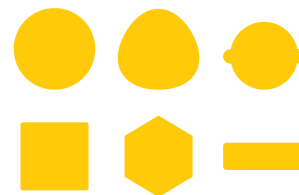


STEELMASTER SMR Series

Rotating Diameter Gauges for 2-roll and 3-roll Mills.
Especially for High-Speed Rolling and Short Product Length!



For diameter/dimension measurement up to approx. 135 mm (5.3 in.)
of hot rolled round and non-round products, squares, hexagons, flats, rebar etc.

SMR gauges are based on the same well-proven architecture of the oscillating SMO systems, however with a novel, fully contactless transmission system for both power and signals. Thanks to this unique concept and the high rotating speed, the full profile is captured within fractions of a second, allowing thus to minimize scrap production and to guarantee tighter tolerances. Twist and twist angle do not affect the measuring result thanks to an integrated dynamic regression analysis in the software package. In a static/orientable mode, longitudinal evolutions can alternatively be monitored at an extremely high measurement rate of 2000/second per axis.

OUTSTANDING ADVANTAGES

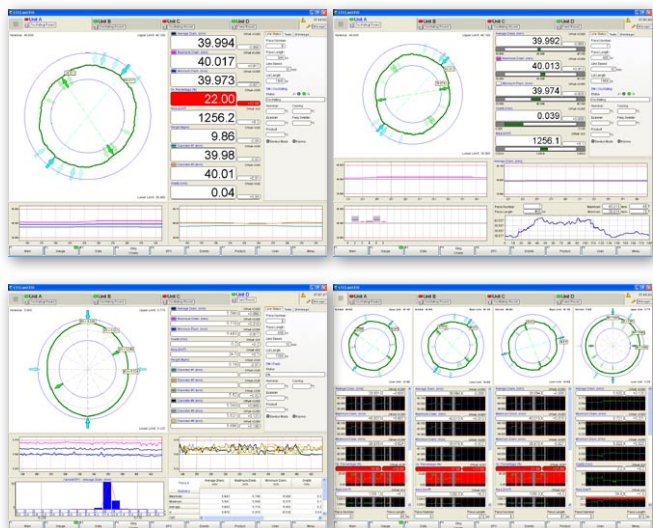
- Up to 6000 measurements/s (2000 measurements/s each axis)
- Extremely compact: 1406 x 1180 x 368 mm
- 2 operation modes at choice:
 - A) Continuous fast rotation: captures up to 10 profiles/s
 - B) Static orientable mode: up to 2000 measurements/s per axis (shows evolution over 1 billet)
- Up to 3 measuring heads in the same plane, i.e. the ovality is known at all times
- High-speed seamless 360° coverage
- Up to 100 rpm
- Large measuring field, uncritical guiding
- Industrial PC, no hard disk needed
- Computes also cross section (mm²/in.²)
- Measures rounds and non-round profiles regardless of product twist
- Unique, fully contactless power and signal transmission
- 1 single fibre optics cable between the local processing unit LPO and the control unit CPO
- High reliability, thanks to unique protection system
- No wear, close-to-zero maintenance
- Easy service access

Up to 600
measured profiles/min



Measuring unit SMR 100

TYPICAL SCREENS



STANDARD MODELS

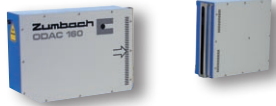
- **SMR 100-S1 / SMR 160-S1**
Basic models with 1 axis for round and non-round products.
- **SMR 100-S2 / SMR 160-S2**
Models with 2 axes for round and non-round products; 2 times faster than the basic models.
- **SMR 100-S3 / SMR 160-S3**
Models with 3 axes. Recommended for 3-roll blocks or for any asymmetric shape deviation of rounds.

Measuring Unit



A robust, welded structure ensures protection of the laser heads against dust, scale, splashes and heat.

