

Code <b>ST02</b>	Project <b>A50-A</b>	Release <b>A</b>	<b>TECHNICAL DATASHEET</b>
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## INCREMENTAL OPTICAL SCALE GVS 200

### GENERAL FEATURES

- Optical scale with glass measuring support (grating pitch 20 µm). Particularly suitable for synchronized press brakes.
- Reader head guided by a self-aligned and self-cleaning sliding carriage with spring system.
- Resolutions up to 0.1 µm. Accuracy grade up to ± 1 µm.
- Adjustable cable output.
- Reference indexes at coded distance or selectable every 10 mm along the entire measuring length, with Zero Magneto Set device.
- The adjustable cable output and the selectable zero references make the scale **SYMMETRIC** and applicable, in the same version, to both columns of the press brake.
- Various possibilities of application, with double-effect joint or steel wire.
- Option: safety limit switches, positionable at both ends.



### MECHANICAL AND ELECTRICAL CHARACTERISTICS

MECHANICAL	Cod. GVS	200
<ul style="list-style-type: none"> <li>• Rugged and heavy PROFILE, made of anodized aluminium. Dimensions 55x28 mm.</li> <li>• Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error &lt;0.2 µm.</li> <li>• SEALING LIPS for the protection of the grating, made of special elastomer resistant to oil and wearing. Special self-blocking profile.</li> <li>• READER HEAD, consisting of tie rod and reading block, with fully protected place for electronic boards.</li> <li>• CARRIAGE guided by ball bearings with gothic arch profile sliding on tempered and grinded guides, to guarantee the system accuracy and the absence of wearing.</li> <li>• Die-cast TIE ROD, with nickel-plating surface treatment.</li> <li>• GLASS SCALE placed in the scale housing.</li> <li>• Elastomeric GASKETS which allow to reproduce the full protection in mechanical joints (in case of disassembling).</li> <li>• Adjustable CABLE output.</li> <li>• Various possibilities of application, with double-effect joint or steel wire. GV-PB adapter guarantees the compatibility with scale mod. PBS-HR.</li> <li>• Full possibility to disassemble and reassemble the scale.</li> <li>• Possibility of direct service.</li> </ul>	<b>Measuring support</b>  Grating pitch  Thermal expansion coefficient	glass scale  20 µm   $8 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$
	<b>Reference indexes (I<sub>0</sub>)</b>	<b>E</b> = selectable (every 10 mm) <b>C</b> = coded distance
	<b>Resolution</b>	10 - 5 - 1 - 0.5 - 0.1 µm
	<b>Accuracy grade</b>	± 2.5 µm standard version ± 1 µm high-accuracy version
	<b>Measuring length ML in mm</b>	170, 220, 270, 320, 370, 420, 470, 520, 570, 620, 670, ...
	<b>Max. traversing speed</b>	120 m/min *
	<b>Max. acceleration</b>	30 m/s <sup>2</sup>
	<b>Required moving force</b>	≤ 1.5 N
	<b>Vibration resistance (EN 60068-2-6)</b>	100 m/s <sup>2</sup> [55 ÷ 2000 Hz]
	<b>Shock resistance (EN 60068-2-27)</b>	150 m/s <sup>2</sup> [11 ms]
	<b>Protection class (EN 60529)</b>	IP 54 standard IP 64 pressurized **
	<b>Operating temperature</b>	0 °C ÷ 50 °C
	<b>Storage temperature</b>	-20 °C ÷ 70 °C
	<b>Relative humidity</b>	20% ÷ 80% (not condensed)
	<b>Sliding block</b>	by ball bearings ©
	<b>Power supply</b>	5 Vdc ± 5% or 10 ÷ 28 Vdc ± 5%
	<b>Current consumption</b>	140 mA <sub>MAX</sub> (with R = 120 Ω) 5 Vdc 100 mA <sub>MAX</sub> (with R = 1200 Ω) 10 ÷ 28 Vdc
	<b>A, B and I<sub>0</sub> output signals</b>	LINE DRIVER PUSH-PULL 
	<b>Max. cable length</b>	25 m ***
	<b>Electrical connections</b>	see related table
	<b>Electrical protections</b>	inversion of polarity and short circuits
	<b>Weight</b>	900 g + 1850 g/m

