Series CGSN
180° angular grippers

New version

Magnetic
Sizes: ø 16, 20, 25, 32 mm

» High flexibility during installation

» Steel gripping fingers resistant to corrosion

» Wide working area

Series CGSN grippers guarantee precision and flexibility during installation. Each gripper has calibrated holes on the base and side for very precise positioning. Installation is made even easier due to the availability of male and female mounting brackets (Mod. C-CGP female or L-CGP male).

A permanent magnet within the gripper is able to send, through proximity switches (Series CSC and CSD) inserted in the grooves on the body, electrical signals to indicate the position of the gripping fingers.
The link mechanism used ensures a high gripping force.

GENERAL DATA

Operation	double effect
Working pressure	1 bar ÷ 7 bar
Working temperature	-10°C ÷ 60°C
Max operating frequency	100 cylcles/min
Lubrication	lubrication is required on sliding section only
Lever open/close angles	-1° / + 180° (tolerance ±3°)
Repeatability	± 0.2 mm
Air ports	M5x0.8
Fluid	Filtered air without lubrication. If lubricated air is used, it is recommended to use oil ISO VG32. Once applied, lubrication should never be interrupted.
Bore sizes (mm)	16 20 25 32
Weight(g)	140 255 430 740
Theoretical gripping moment [M] (N·mm)	1230xP 2350xP 4540xP 9680xP [P = pressure (MPa)]
Max length of gripping point [L] (mm)	80 100 120 140
Effective gripping force [F] (N)	F = M/L x 0.9 (value with the fingers in parallel position)
Example with P = 0.5MPa and L max	F = 7N F = 10N F = 17N F = 30N

1

MOVEMENT

CODING EXAMPLE

CGSN	-	20

CGSN	SERIES	PNEUMATIC SYMBOL PNZ1 See the following pages
20	SIZES 16 = ø 16 mm 20 = ø 20 mm 25 = ø 25 mm 32 = ø 32 mm	

Series CGSN Gripper - construction
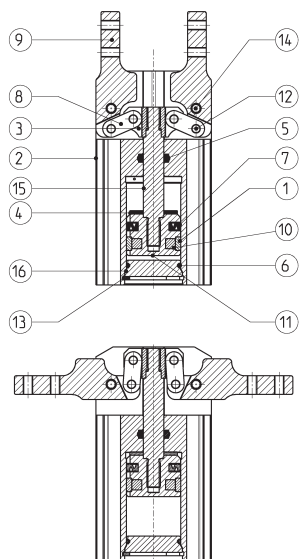
PARTS	MATERIALS
1 = Piston guide ring	Polyacetalic
2 = Body	Aluminium
3 = T-shackle	Stainless steel
4 = Bumper seal	TPU
5 = Rod seal	HNBR
6 = Head seal	NBR
7 = Piston seal	HNBR
8 = Connecting rod lever	Stainless steel
9 = Finger lever	Stainless steel
10 = Magnet	Plastoferrite
11 = Piston	Aluminium
12 = Needle	Steel
13 = Seeger	Steel
14 = Pin	Steel
15 = Rod	Steel
16 = Head	Polyacetal POM

Criteria to choose the most suitable size: 1) GRIPPING FORCE ANALYSIS

The choice of the most suitable gripper has to be carried out according to the weight of the object that has to be moved. It is suggested that the selected model develops a gripping force at least 20 times higher than the weight of the object. In case of great acceleration or impact during the moving of the object, it is necessary to supply a wider margin.

EXAMPLE OF CALCULATION (see the diagram on the right)
Weight of the object to be moved (Kg) = 0.06
Coefficient of safety = 20
Gripping moment L (mm) = 30
Working pressure (MPa) = 0.5
F = gripping force
Fmin [min. required gripping force] = 0,06kg x 20 x 9.8m/s² = 12N (minimum).

