



Features:

- Senses non-metallic objects
- Available with a wide range of diameter
- Very useful for liquid level monitoring application

Technical Specification:

- Diameter: M12 to M80
- Sensing Distance: 3 to 50 mm
- Basic Connection: 2 wire / 3 wire / 4 wire
- Output Logic: NO / NC / RO / PNP-NO / PNP-NC / NPN-NO / NPN-NC
- Supply Voltage: 24/110/240 V AC, 5/24/30/48/65/110/220 V DC
- Mounting type: Flush / Non-Flush
- Load Current: 3-5 mA/100/200/300/400 mA

Capacitive Proximity Switches

Series - SW 505

INTRODUCTION

The Series SW 505 Capacitive Proximity Switches are designed for sensing wide range of materials. These switches give a superior performance for detection of various non-metallic objects where Inductive type switches can not function.

The major applications of Capacitive Switches include sensing of;

- Liquid level
- Plastic granules & parts
- Sand / Bulk Material Level
- Food / Grain / Confectionary
- Paper & rubber
- Glass bottles / Tins in packaging

WORKING PRINCIPLE

The switch works on the principle of resonant oscillator circuit. A pair of brass/copper disc form the electrodes of a capacitor & the object acts as a dielectric media. The change in capacitance value, due to presence of object, is sensed by a precision integrated circuit. An effective output signal is generated at a preset value of capacitance.

CONSTRUCTION

These are offered in tubular threaded housing from size M12 to M80. The enclosures are made of Brass, Stainless Steel or Engineering Plastics. Special shapes, Teflon housings are provided against requirements. Standard models are provided with an integrated 2 meter long cable. Connector type versions are available with built-in male connectors.

SENSING DISTANCE

The nominal sensing distance of any size of switch is specified with Water as standard object and tested at 25°C. Depending upon the material of the object to be detected, the distance will vary. The sensitivity of the sensor is adjustable with a trimpot provided usually on the rear side of the sensor. Typical Sensing distance chart for a M30 size sensor, for different objects is shown in Fig-1.

EFFECT OF AMBIENT CONDITIONS ON SENSITIVITY

The sensing distance is affected by change in ambient temperature, humidity, size and material of the object.

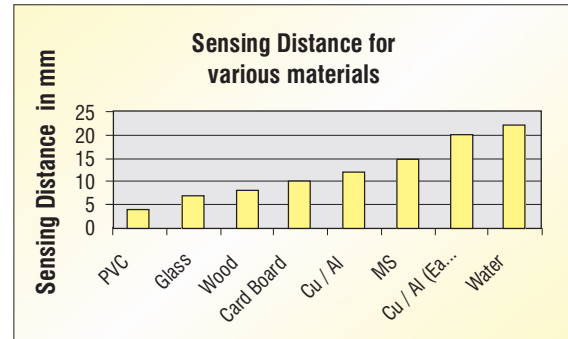


Fig.1

GENERAL SPECIFICATIONS

Operating Temperature	: 55°C Max.
Response Time	: 2 to 5 milliseconds
Hysteresis	: 3% to 15 % of actuating point
Protection Grade	: IP-67
Quiescent Current	: 1) DC - 8 mA Max. 2) AC - 2 mA Max.
Indication	: LED for object status
Output	: 1) To drive a Relay 2) PLC Compatible

SPECIAL MODELS

Special High Temperature models of Capacitive switches are available with Operating Temperature upto 150°C max.

These switches are provided with a teflon front cap and with suitable teflon cable.

These switches are to be used with a specially designed controller/amplifier unit.

The permitted operating length between sensor and the controller is maximum 5 meters.

NAMUR type switches are available with CMRI-Certificate and approved Power Supply Unit with built-in Zener barrier circuit.

PROTECTIONS

All the Capacitive switches are provided with Reverse polarity, Overload, short circuit and false pulse protections.

Rugged construction along with IP-67 grade of protection renders these switches to be very useful for liquid level monitoring applications.