#### MECHANICAL

- Rugged and heavy PROFILE, made of anodized aluminium. Dimensions 55x28 mm.
- Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error <0.2 µm.
- SEALING LIPS for the protection of the grating, made of special elastomer resistant to oil and wearing. Special self-blocking profile.
- READER HEAD, consisting of tie rod and reading block, with fully protected place for electronic boards.
- CARRIAGE guided by ball bearings with gothic arch profile sliding on tempered and grinded guides, to guarantee the system accuracy and the absence of wearing.
- Die-cast TIE ROD, with nickel-plating surface treatment.
- GLASS SCALE placed in the scale housing.
- Elastomeric GASKETS which allow to reproduce the full protection in mechanical joints (in case of disassembling).
- Adjustable CABLE output.
- Various possibilities of application, with double-effect joint or steel wire. GV-PB adapter guarantees the compatibility with scale mod. PBS-HR.
- Full possibility to disassemble and reassemble the scale.
- Possibility of direct service.

#### ELECTRICAL

- Reading device with an infra-red light emitter and receiving photodiodes.
  - A and B output signals with phase displacement of 90° (electrical).
  - Reference indexes at coded distance or selectable every 10 mm.
  - CABLE:
    - 8-wire shielded cable Ø = 6.1 mm, PUR external sheath.
    - Conductors section: power supply 0.35 mm<sup>2</sup>; signals 0.14 mm<sup>2</sup>.
- The cable's bending radius should not be lower than 80 mm.**  
**The cable is suitable for continuous movements.**

LINE DRIVER	PUSH-PULL	CONDUCTOR COLOR
+ V	+ V	Red
0 V	0 V	Blue
A	B	Green
$\bar{A}$	NC	Orange
B	A	White
$\bar{B}$	NC	Light-blue
I <sub>0</sub>	I <sub>0</sub>	Brown
$\bar{I}_0$	NC	Yellow
SCH	SCH	Shield

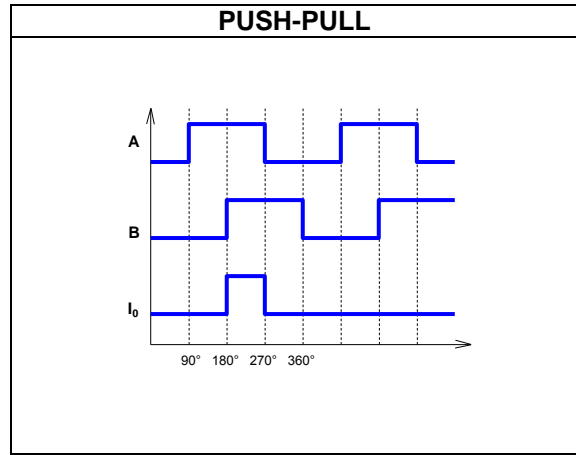
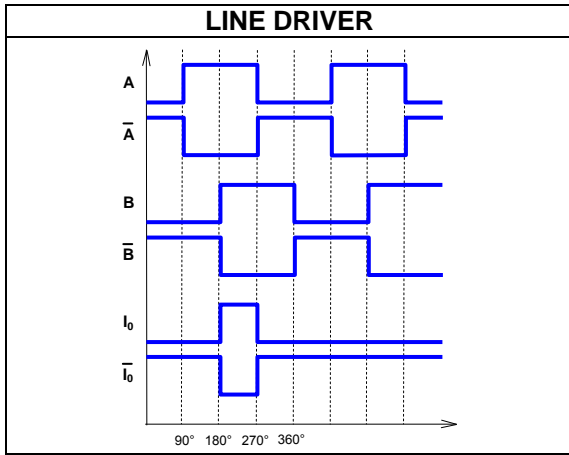
\* With a 0.1 resolution, the maximum traversing speed becomes 45 m/min.

\*\* Pressurization set up on request.

\*\*\* Ensuring the required power supply voltage to the transducer, the maximum cable length can be extended to 100 m.