Through the diagrams "Effective Gripping force" we deduce from the above mentioned conditions tha the gripping force with the mod. CGSN-16 is 16N, that is 26 times the weight of the object.
The condition requiring that grip force is at least 20 times higher than the set gripping force is thus satisfied.
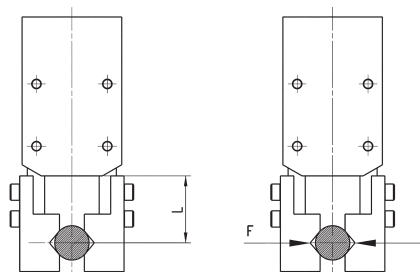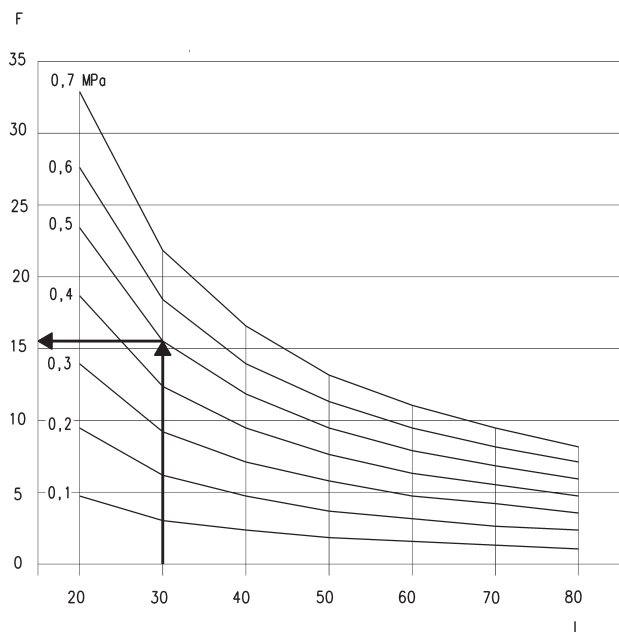
DRAWING LEGEND:
L = Gripping moment (mm)
F = Finger push (N)

EFFECTIVE GRIPPING FORCE (F)
The shown gripping force corresponds to the gripping force of a finger when all fingers (or accessories) are in contact with the load.

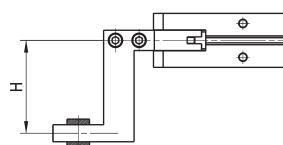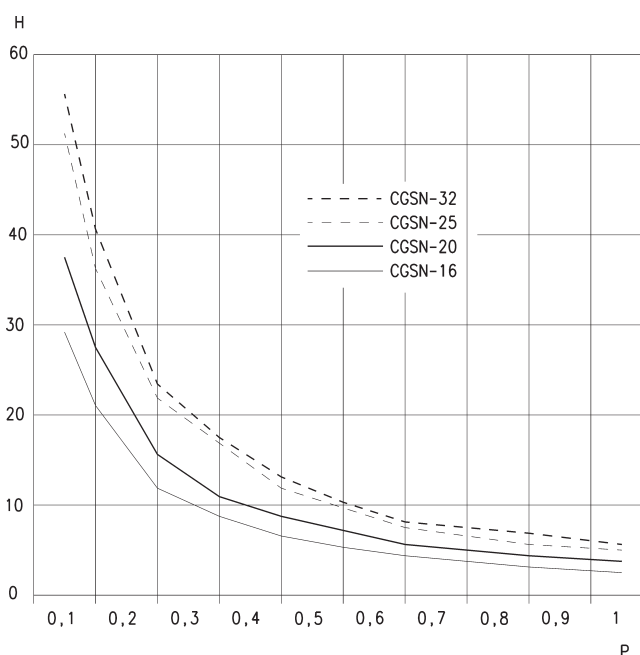## Criteria to choose the most suitable size: 2) GRIPPING MOMENT ANALYSIS
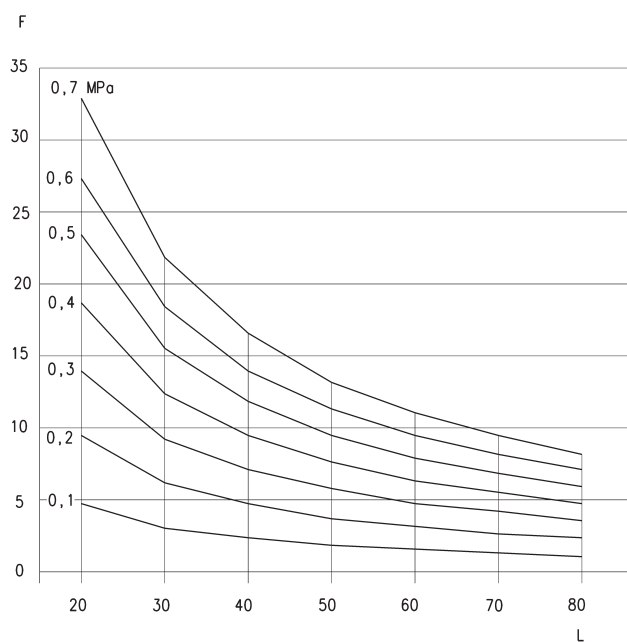
LEGEND:
H = Gripping arm (mm)
P = Pressure (MPa)