CAPACITIVE PROXIMITY SWITCHES



CAPACITIVE		M12	M18	Ø20
SW 5051/5151		DC 3/4 WIRE		
Dimension :	Dia.	M12	M18	Ø20
	Length (mm)	80	80	80
Sensing Distance	Sn. (mm)	NF-2-5	F-2-5 NF-2-10	F-2-7 NF-2-10
Enclosure		B, A, S	B, A, S, T	A
Load Current	(mA)	200	400	400
Supply Voltage	(V DC)	D1 to D6	D1 to D6	D1 to D6
Switching Frequency	(Hz)	25	50	50
Logic Available		PO, PC, NO, NC, PDO, NDO	PO, PC, NO, NC, PDO, NDO	PO, PC, NO, NC, PDO, NDO
SW 5052/5152		DC 2 WIRE NAMUR		
Dimension :	Dia.	M12	M18	Ø20
	Length (mm)	80	80	80
Sensing Distance	Sn. (mm)	NF-2-3 F-2-5	NF-2-5 F-2-10	NF-2-7 NF-2-10
Enclosure		B, A, S	B, A, S, T	A
Load Current	(mA)	3 to 5 mA	3 to 5 mA	3 to 5 mA
Supply Voltage	(V DC)	D4	D4	D4
Switching Frequency	(Hz)	25	50	50
Logic Available		NO, NC	NO, NC	NO, NC
SW 5053/5153		DC 2 WIRE		
Dimension :	Dia.	M12	M18	Ø20
	Length (mm)	80	80	80
Sensing Distance	Sn. (mm)	NF-2-3 F-2-5	NF-2-5 F-2-10	NF-2-7 NF-2-10
Enclosure		B, A, S	B, A, S, T	A
Load Current	(mA)	200	400	400
Supply Voltage	(V DC)	D6	D6	D6
Switching Frequency	(Hz)	25	50	50
Logic Available		NO, NC	NO, NC	NO, NC
SW 5054/5154		AC/DC 2 WIRE		
Dimension :	Dia.	M12	M18	Ø20
	Length (mm)	80	80	80
Sensing Distance	Sn. (mm)	NF-2-3 F-2-5	NF-2-5 F-2-10	NF-2-7 NF-2-10
Enclosure		B, A, S	B, A, S, T	A
Load Current	(mA)	200	400	400
Supply Voltage	(V AC/DC)	A6	A6	A6
Switching Frequency	(Hz)	15	15	15
Logic Available		NO, NC	NO, NC	NO, NC
SW 5055/5155		AC 2 WIRE		
Dimension :	Dia.	M12	M18	Ø20
	Length (mm)	80	80	80
Sensing Distance	Sn. (mm)	NF-2-3 F-2-5	NF-2-5 F-2-10	NF-2-7 NF-2-10
Enclosure		B, A, S	B, A, S, T	A
Load Current	(mA)	200	400	400
Supply Voltage	(V AC)	A1 to A5	A1 to A5	A1 to A5
Switching Frequency	(Hz)	15	15	15
Logic Available		NO, NC	NO, NC	NO, NC

CAPACITIVE PROXIMITY SWITCHES



CAPACITIVE		M24		M30		Ø34	
SW 5051/5151		DC 3/4 WIRE					
Dimension :	Dia.	M24		M30		Ø34	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	NF-2-8	F-2-10	NF-2-10	F-3-15	NF-3-12	NF-3-16
Enclosure		B, S		B, A, S, T		A	
Load Current (mA)		400		400		200	
Supply Voltage (V DC)		D1 to D6		D1 to D6		D1 to D6	
Switching Frequency (Hz)		50		50		50	
Logic Available		PO, PC, NO, NC, PDO, NDO		PO, PC, NO, NC, PDO, NDO		PO, PC, NO, NC, PDO, NDO	
SW 5052/5152		DC 2 WIRE NAMUR					
Dimension :	Dia.	M24		M30		Ø34	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	NF-2-8	F-2-10	NF-2-10	F-3-15	NF-3-12	NF-3-16
Enclosure		B, S		B, A, S, T		A	
Load Current (mA)		3 to 5 mA		3 to 5 mA		3 to 5 mA	
Supply Voltage (V DC)		D4		D4		D4	
Switching Frequency (Hz)		50		50		50	
Logic Available		NO, NC		NO, NC		NO, NC	
SW 5053/5153		DC 2 WIRE					
Dimension :	Dia.	M24		M30		Ø34	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	NF-2-8	F-2-10	NF-2-10	F-3-15	NF-3-12	NF-3-16
Enclosure		B, S		B, A, S, T		A	
Load Current (mA)		400		400		200	
Supply Voltage (V DC)		D6		D6		D6	
Switching Frequency (Hz)		50		50		50	
Logic Available		NO, NC		NO, NC		NO, NC	
SW 5054/5154		AC/DC 2 WIRE					
Dimension :	Dia.	M24		M30		Ø34	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	NF-2-8	F-2-10	NF-2-10	F-3-15	NF-3-12	NF-3-16
Enclosure		B, S		B, A, S, T		A	
Load Current (mA)		400		400		200	
Supply Voltage (V AC/DC)		A6		A6		A6	
Switching Frequency (Hz)		15		15		15	
Logic Available		NO, NC		NO, NC		NO, NC	
SW 5055/5155		AC 2 WIRE					
Dimension :	Dia.	M24		M30		Ø34	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	NF-2-8	F-2-10	NF-2-10	F-3-15	NF-3-12	NF-3-16
Enclosure		B, S		B, A, S, T		A	
Load Current (mA)		400		400		200	
Supply Voltage (V AC)		A1 to A5		A1 to A5		A1 to A5	
Switching Frequency (Hz)		15		15		15	
Logic Available		NO, NC		NO, NC		NO, NC	

