

Technical Datasheet



ZHA Series

Gear Flow Meters with ball bearings
Aluminium version

Application

The gear flowmeters of the series "ZHA" are good quality sensors of measured values for any lubrication and non-abrasive liquids, e.g. oils and emulsions. The parts of these inexpensive products are manufactured of aluminium and high-grade stainless steel materials.

The products of ZHA series are suitable for simple consumption measuring, monitoring and dosing works. For different ranges of flow rates there are also available various design sizes of products as options.

Applications

- Dosing systems
- Consumption measurement
- Monitoring systems

Principle and Design

Gear flowmeters are volumetric counters that have internal design similar to gear pumps. There are two gear wheels inside the flowmeter body; they have mutual engagement with a minimum backlash.

Between the teeth and walls of the flowmeter body closed chambers arise into which medium forced-flows and it puts thereby the gear wheels in motion.

The gear wheels move freely and do not brake the medium flow. Their number of revolutions is proportional to the flow rate and is sensed using contactless sensors through the body wall.

Features

- High resolution
- Low pressure drop
- Dynamic measuring system
- Measuring accuracy
- Low weight

Technical Data

| Type | Measuring range, l/min | | | K-Factor, pulses/l ¹⁾ | max. Pressure, bar | Frequency, in Hz ¹⁾ | | | Weight, kg |
|------------------------|---------------------------|-----|-------|-------------------------------------|-----------------------|-----------------------------------|-----|-----|---------------|
| | | bis | | | | | bis | | |
| ZHA 01/2 ²⁾ | 0,02 | bis | 3 | 14.000 | 315 | 4,6 | bis | 700 | 0,8 |
| ZHA 02 ²⁾ | 0,1 | bis | 7 | 4.200 | 315 | 7 | bis | 490 | 1,2 |
| ZHA 03 ²⁾ | 0,5 | bis | 25 | 1.740 | 315 | 14 | bis | 730 | 1,3 |
| ZHA 04 ²⁾ | 0,5 | bis | 70 | 425 | 315 | 4 | bis | 560 | 4,1 |
| ZHA 05 ²⁾ | 5 | bis | 150 | 134 | 250 | 11 | bis | 340 | 12,7 |
| ZHA 06 ²⁾ | 20 | bis | 500 | 58 | 250 | 18 | bis | 450 | 16,8 |
| ZHA 07 ²⁾ | 50 | bis | 1.000 | 24 | 100 | 20 | bis | 400 | 25,5 |

¹⁾ Durchschnittswerte mit Einzelaufnehmer. Für höhere Auflösung sind Doppelaufnehmer erhältlich.

²⁾ Genaue Typenbezeichnung auf Anfrage.

General

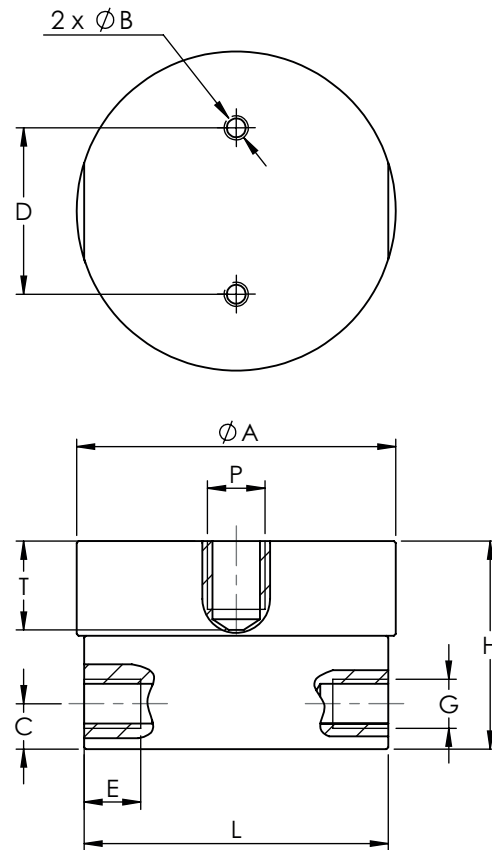
| | |
|--------------------|--|
| Linearity | ± 1% of actual flow (≥ 30 mm ² /s; up to 0.1% with linearization electronics) |
| Repeatability | ± 0.1% |
| Materials | Housing: as per DIN ALZn5.5MgCu-7075-F54 Gears: as per DIN 1.4122 Bearing: ball bearings: high-grade stainless steel (ZHA 01/2-04), chromium steel (ZHA 05-06) tapered bearings: chromium steel (ZHA 06-07) Sealing: FKM, PTFE |
| Medium temperature | -20 to +150°C (higher temperatures on request) |
| Dimensions | See drawing (page 4 to 5) |