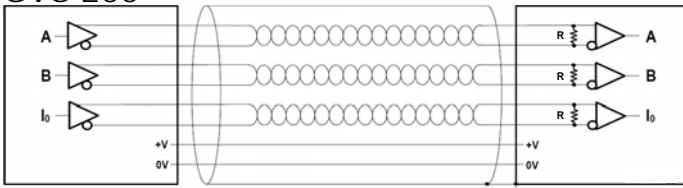
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### OUTPUT SIGNALS



### CABLE

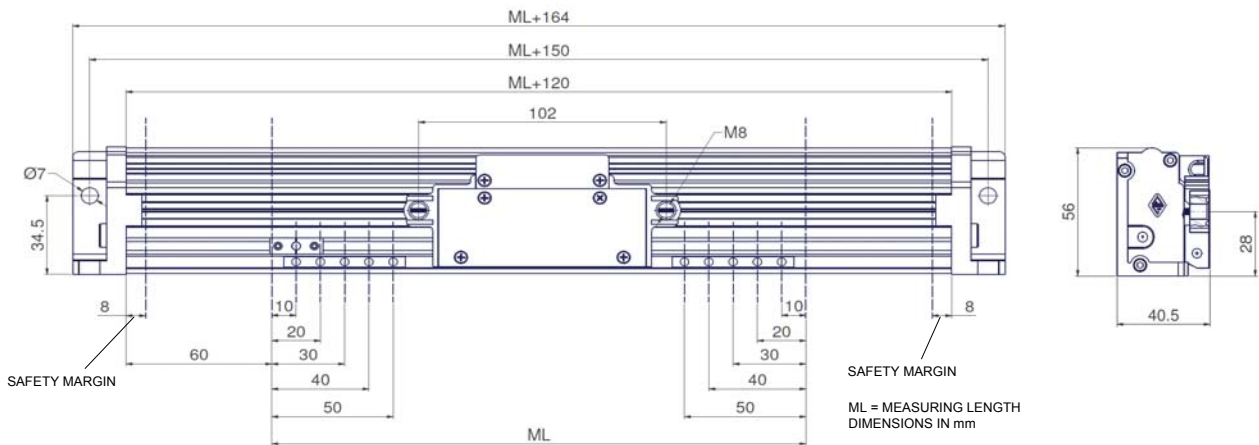
GVS 200



In case of cable extension, it is necessary to guarantee:

- the electrical connection between the body of the connectors and the cables shield;
- the required power supply to the transducer.

### DIMENSIONS



GV-PB adapter provided for the interchangeability with scale mod. PBS-HR.

### ORDERING CODE

MODEL	SCALE TYPE, RESOLUTION, INDEX	MEASURING LENGTH	POWER SUPPLY, OUTPUT SIGNALS	CABLE LENGTH, CABLE TYPE	CONNECTOR WIRING	LIMIT SWITCH OPTION	SPECIAL, PRESSURIZATION
<b>GVS 200</b>	<b>T 5 E</b>	<b>0270</b>	<b>05V L</b>	<b>M0.5 / S</b>	<b>CG1</b>	<b>A</b>	<b>PR</b>

T = TTL  
 10 = 10  $\mu$ m  
 5 = 5  $\mu$ m  
 1 = 1  $\mu$ m  
 05 = 0.5  $\mu$ m  
 01 = 0.1  $\mu$ m  
 C = indexes at coded distance  
 E = selectable indexes

Length in mm  
 0270 = 270 mm

05V = 5 Vdc  
 1028 = 10 ÷ 28 Vdc  
 L = LINE DRIVER  
 Q = PUSH-PULL

Mnn = length in m  
 M0.5 = 0.5 m (standard)  
 100 = 100 m  
 S = PUR cable for continuous movements

Cnn = progressive

No cod. = standard  
 A = NPN  
 B = NPN OC  
 C = PNP  
 D = PNP OC

No cod. = standard  
 SPnn = special nn  
 PR = pressurized

Example  **OPTICAL SCALE GVS200 T5E 0270 05VL M0.5/S CG1 A PR**