



# Catalogue of Wear Solutions for Oil&Gas Industry



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## COMPANY PROFILE

### Company business scope

Zhuzhou Pute Carbide Tools Co.,Ltd. (Pute) focuses on serving global intelligent manufacturing with precision cutting tools. The product range covers different grades of cemented carbide cutting tools with PVD or CVD, cermet, ceramics and ultra-hard material (CBN, PCD) etc. The cutting tools can be applied in high precision turning, milling, drilling, boring, grooving and parting etc.

The company's stable, efficient and high-precision cutting tools are used for processing workpiece of P, M, K, N, S or H; they are widely used in mold manufacturing, automotive parts, general machinery, 3C, clean energy, rail transportation, shipping, aerospace, heavy equipment industries etc.

### I. Main business categories

- 1、Cutting tools ,such as Coated Cemented carbide inserts, Cermet, CBN, PCD .
- 2、Cemented carbide inserts blanks, such as sintered blanks and grinding blanks.
- 3、Other cemented carbide products, rods, wear-resistant parts etc.
- 4、Carbide mixed powder (Ready to Press Powder of cemented carbide , chromium carbide (CrC), vanadium carbide (VC), solid solution powders of tantalum carbide-niobium carbide).
- 5、Non-standard cemented carbide products, shaped products, customized carbide products.

## COMPANY PROFILE

### II. Our preponderance for cooperation

- 1、The professionals are experted in full-process international markets customer service, The team is composed of experienced talents in manufacture technology,application service,international business.
- 2、High quality product manufacturer. Say: carbide inserts、solid carbide end mills、drills ,other carbide products, carbide powder and other material cutting tools; our products are from more than 10 years of experience first-class enterprises through the ISO quality management certification with a stable raw material supply system,from RTP Powder to Coated tools,sophisticated production equipment and well-trained workforce.
- 3、Some of the team member have more than 10 years of experience in key technical positions of larger cemented carbide tools manufacturing enterprises.
- 4、Main managers have more than 15 years in charge of international marketing management in cemented carbide tools industry.
- 5、The headquarter is located in Zhuzhou city which is the main cemented carbide and precision carbide inserts production area .
- 6、In addition to standard products, we also provide technical support for the application of cutting tools and custom-made service for non-standard ,shapes products.

### III. Business philosophy

- 1、To explore international market demand, guide complementary advantages and improve customer satisfaction.
- 2、Adhering to carrying forward professionalism, providing an associate platform and creating value or cooperation partner.
- 3、Focusing on responsibility, gratitude and cherish blessing, giving back to society.
- 4、Enhance long-term cooperation through technological innovation and enterprising spirit.

# Advanced Equipment



Mould Manufacturing



Wet-milling



Spray drying



Pressing



Sintering

3



Grinding

POTACT

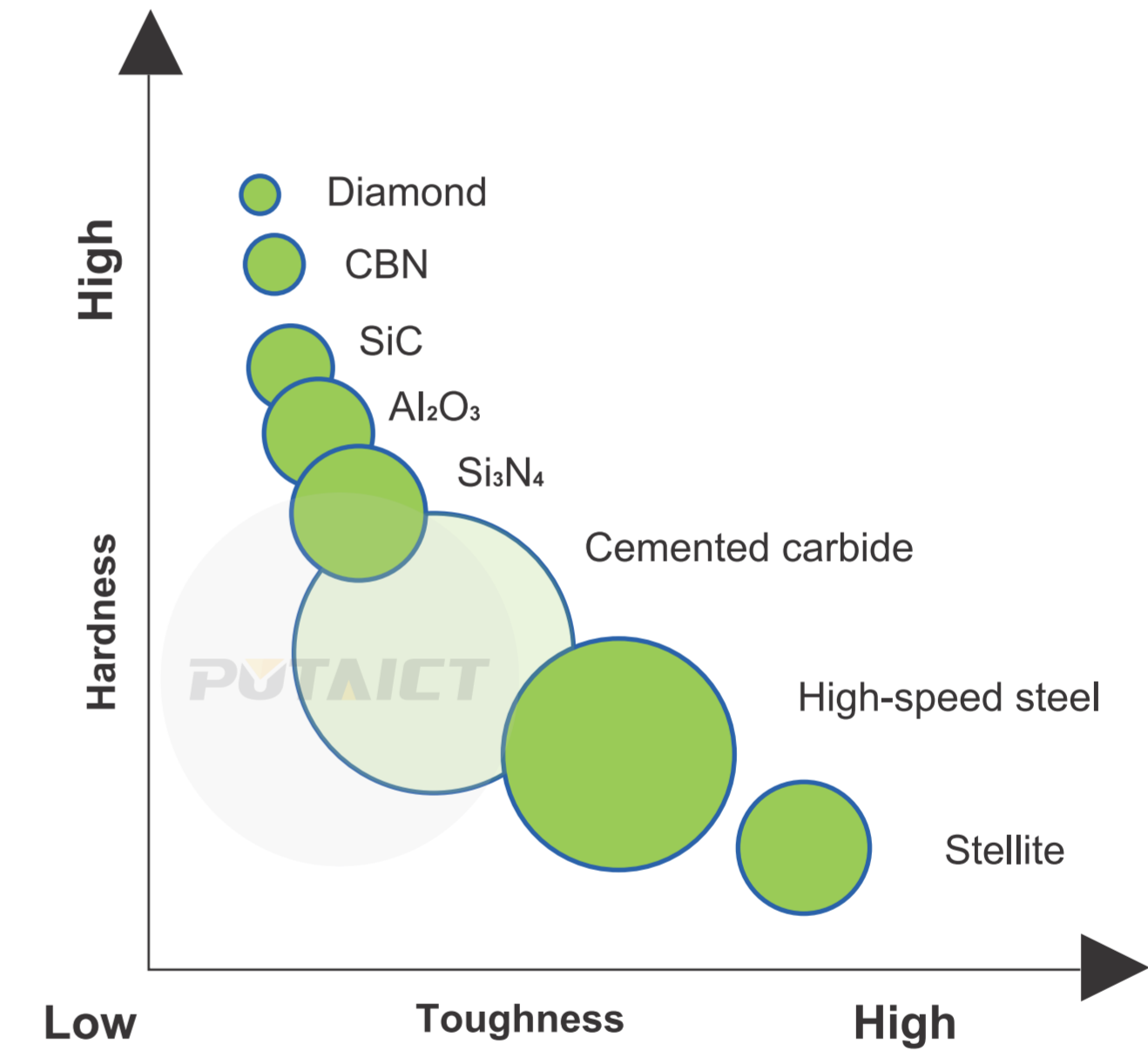
POTACT

## Characteristics of Cemented Carbide

Cemented carbide is one of the most successful composite materials which is shown schematically relative to its hardness and toughness properties. Diamond (PCD) is the hardest one, followed by cubic boron nitride (CBN) and the ceramics ( $Al_2O_3$ , SiC, Sialon, etc). Superhard materials all have problem that lowered toughness and poor resistance to sudden fracture.

As shown in the diagram, only cemented carbide balances hardness and toughness, which makes cemented carbide become ideal material for engineering and tooling applications. Cemented carbide is an intelligent material to meet a wide range of requirements since its composition could be varied to ensure maximum combined resistance to wear, deformation, corrosion, erosion, fracture, and toughness.

Oil & Gas industry is and always faces aggressive & atrocious environment that full of corrosion, abrasiveness, impacting, high pressure and temperature. Thus, cemented carbide would be the best c wear solutions for Oil & Gas industry.



## Grade Offering

A collection of grades have been developed to specifically serve the needs of the Oil & Gas industry.

Grades	Physical Properties			Areas of Application			Major characteristics and application
	Hardness	Density	TRS	Corrosion	Erosion	Toughness	
	HRA	g/cm <sup>3</sup>	N/mm <sup>3</sup>	C	E	T	
PF50H	88.2-89.2	13.95-14.15	≥3000	▲	●	■	It's suitable to produce sleeves and other wear parts used in oil & gas and chemistry industry due to high impact-resistance and wear resistance.
PK35	88.5-89.5	14.30-14.50	≥2800	▲	●	■	It's suitable to produce sleeves, bushings and nozzles due to high hardness and good wear-resistance.
PV25	88.7-89.7	14.20-14.50	≥3200	▲	■	●	It's suitable to produce high pressure nozzles, threaded nozzles, bushings and valves used in oil & gas and chemistry industry due to high impact-resistance and wear resistance.
PK40A	90.5-91.5	14.50-14.70	≥2800	●	■	▲	It's suitable to produce sleeves and nozzles used in oil & gas industry due to high hardness and good wear-resistance.
PK30H	89.5-90.5	14.70-14.80	≥2800	▲	●	■	It's suitable to produce sleeves and bushings due to good wear resistance and toughness.
PU10	92.5-93.5	14.80-15.00	≥2700	▲	●	■	It's suitable to produce sleeves and bushings due to high hardness and good wear-resistance.

● ( Recommended application area )

■ ( Secondary application area )

▲ ( Alternative application area )

Grades	Physical Properties			Areas of Application			Major characteristics and application
	Hardness	Density	TRS	Corrosion	Erosion	Toughness	
	HRA	g/cm <sup>3</sup>	N/mm <sup>3</sup>	C	E	T	
PK05A	92.0-93.0	14.80-15.00	≥2450	▲	●	■	It's suitable to produce wear parts used for oil-immersed pump, valve point and valve seat due to excellent wear resistance and high toughness.
PA25N	88.3-89.3	13.85-14.05	≥2700	●	■	▲	It's suitable to produce wear tiles for stabilizer and other parts used in oil & gas industry due to good wear-resistance and corrosion resistance.
PD10N	87.5-89.0	14.40-14.60	≥2400	●	■	■	It's suitable to produce valve balls and seats as well as other valve products used in oil & gas industry due to excellent corrosion & erosion resistance.
PD06N	89.0-90.5	14.80-15.00	≥1900	●	■	▲	It's suitable to produce valve balls and seats as well as other valve products used in oil & gas industry due to excellent corrosion & erosion resistance.
PF06N	90.2-91.2	14.80-15.00	≥1760	●	■	▲	It's suitable to produce sleeves and bushings used in oil & gas industry due to excellent corrosion & erosion resistance.
PT50B	89.5-90.5	9.20-9.40	≥1200	●	■	▲	It's suitable to produce valve balls and seats used in oil & gas industry due to excellent corrosion & erosion resistance.

● ( Recommended application area )

■ ( Secondary application area )

▲ ( Alternative application area )





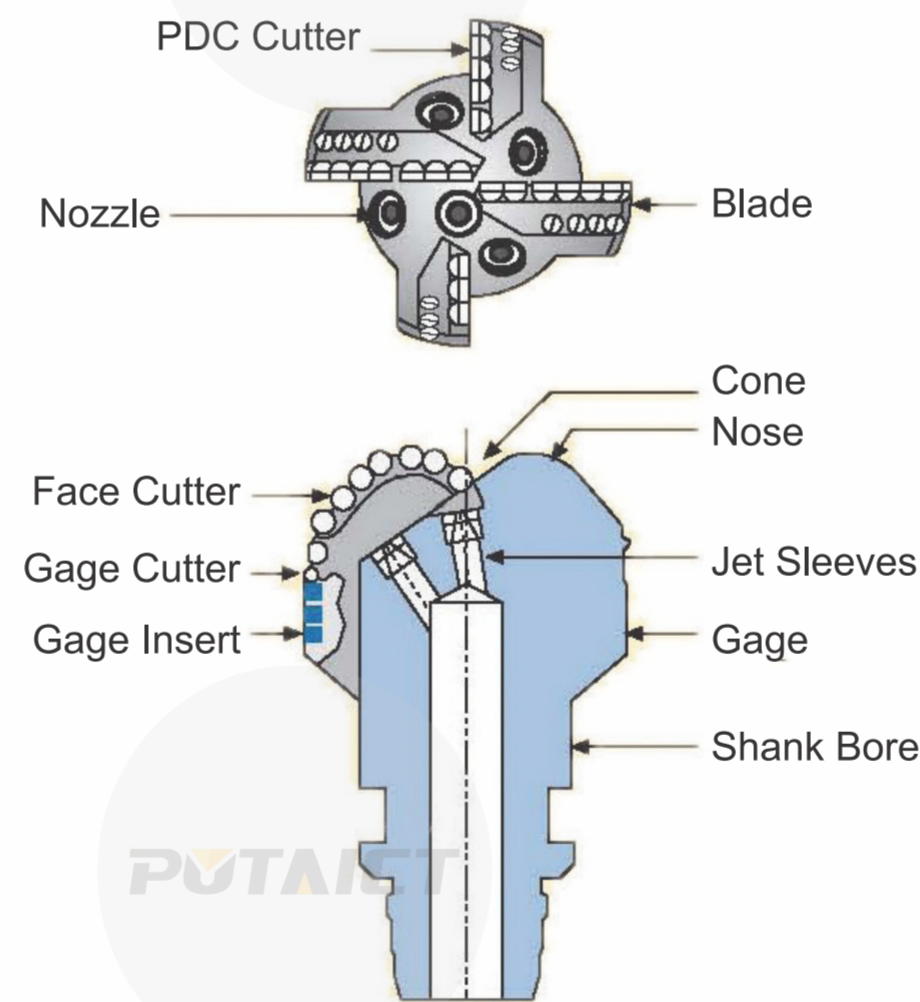
## Cemented Carbide Nozzles & Accessories for Drill Bits

The cemented carbide nozzles are mainly used for PCD drill bits and roller cone bits for flushing, cooling and lubricating drill bit cutters.

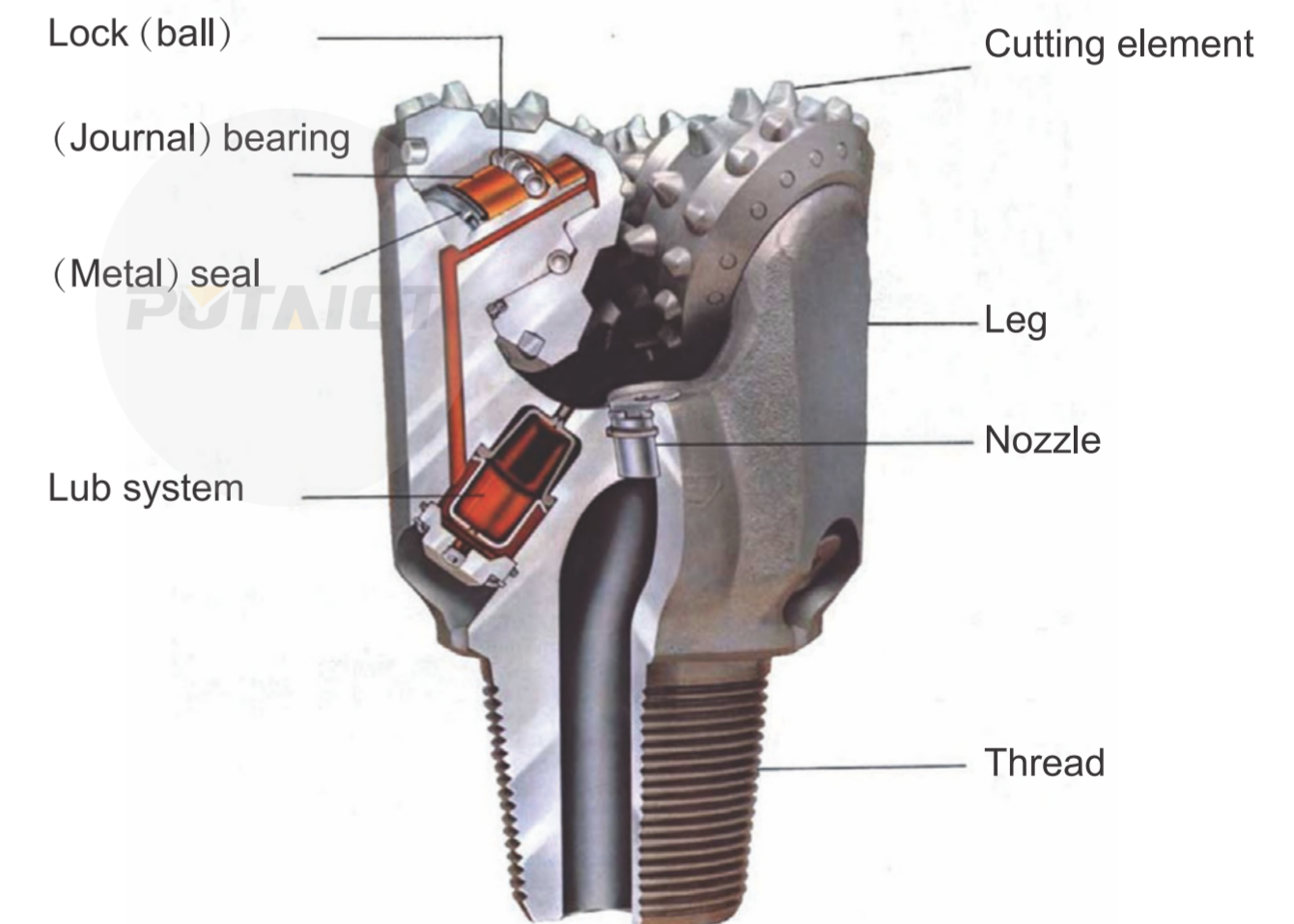
Meanwhile, the high pressure fluid jetted out of the nozzles will help break down the rock.

As a fully-integrated supplier, we provide nozzles in a wide range of styles and sizes combinations for most down-hole drilling applications.

Grades are designed for excellent corrosion & erosion resistance Custom-molded nozzles could be provided upon drawings and grade requirements from customers.

