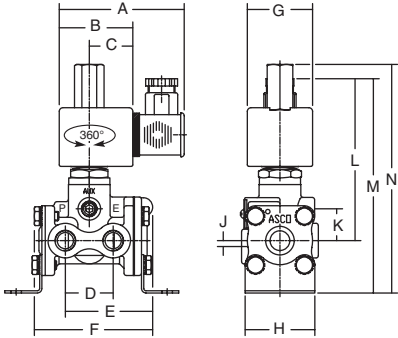
All leaflets are available on: [www.asco.com](http://www.asco.com)

## DIMENSIONS (mm), WEIGHT (kg)



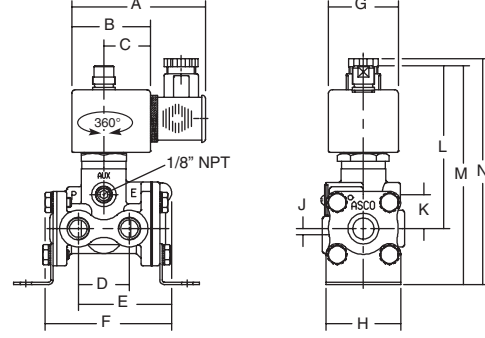
**TYPE 01**  
Epoxy moulded  
SC: IEC 335 / ISO 4400

316A001 / A002 / A003 / A004 / A081 / A082 / A084



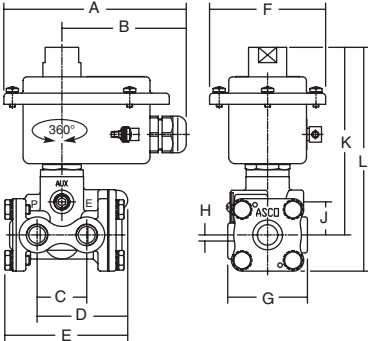
**TYPE 02**  
Epoxy moulded  
SC: IEC 335 / ISO 4400

316A301 / A302 / A303 / A304 / A381 / A382 / A384



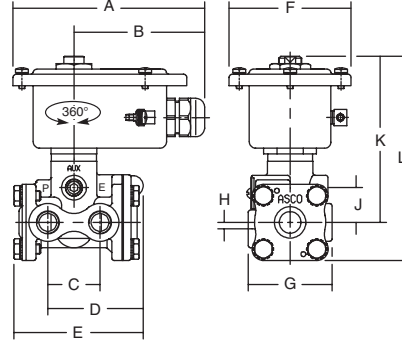
**TYPE 03**  
Metal, epoxy coated / AISI 316 SS  
WP / WS: IEC 335  
EM / WSEM: EN/IEC 60079-7+18+31

316A001 / A002 / A003 / A004 / A081 / A082 / A084



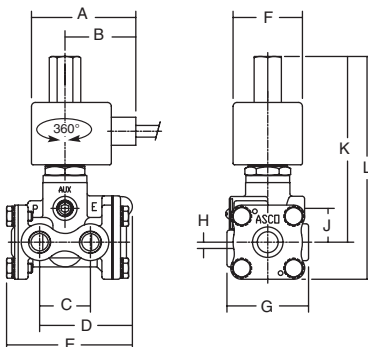
**TYPE 04**  
Metal, epoxy coated / AISI 316 SS  
WP / WS: IEC 335  
EM / WSEM: EN/IEC 60079-7+18+31

316A301 / A302 / A303 / A304 / A381 / A382 / A384



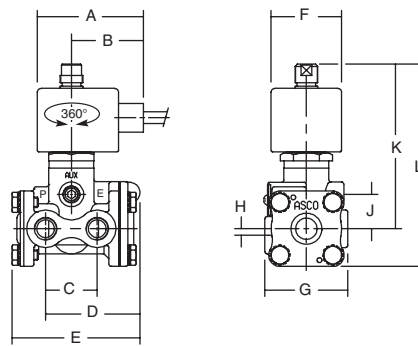
**TYPE 05**  
Epoxy encapsulated  
PV: EN/IEC 60079-18

316A001 / A002 / A003 / A004 / A081 / A082 / A084



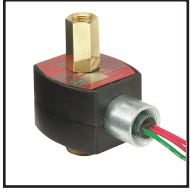
**TYPE 06**  
Epoxy encapsulated  
PV: EN/IEC 60079-18

316A301 / A302 / A303 / A304 / A381 / A382 / A384



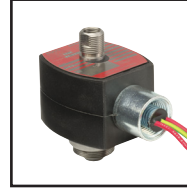
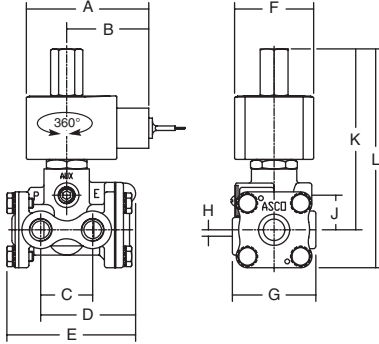
All leaflets are available on: [www.asco.com](http://www.asco.com)