The load has to be maintained within the distance field from the gripper barycentre (H) for a certain set pressure.
If the load is outside the recommended field for a certain pressure, the product durability can be compromised.
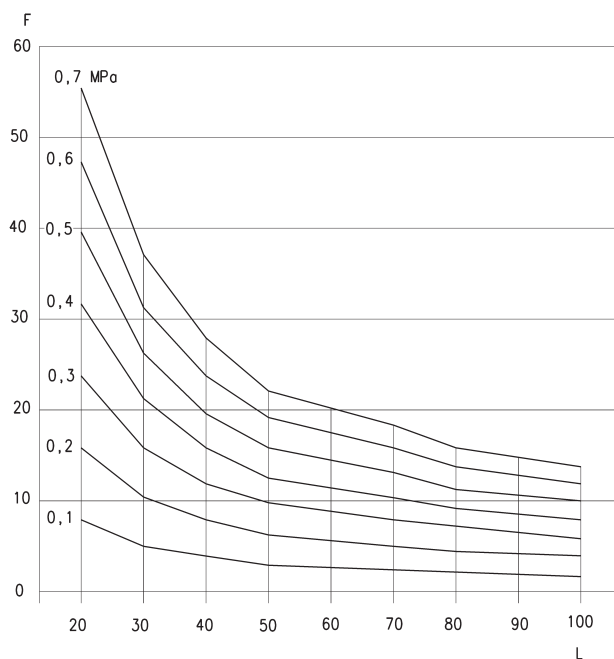
1

MOVEMENT

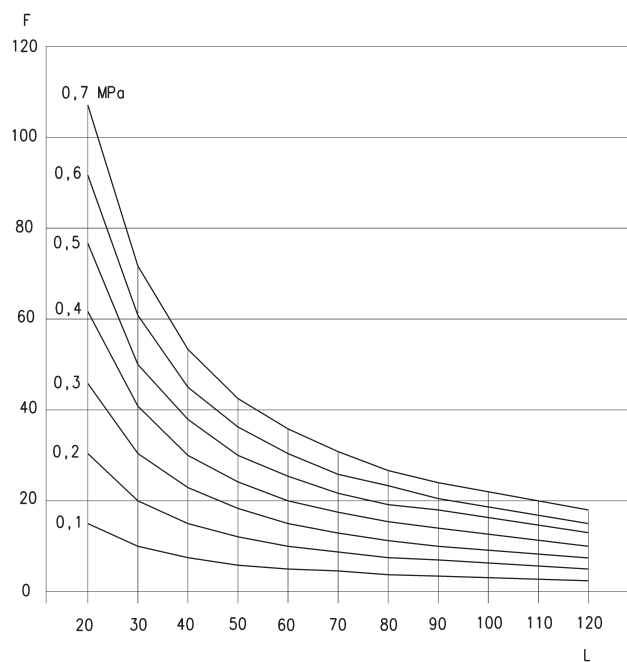## Diagrams to choose the most suitable gripper size

CGSN-16

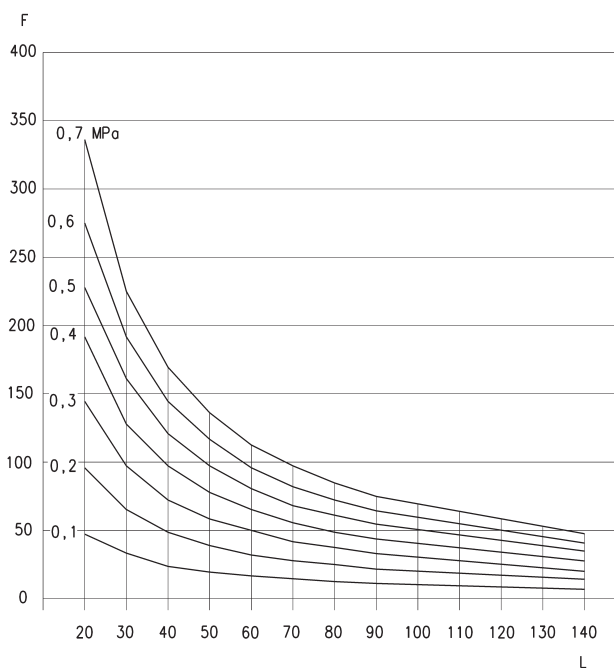F = Gripping force (N)
L = Gripping moment (mm)