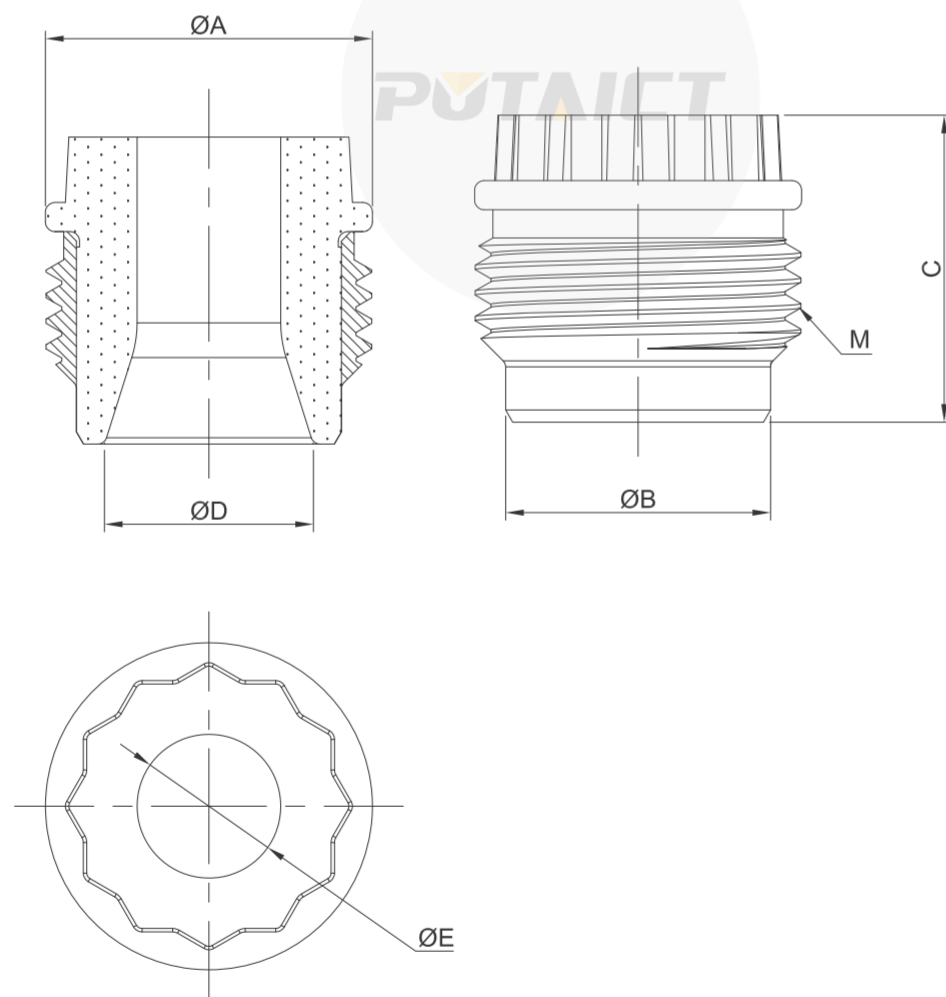


PDC drill bit



Roller cone bit

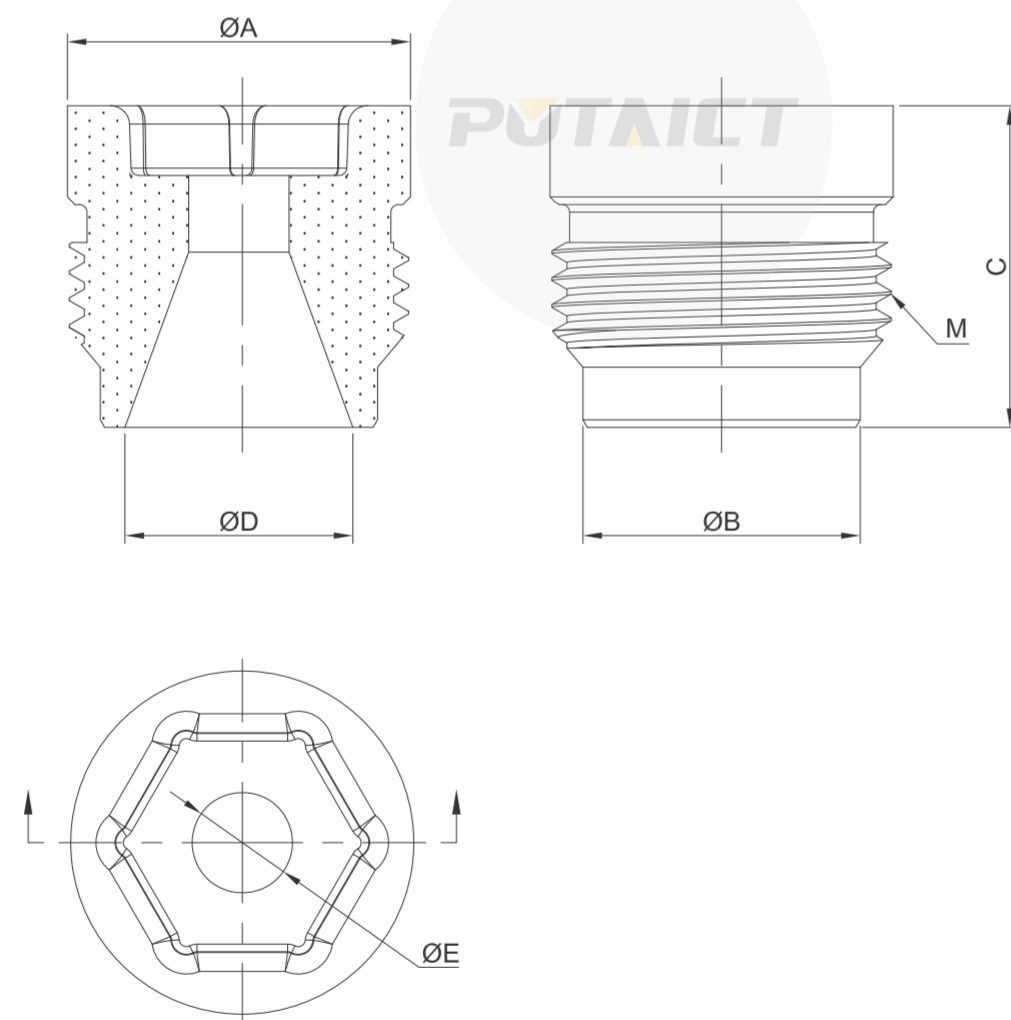
## Nozzles for PDC Drill Bits



Threaded nozzle of plumblossom teeth wrench series

Unit: mm

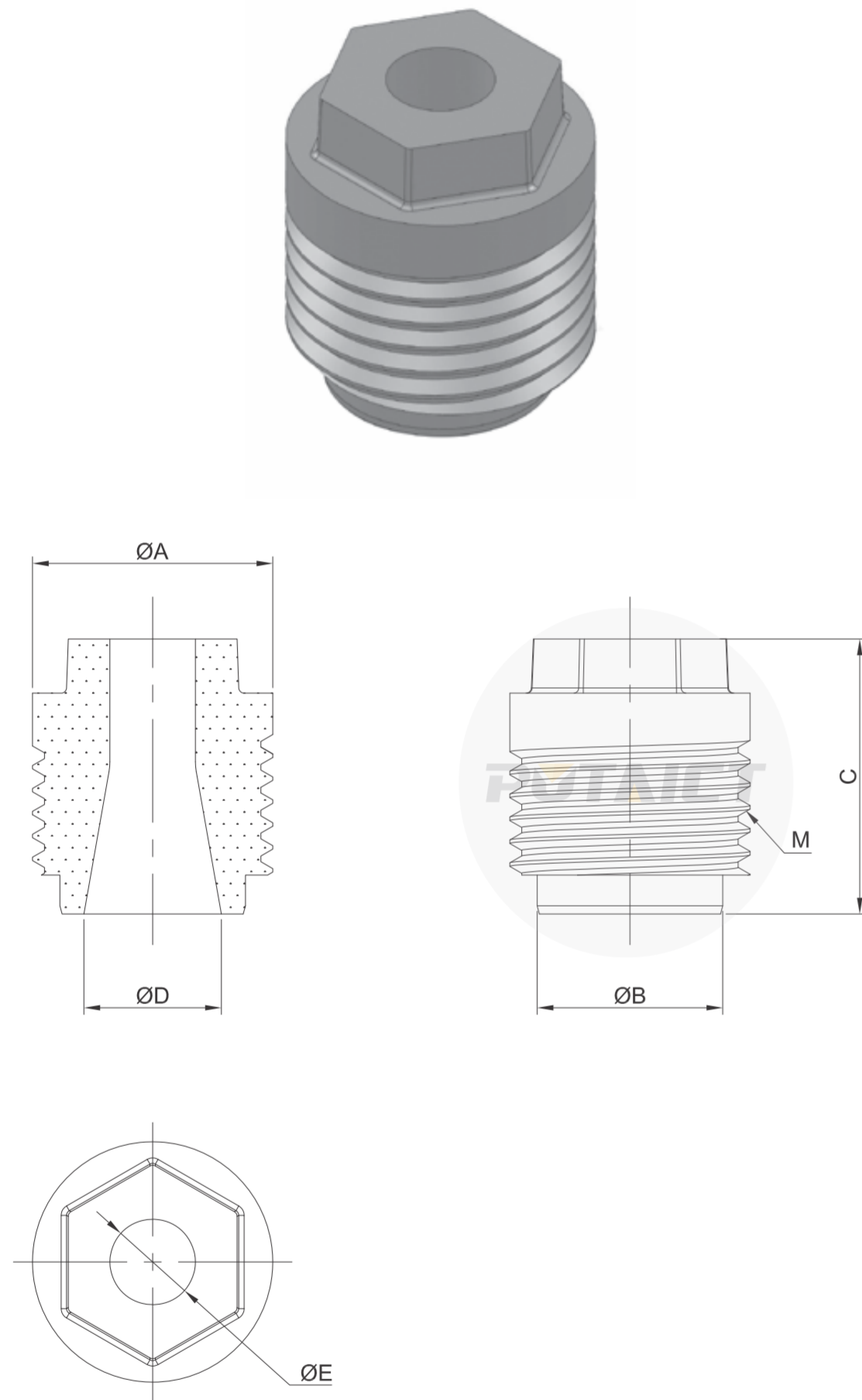
Stock No.	ΦA	C	ΦE	M
PTX100702	27.1	25.4	5.6	1-1/16-12UN-2A
PTX100802	27.1	25.4	6.4	1-1/16-12UN-2A
PTX100902	27.1	25.4	7.1	1-1/16-12UN-2A
PTX101002	27.1	25.4	7.9	1-1/16-12UN-2A
PTX101102	27.1	25.4	8.7	1-1/16-12UN-2A
PTX101202	27.1	25.4	9.5	1-1/16-12UN-2A
PTX101302	27.1	25.4	10.3	1-1/16-12UN-2A
PTX101402	27.1	25.4	11.1	1-1/16-12UN-2A
PTX101502	27.1	25.4	11.9	1-1/16-12UN-2A
PTX101602	27.1	25.4	12.7	1-1/16-12UN-2A
PTX101702	27.1	25.4	13.5	1-1/16-12UN-2A
PTX101802	27.1	25.4	14.3	1-1/16-12UN-2A
PTX101902	27.1	25.4	15.1	1-1/16-12UN-2A
PTX102002	27.1	25.4	15.9	1-1/16-12UN-2A
PTX102102	27.1	25.4	16.7	1-1/16-12UN-2A
PTX102202	27.1	25.4	17.5	1-1/16-12UN-2A



Threaded nozzle of inner hexagon wrench series

Unit: mm

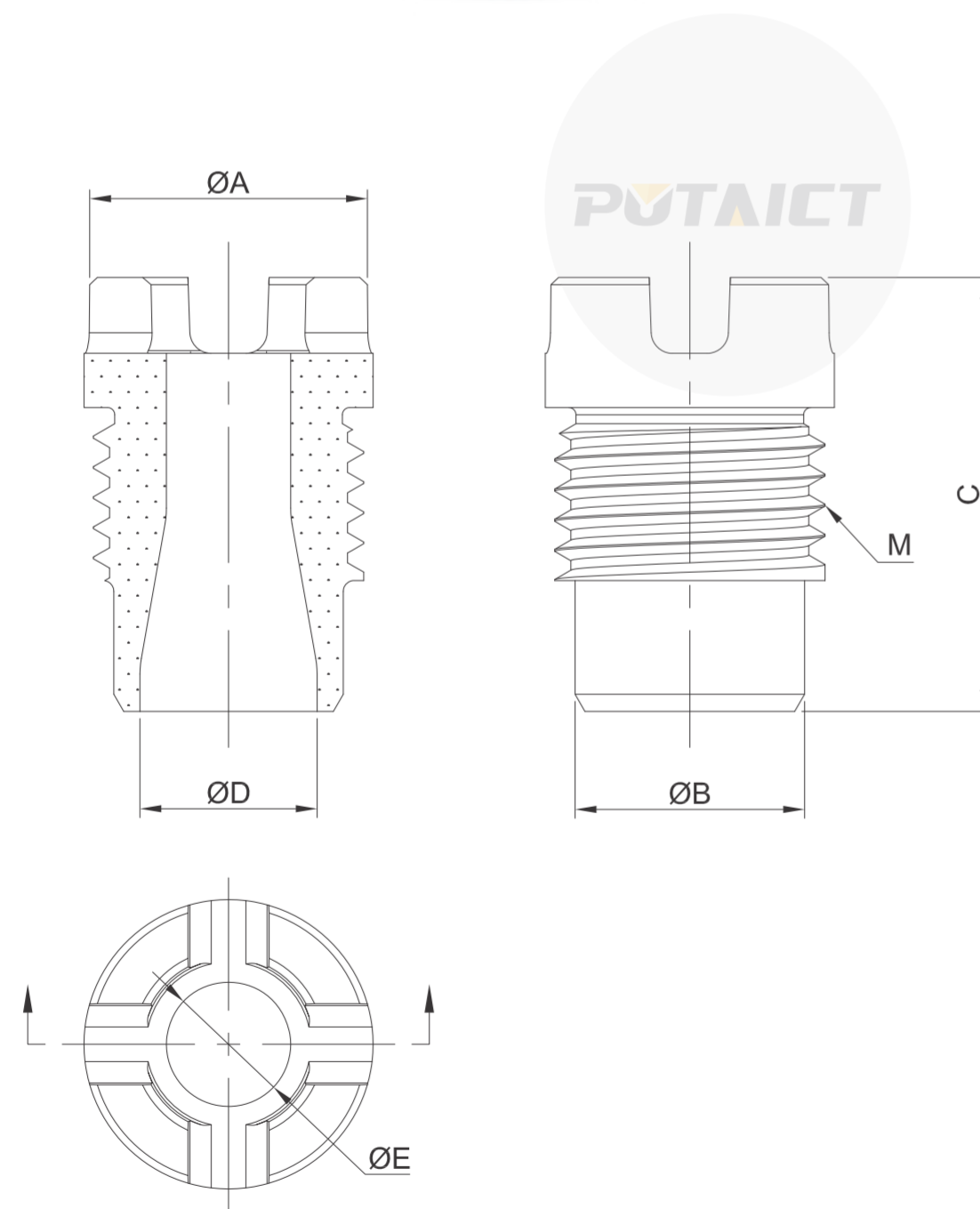
Stock No.	ΦA	C	ΦE	M
PTN200601	27.1	25.4	6.4	1"-1/16-12UN-2A
PTN200701	27.1	25.4	7.1	1"-1/16-12UN-2A
PTN200801	27.1	25.4	7.9	1"-1/16-12UN-2A
PTN200901	27.1	25.4	9.5	1"-1/16-12UN-2A
PTN201101	27.1	25.4	11.1	1"-1/16-12UN-2A
PTN201301	27.1	25.4	12.7	1"-1/16-12UN-2A
PTN201401	27.1	25.4	14.3	1"-1/16-12UN-2A
PTN201601	27.1	25.4	15.9	1"-1/16-12UN-2A
PTN300501	19.1	23.0	5.6	3/4"-12UN-2A
PTN300601	19.1	23.0	6.4	3/4"-12UN-2A
PTN300701	19.1	23.0	7.1	3/4"-12UN-2A
PTN300801	19.1	23.0	7.9	3/4"-12UN-2A
PTN300901	19.1	23.0	9.5	3/4"-12UN-2A
PTN301101	19.1	23.0	11.1	3/4"-12UN-2A



Threaded nozzle of hexagon wrench series

Unit: mm

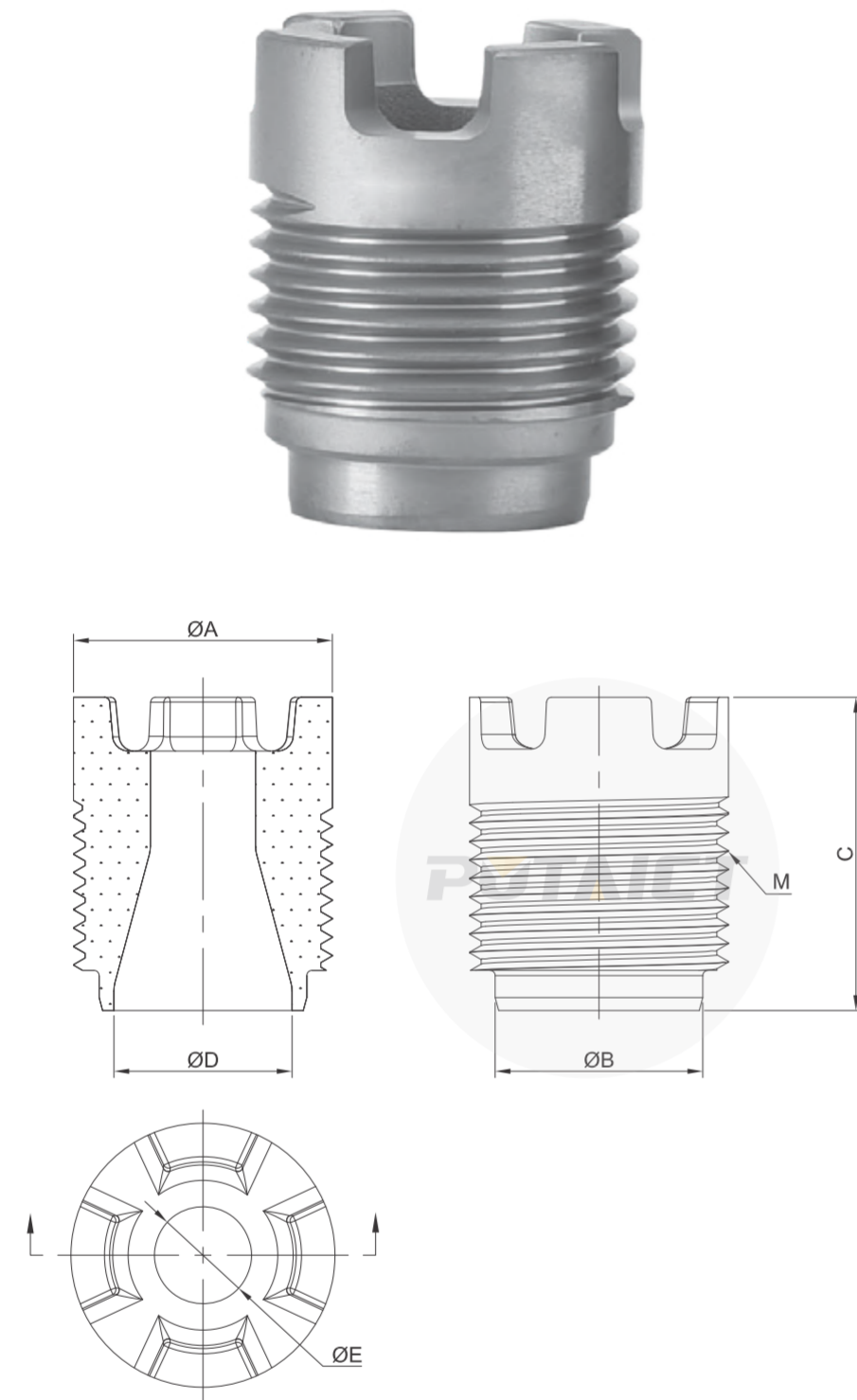
Stock No.	ΦA	C	ΦE	M
PTX200702	25.4	28.6	7.1	1"-14UNS-2A
PTX200802	25.4	28.6	7.9	1"-14UNS-2A
PTX200902	25.4	28.6	8.7	1"-14UNS-2A
PTX201002	25.4	28.6	9.5	1"-14UNS-2A
PTX200102	25.4	28.6	10.3	1"-14UNS-2A
PTX201102	25.4	28.6	1.1	1"-14UNS-2A
PTX201202	25.4	28.6	11.9	1"-14UNS-2A
PTX201302	25.4	28.6	12.7	1"-14UNS-2A
PTX201402	25.4	28.6	13.5	1"-14UNS-2A
PTX201502	25.4	28.6	14.3	1"-14UNS-2A
PTX201602	25.4	28.6	15.1	1"-14UNS-2A
PTX201702	25.4	28.6	15.9	1"-14UNS-2A



Threaded nozzle of castle top wrench series

Unit: mm

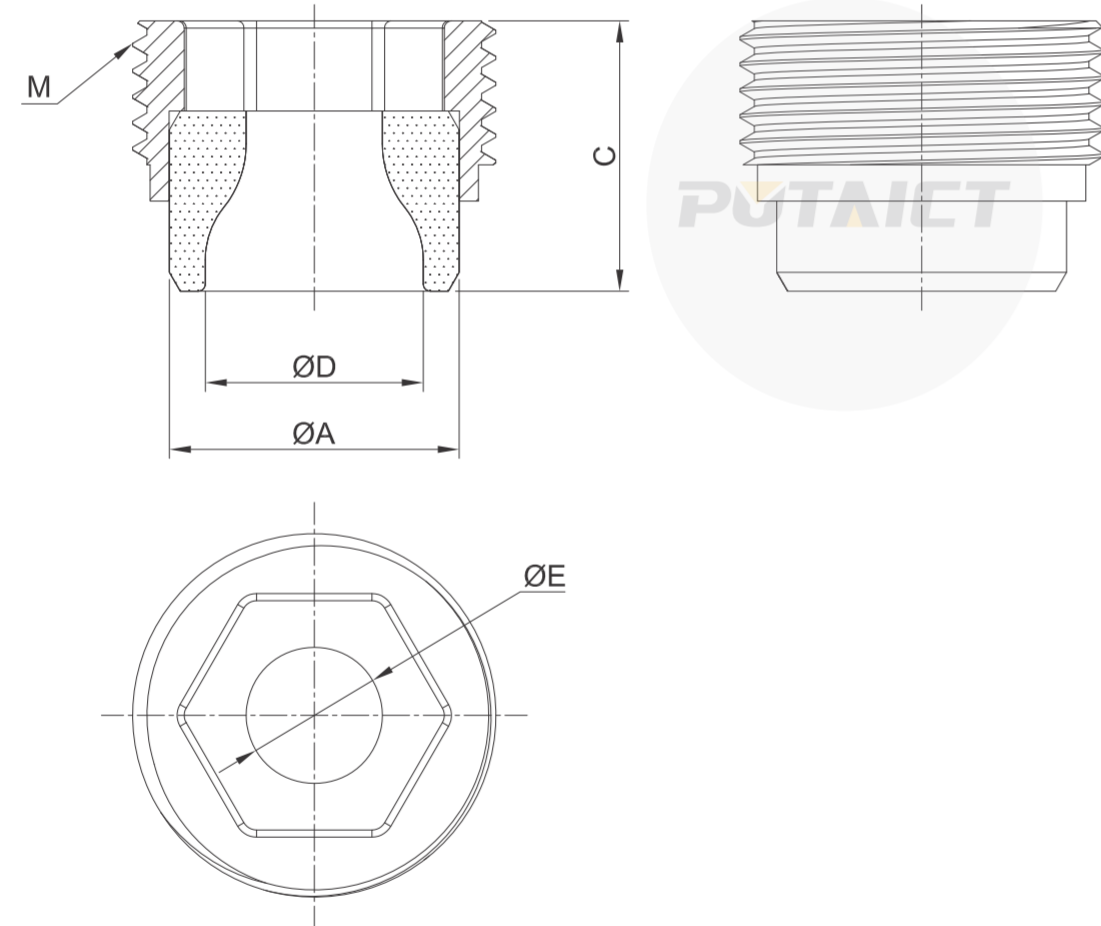
Stock No.	ΦA	C	ΦE	M
PTD500701	20.3	30.5	5.6	3/4"-12UN-2A
PTD500801	20.3	30.5	6.4	3/4"-12UN-2A
PTD500901	20.3	30.5	7.1	3/4"-12UN-2A
PTD501001	20.3	30.5	7.9	3/4"-12UN-2A
PTD501101	20.3	30.5	8.7	3/4"-12UN-2A
PTD501201	20.3	30.5	9.5	3/4"-12UN-2A
PTD501301	20.3	30.5	10.3	3/4"-12UN-2A
PTD501401	20.3	30.5	11.1	3/4"-12UN-2A
PTD501501	20.3	30.5	11.9	3/4"-12UN-2A
PTD501601	20.3	30.5	12.7	3/4"-12UN-2A



Threaded nozzle of castle top wrench series

Unit: mm

Stock No.	ΦA	C	ΦE	M
PTD200902	25.4	30.7	7.1	1"-14UNS-2A
PTD201002	25.4	30.7	7.9	1"-14UNS-2A
PTD201102	25.4	30.7	8.7	1"-14UNS-2A
PTD201202	25.4	30.7	9.5	1"-14UNS-2A
PTD201302	25.4	30.7	10.3	1"-14UNS-2A
PTD201402	25.4	30.7	11.1	1"-14UNS-2A
PTD201502	25.4	30.7	11.9	1"-14UNS-2A
PTD201602	25.4	30.7	12.7	1"-14UNS-2A
PTD201702	25.4	30.7	13.5	1"-14UNS-2A
PTD201802	25.4	30.7	14.3	1"-14UNS-2A
PTD201902	25.4	30.7	15.1	1"-14UNS-2A
PTD202002	25.4	30.7	15.9	1"-14UNS-2A
PTD202102	25.4	30.7	16.7	1"-14UNS-2A
PTD202202	25.4	30.7	17.5	1"-14UNS-2A