CAPACITIVE PROXIMITY SWITCHES



CAPACITIVE		M36		M50		M60	
SW 5051/5151		DC 3/4 WIRE					
Dimension :	Dia.	M36		M50		M60	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	F - 3-13	F - 3-16	F - 3-16	NF - 3-20	F - 3-20	NF - 3-25
Enclosure		B, S		B, S		B, S	
Load Current	(mA)	400		400		400	
Supply Voltage	(V DC)	D1 to D6		D1 to D6		D1 to D6	
Switching Frequency	(Hz)	50		50		50	
Logic Available		PO, PC, NO, NC, PDO, NDO		PO, PC, NO, NC, PDO, NDO		PO, PC, NO, NC, PDO, NDO	
SW 5052/5152		DC 2 WIRE NAMUR					
Dimension :	Dia.	M36		M50		M60	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	F - 3-13	F - 3-16	F - 3-16	NF - 3-20	F - 3-20	NF - 3-25
Enclosure		B, S		B, S		B, S	
Load Current	(mA)	3 to 5 mA		3 to 5 mA		3 to 5 mA	
Supply Voltage	(V DC)	D4		D4		D4	
Switching Frequency	(Hz)	50		50		50	
Logic Available		NO, NC		NO, NC		NO, NC	
SW 5053/5153		DC 2 WIRE					
Dimension :	Dia.	M36		M50		M60	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	F - 3-13	F - 3-16	F - 3-16	NF - 3-20	F - 3-20	NF - 3-25
Enclosure		B, S		B, S		B, S	
Load Current	(mA)	400		400		400	
Supply Voltage	(V DC)	D6		D6		D6	
Switching Frequency	(Hz)	50		50		50	
Logic Available		NO, NC		NO, NC		NO, NC	
SW 5054/5154		AC/DC 2 WIRE					
Dimension :	Dia.	M36		M50		M60	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	F - 3-13	F - 3-16	F - 3-16	NF - 3-20	F - 3-20	NF - 3-25
Enclosure		B, S		B, S		B, S	
Load Current	(mA)	400		400		400	
Supply Voltage	(V AC/DC)	A6		A6		A6	
Switching Frequency	(Hz)	15		15		15	
Logic Available		NO, NC		NO, NC		NO, NC	
SW 5055/5155		AC 2 WIRE					
Dimension :	Dia.	M36		M50		M60	
	Length (mm)	80		80		80	
Sensing Distance	Sn. (mm)	F - 3-13	F - 3-16	F - 3-16	NF - 3-20	F - 3-20	NF - 3-25
Enclosure		B, S		B, S		B, S	
Load Current	(mA)	400		400		400	
Supply Voltage	(V AC)	A1 to A5		A1 to A5		A1 to A5	
Switching Frequency	(Hz)	15		15		15	
Logic Available		NO, NC		NO, NC		NO, NC	