CGSN-20

F = Gripping force (N)
L = Gripping moment (mm)

Diagrams to choose the most suitable gripper size

CGSN-25

F = Gripping force (N)
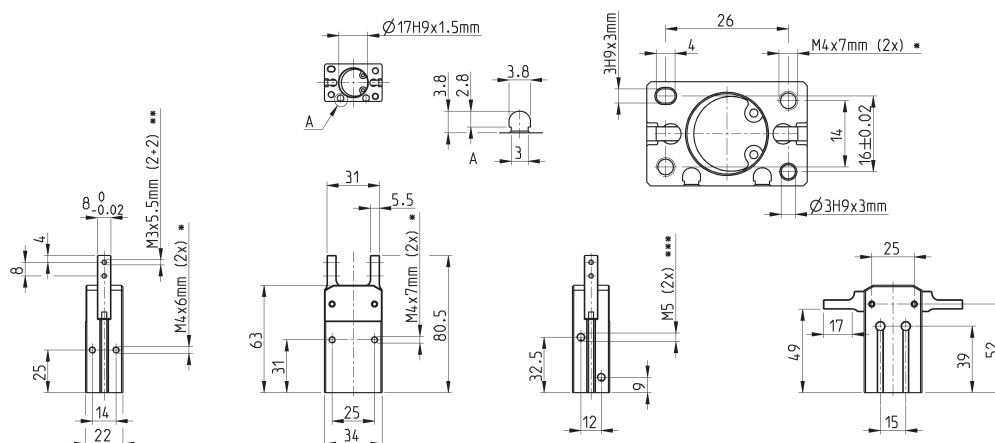L = Gripping moment (mm)

CGSN-32

F = Gripping force (N)
L = Gripping moment (mm)

CGSN gripper, bore 16 mm - dimensions

A = groove for Series CSD sensors

* = depth of the mounting threads
** = thread for the accessory mounting
*** = opening/closing for air connections

PNZ1

Ø17H9x1.5mm

26

M4x7mm (2x) *

M3x5.5mm (2÷2) **
M4x6mm (2x) *
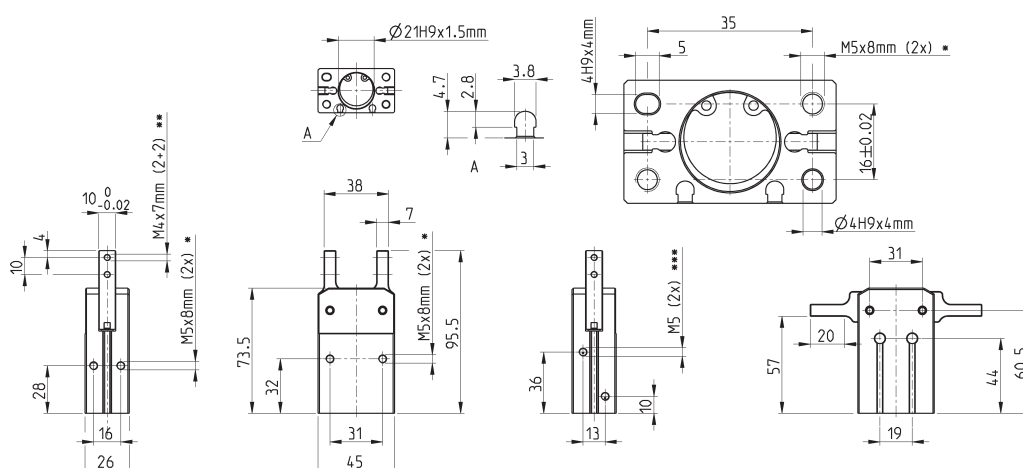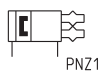M4x7mm (2x) *
M5 (2x) ***

Mod.
CGSN-16

CGSN gripper, bore 20 mm - dimensions

A = groove for Series CSD sensors

* = depth of the mounting threads
** = thread for the accessory mounting
*** = opening/closing for air connections

PNZ1

Ø21H9x1.5mm

35

M5x8mm (2x) *

M4x7mm (2÷2) **
M5x8mm (2x) *
M5x8mm (2x) *
M5 (2x) ***

Mod.
CGSN-20

Products designed for industrial applications.
General terms and conditions for sale are available on www.camozzi.com.