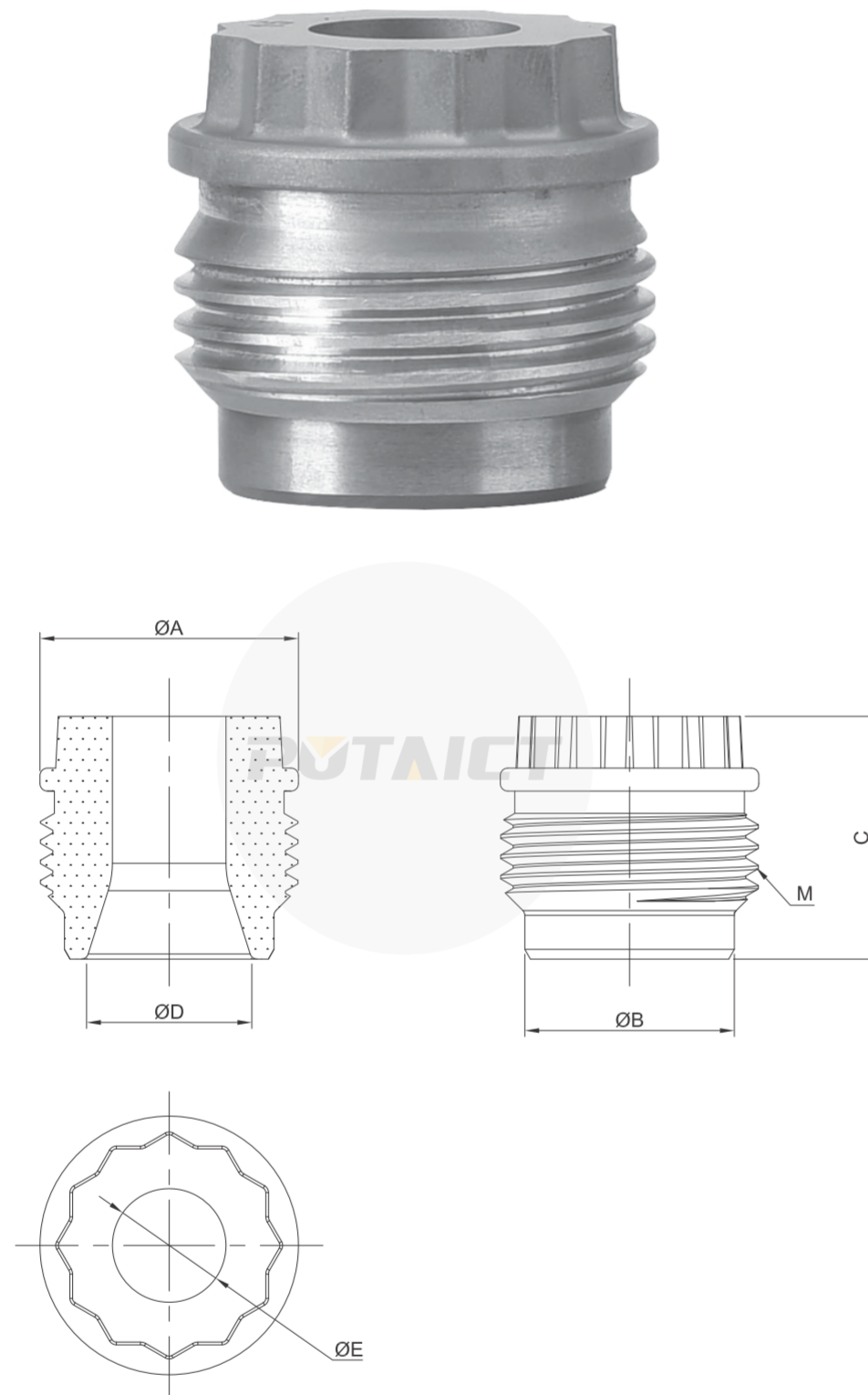
Nozzle cased in threaded steel sleeve

Unit: mm

Stock No.	ΦA	C	ΦE	M
PT2300001	20.3	18.9	0.0	1"-14UNS-2A
PT2305501	20.3	18.9	5.6	1"-14UNS-2A
PT2306301	20.3	18.9	6.4	1"-14UNS-2A
PT2307001	20.3	18.9	7.1	1"-14UNS-2A
PT2307901	20.3	18.9	7.9	1"-14UNS-2A
PT2308701	20.3	18.9	8.7	1"-14UNS-2A
PT2309501	20.3	18.9	9.5	1"-14UNS-2A
PTS500701	31.8	28.7	5.6	1-1/2"-12UNF-2A
PTS500801	31.8	28.7	6.4	1-1/2"-12UNF-2A
PTS500901	31.8	28.7	7.1	1-1/2"-12UNF-2A
PTS501001	31.8	28.7	7.9	1-1/2"-12UNF-2A
PTS501101	31.8	28.7	8.7	1-1/2"-12UNF-2A
PTS501201	31.8	28.7	9.5	1-1/2"-12UNF-2A
PTS501301	31.8	28.7	10.3	1-1/2"-12UNF-2A
PTS501401	31.8	28.7	11.1	1-1/2"-12UNF-2A
PTS501501	31.8	28.7	11.9	1-1/2"-12UNF-2A

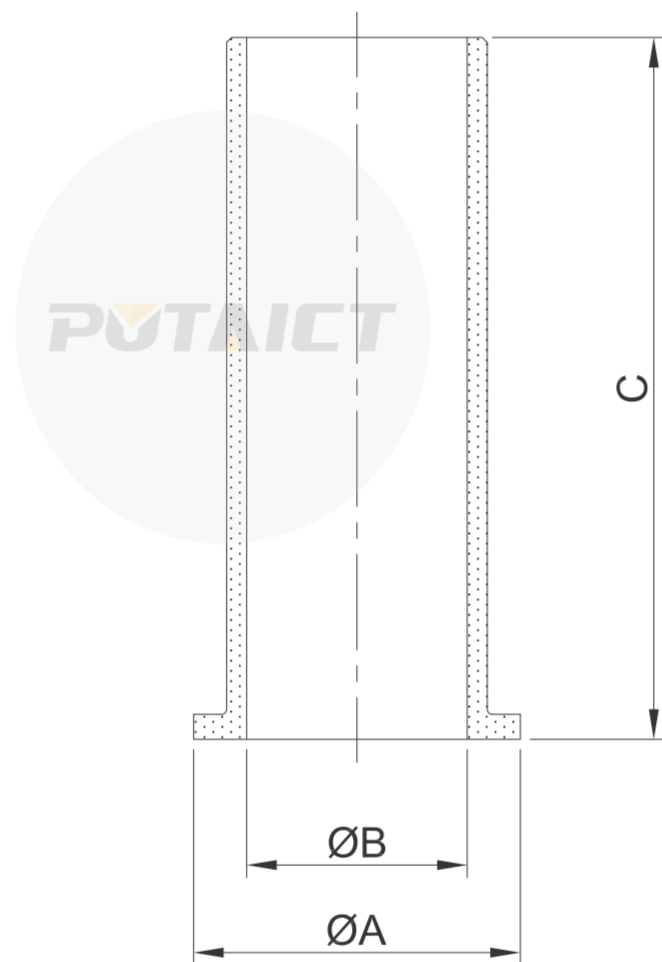
Nozzle cased in threaded steel sleeve

Unit: mm



Stock No.	ΦA	C	ΦE	M
PTX100701	27.1	25.4	5.6	1-1/16-12UN-2A
PTX100801	27.1	25.4	6.4	1-1/16-12UN-2A
PTX100901	27.1	25.4	7.1	1-1/16-12UN-2A
PTX101001	27.1	25.4	7.9	1-1/16-12UN-2A
PTX101101	27.1	25.4	8.7	1-1/16-12UN-2A
PTX101201	27.1	25.4	9.5	1-1/16-12UN-2A
PTX101301	27.1	25.4	10.3	1-1/16-12UN-2A
PTX101401	27.1	25.4	11.1	1-1/16-12UN-2A
PTX101501	27.1	25.4	11.9	1-1/16-12UN-2A
PTX101601	27.1	25.4	12.7	1-1/16-12UN-2A
PTX101701	27.1	25.4	13.5	1-1/16-12UN-2A
PTX101801	27.1	25.4	14.3	1-1/16-12UN-2A
PTX101901	27.1	25.4	15.1	1-1/16-12UN-2A
PTX102001	27.1	25.4	15.9	1-1/16-12UN-2A
PTX102101	27.1	25.4	16.7	1-1/16-12UN-2A
PTX102201	27.1	25.4	17.5	1-1/16-12UN-2A



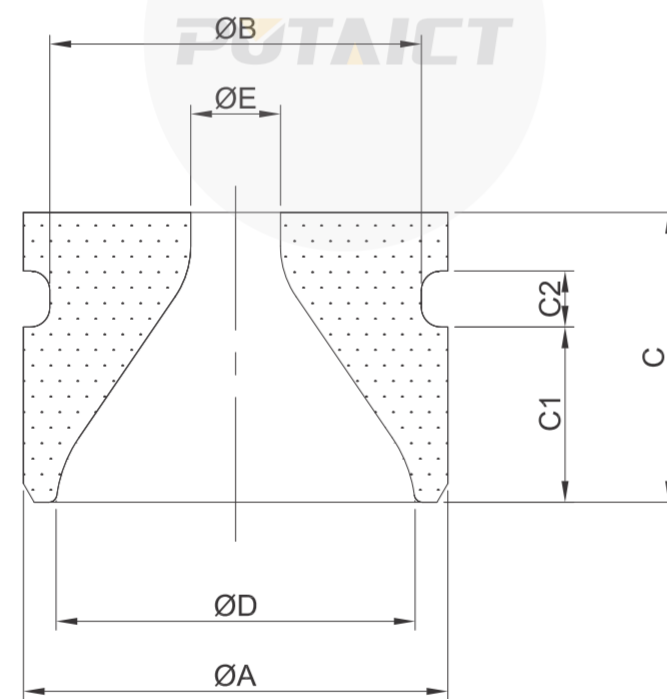


Jet sleeve

Unit: mm

Stock No.	ΦA	ΦB	C
PX022011	28.5	22.0	40.0
PX022012	28.5	22.0	70.0
PX018001	24.6	18.0	35.0
PX018002	24.6	18.0	50.0
PX018006	22.9	18.0	35.0
PX011006	16.5	11.5	40.0

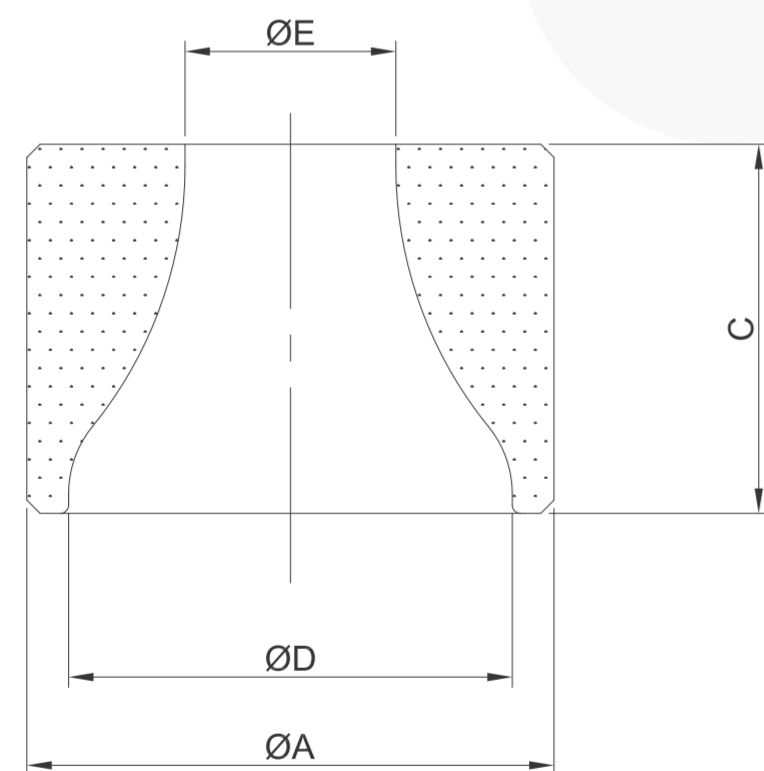
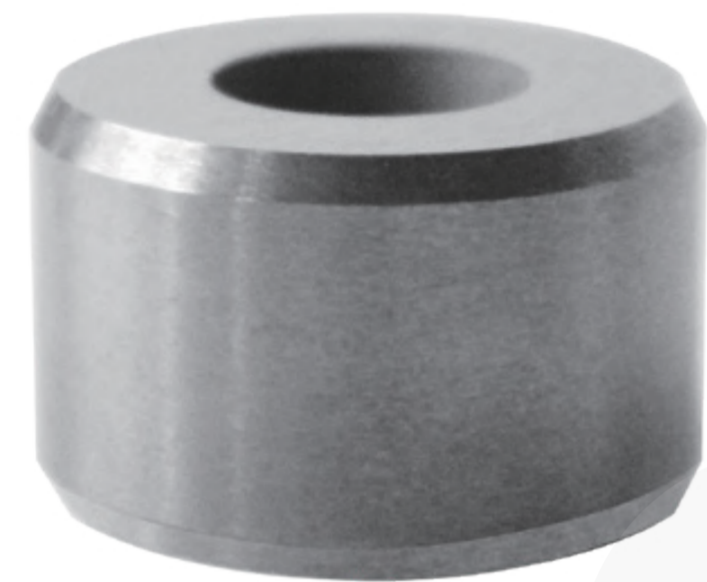
## Nozzles for Roller Cone Drill Bits



Grooved nozzle

Unit: mm

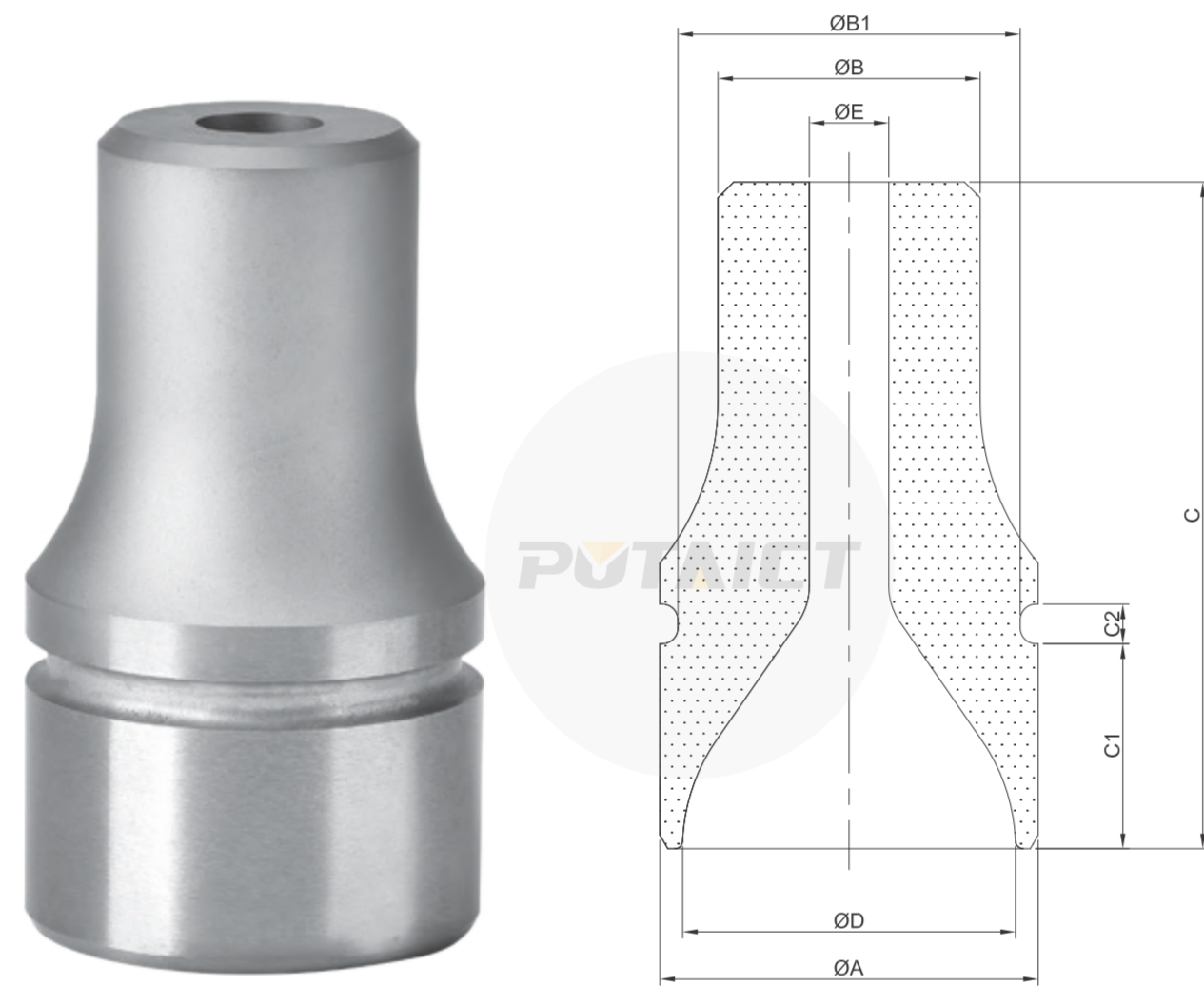
Stock No.	ØA	C	ØD	ØE
PTK100801	18.9	18.8	14.7	6.4
PTK101301	18.9	18.8	14.7	10.3
PTK101601	18.9	18.8	14.7	12.7
PTK200701	22.1	18.8	17.5	5.5
PTK200901	22.1	18.8	17.5	7.1
PTK201401	22.1	18.8	17.5	11.1
PTK201601	22.1	18.8	17.5	12.7
PTK300901	30.0	20.6	25.4	7.1
PTK301301	30.0	20.6	25.4	10.3
PTK302201	30.0	20.6	25.4	17.5
PTK401001	33.2	27.0	28.6	7.9
PTK502801	37.8	28.6	33.3	22.2
PTK503201	37.8	28.6	33.3	25.4



Non-shrouded nozzle

Unit: mm

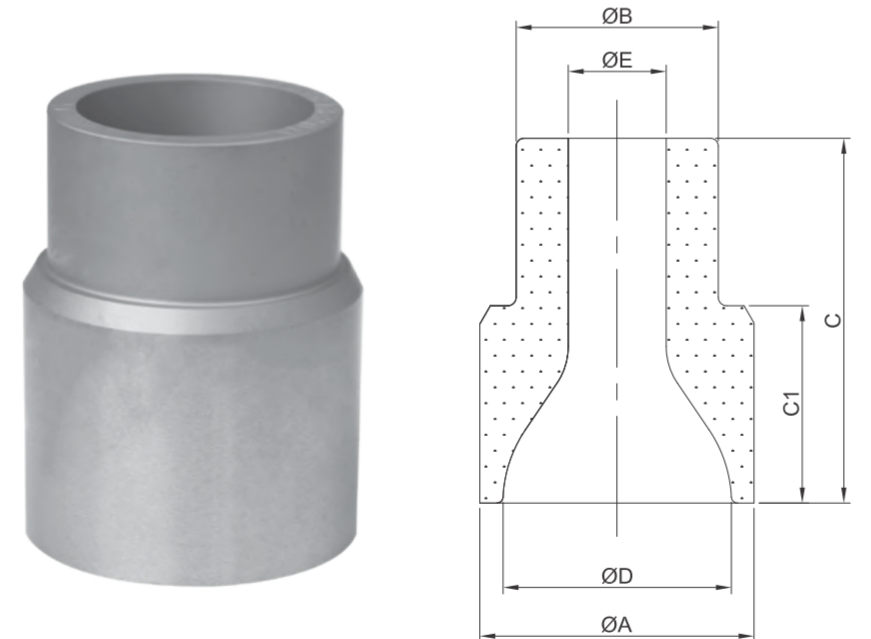
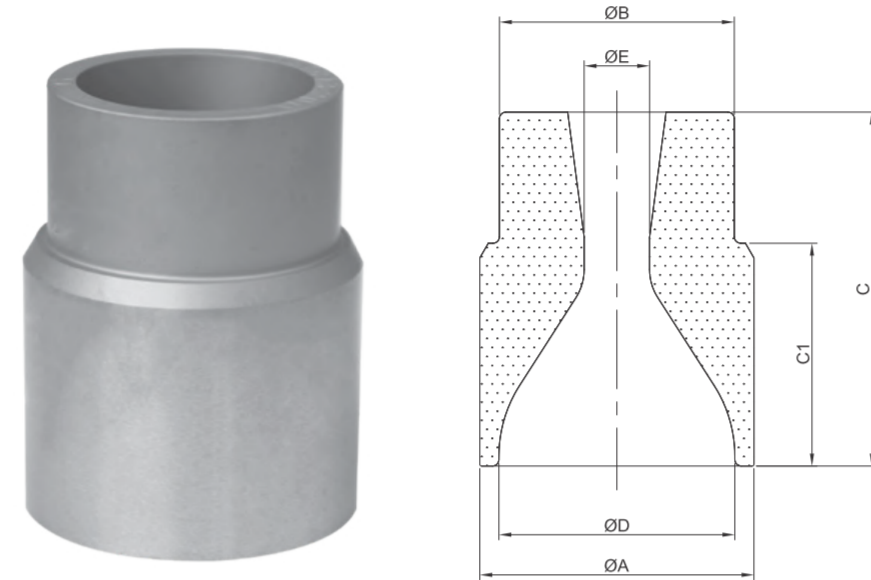
Stock No.	ΦA	C	ΦD	ΦE
PTS500701	31.8	22.2	26.7	5.6
PTS500901	31.8	22.2	26.7	7.1
PTS501201	31.8	22.2	26.7	9.5
PTS502001	31.8	22.2	26.7	15.9
PT2305501	20.3	12.6	POT15.2T	5.6
PT2314201	20.3	12.6	15.2	14.3
PT2309202	20.4	12.7	15.9	9.3



Grooved extended nozzle

Unit: mm

Stock No.	ΦA	C	ΦD	ΦE
PTL100901	30.0	46.0	25.4	7.1
PTL101401	30.0	46.0	25.4	11.1
PTL200901	33.2	61.9	28.6	7.1
PTL201301	33.2	61.9	28.6	10.3
PTL201501	33.2	61.9	28.6	11.9
PTL301001	37.8	66.7	33.3	8.0
PTL301501	37.8	66.7	33.3	11.9
PTL302001	37.8	66.7	33.3	15.9



Extended nozzle

Unit: mm

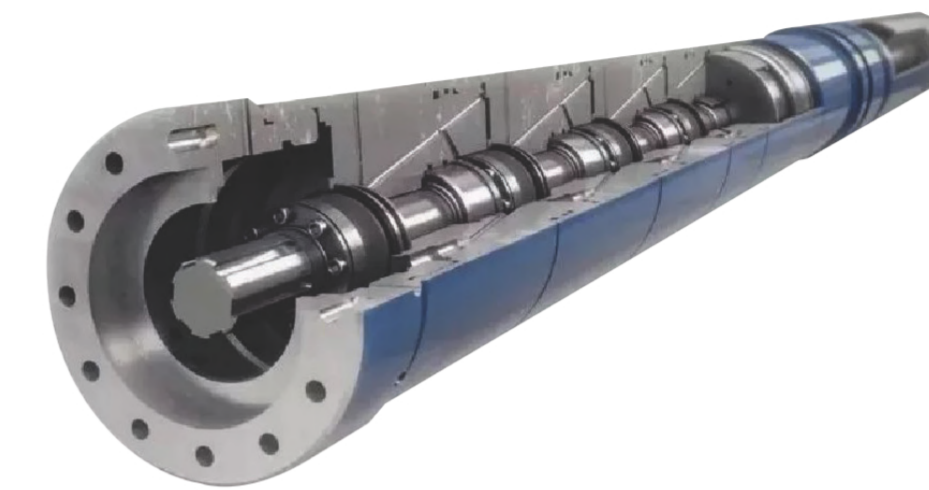
Stock No.	ΦA	C	ΦD	ΦE
PTZ101001	33.2	42.9	28.6	7.9
PTZ101201	33.2	42.9	28.6	9.5
PTZ101401	33.2	42.9	28.7	11.1
PTZ101402	33.2	42.9	28.6	11.4
PTZ101602	33.2	42.9	28.6	12.9
PTZ101802	33.2	42.9	28.6	14.5
PTZ102002	33.2	42.9	28.6	16.0
PTZ102202	33.2	42.9	28.6	17.5
PTZ102402	33.2	42.9	28.6	19.1



Unit: mm

Stock No.	ΦA	C	ΦD	ΦE
PTL400801	26.8	35.7	22.2	6.4
PTL401101	26.8	35.7	22.2	8.7
PTL401601	26.8	35.7	22.2	12.7
PTL501001	33.2	42.9	28.6	7.9
PTL501301	33.2	42.9	28.6	10.3
PTL501801	33.2	42.9	28.6	14.3
PTL502401	33.2	42.9	28.6	19.1

## Cemented Carbide Sleeves for Oil Pump



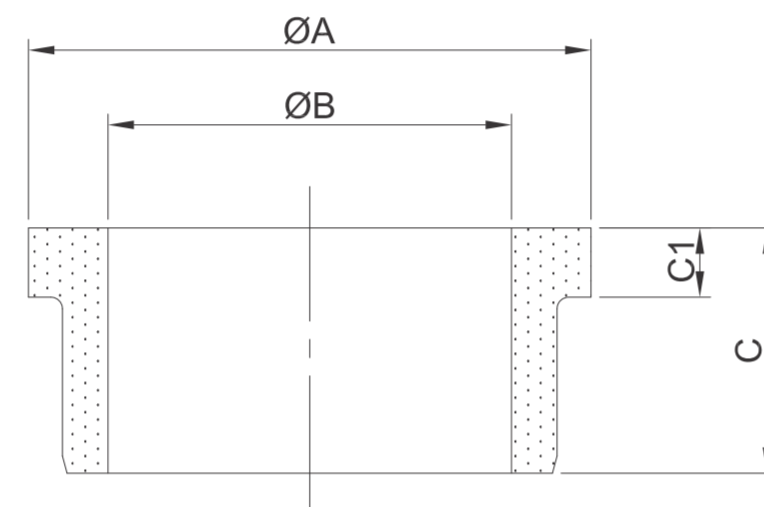
Electric submersible pump



The cemented carbide bushings & sleeves are mainly used for rotating support, seal, and anti-trust of the axle in the motor of ESP, protector and centrifuge that work in the extreme adverse conditions.