- Drive system for up to 100 rpm
- Fully contactless power/signal transmission
- Easy exchangeable protection glasses
- Temperature control system
- Diagnostic outputs for checking the video signals
- Cooling for OD's up to approx. 30 mm (1.2 in.) by air only.
Over 30 mm (1.2 in.) additional water cooling.
- Air purging and cooling by blower GE 5-2

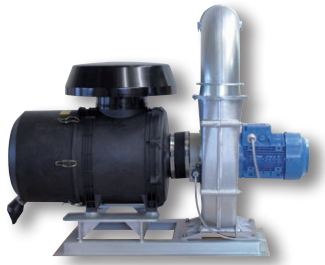


Hi-Tech Measuring Heads ODAC 100 and 160

(comprised in the above measuring unit)

- 1 emitter / 1 receiver for each head
- Principle: Laser scanning, up to 2000 measurements/s
- Calibrated Single Scan (CSS)
- Light source: Solid state laser, class II
- Fully synchronized scanning between each measuring head

Filter / Blower Unit GE 5-2



Providing filtered air at high volume to purge the laser shutter and for cooling of the measuring unit.
3 kW, 1350 m³/h (47,600 cu. ft./h).

Local Processing and Operation Unit LPO



It forwards all pre-filtered measured values and transmits the data via 1 only fibre optic cable to the main control unit CPO.

- Inputs for mains, measuring unit, pyrometer (option)
- PLC controller
- Built-in cooling unit

Central Control and Operating Unit CPO



For up to 4 measuring units of the SMR (rotating), SMO (oscillating) or SMS (static) models.

- 19" drawer, height = 8HU
- Industrial embedded PC without fan. Operating system on solid state disk, i.e no need for UPS unit (fail safe).
- Inputs/Outputs: – VGA for screen/keyboard/mouse
– Fibre optic connection to LPO unit
– ETHERNET for customer (TCP/IP)
– USB for printer or other peripherals
– RS-422 for giant displays
– Relay outputs for alarm etc.
– Digital inputs (8) and outputs (4)

STEELMASTER Software

- Start and end suppression
- Calculation of diameters, height, width, diagonals
- Display of mean value, min., max., ovality
- Hot and / or cold values
- Min. / max. alarms
- Head and tail scrap length indication
- Personalized screens
- Statistics, printed reports
- Optional software extensions
- 10 major languages; others on request
- Section, trend screens
- Split screens (MULTIGAUGE)
- Configuration, calibration screens

___ OPTIONS

MULTIGAUGE extension

For the connection of up to 4 gauges to 1 CPO.

Display systems for completing the basic system:

- Office kit with 19" LCD flat screen, keyboard, optical mouse.
- STEELMASTER Data Processing and Display Unit in 19" cabinet, height = 1985 mm / 78.15 in. (42HU).

Remote repeater screen

For mounting and operation up to 150m (490ft.).

Remote giant display

2, 3 or 4 groups of 5 digits.

Pyrometer

For conversion to cold values (20° C / 68° F).

Traversing system

For positioning or withdrawing of the measuring unit.

Air cooler or heater

For cooling and/or heating of blower air.

Water cooling system

Heat shield with circulating water. For product diameters exceeding 30mm (1.2 in.).

Software packages:

Besides the basic package which features all functions for round products, STEELMASTER systems offer many additional modules and extensions such as:

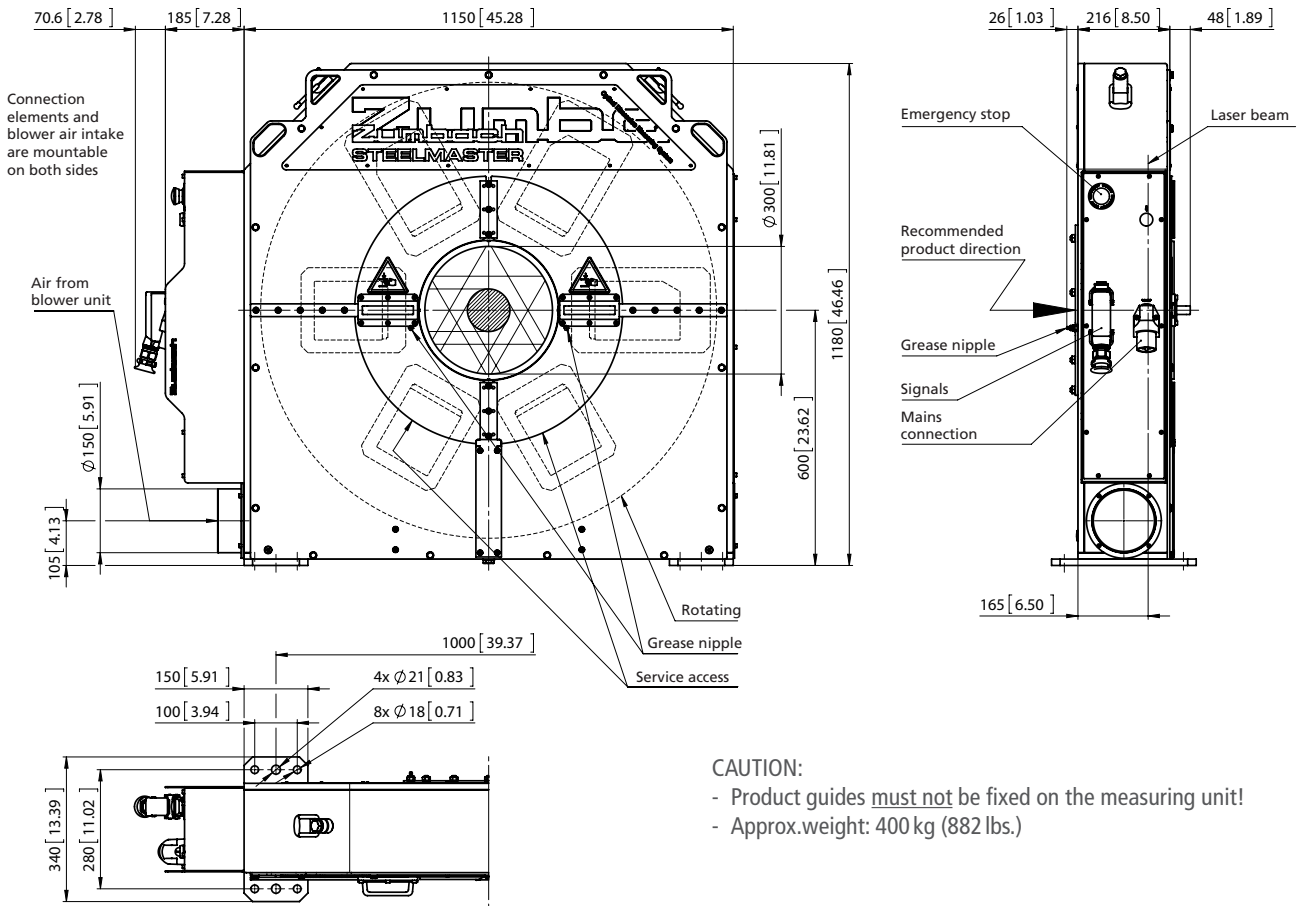
- **STEELDATA**
Data filtering, preprocessing, computation
- **STEELGAUGE**
System configuration
- **PROFILES**
For squares, hexagons, flats, special profiles
- **POLYGON / EPM / FPS**
EPM software for rounds and hexagons, for special symmetric shapes and for the determination of out of round conditions
- **REBAR**
For rebar with various geometries
- **SPC**
For SPC statistics, configurable
- **STEELHOST**
Standard protocol for ETHERNET TCP/IP
- **STEELDATABASE**
For post production viewing and archiving (to be installed on external PC's)
- **REMOTE STEELMASTER**
For networking via ETHERNET TCP/IP, with up to 10 independent PC workstations