### DIMENSIONS (mm), WEIGHT (kg)



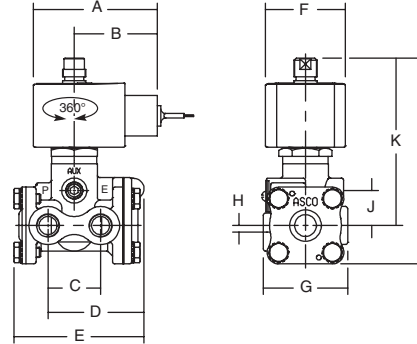
**TYPE 07**  
Epoxy encapsulated  
EF: ICS-6 ANSI / NEMA Type 7 and 9  
NOTE: applicable to solenoid only

316G001 / G002 / G003 / G004 / G081 / G082 / G084



**TYPE 08**  
Epoxy encapsulated  
EF: ICS-6 ANSI / NEMA Type 7 and 9  
NOTE: applicable to solenoid only

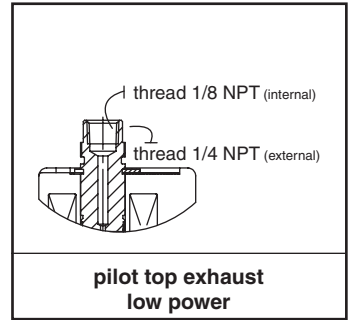
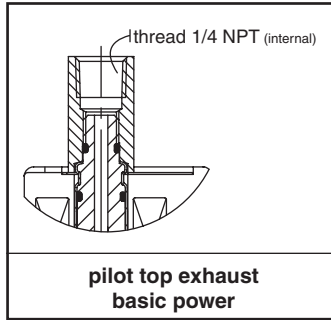
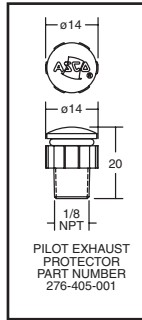
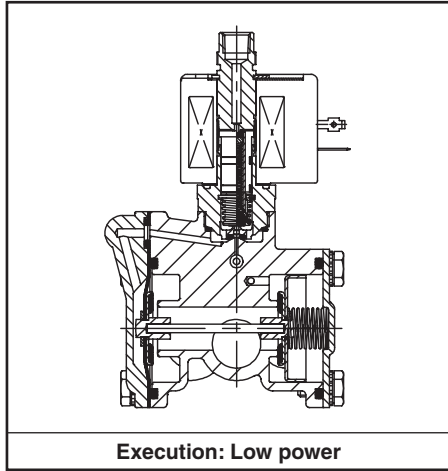
316G301 / G302 / G303 / G304 / G381 / G382 / G384



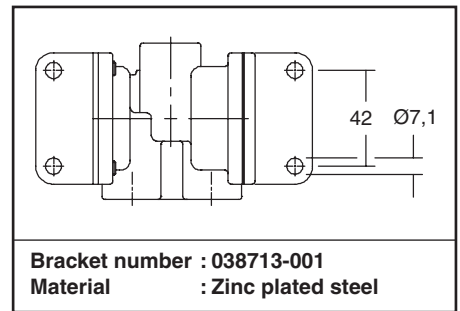
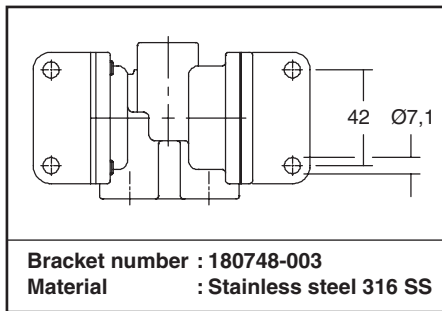
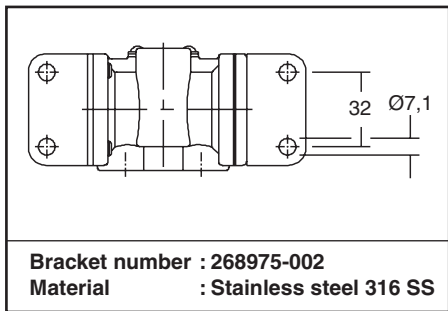
type	prefix option	power level	A	B	C	D	E	F	G	H	J	K	L	M	N	weight
01	SC	BP	85	50	30	33	81	81	45	48	4	22	110	147	156	2,50 kg
02	SC	LP	85	50	30	33	60	81	45	48	4	22	104	140	144	2,50 kg
03	WP, WS, EM, WSEM	BP	120	82	33	60	76	76	52	4	22	123	147	-	-	2,60 kg
04	WP, WS, EM, WSEM	LP	120	82	33	60	77	77	52	4	22	104	128	-	-	2,60 kg
05	PV	BP	67	45	33	66	87	45	52	4	22	119	143	-	-	2,50 kg
06	PV	LP	67	45	33	60	45	52	4	22	104	128	-	-	2,50 kg	
07	EF	BP	77	51	33	60	50	50	52	4	22	113	137	-	-	2,50 kg
08	EF	LP	77	52	33	60	50	50	52	4	22	104	128	-	-	2,50 kg

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## SECTIONAL DRAWING



## MOUNTING BRACKETS



### Internal Piloting

"INT" marking shown. This indicates correct assembly for internal piloting

### External Piloting

"EXT" marking shown. This indicates correct assembly for external piloting

large and small flow gaskets shown in support

