

# CAT CYLINDERS SERIES

STANDARD ISO 6020/1



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**CAT series** integrates **magnetostrictive transducers** and follows international standard ISO 6020/1; this series is designed to guarantee maximum reliability, high performance and endurance.

The compact construction with round heads fits to the most demanding and challenging industrial actuation requests with continuous nominal pressure up to **16 MPa**.

The integrated transducer and the used technology, assure precision and lack of wear, as the parts in movement are not in contact with each other.

These characteristics allow the cylinder to operate in heavy working environments, protected from dirt and shock, ensuring maximum reliability of the system and reducing the need of maintenance to a minimum. Transducers can be supplied with analogue or digital output.

The choice of selected materials, the severe controls of 100% of all cylinders produced and the quality of the means of production, allow to reach high standards of quality, reliability and enduring product performance.

The seals used, supplied by premium suppliers, grant high performance and international availability. The wide range of seals, allows us to offer cylinders for applications with different kinds of hydraulic fluids, speed, frequency and operating temperature.

## Technical characteristics:

- Standard ISO 6020/1
- Magnetostrictive position transducer integrated with analogue output signal (intensity or tension) or digital output signal (SSI, CAN-open, PROFIBUS-DP or IO/LINK)
- Nominal pressure 16 MPa (continuous operation)
- Maximum pressure 25 MPa
- Bore 40-320 mm
- Stroke up to 4000 mm
- Single or double rod
- Up to 2 rod diameter per bore
- 6 Mounting styles Ref. ISO MP3 - MF3 - MS2 - MT4 - MF1 - MP5

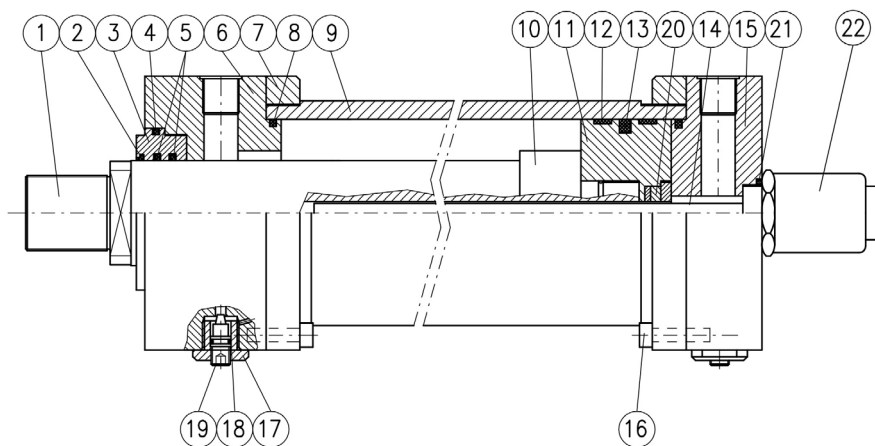
## Options:

- Analogue output signal: 4/20 mA or 0/10 V
- Digital output signal: SSI, CAN-open, PROFIBUS-DP, IO/LINK
- Air bleeds
- Rod treatment : chromed, induction hardened and chromed, nickel-chromed
- Drainage
- Subplate CETOP 03/05
- Protection case

## EPC Cylinder configurator

This is an innovative tool that allows the client to configure CAT cylinders in a rapid and intuitive way, guiding the technician through the choices of all the options available. Once the cylinder code is defined, the EPC software provides 2D, 3D and PDF drawings, and gives the user the possibility to save projects and request offers. With the complete access, reserved to the purchasing department, it is possible to make orders directly. For all orders received through EPC an extra discount will be applied.

Login at: <http://configuratore.grices.it/>



N°	ITEM	MATERIAL
1	Rod	Chromium-plated steel
2	Dust scraper	Polyurethane
3	Guide sleeve	Cast iron
4	O-Ring + anti-extrusion	Nitrile rubber + sealon
5	Rod seal	Nitrile rubber + PTFE
6	Front head	Steel
7	Counterflange	Steel
8	O-Ring + anti-extrusion	Nitrile rubber + sealon
9	Body	Steel
10	Front cushioning sleeve	Steel
11	Piston	Steel
12	Sliding guide	MCF80
13	Piston B seal	Nitrile rubber + PTFE
14	Transducer	Stainless steel
15	Rear head	Steel
16	Cilindrical head screw	Steel
17	Safety plug	Steel
18	O-Ring	Nitrile rubber
19	Adjustment needle	Steel
20	Magnet	-
21	O-Ring	Nitrile rubber
22	Position Transducer	-

### Mounting style



# TECHNICAL CHARACTERISTICS

STANDARD ISO 6020/1



## LINEAR POSITION TRANSDUCER

To immediately check the rod position, install a linear position transducer.