Pickup Selection

| Criteria | Type | VTE * | WI* | VIE * | IF * / VIEG | VTC * | VTB * | TD * | VHE* | FOP * |
|--------------------------------|----------|-------|-----|-------|-------------|-------|-------|------|------|-------|
| Drilling type ¹⁾ | | E | E | E | E | E | E | D | E | E/F |
| Medium temperature | ≤ +70°C | | | | | | | | | |
| | ≤ +120°C | | | | | | | | ✓ | |
| | ≤ +150°C | | ✓ | ✓ | ✓ | | | | | |
| | ≤ +350°C | | | | | | | | | |
| EX-Approval | | | ✓ | ✓ | ✓ | | | | | |
| Frequency output | | | ✓ | ✓ | ✓ | | | | ✓ | |
| Dual frequency output | | | | | | | | | | |
| Analogue output 4 - 20 mA | | | ✓ | | | | | | | |
| Forward / backward recognition | | | | | | | | | | |
| Local display | | | | | | | | | | |
| Linearization | | | ✓ | | | | | | | |
| Supply 12 - 24 V | | | ✓ | ✓ | ✓ | | | | ✓ | |
| Supply battery | | | | | | | | | | |
| Interface | | | ✓ | | | | | | | |

1) Thread types: E: single pickup / D: dual pickup / F: FOP-pickup
 * Ordering code (please see separate datasheet)

Dimensional Drawings (mm) - ZHA 01/2 bis 05

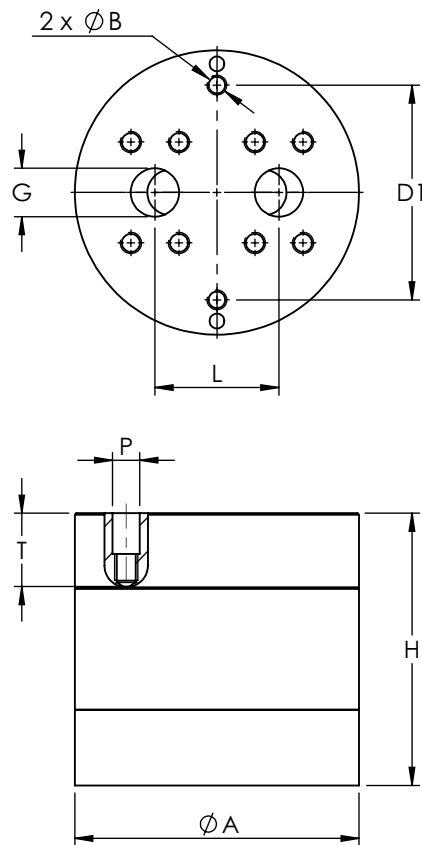


| ZHM Type | Ø A | B | C | D | E | G | H | L | P ¹⁾ | T ²⁾ |
|----------|------|----------|------|-----|----|--------------------------------|-----|-----|-----------------|-----------------|
| ZHA 01/2 | 76 | M6 ↓ 10 | 12 | 44 | 16 | G1/4" | 55 | 72 | D/E | 23,5 |
| ZHA 02 | 84,4 | M6 ↓ 10 | 12 | 44 | 16 | G1/4" | 55 | 80 | D/E | 23,5 |
| ZHA 03 | 84,4 | M6 ↓ 10 | 12 | 44 | 16 | G1/4" | 67 | 80 | E | 23,5 |
| ZHA 04 | 125 | M10 ↓ 16 | 19 | 60 | 17 | G1/2" G3/4" G1" R1/2" | 107 | 121 | D/E | 30,5 |
| ZHA 05 | 175 | M12 ↓ 20 | 22,5 | 100 | 18 | G1" | 133 | 170 | D/E | 43,5 |

1) See "Pickup Selection" table (P. 3)

2) Please notice: total height is calculated by adding up the height (H) and the height of the pickup (separate data sheet) and subtract the bore hole depth (T)

Dimensional Drawings (mm) - ZHA 06



| ZHA Type | Ø A | B | D | G | H | L | P ¹⁾ | T ²⁾ |
|----------|-----|----------|-----|------------|-----|-----|-----------------|-----------------|
| ZHA 06 | 188 | M12 ∇ 25 | 142 | SAE 1 1/4" | 180 | 82 | E | 48,5 |
| ZHA 07 | 233 | M12 ∇ 25 | 150 | SAE 1 1/2" | 220 | 100 | E | 63,5 |

1) See "Pickup Selection" table (P. 3)

2) Please notice: total height is calculated by adding up the height (H) and the height of the pickup (separate data sheet) and subtract the bore hole depth (T)

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