As a fully-integrated supplier, we manage the full manufacturing life cycle of your product. Managing the entire process ensures that our products are the highest quality—every time. It also allows us the flexibility to meet each customer’s unique needs, such as grade composition, part geometry and batch size.

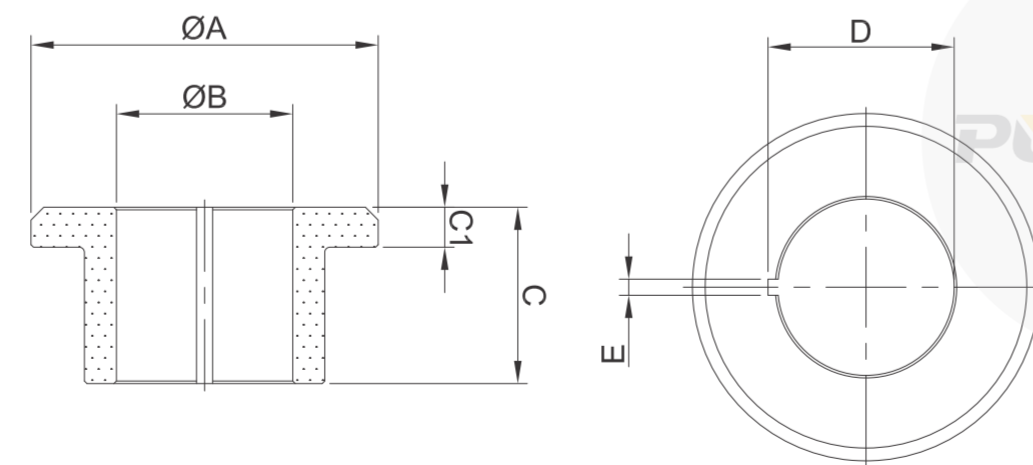
## Sleeves for Electric Submersible Pump



Convex stage sleeve

Unit: mm

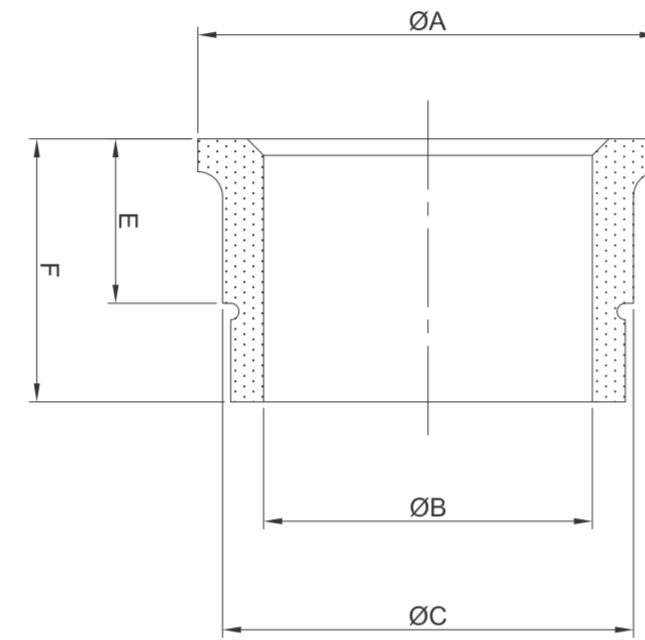
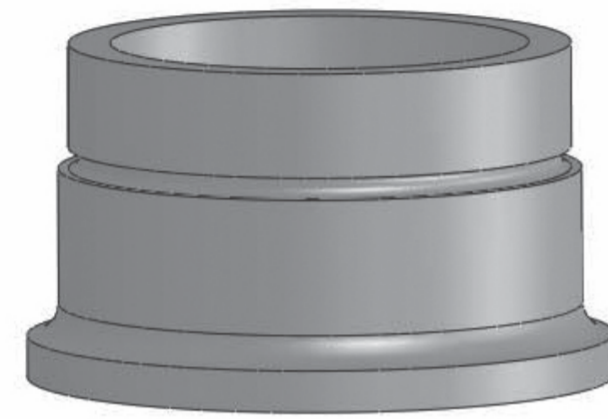
Stock No.	ΦA	ΦB	C
PX018001	24.6	18.0	35.0
PX018002	24.6	18.0	50.0
PX018004	24.6	18.0	25.0
PX035001	48.9	35.1	21.3
PX047002	63.2	47.1	28.5



Convex stage sleeve with keyway

Unit: mm

Stock No.	ΦA	ΦB	C	D	E
PX034001	34.4	17.5	17.5	18.4	1.6
PX034002	34.7	17.5	12.7	18.4	1.6
PX034003	36.8	22.3	15.1	23.2	1.6



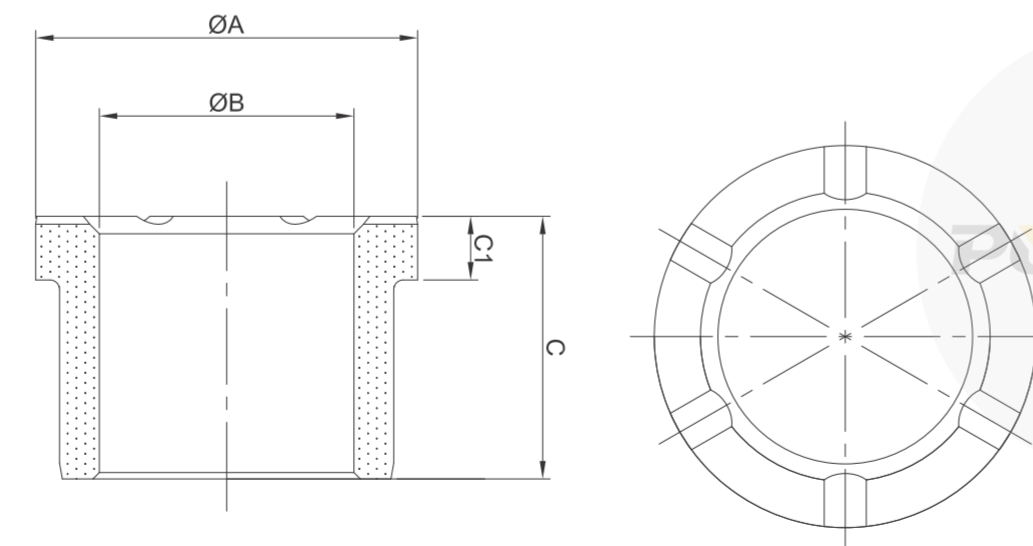
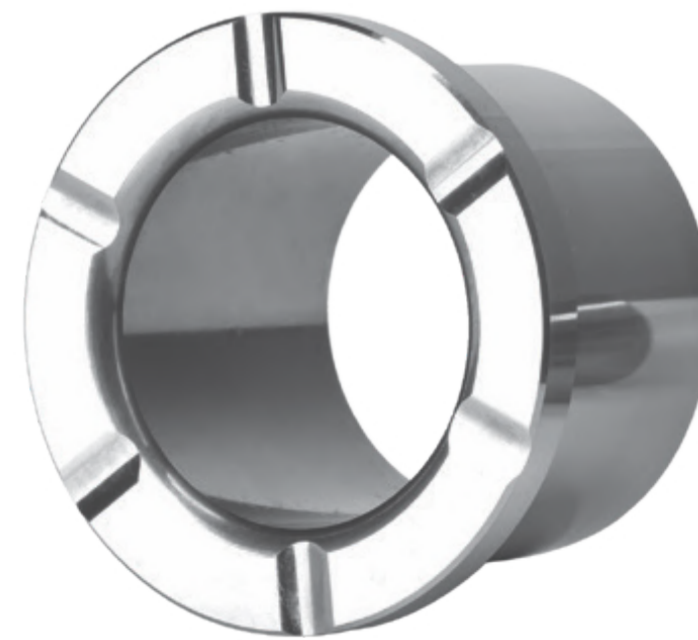
Convex stage sleeve with round groove

Unit: mm

Stock No.	ΦA	ΦB	ΦC	E	F
PX028001	28.0	20.0	25.0	13.0	16.0
PX029001	29.0	22.0	27.0	14.0	17.0
PX034001	34.0	24.0	30.0	15.0	18.0

POTACT

POTACT

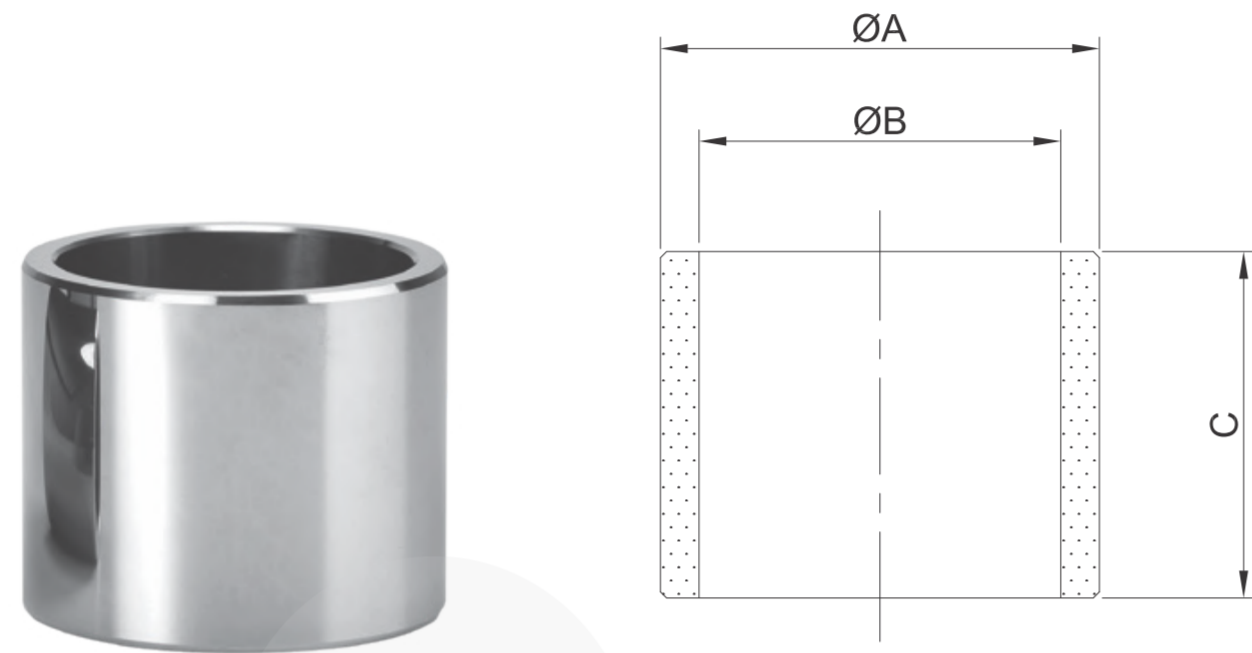


Convex stage sleeve with oil groove

Unit: mm

Stock No.	ΦA	ΦB	C
PX045001	24.0	16.0	16.5
PX045002	27.0	19.0	16.5

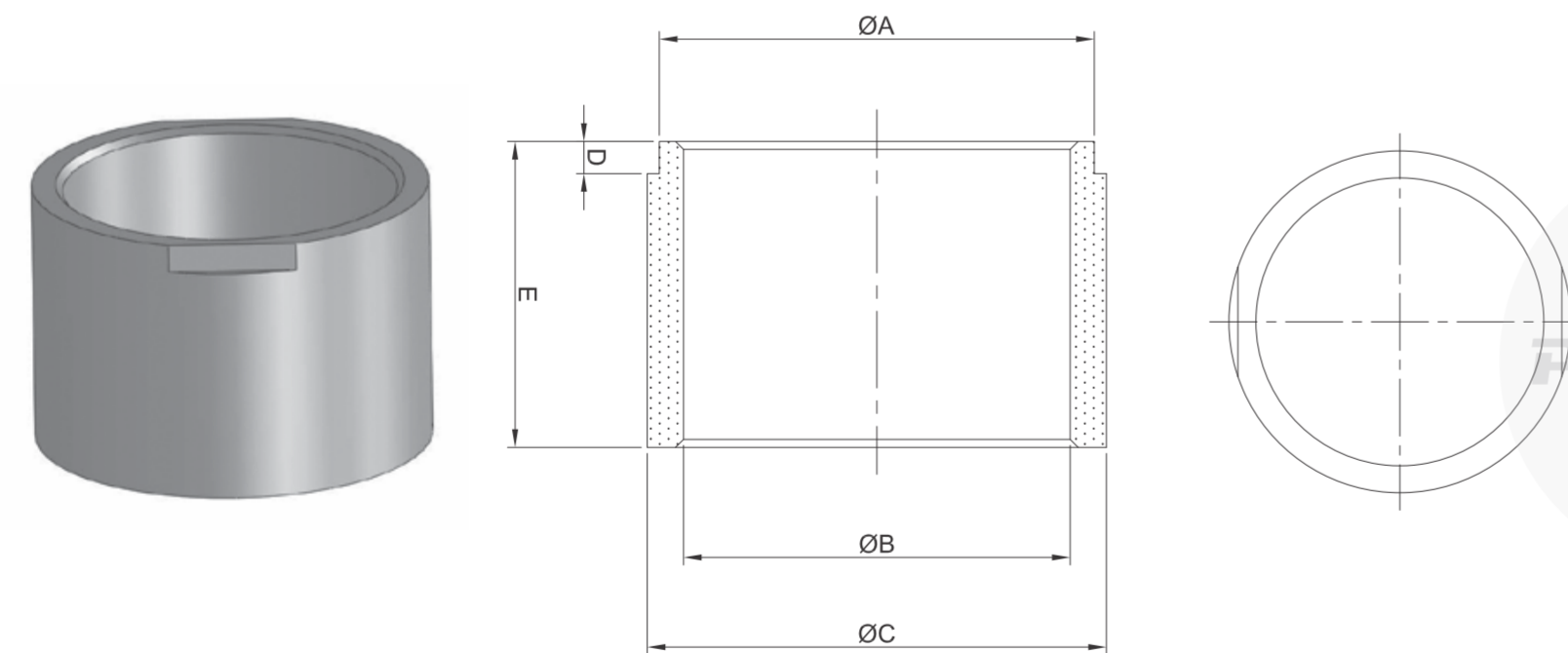




Straight tube sleeve

Unit: mm

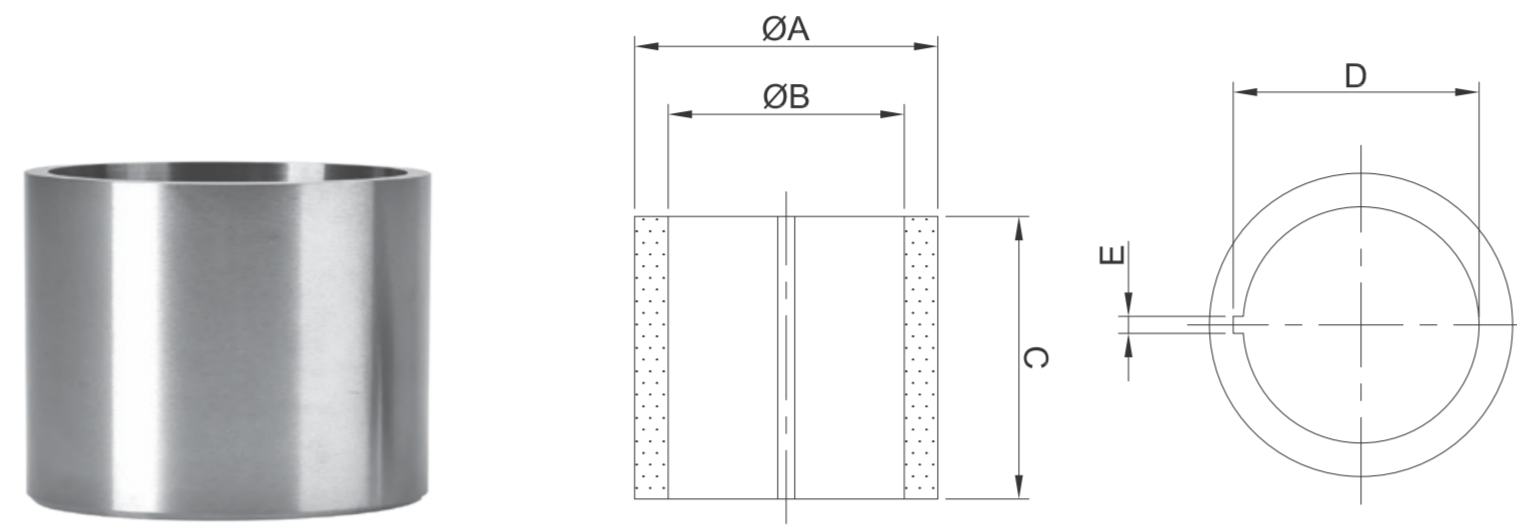
Stock No.	ΦA	ΦB	C
PH101501	20.4	15.8	19.3
PH102202	26.9	22.2	22.2
PH103201	37.0	48.7	32.1
PH104504	53.6	45.5	37.7
PH105101	59.1	51.1	58.5
PH106201	69.9	62.2	24.1



Straight tube sleeve

Unit: mm

Stock No.	ΦA	ΦB	C	D	E
PX054004	54.0	48.0	57.0	4.0	54.0
PX058005	58.0	50.0	60.0	5.0	60.0
PX060003	60.0	53.0	65.0	8.0	65.0



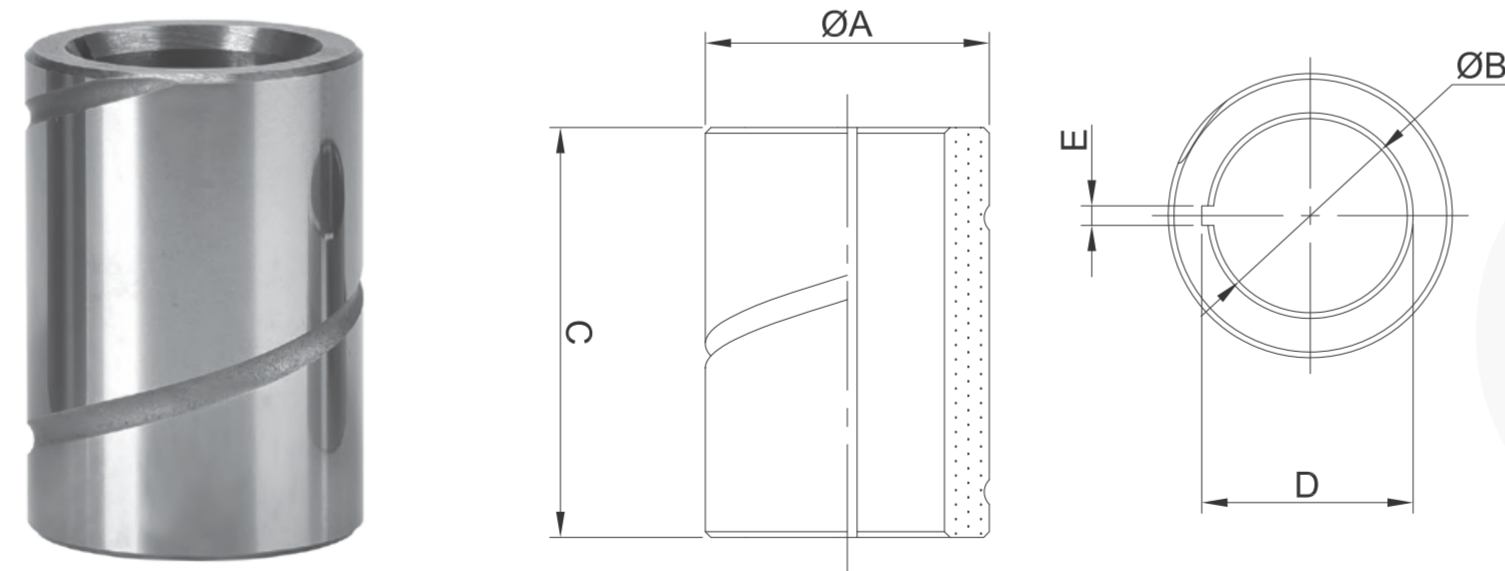
Straight tube sleeve with keyway

Unit: mm

Stock No.	ΦA	ΦB	C	D	E
PX023001	23.8	17.5	14.1	18.4	1.6
PX023002	23.8	17.5	38.1	18.4	1.6
PX025001	36.5	30.2	34.4	31.1	1.6
PX025002	38.1	30.2	50.8	31.1	1.6
PX024001	28.6	22.3	15.6	23.2	1.6
PX024002	28.6	22.3	38.1	23.2	1.6
PX024003	28.6	22.3	26.6	23.2	1.6