CAPACITIVE PROXIMITY SWITCHES



CAPACITIVE		D40	DV40	D50
SW 5051/5151		DC 3/4 WIRE		
Dimension :	Dia.	D40	DV40 (Variable Sensing Head)	D50
	Length (mm)	112.5 x 40 x 40	118 x 40 x 40	120 x 50 x 50
Sensing Distance	Sn. (mm)	3 - 15	3 - 15	3 - 20
Enclosure		A	A	A
Load Current	(mA)	400	400	400
Supply Voltage	(V DC)	D1 to D8	D1 to D8	D1 to D8
Switching Frequency (Hz)		100	100	100
Logic Available		PO, PC, NO, NC, PDO, NDO	PO, PC, NO, NC, PDO, NDO	PO, PC, NO, NC, PDO, NDO
SW 5052/5152		DC 2 WIRE NAMUR		
Dimension :	Dia.	D40	DV40 (Variable Sensing Head)	D50
	Length (mm)	112.5 x 40 x 40	118 x 40 x 40	120 x 50 x 50
Sensing Distance	Sn. (mm)	3 - 15	3 - 15	3 - 20
Enclosure		A	A	A
Load Current	(mA)	3 to 5 mA	3 to 5 mA	3 to 5 mA
Supply Voltage	(V DC)	D4	D4	D4
Switching Frequency (Hz)		100	100	100
Logic Available		NO, NC	NO, NC	NO, NC
SW 5053/5153		DC 2 WIRE		
Dimension :	Dia.	D40	DV40 (Variable Sensing Head)	D50
	Length (mm)	112.5 x 40 x 40	118 x 40 x 40	120 x 50 x 50
Sensing Distance	Sn. (mm)	3 - 15	3 - 15	3 - 20
Enclosure		A	A	A
Load Current	(mA)	400	400	400
Supply Voltage	(V DC)	D6	D6	D6
Switching Frequency (Hz)		100	100	100
Logic Available		NO, NC	NO, NC	NO, NC
SW 5054/5154		AC/DC 2 WIRE		
Dimension :	Dia.	D40	DV40 (Variable Sensing Head)	D50
	Length (mm)	112.5 x 40 x 40	118 x 40 x 40	120 x 50 x 50
Sensing Distance	Sn. (mm)	3 - 15	3 - 15	3 - 20
Enclosure		A	A	A
Load Current	(mA)	400	400	400
Supply Voltage	(V AC/DC)	A6	A6	A6
Switching Frequency (Hz)		15	15	15
Logic Available		NO, NC	NO, NC	NO, NC
SW 5055/5155		AC 2 WIRE		
Dimension :	Dia.	D40	DV40 (Variable Sensing Head)	D50
	Length (mm)	112.5 x 40 x 40	118 x 40 x 40	120 x 50 x 50
Sensing Distance	Sn. (mm)	3 - 15	3 - 15	3 - 20
Enclosure		A	A	A
Load Current	(mA)	400	400	400
Supply Voltage	(V AC)	A1 to A5	A1 to A5	A1 to A5
Switching Frequency (Hz)		15	15	15
Logic Available		NO, NC	NO, NC	NO, NC