The magnetostrictive technology allows rod position detection even in heavy duty conditions and/or high frequency applications, avoiding the contact between the moving parts.

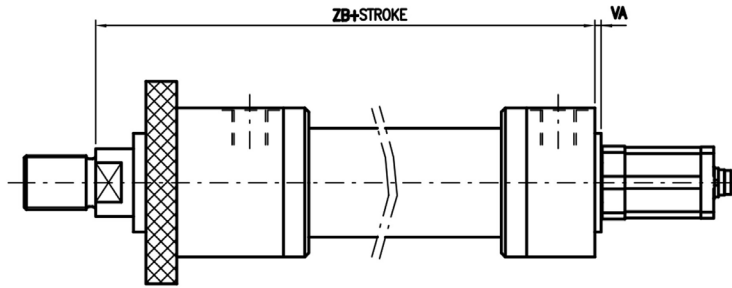
The transducer, besides offering a high reliability, permits easy maintenance. Its replacement does not require the cylinder dismounting.

Analogue or digital versions are available.

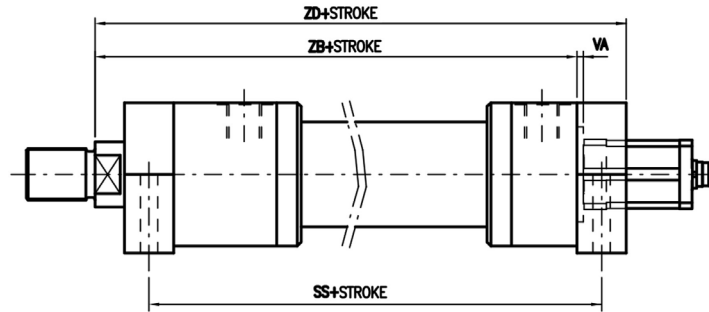
<b>Resolution</b>	0,01 mm
<b>Independent linearity</b>	±0,05 % (% of the total stroke)
<b>Repeatability</b>	±0,01 % (% of the total stroke)
<b>Max. speed</b>	2 m/sec
<b>Working temperature</b>	-20 +80 °C
<b>Analogue/digital signal</b>	0+10 V 10+0 V or 4+20 mA / SSI, CAN OPEN, PROFIBUS DP, IO/LINK
<b>Strokes</b>	50÷3850 mm
<b>Max. transducer pressure</b>	35 MPa (350 Bar)
<b>Power supply</b>	24 V DC ±10 %
<b>Protection degree (connector installed)</b>	IP-67

1.1 AVAILABLE VERSIONS AND DIMENSIONS

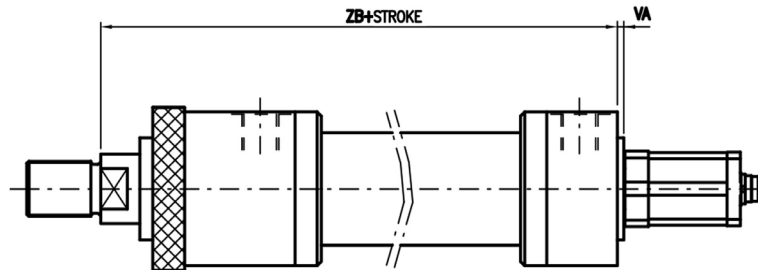
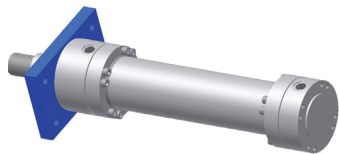
**FA** ISO type ME5