POTACT

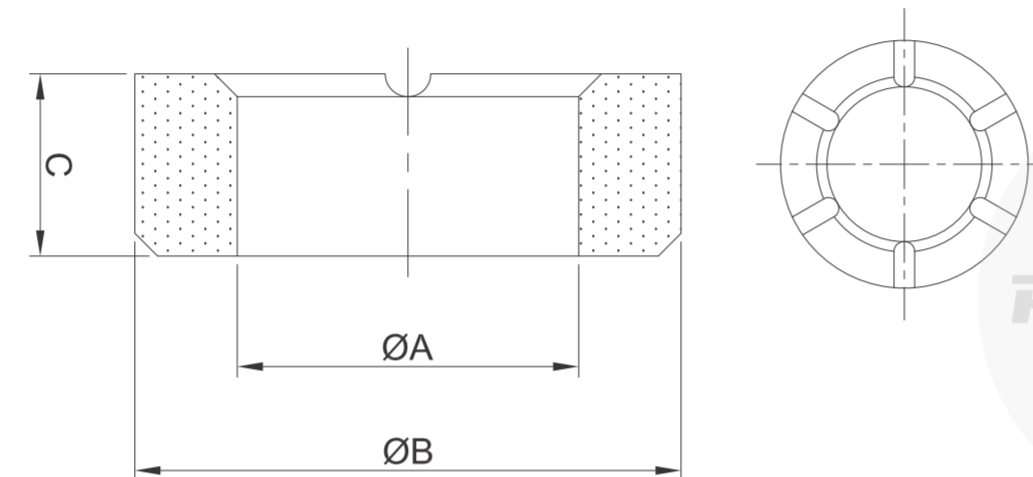
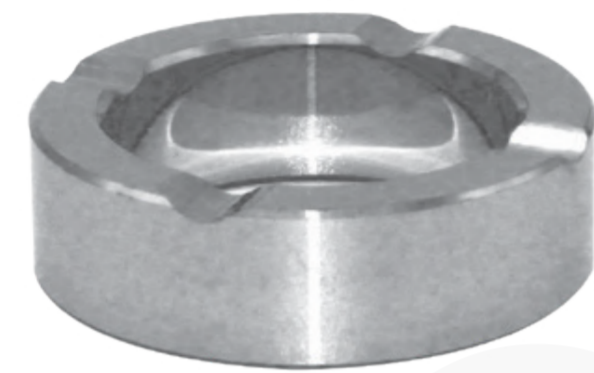
POTACT



Straight tube sleeve with keyway and spiral groove

Unit: mm

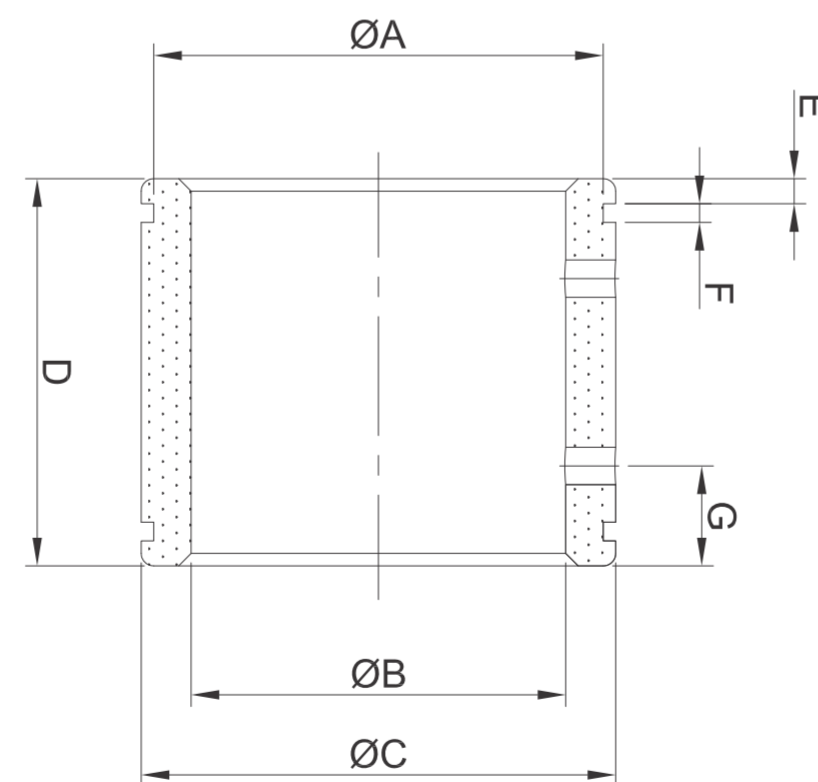
Stock No.	ΦA	ΦB	C	D	E
PX017004	25.0	17.0	36.0	17.9	1.6
PX020007	28.0	20.0	36.0	20.9	1.6
PX022010	28.0	22.0	36.0	23.0	2.0
PX017005	25.0	17.0	32.0	17.9	1.6



Straight tube sleeve with oil groove

Unit: mm

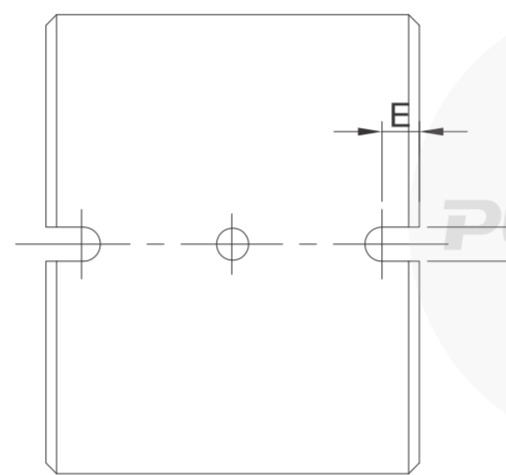
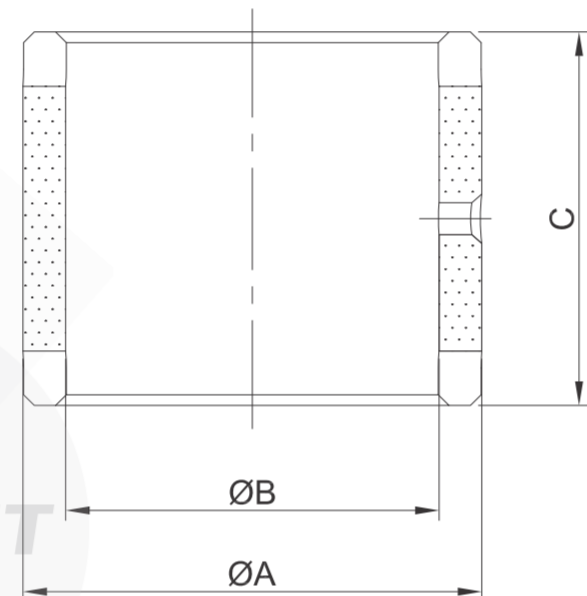
Stock No.	ΦA	ΦB	C	R
PX034001	15.0	27.0	8.0	2.5
PX034002	18.0	30.0	12.0	2.5
PX034003	28.0	38.0	16.0	2.5



Sleeve with round groove and oil hole

Unit: mm

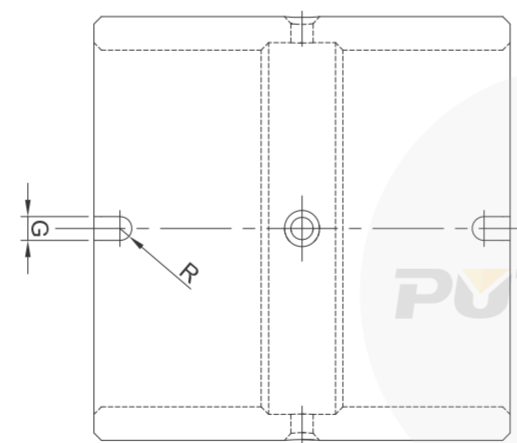
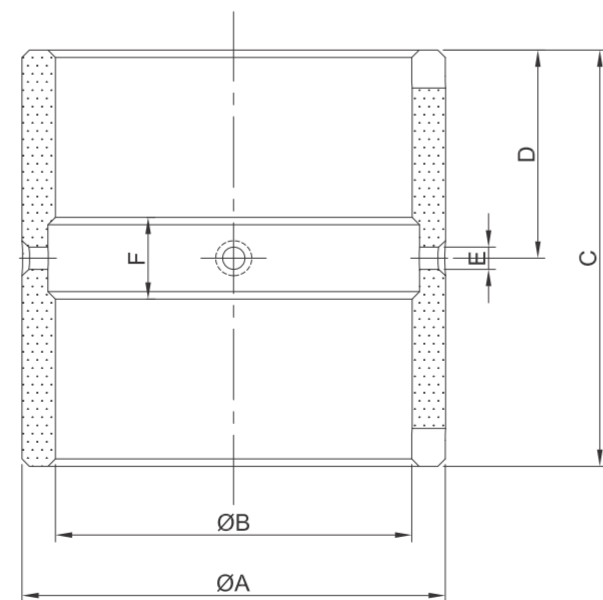
Stock No.	ΦA	ΦB	ΦC	D	E	F
PX017004	58.0	53.0	61.0	40.0	2.0	1.5
PX017005	45.0	40.0	48.0	35.0	3.0	2.0
PX017006	52.0	45.0	58.0	45.0	4.0	2.2



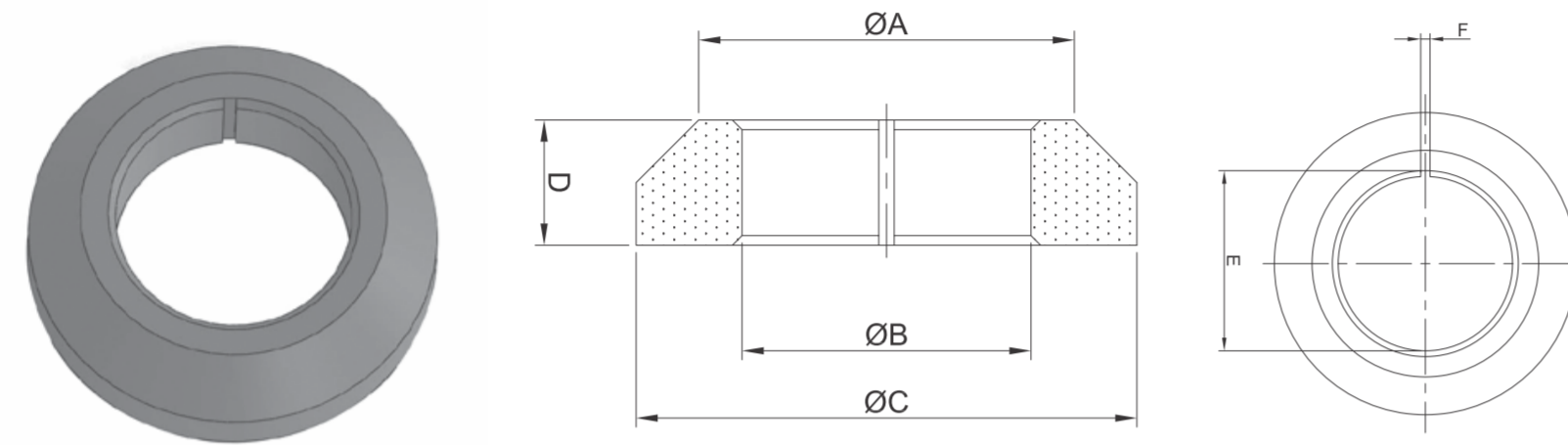
Sleeve with aligning groove and oil hole

Unit: mm

Stock No.	ΦA	ΦB	ΦC	D	E
PX042003	42.0	34.0	34.0	3.1	3.4



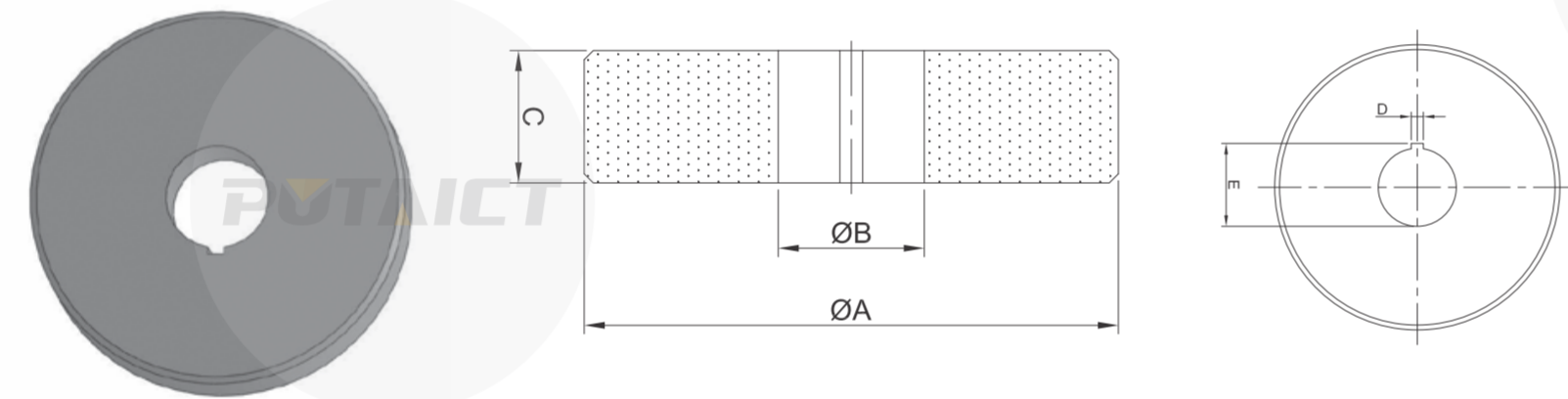
Stock No.	ΦA	ΦB	C	D	ΦE	F	G
PX056009	56.0	46.0	55.0	27.0	2.0	9.0	3.0



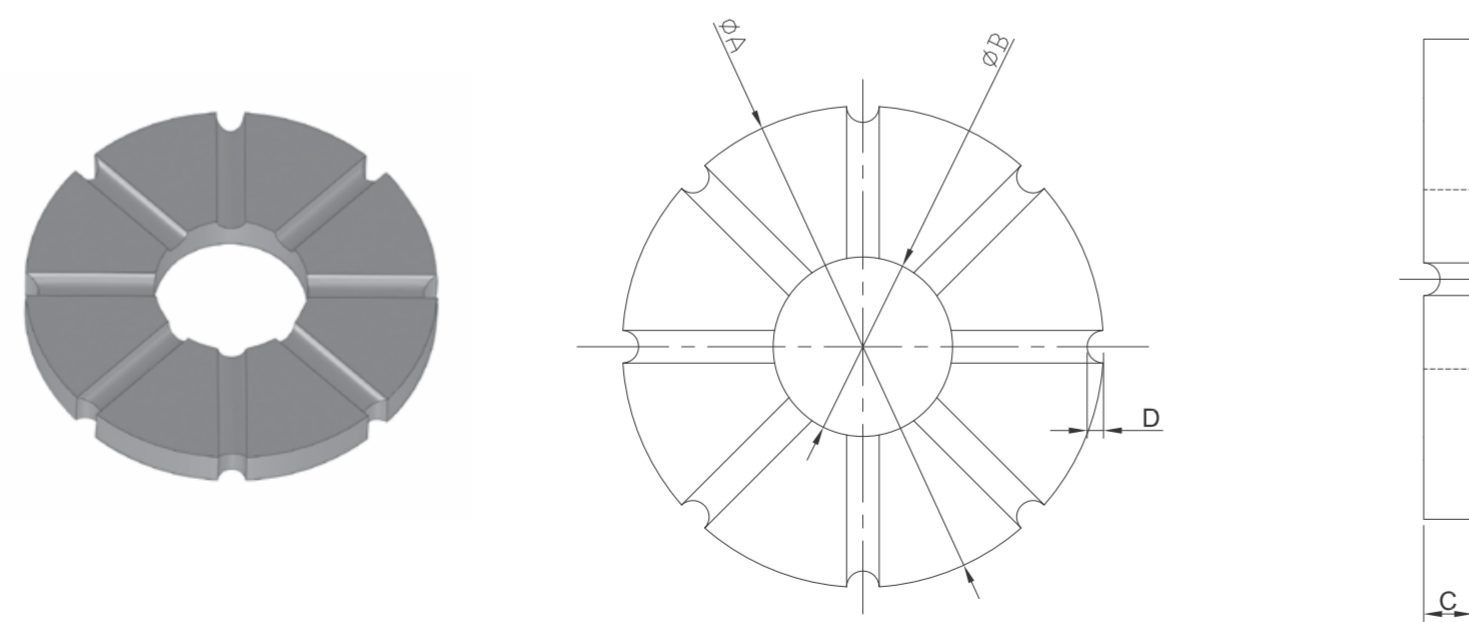
Thrust sleeve with keyway

Unit: mm

Stock No.	ΦA	ΦB	ΦC	D	E	F
PX045002	45.0	36.0	60.0	13.0	39.0	1.8
PX040003	40.0	35.0	55.0	13.0	37.0	2.1
PX052004	52.0	37.0	63.0	13.0	40.0	3.2



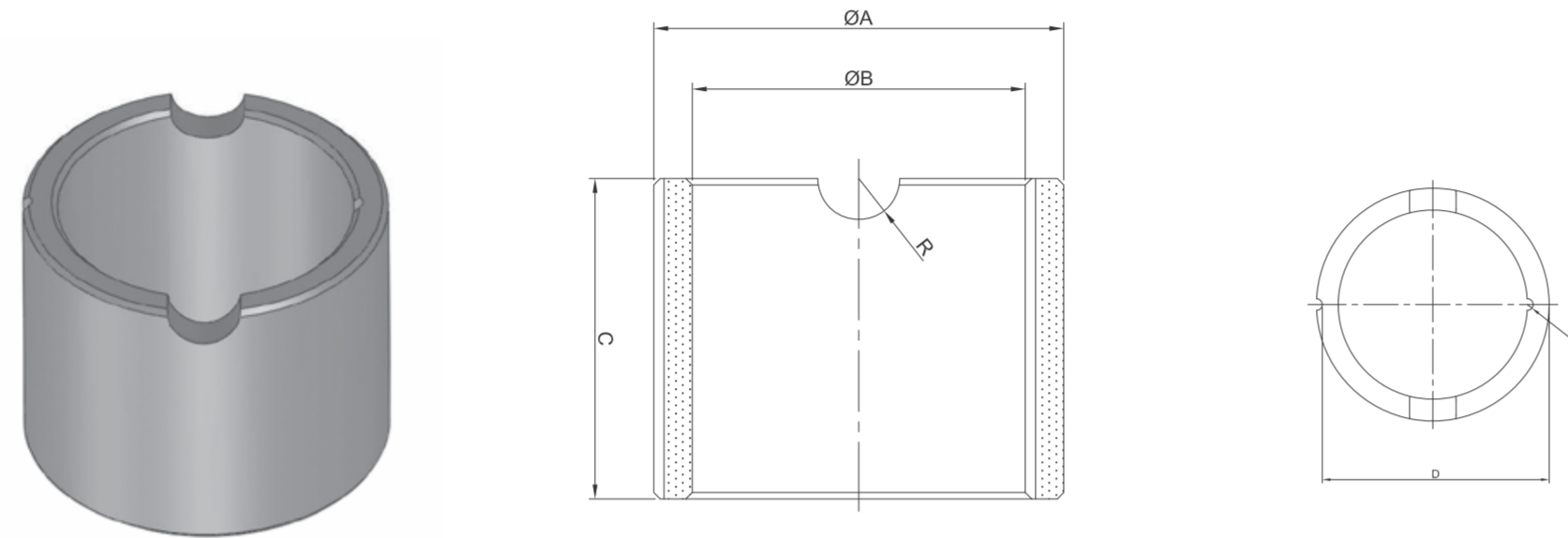
Stock No.	ΦA	ΦB	ΦC	D	E
PX028033	115.0	30.0	28.0	4.0	33.0



Thrust sleeve with oil groove

Unit: mm

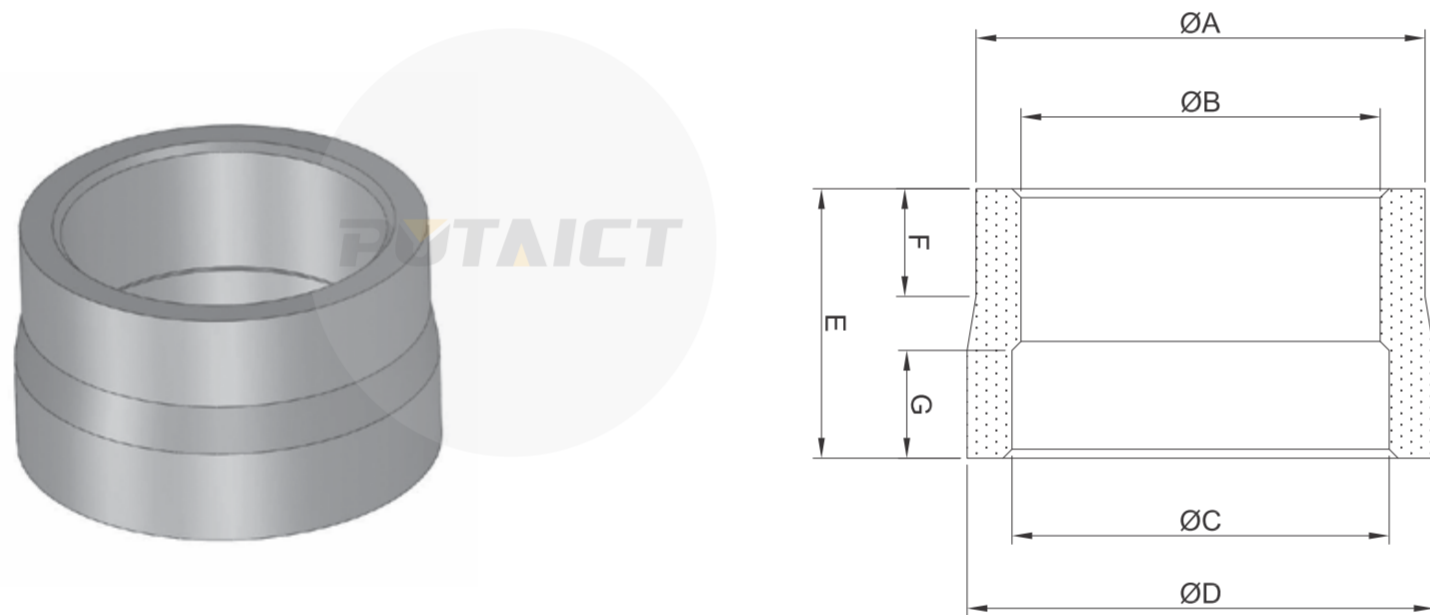
Stock No.	ΦA	ΦB	C	D
PX059001	59.0	22.0	6.0	2.0
PX065001	65.0	25.0	8.0	2.8
PX085001	85.0	32.0	12.0	3.5