1/7.12.05
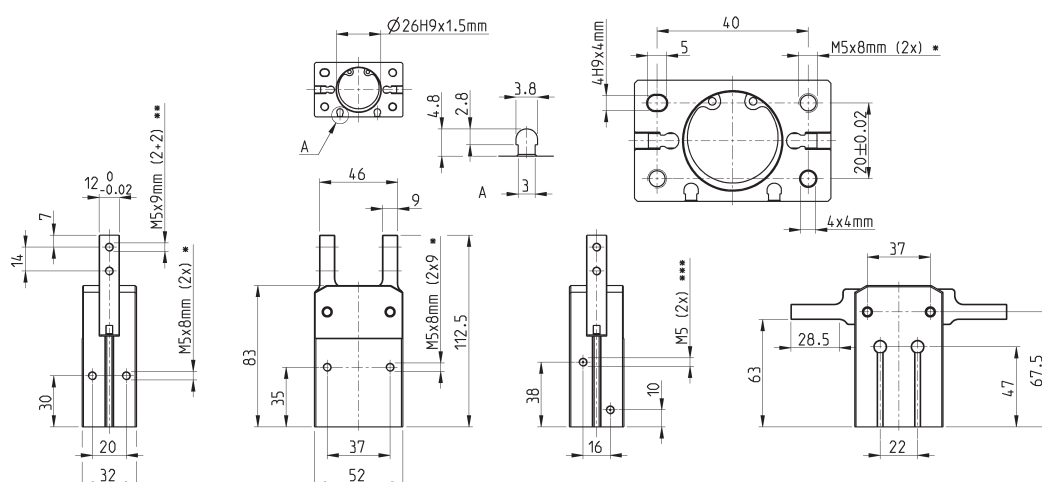
1

MOVEMENT

CGSN gripper, bore 25 mm - dimensions

A = groove for Series CSD sensors

* = depth of the mounting
  threads
** = thread for the
  accessory mounting
*** = opening/closing for
  air connections

PNZ1

Ø26H9x1.5mm

M5x8mm (2x) *

M5x9mm (2÷2) **

M5x8mm (2x) *

M5x8mm (2x9 *
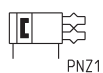
M5 (2x) ***

Mod.
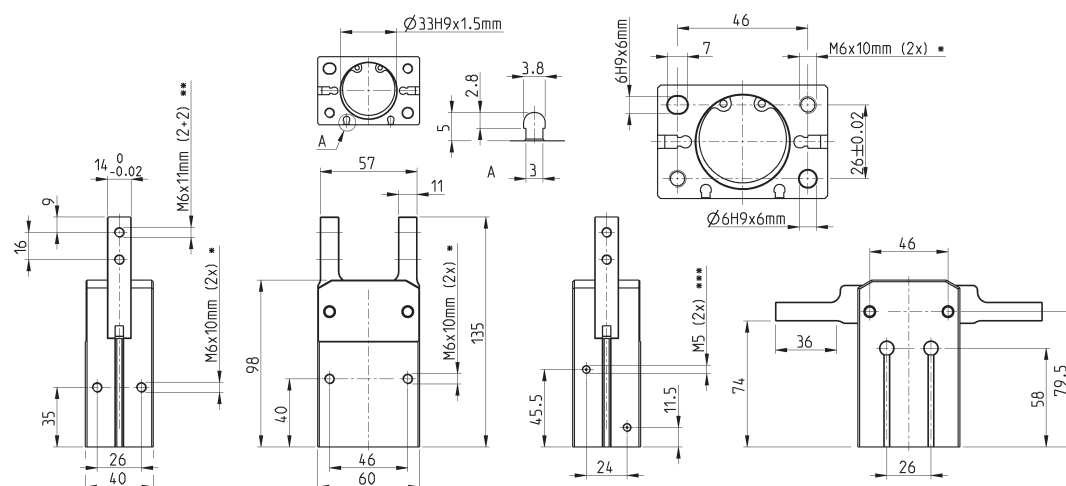
CGSN-25

CGSN gripper, bore 32 mm - dimensions

A = groove for Series CSD sensors

* = depth of the mounting
  threads
** = thread for the
  accessory mounting
*** = opening/closing for
  air connections

PNZ1

Ø33H9x1.5mm

M6x10mm (2x) *

M6x11mm (2÷2) **

M6x10mm (2x) *

M6x10mm (2x) *

M5 (2x) ***

Ø6H9x6mm

6H9x6mm

Mod.

CGSN-32