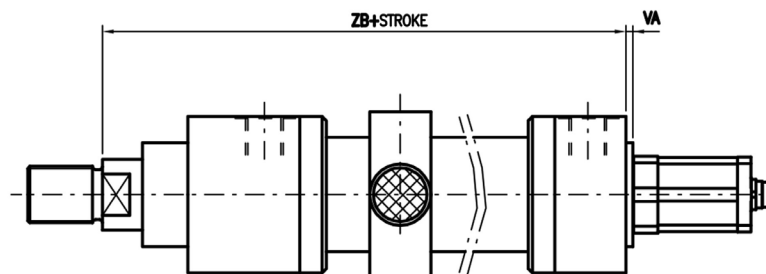
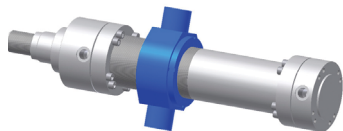
**PI** ISO type MS2

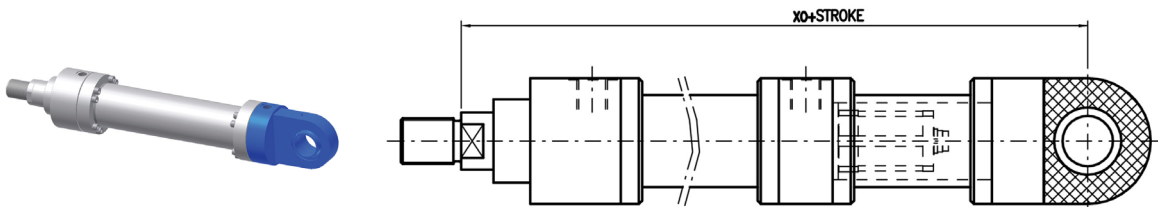
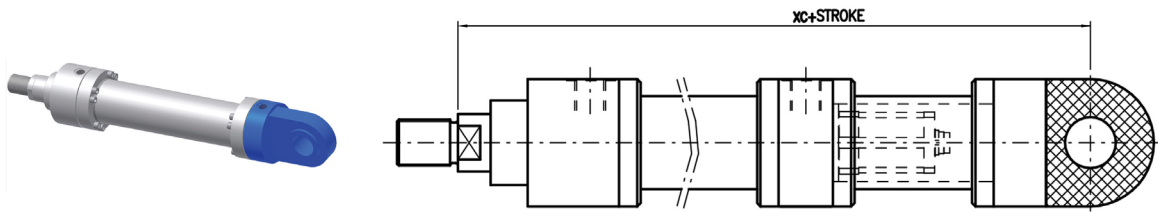


**QA** ISO type MF1



**OI** ISO type MT4





BORE	ZB	VA	SS	ZD	XC	XO
40	190	4	NA	NA	NA	NA
50	205	7	199	237	NA	NA
63	224	5	211	256	539*	539*
80	250	5	236	290	584*	584*
100	300	5	293	350	672*	672*
125	325	6	321	381	724*	724*
160	370	10	364	430	816*	816*
200	450	10	447	522	953*	953*
250	550	10	NA	NA	1243*	1243*
320	660	10	NA	NA	1420*	1420*

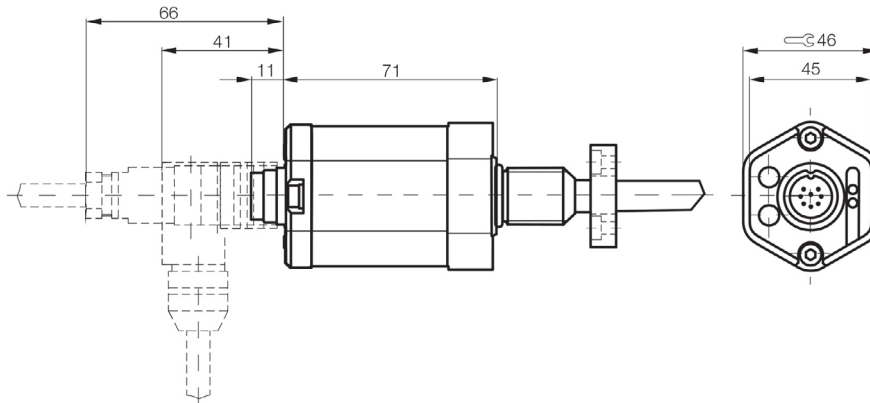
\* Dimensions not ISO

## 1.2 TRANSDUCERS DIMENSION

Transducers dimension **TYPE UT - UC - SI** with connector type:

**STRAIGHT CBKS-S 32-00: Y1**

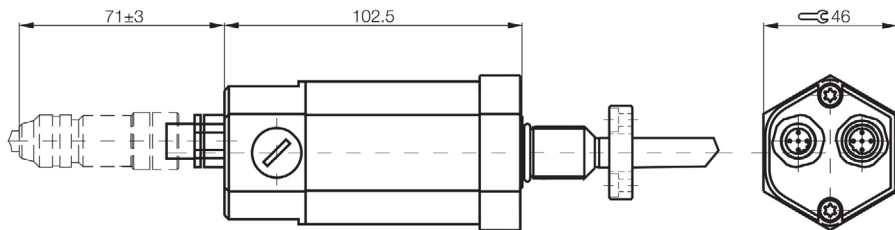
**90° CBKS-S 33-00: Y2**



Transducers dimension **TYPE HH** with connector type **Y4**:

**CBKS-S 92-00**

**CBKS-S 94-00**

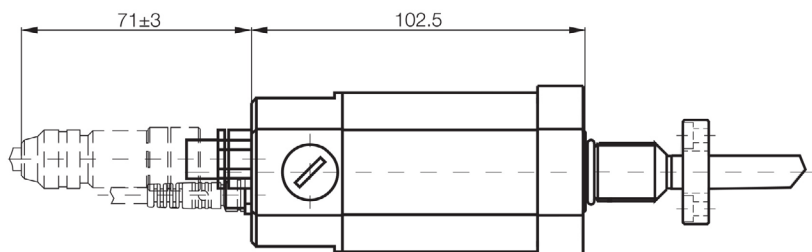


Transducers dimension **TYPE TT** with connector type **Y3**:

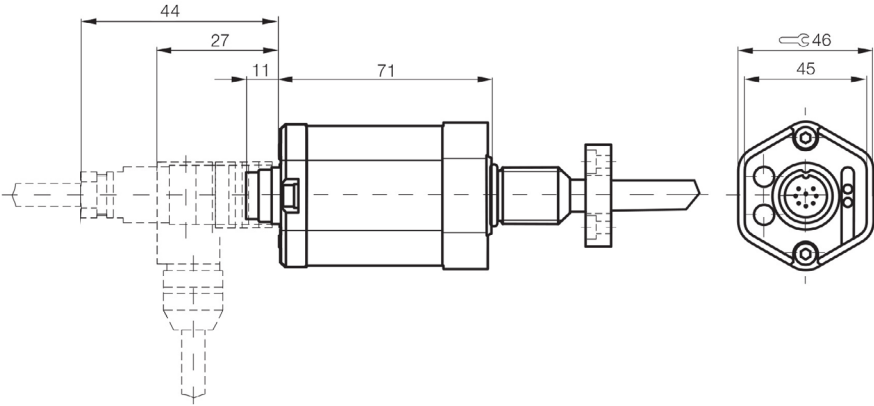
**CBKS-S 105-00**

**CBKS-S 103-00**

**CBKS-S 48-15-CP-05**

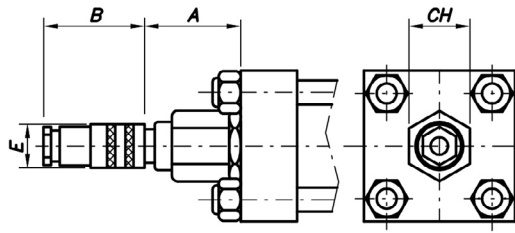


Transducers dimension **TYPE IO/LINK** with outlets **Y5** and **Y6**

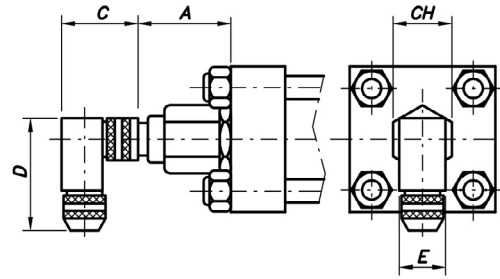




### 1.3 CONNECTORS DIMENSION



Type: CBKS-S 32 M-00



Type: CBKS-S 33 M-00

Type	A	B	C	D	E	CH
CBKS-S 32 M-00	74	69	-	-	18	46
CBKS-S 33 M-00	74	-	48	54	20	46

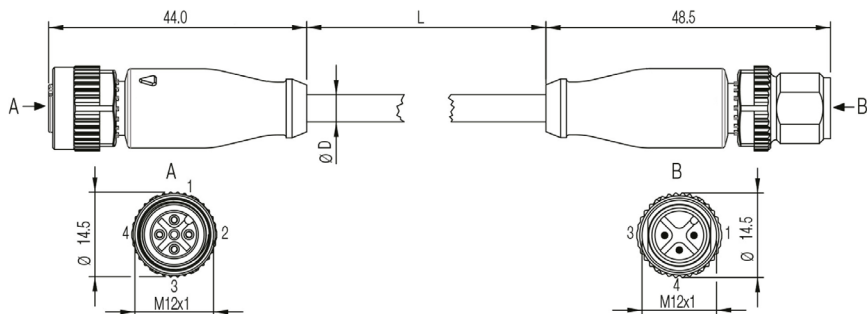
Connection	Pin	Color
<p>View from the bushing weld side</p>	1	Yellow
	2	Grey
	3	Pink
	4	Green
	5	Blue
	6	Blue
	7	Brown
	8	White

### IO/LINK CONNETTORS

Position transducer (A)		IO/LINK Master (B)
1	L+ (18...30 V)	1
2	None	-
3	L- (GND)	3
4	C/Q	4

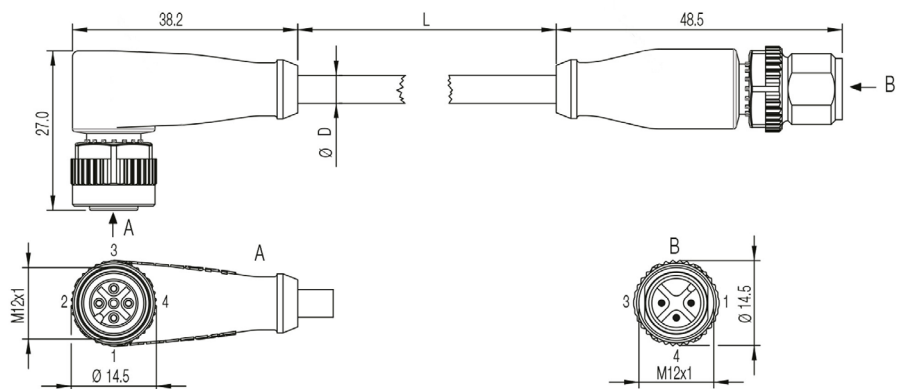
**Straight outlet - straight connector option Y5 - IO/LINK**