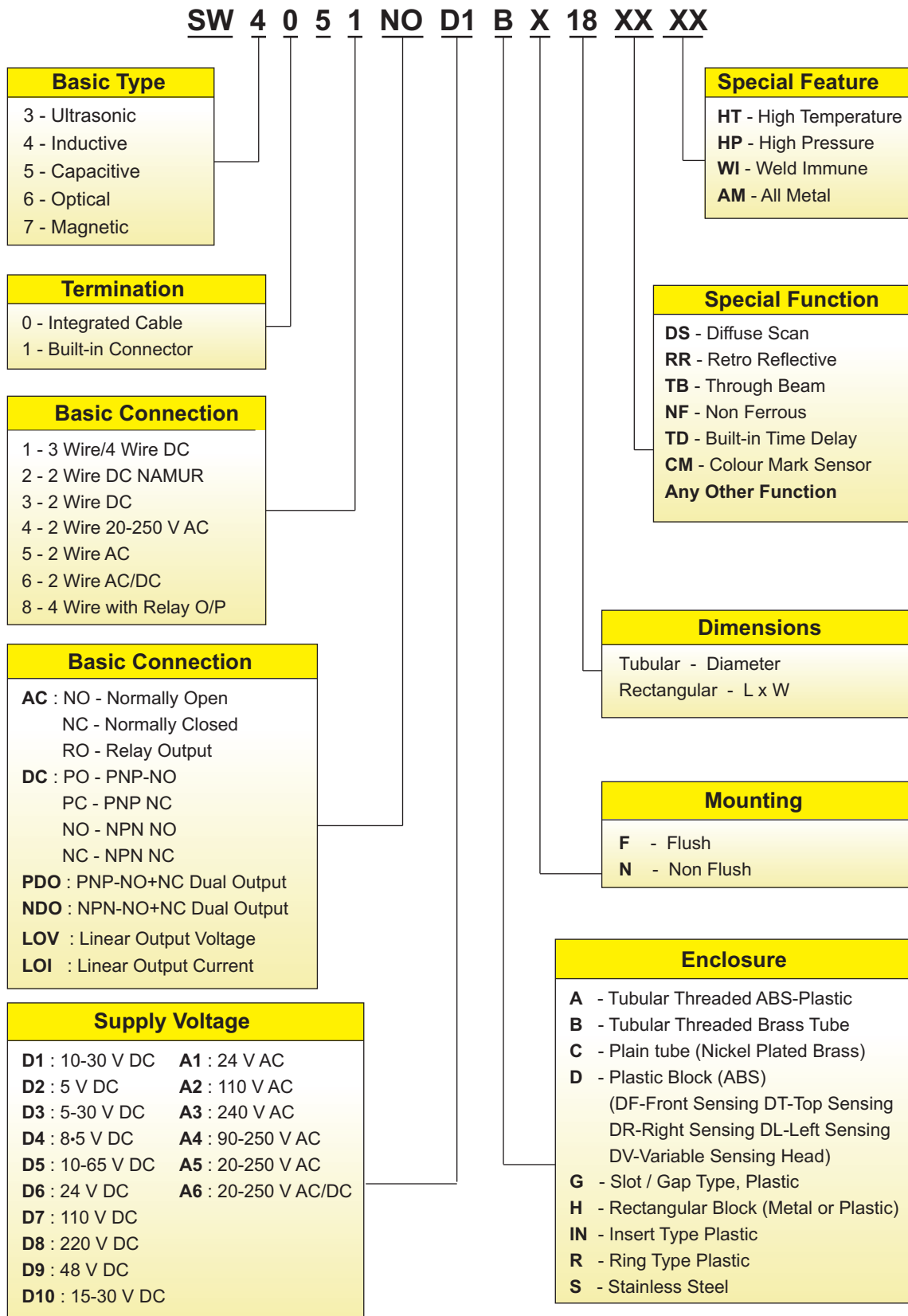
CAPACITIVE PROXIMITY SWITCHES



CAPACITIVE		H50*25*10	H55*35*15	H120*80
SW 5051/5151		DC 3/4 WIRE		
Dimension :	Dia.	H5025	H5515	H120*80
	Length (mm)	50 x 25 x 10	55 x 35 x 15	120 x 80 x 30
Sensing Distance	Sn. (mm)	5	10	50
Enclosure		B	A	A
Load Current	(mA)	200	200	400
Supply Voltage	(V DC)	D1 to D6	D1 to D6	D1 to D6
Switching Frequency (Hz)		300	100	500
Logic Available		PO, PC, NO, NC	PO, PC, NO, NC, PDO, NDO	PO, PC, NO, NC, PDO, NDO
SW 5052/5152		DC 2 WIRE NAMUR		
Dimension :	Dia.	H5025	H5515	H120*80
	Length (mm)	50 x 25 x 10	55 x 35 x 15	120 x 80 x 30
Sensing Distance	Sn. (mm)	5	10	50
Enclosure		B	A	A
Load Current	(mA)	3 to 5 mA	3 to 5 mA	3 to 5 mA
Supply Voltage	(V DC)	D4	D4	D4
Switching Frequency (Hz)		300	100	500
Logic Available		NO, NC	NO, NC	NO, NC
SW 5053/5153		DC 2 WIRE		
Dimension :	Dia.	H5025	H5515	H120*80
	Length (mm)	50 x 25 x 10	55 x 35 x 15	120 x 80 x 30
Sensing Distance	Sn. (mm)	5	10	50
Enclosure		B	A	A
Load Current	(mA)	200	200	400
Supply Voltage	(V DC)	D6	D6	D6
Switching Frequency (Hz)		300	100	500
Logic Available		NO, NC	NO, NC	NO, NC
SW 5054/5154		AC/DC 2 WIRE		
Dimension :	Dia.	N.A.	N.A.	N.A.
	Length (mm)	N.A.	N.A.	N.A.
Sensing Distance	Sn. (mm)	N.A.	N.A.	N.A.
Enclosure		N.A.	N.A.	N.A.
Load Current	(mA)	N.A.	N.A.	N.A.
Supply Voltage	(V AC/DC)	N.A.	N.A.	N.A.
Switching Frequency (Hz)		N.A.	N.A.	N.A.
Logic Available		N.A.	N.A.	N.A.
SW 5055/5155		AC 2 WIRE		
Dimension :	Dia.	N.A.	H5515	H120*80
	Length (mm)	N.A.	55 x 35 x 15	120 x 80 x 30
Sensing Distance	Sn. (mm)	N.A.	10	50
Enclosure		N.A.	A	A
Load Current	(mA)	N.A.	200	400
Supply Voltage	(V AC)	N.A.	A1 to A5	A1 to A5
Switching Frequency (Hz)		N.A.	15	15
Logic Available		N.A.	NO, NC	NO, NC

SELECTION CHART

While selecting a switch please follow this nomenclature



The Sensing Distance, Load Current, Switch Length, Cable Length, Operating Temperature will be as per factory standard unless otherwise specifically mentioned.

Example : Inductive Proximity Switch of 3-Wire DC PNP tubular type with 24 mm diameter will have following type no. **SW 4051 PO D1 B24**