___ MAIN DATA

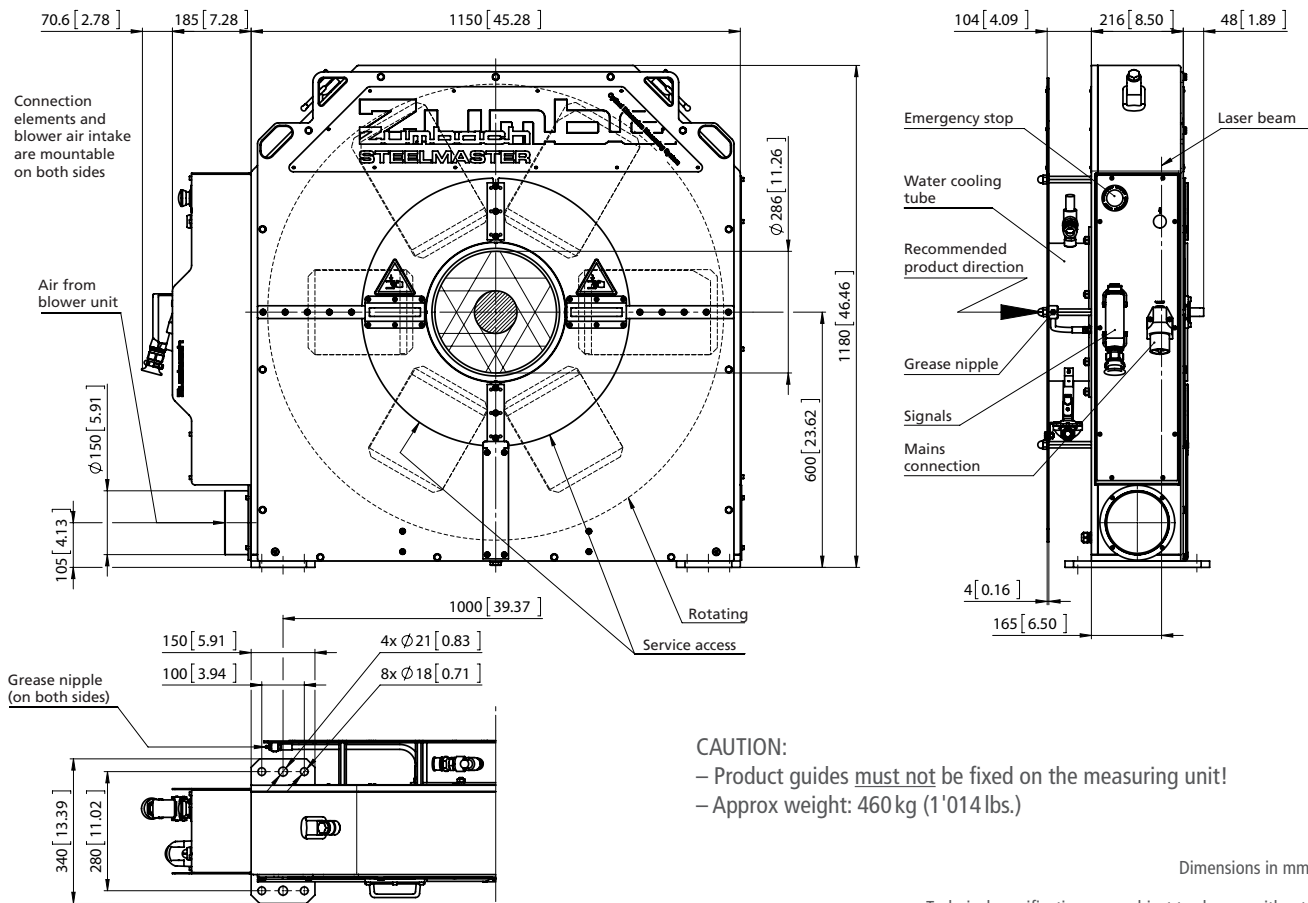
Model	STEELMASTER SMR 100-Sx	STEELMASTER SMR 160-Sx
Measuring field	100 mm (4 in.)	160 mm (6.3 in.)
Product diameter *	4 up to approx. 80 mm (.16 up to approx. 3.2 in.)	4 up to approx. 135 mm (.16 up to approx. 5.3 in.)
No. of measuring heads (axes)	1, 2 or 3, depending on model	
Measuring rate	Up to 2000 measurements/s, each axis	
Resolution	+/- 0.001 mm (.00004 in.)	
Accuracy (Repeatability)	+/- 0.01 mm (.0004 in.)	
Approx. time for 1 profile in ...		
... rotating mode:	1 axis = 0.3 s 2 axes = 0.15 s 3 axes = 0.1 s	
... static mode:	0.5 ms (screen update = 0.5 s)	
Power consumption	3 x 400 V~ and 1 x 110-230 V~, 50/60 Hz, approx. 4.1 kVA	

* Depending on centring, resp. guiding or product vibration

DIMENSIONS SMR 100-Sx



DIMENSIONS SMR 100/160-Sx WITH HEAT PROTECTION



Dimensions in mm (inch)

• Technical specifications are subject to change without notice