PBCC0374 with 4m cable

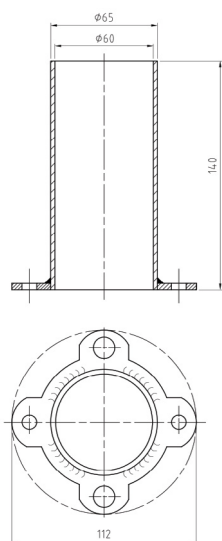


**Angled outlet - straight connector option Y6 - IO/LINK**

PBCC037M with 4m cable



**1.4 SENSOR PROTECTION DIMENSIONS**



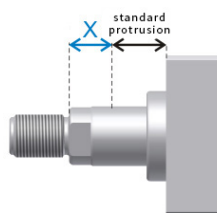
# EXAMPLE OF ORDER ACRONYM

## CAT/50/28/530/OI00BUT00000Y1Q102R120XV...

CHARACTERISTIC	DESCRIPTION	SYM.	EXMAPLE
<b>SERIES</b>	Tie rod execution	<b>CAT</b>	<b>CAT/</b>
<b>BORE</b>	Indicate in mm		CAT/ <b>50/</b>
<b>ROD</b>	Indicate in mm		CAT/50/ <b>28/</b>
<b>STROKE</b>	Indicate in mm		CAT/50/28/ <b>530/</b>
<b>EXECUTION</b>	Front flange	<b>FA</b>	CAT/50/28/530/ <b>OI</b>
	Feet	<b>PI</b>	
	Square front flange	<b>QA</b>	
	Male hinge	<b>CM</b>	
	Joint hinge	<b>CS</b>	
	Intermediate trunnion	<b>OI</b>	
<b>CUSHIONING</b>	None	<b>0</b>	CAT/50/28/530/OI <b>0</b>
<b>SPACER</b>	None	<b>0</b>	CAT/50/28/530/OI <b>00</b>
	50 mm	<b>1</b>	
	100 mm	<b>2</b>	
	150 mm	<b>3</b>	
	200 mm	<b>4</b>	
<b>SEALS</b>	Nitrile + PTFE (anti-friction)	<b>B</b>	CAT/50/28/530/OI <b>00B</b>
<b>TRANSDUCER OUTPUT</b>	Tension 0-10 V UT	<b>UT</b>	CAT/50/28/530/OI <b>00BUT</b>
	Electrical current 4-20 M	<b>UC</b>	
	SSI Iterface	<b>SI</b>	
	CANopen Iterface	<b>HH</b>	
	PROFIBUS Interface	<b>TT</b>	
	IO/LINK Interface	<b>LK</b>	
<b>ROD END</b>	Type M (standard)	<b>0</b>	CAT/50/28/530/OI <b>00BUT0</b>
	Type F	<b>F</b>	
<b>AIR BLEEDS</b>	None	<b>0</b>	CAT/50/28/530/OI <b>00BUT00</b>
	Front	<b>G</b>	
	Rear	<b>H</b>	
	Front + rear	<b>I</b>	
<b>DOUBLE ROD SEAL</b>	None	<b>0</b>	CAT/50/28/530/OI <b>00BUT000</b>
	Double rod seal	<b>L</b>	
<b>DRAINAGE</b>	None	<b>0</b>	CAT/50/28/530/OI <b>00BUT0000</b>
	Rod side	<b>W</b>	
<b>ROD TREATMENT</b>	Standard chromium-plated	<b>0</b>	CAT/50/28/530/OI <b>00BUT00000</b>
	Heavy chromium-plated, 0.045mm thick, 100h salt mist ISO 3768	<b>P</b>	
	Hardening and chromium-plating	<b>T</b>	
	Ni-CROMAX30 chromium-plated, nickelplated, ASTM B 117 1000h	<b>N</b>	
<b>CONNECTOR</b>	None	<b>0</b>	CAT/50/28/530/OI <b>00BUT000000</b>
	Straight CBKS-S 32 M-00	<b>Y1</b>	
	Angled 90° CBKS-S 33 M-00	<b>Y2</b>	
	Male connector CBKS-S-105-00 Female connector CBKS-S-103-00 Supply cable CBKS-S 48-15-CP-05	<b>Y3</b>	
	Female connector CBNS-S92-00 Male connector CBNS-S94-00	<b>Y4</b>	
	Straight outlet - straight connector PBCC 0374	<b>Y5</b>	
	Angled outlet - straight connector PBCC 037M	<b>Y6</b>	

FRONT HEAD					
POS. OIL PORTS	Side 1	Side 2	Side 3	Side 4	CAT/50/28/530/OI00BUT000000Q1
POS. CUSHIONING	0 if not requested				CAT/50/28/530/OI00BUT000000Q10
POS. AIR BLEED	0 if not requested				CAT/50/28/530/OI00BUT000000Q102
	Side 1	Side 2	Side 3	Side 4	
REAR HEAD					
POS. OIL PORTS	Side 1	Side 2	Side 3	Side 4	CAT/50/28/530/OI00BUT000000Q102R1
POS. AIR BLEED	0 if not requested				CAT/50/28/530/OI00BUT000000Q102R12
	Side 1	Side 2	Side 3	Side 4	
*EXTRA ROD X QUOTE	Indicate mm				CAT/50/28/530/OI00BUT000000Q102R120
XV QUOTE	Indicate mm (only version MT4)				CAT/50/28/530/OI00BUT000000Q102R120XV...

\*Specify the possible *extra-rod (X)* size in addition to the standard rod protrusion:



Login at: <http://configuratore.grices.it/>

Configure your cylinder in a quick and intuitive way choosing all the available options.

#### Note

The indicated operating pressures are efficient for smooth applications without blows. For extreme loads or high operating pressures with high frequency, is necessary to use mounting styles and thread-rod links designed to be stress-resistant.

For further information contact our Technical Department.