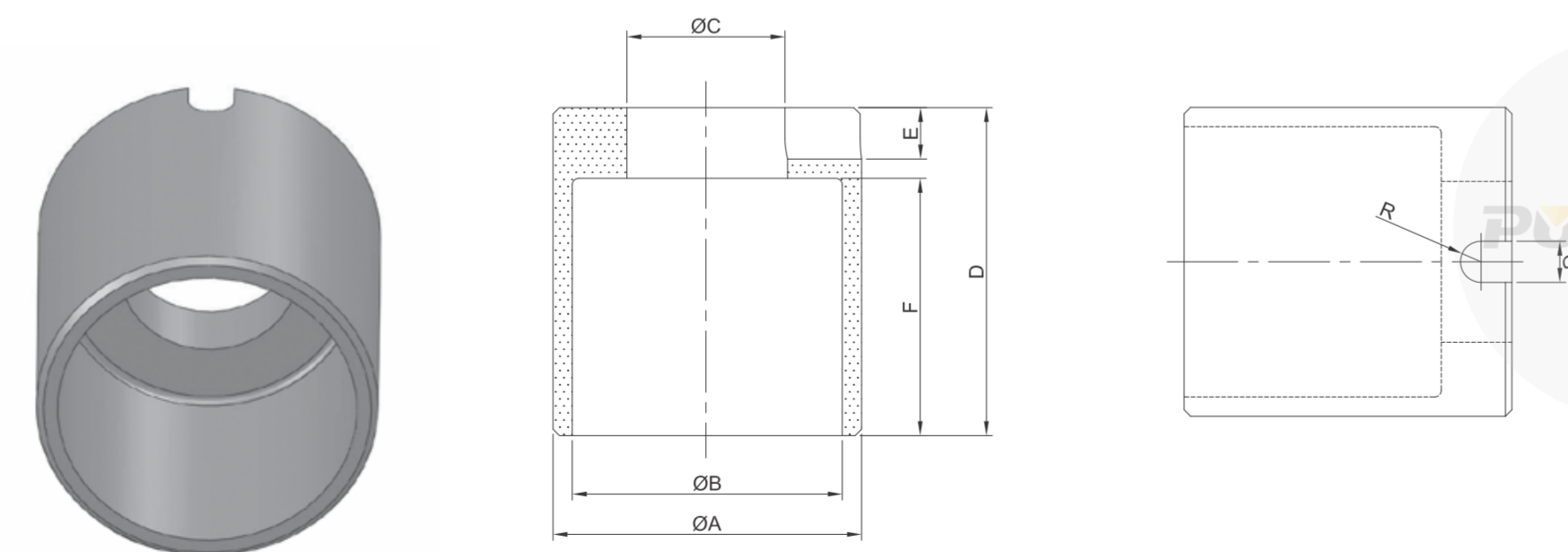
Nonstandard sleeve

Unit: mm

Stock No.	ΦA	ΦB	C	D	R
PX030003	30.0	25.0	24.0	29.0	3.2



Stock No.	ΦA	ΦB	ΦC	ΦD	E
PX025007	25.0	19.0	20.0	26.0	16.0



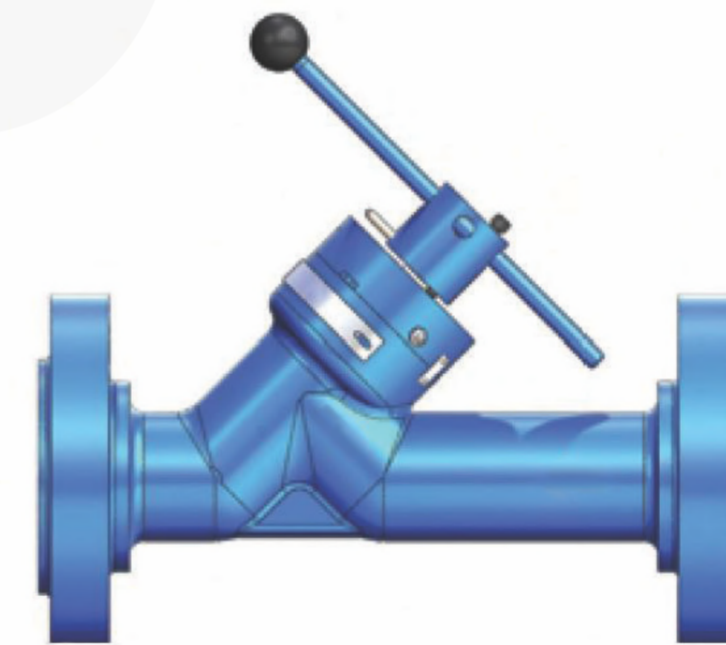
Stock No.	ΦA	ΦB	D	E	F
PX048001	47.0	4.0	50.0	7.0	42.0



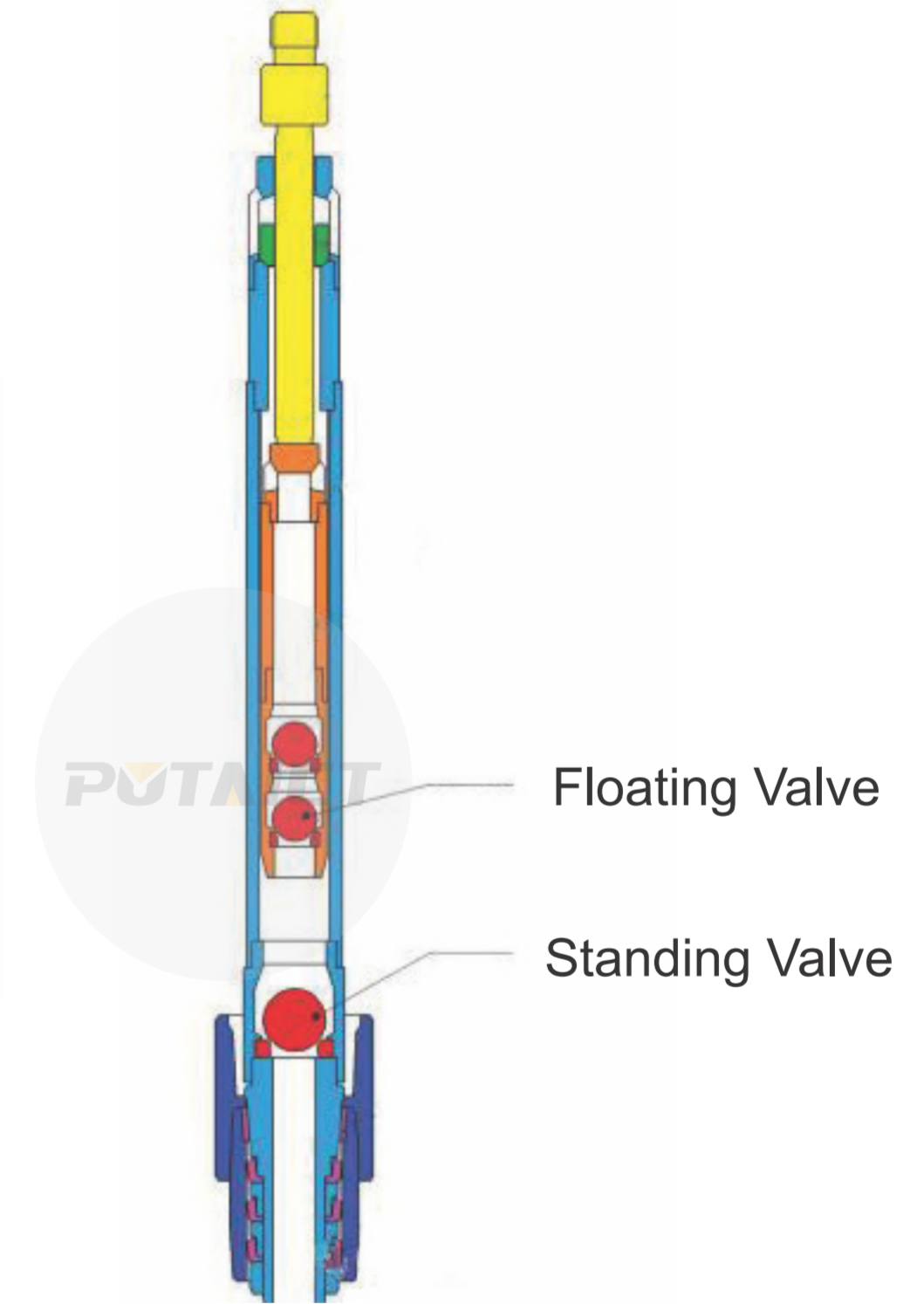
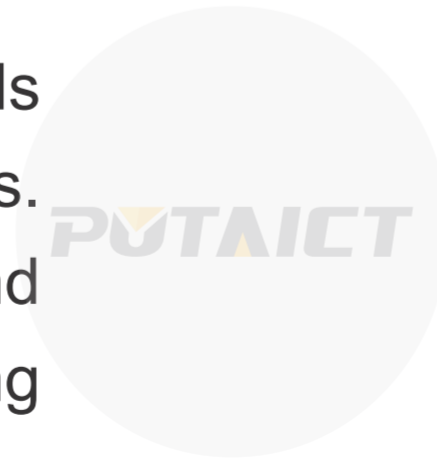
## Cemented Carbide Wear Parts for Valves

The wear parts for valves mainly include valve disks, valve cages, valve balls and seats as well as other component that needs excellent corrosion & erosion resistance. The valve disk is widely used in the choke valve and control valve to control the fluid volume and pressure accurately; the valve balls & seats are majorly used to the stationary and roving unidirectional valve in various tube and rod defueling oil pump.

Cobalt bonded, Nickel bonded and Nickel-Titanium bonded grads are available for highly corrosive and serve service applications. The unique property with good balance of toughness and hardness, cemented carbide balls & seats achieves high pumping effect and a long pump check cycle.

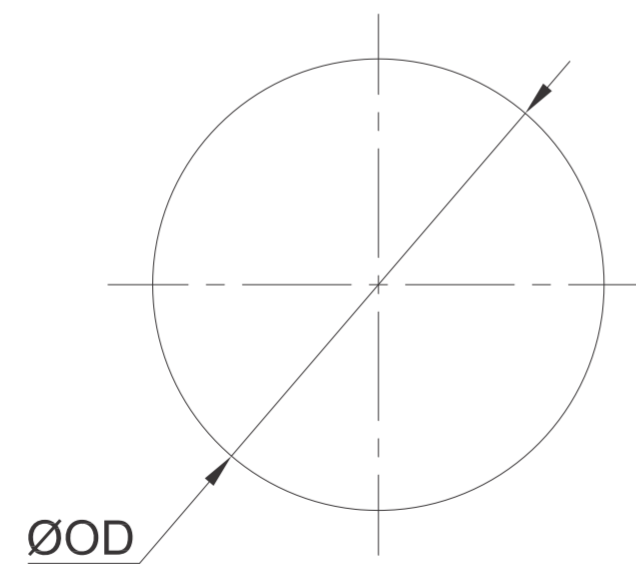


**Choke Valve**



**Rod defueling pump**

## Valve Ball



Valve ball

Unit: mm

API type	Stock No.	Size	OD	
P11-106	PQ115801	5/8"	Ø15.9	+0.9 +0.6
P11-125	PQ119001	3/4"	Ø19.1	+1.0 +0.8
P11-150	PQ123801	15/16"	Ø23.8	+1.0 +0.8
P11-175	PQ128501	1-1/8"	Ø28.6	+1.1 +0.8
P11-200	PQ131701	1-1/4"	Ø31.8	+1.5 +1.0
P11-225	PQ134901	1-3/8"	Ø34.9	+1.5 +1.0
P11-250	PQ142801	1-11/16"	Ø42.9	+1.5 +1.0
P11-375	PQ157101	2-1/4"	Ø57.2	+1.8 +1.3



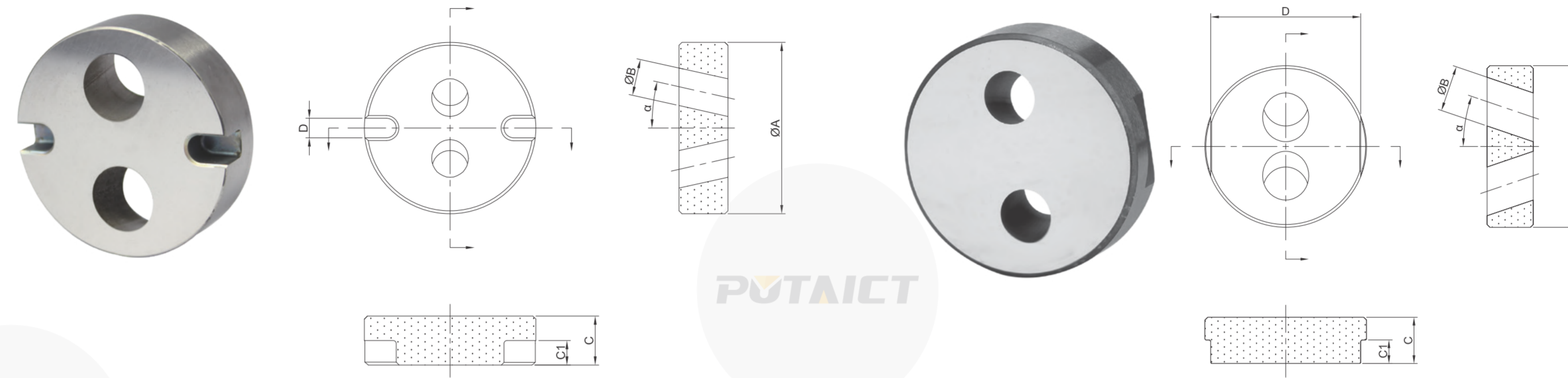
Valve seat

Unit: mm



API type	Stock No.	Size	A		B	C	D	R
P11-106	PS10201101201	1-1/16"	Ø20.4	+0.5 +0	Ø11.7	13.0	1.0	1.6
P11-125	PS10231301201	1-1/4"	Ø23.6	+0.5 +0	Ø14	13.0	1.0	1.6
P11-150	PS10291701201	1-1/2"	Ø29.9	+0.5 +0	Ø17	13.0	1.3	2.0
P11-175	PS10352001201	1-3/4"	Ø35.5	+0.5 +0	Ø21	13.0	1.5	2.4
P11-200	PS10372401201	2"	Ø37.8	+0.5 +0	Ø24.4	13.0	1.5	2.4
P11-225	PS10432601201	2-1/4"	Ø43.9	+0.6 +0	Ø26.9	13.0	2.0	2.4
P11-250	PS10513301201	2-3/4"	Ø51.3	+0.6 +0	Ø33.3	13.0	2.0	2.4
P11-375	PS10784701901	3-3/4"	Ø78.3	+0.6 +0	Ø47.8	19.3	2.5	3.2

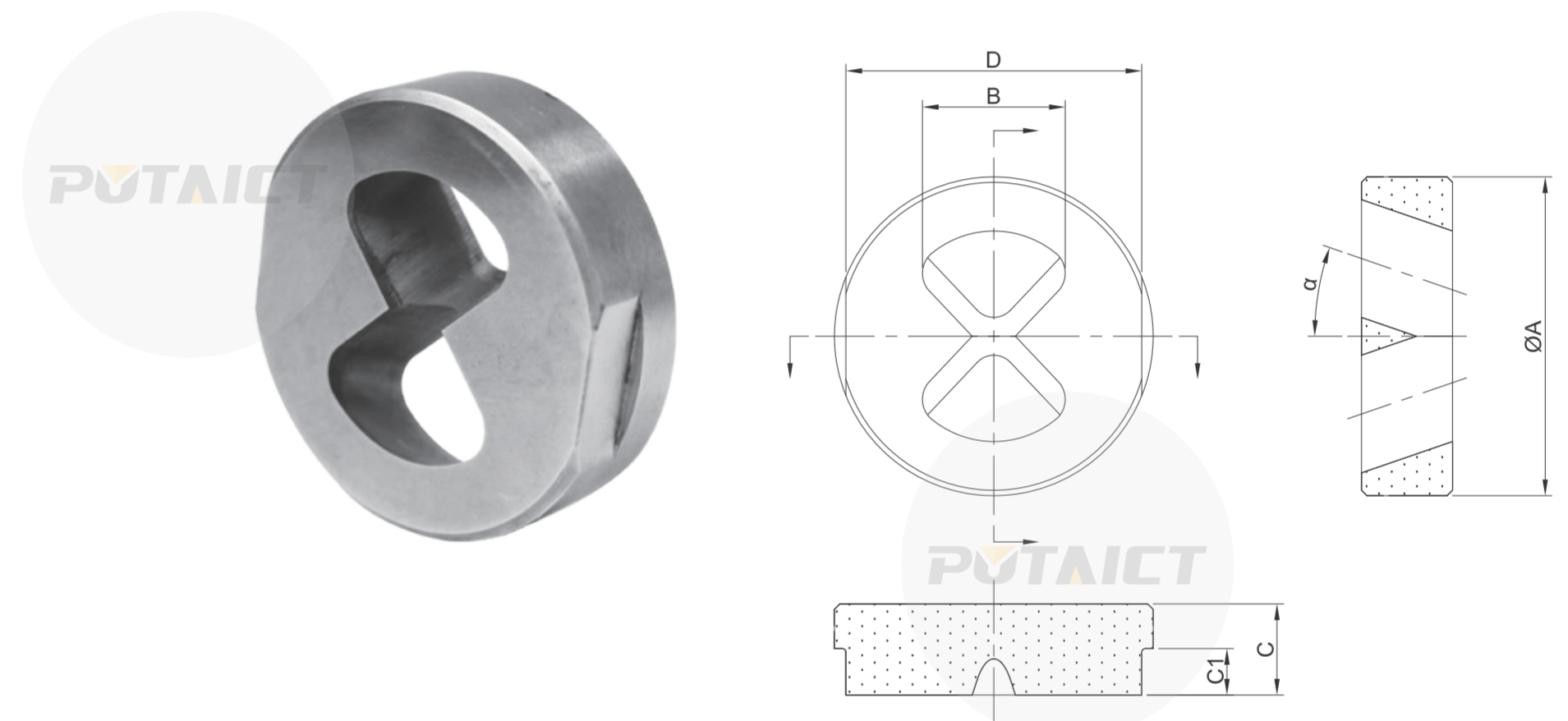
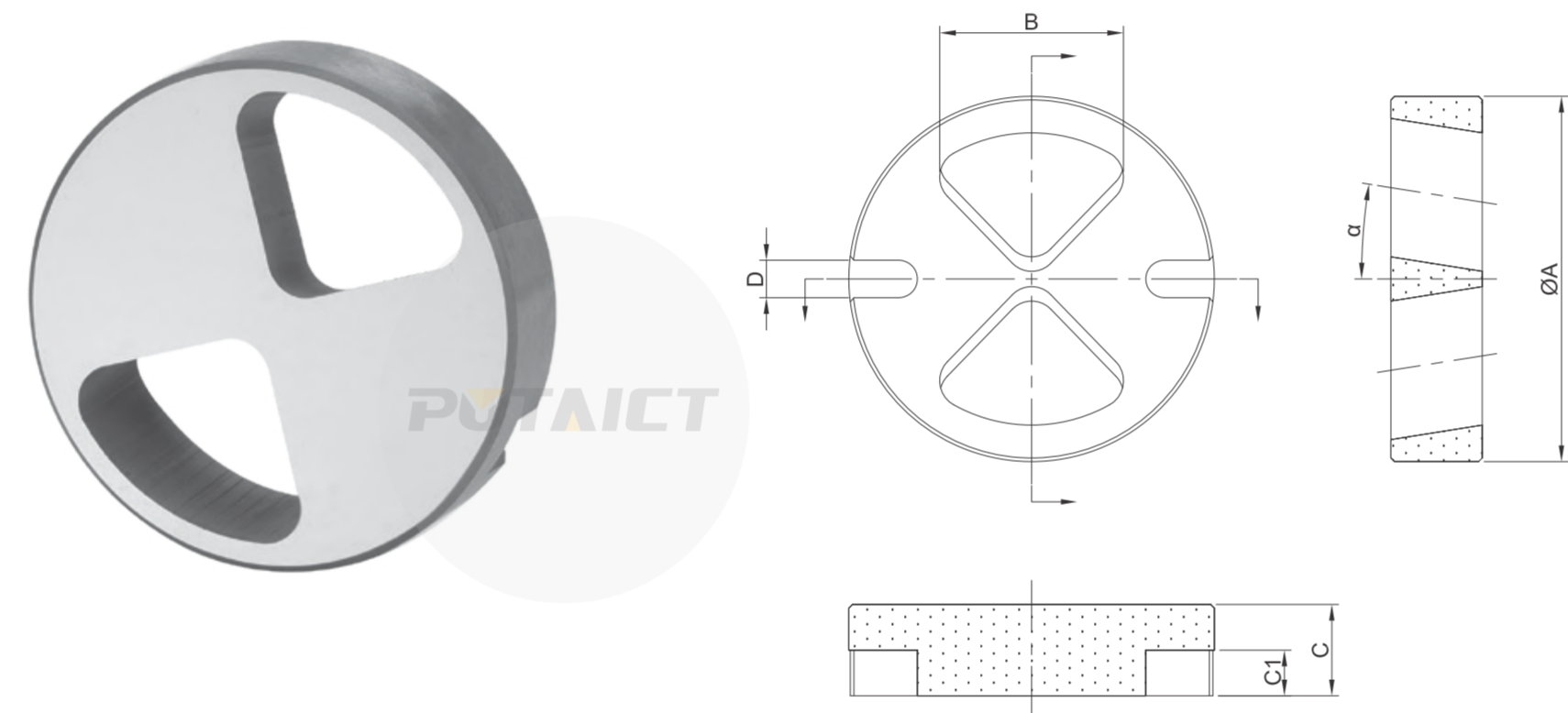
Valve Disk



Unit: mm

Stock No.	ΦA	ΦB	C	D
PD034002	34.9	3.2	12.8	5.3
PD034003	34.9	6.4	12.8	5.3
PD034004	34.9	9.5	12.8	5.3
PD044003	44.5	14.3	12.7	5.1
PD044008	44.5	3.2	12.7	5.2
PD044009	44.5	4.8	12.7	5.2
PD044010	44.5	6.4	12.7	5.2
PD044011	44.5	9.5	12.7	5.2
PD044012	44.5	12.7	12.7	5.2
PD044026	44.5	9.5	12.7	5.1
PD044030	44.5	12.7	12.7	5.1
PD063006	63.5	9.5	19.1	6.9

## Valve Disk

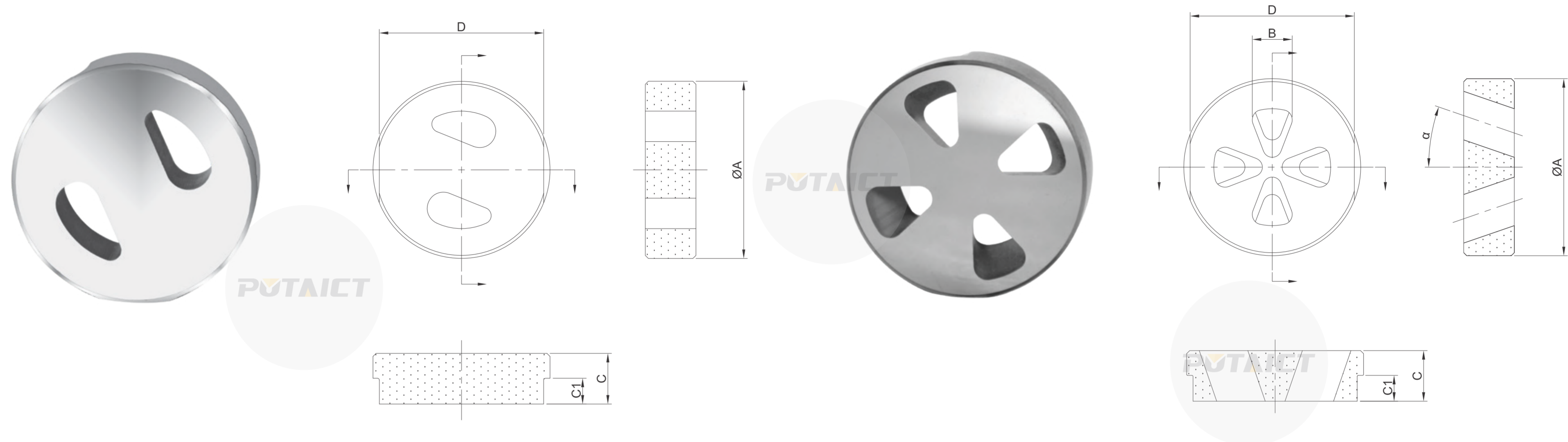


Unit: mm

Stock No.	ΦA	ΦB	C	D
PD034007	34.9	16.8	12.8	5.3
PD044013	44.5	21.4	12.7	5.2
PD050009	50.8	25.6	12.7	5.2
PD067001	67.3	35.4	12.7	4.8
PD090002	90.5	42.6	19.1	7.0

Unit: mm

Stock No.	ΦA	ΦB	C	D
PD044007	44.5	19.9	12.7	41.3

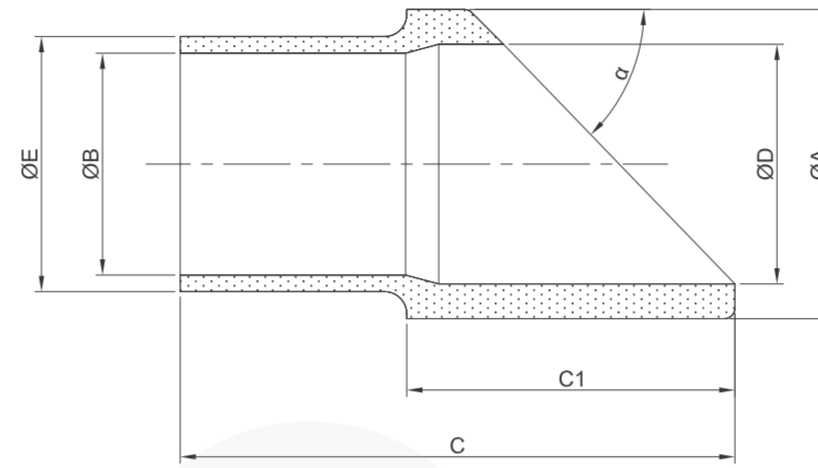


Other shape

Unit: mm

Unit: mm

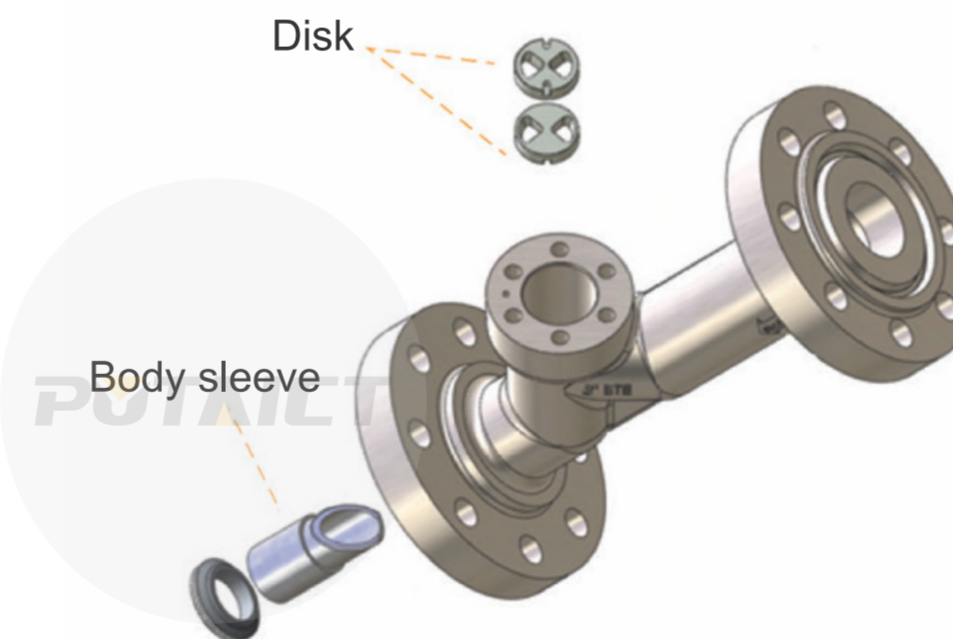
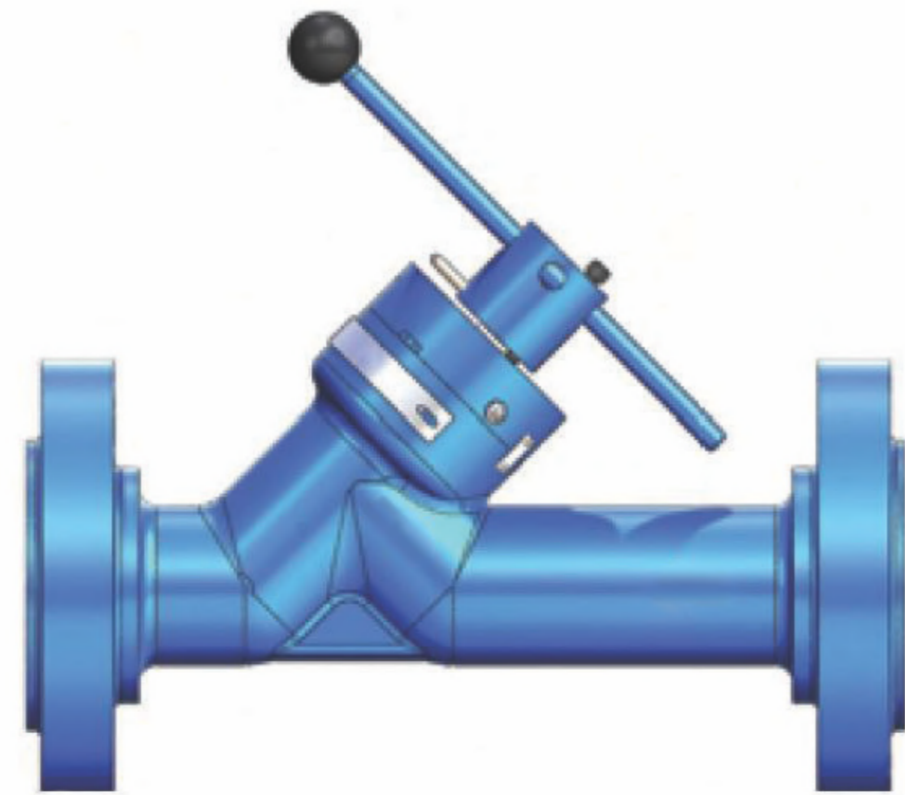
Stock No.	ΦA	C	D	Stock No.	ΦA	ΦB	C	D
PD044028	44.5	12.7	41.3	PD044006	44.5	10.0	12.7	41.3

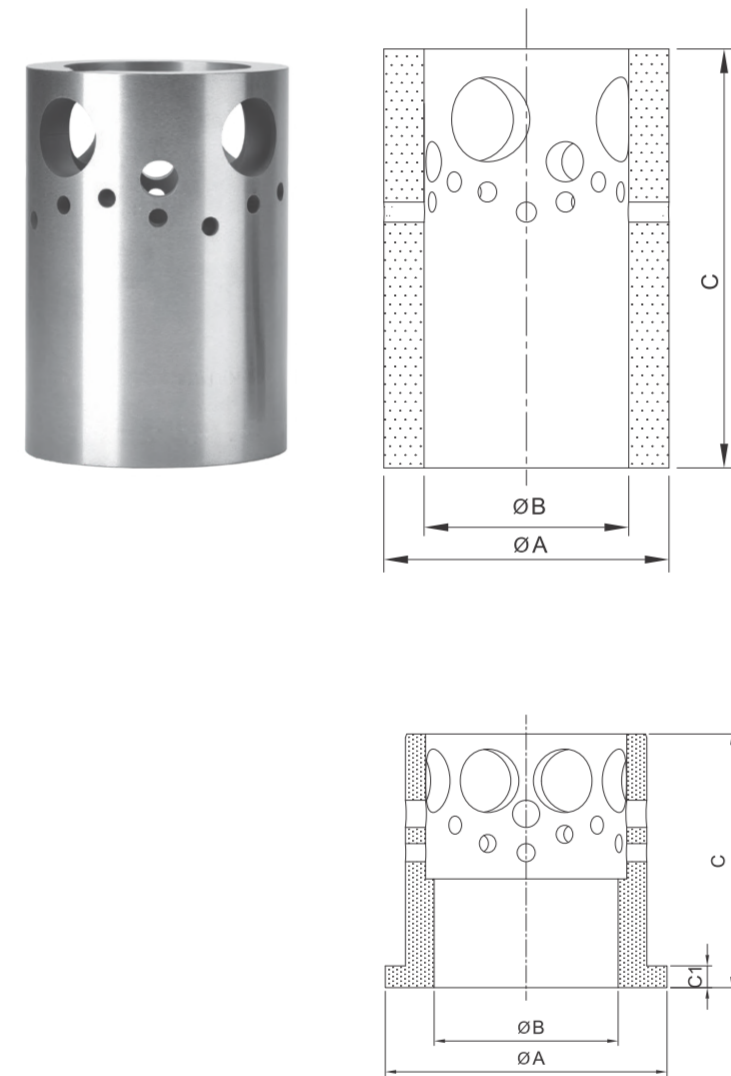


Body sleeves

Unit: mm

Stock No.	ΦA	ΦB	C	ΦD	ΦE
PNX050011	44.5	31.8	79.8	34.3	36.5



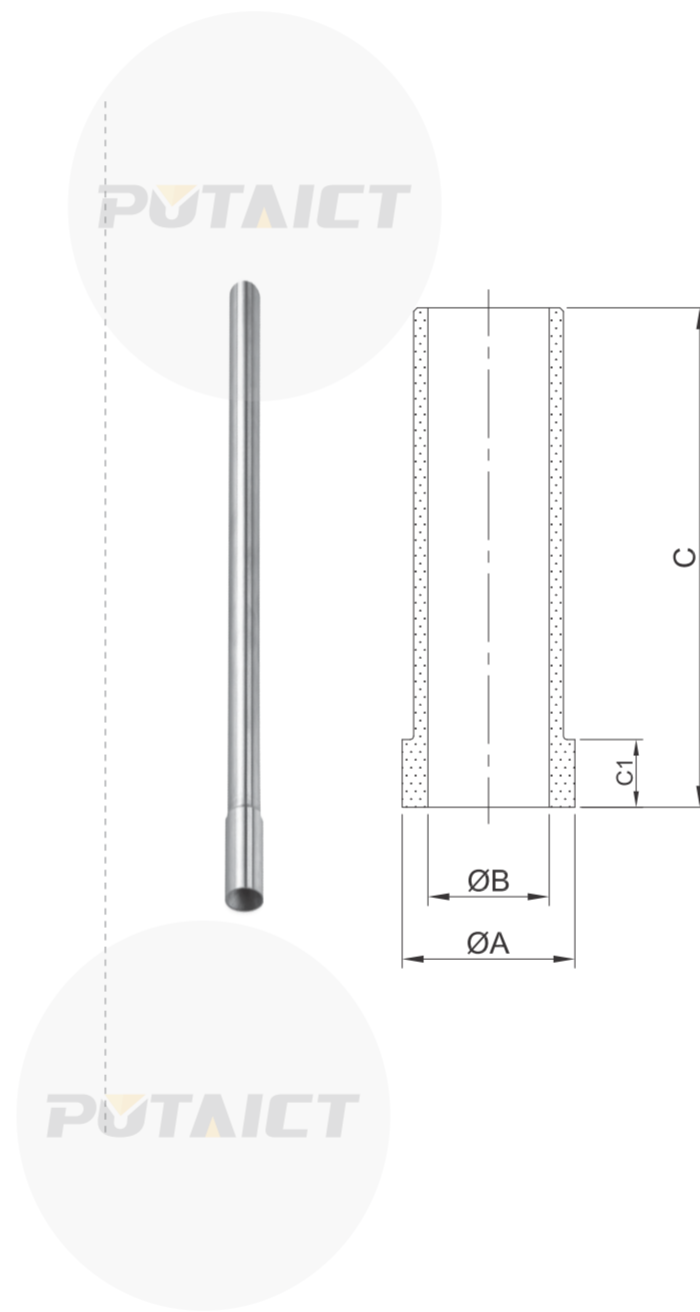


Cages

Unit: mm

Stock No.	ΦA	ΦB	C
PX050007	70.8	50.8	104.0
PX076007	95.3	76.2	111.0

Stock No.	ΦA	ΦB	C
PX101001	155.5	101.6	140.0



Valve seat

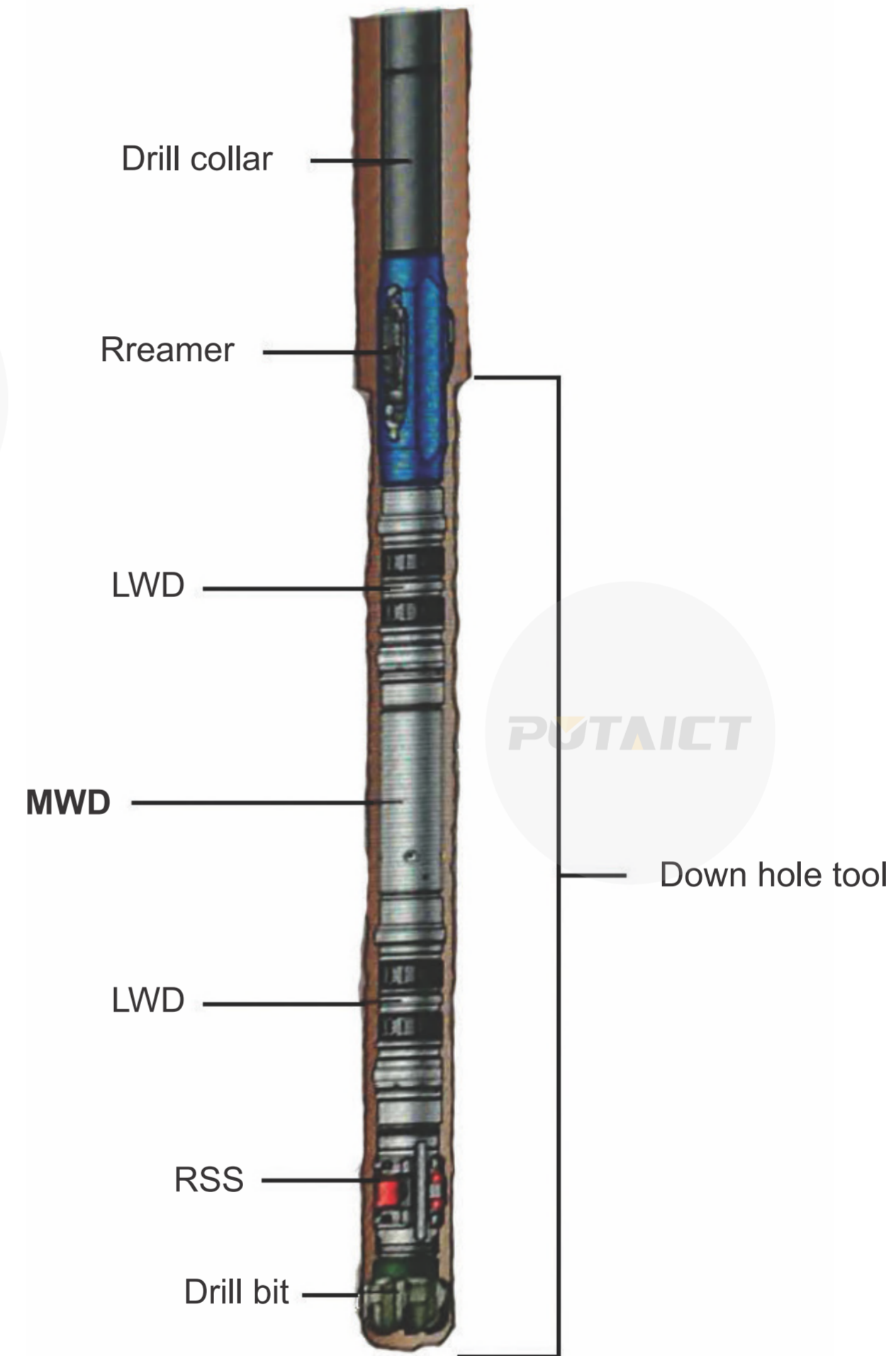
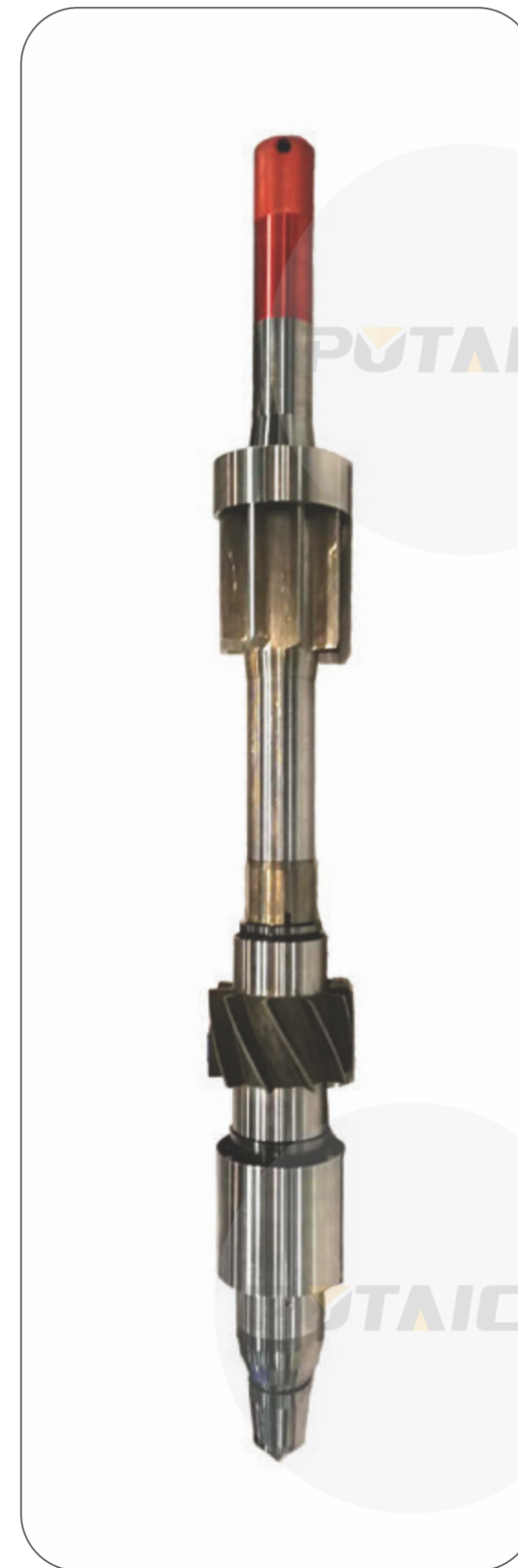
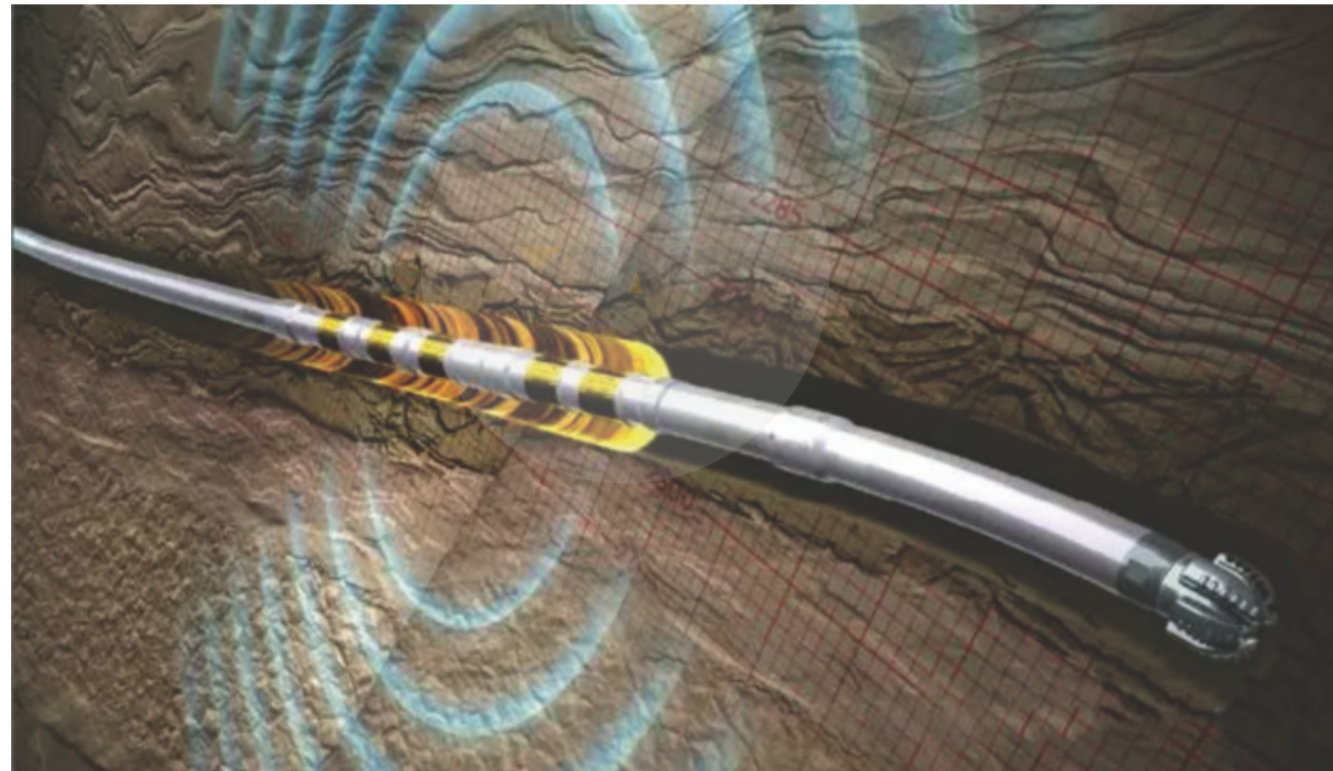
Unit: mm

Stock No.	ΦA	ΦB	C
PX023015	17.0	11.1	76.0
PX023016	24.2	17.5	40.0
PX023017	24.2	17.5	50.0
PX023018	24.2	17.5	60.0
PX023019	24.2	17.5	70.0
PX023020	24.2	17.5	80.0
PX023021	24.2	17.5	95.0

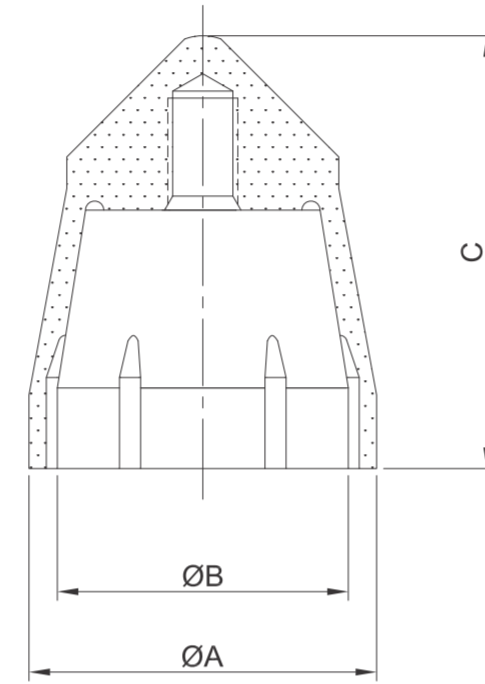
## Cemented Carbide Accessories for MWD&LWD

The accessories and components in this section are mainly used on down hole drill tools, MWD and LWD, for the function of flushing, slurry sealing, flow diversion, and sending slurry pressure and other information back with pulse signal. It works in very severe and adverse conditions of high corrosion, erosion and high temperature.





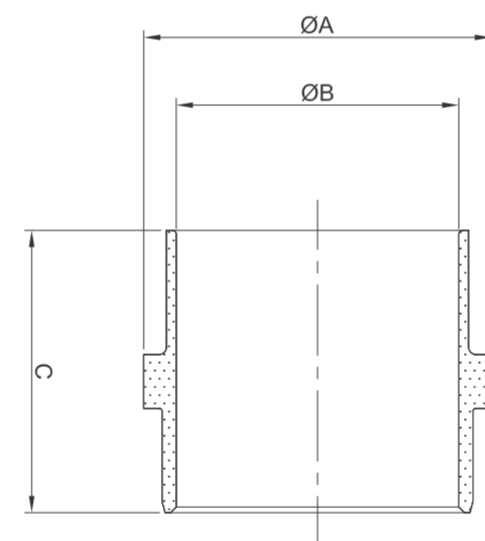
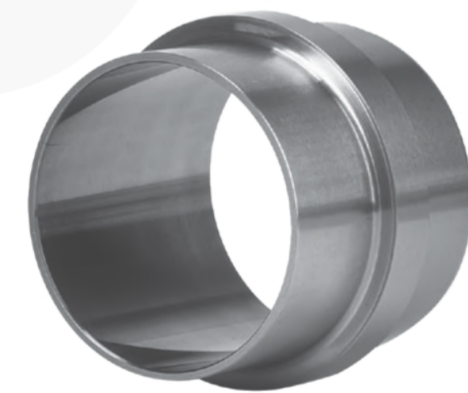




Lift valve

Unit: mm

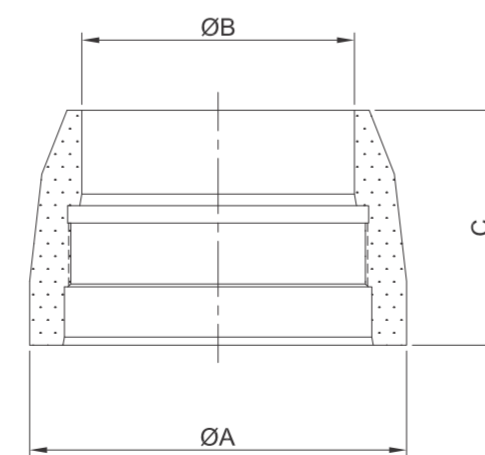
Stock No.	ΦA	ΦB	C
PNX061002	49.0	42.0	61.5



Upper wear sleeve

Unit: mm

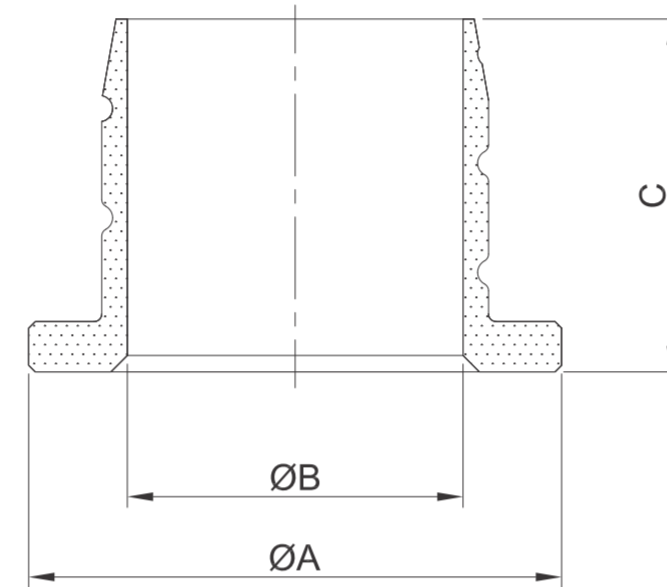
Stock No.	ΦA	ΦB	C
PNX046001	46.9	38.2	38.1



Nose cap

Unit: mm

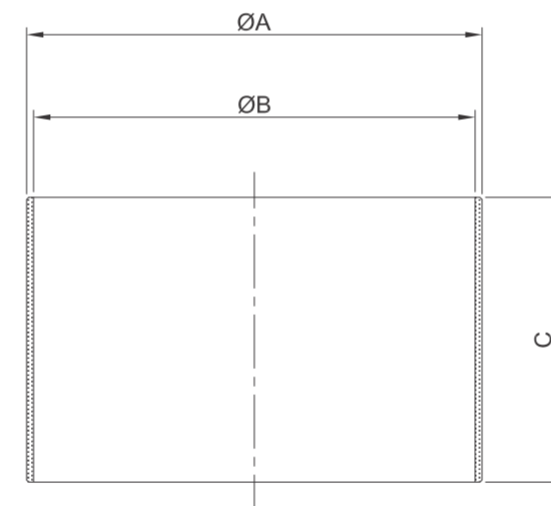
Stock No.	ΦA	ΦB	C
PNX091007	65.0	47.0	40.5



Lower bearing sleeve

Unit: mm

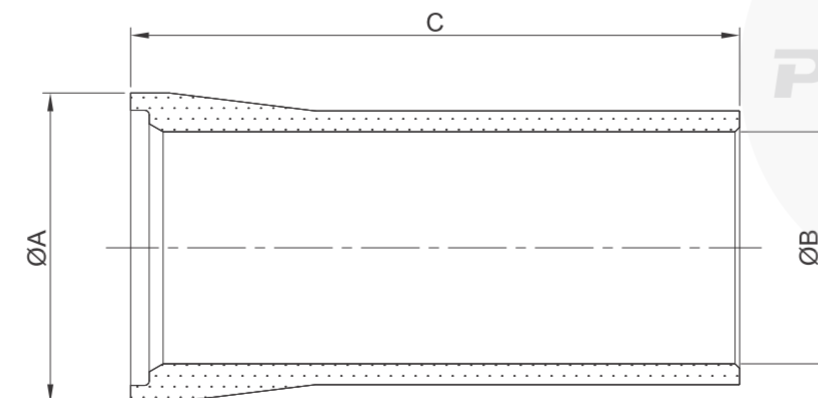
Stock No.	ΦA	ΦB	C
PNX103901	62.1	39.0	41.1
PX030014	50.0	30.0	41.0



Wear sleeve

Unit: mm

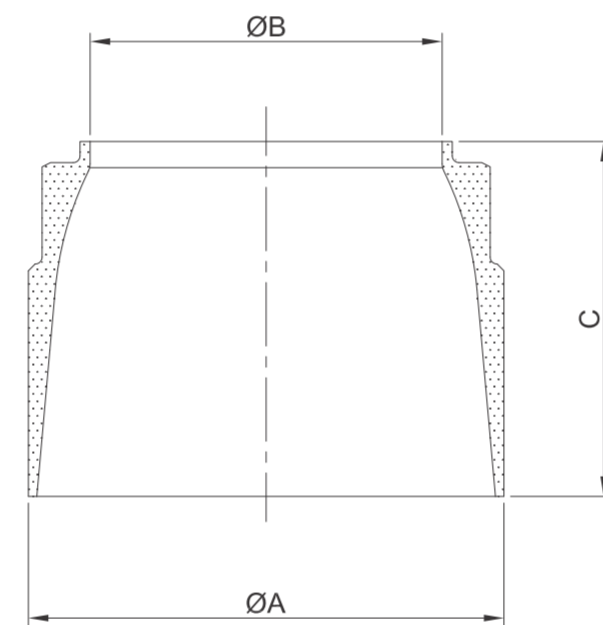
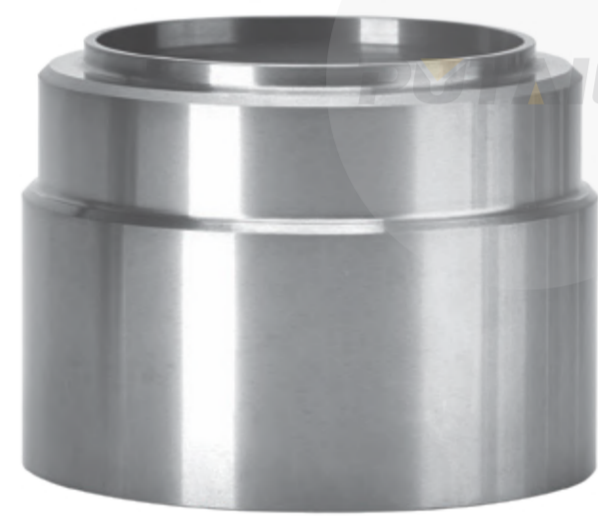
Stock No.	ΦA	ΦB	C
PH108205	85.4	80.6	53.0



Spacer sleeve

Unit: mm

Stock No.	ΦA	ΦB	C
PNX045011	52.4	41.3	110.5

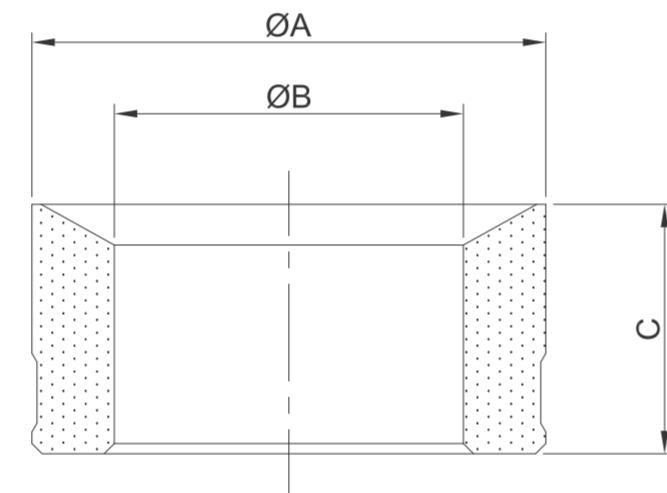
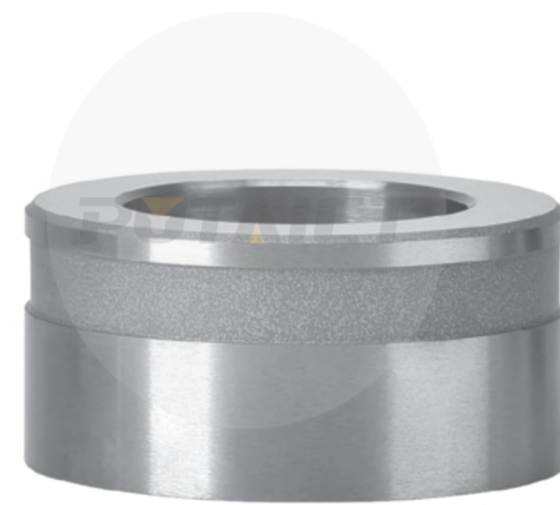


Bush raising valve

Unit: mm

Stock No.	ΦA	ΦB	C
PPF1841101	83.0	50.5	37.8
PPF1712801	73.2	53.6	55.3
PPF1961501	94.2	70.4	35.8

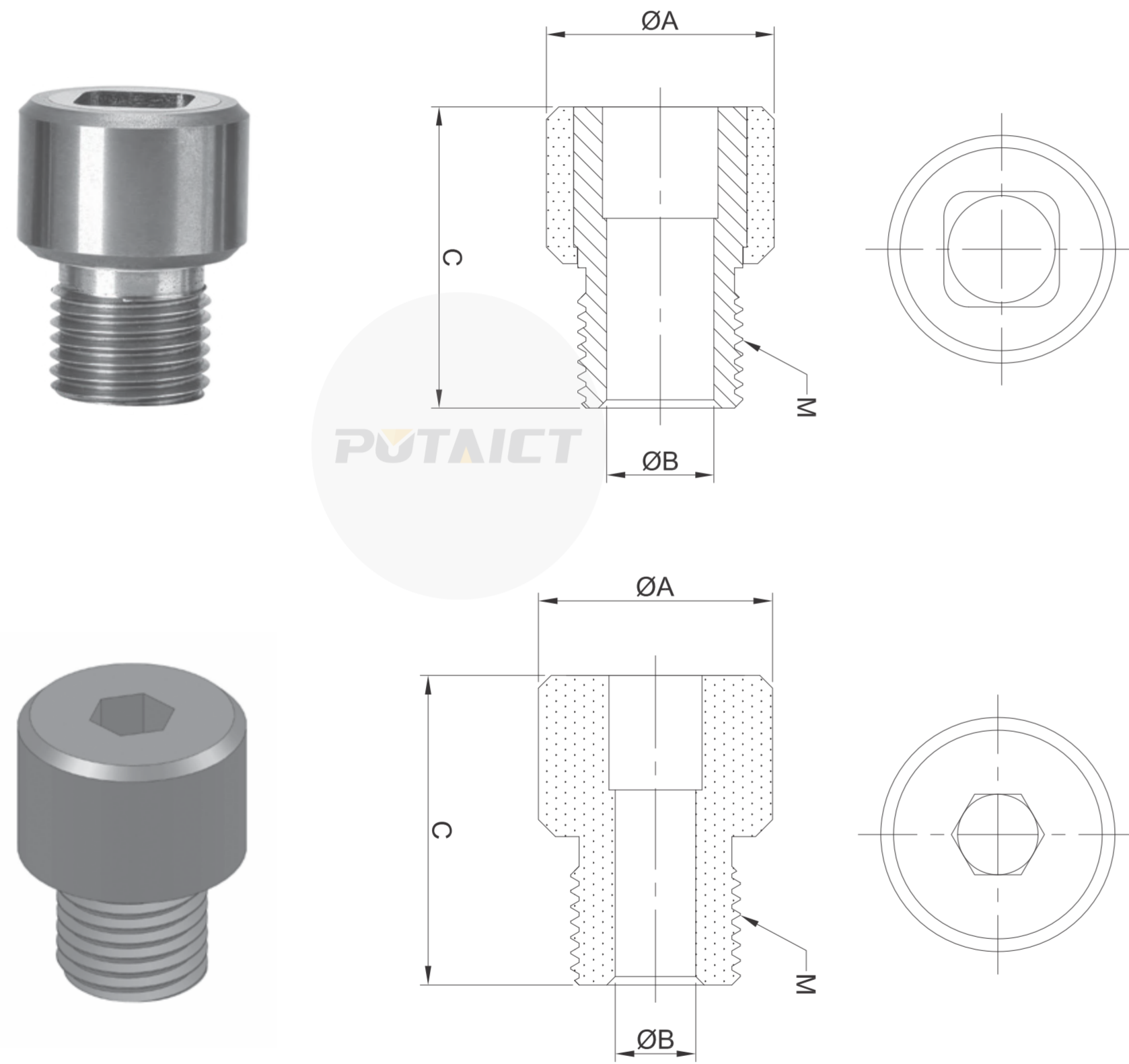




Flow limitation ring

Unit: mm

Stock No.	ΦA	ΦB	C
PX035011	50.5	35.6	24.5
PX038006	50.5	38.1	24.5
PX030011	50.5	30.5	24.5
PX032007	50.5	32.5	24.5
PX034009	50.5	34.3	24.5
PX045006	61.9	45.0	29.0
PX032008	50.7	32.5	24.5
PX034010	50.7	34.3	24.5
PX035012	50.7	35.6	24.5
PX038007	50.7	38.1	24.5
PX030012	50.7	30.5	24.5
PX026008	40.0	26.2	22.0
PX028022	40.0	28.5	22.0
PX030015	40.0	30.5	22.0
PX032011	40.0	32.1	22.0



Main valve core

Unit: mm

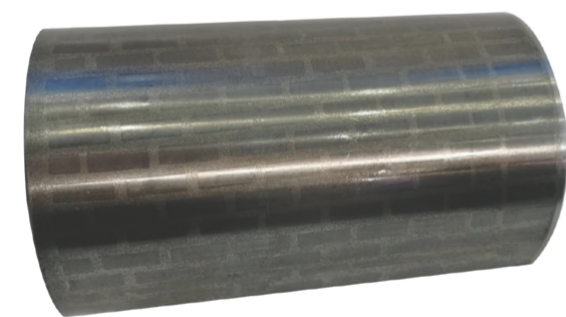
Stock No.	ΦA	ΦB	C	M
PNX013026	26.4	13.0	36.5	M20X2
PNX013027	27.6	13.0	36.5	M20X2
PNX013028	28.5	13.0	36.5	M20X2
PNX013030	30.5	13.0	36.5	M20X2

Stock No.	ΦA	ΦB	C	M
PNX009026	26.4	9.5	37.0	7/8-14UNF-2A
PNX009027	27.6	9.5	37.0	7/8-14UNF-2A
PNX009028	28.5	9.5	37.0	7/8-14UNF-2A
PNX009030	30.5	9.5	37.0	7/8-14UNF-2A

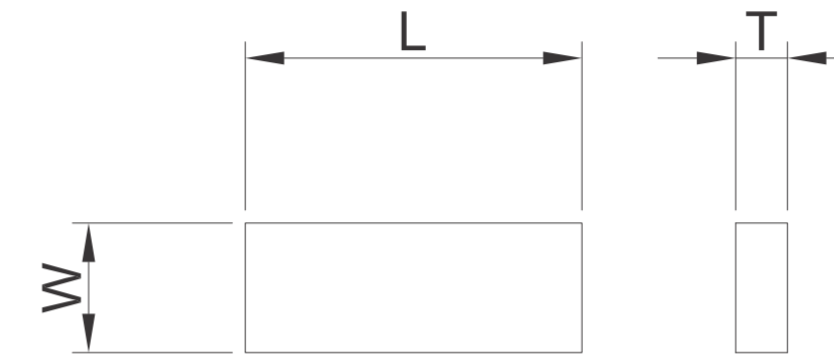
# Gage Bricks&Stabilizer Blanks

Gage bricks are mainly used to protect the drill bit steel body and the PDC or carbide cutters; the stabilizer blanks are used as wear resistant parts for maintaining drilling accuracy. A wide range of styles and sizes combinations are provided to meet most of your required applications.

Custom-molded sizes and material composition could be provided upon drawings and requirements from customers.



## Wear Tile



Unit: mm

Stock No.	L	W	T
PG12007001	7.5	5.0	1.5
PG12013001	13.0	5.0	1.5
PG12013002	13.0	5.0	2.0





**PUTAICT**

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