

1 Scope

The Quality Management System in production of diaphragm seals is based on the general Quality Management System of WIKAI, Alexander Wiegand SE & Co. KG.
This document is meant to give an overview of the major quality relevant processes used for production and control of diaphragm seals. It should be viewed in combination with the Quality manual document as general information.

2 Documentation

Document	Definition
Data sheet (DS) Operating manual (OPM)	The data sheet defines technical features of a standard diaphragm seal and can be downloaded from WIKAI's website.
Number / type code of a single part or manometer	The part number of any part, component or diaphragm seal is unique; it is kept under control through revision management.
Drawing (DRW)	The drawing is used to record technical details of parts, components, or diaphragm seals and always refers to a part number. It is kept under control through revision management.
Standard operating procedure (SOP)	The SOP defines how to perform each step of a process. The SOP document is kept under control through revision management and only for internal use at WIKAI.
Work instruction (WI)	The WI defines how to handle or work on parts/ production steps. The WI document is kept under control through revision management and only for internal use at WIKAI.
Production workplan (WP)	The WP, which is elaborated by the Process Engineering department, defines the different production steps. Every production step is signed by the skilled employee during the production process. The WP document is kept under control through revision management and only for internal use at WIKAI.
Bill of materials (BOM)	The BOM is a structured list of individual parts/ materials needed for the assembly of a part or product.
Welding procedure specification (WPS)	The WPS defines in detail how to handle the welding process. The WPS document is kept under control through revision management and only for internal use at WIKAI.

WIKAI's internal documents may be shown through customer visit/ audit upon request; copying for customer documentation or use is not allowed.

3. Quality Management procedures in production

3.1 Quality Management prior to series production

- New products and variation of existing products are developed and validated for series production capability according to the WP.
- Potential new suppliers are evaluated prior to series shipments.
- New parts have to pass the First Article Inspection (FAI) process according to the WIKAI Global Guideline "Supplier Quality."
- Preventive quality tools (like FMEA, QFD, quality workshops...) are used to define quality specification items.

3.2 Quality Management during series production

- Incoming inspection of purchased parts from certified suppliers according to a control plan is done to verify incoming quality.

3.2.1 Quality Management of diaphragm seals

Product / step	Process	Specification
Diaphragm Seal	Welding diaphragm of flange	Drawing, BOM, welding procedure specification (WPS)
Leakage test	100% helium leakage test of diaphragm seals	SOP or customer specification
Hydrostatic test	Optional pressure test	Customer specification
Autofrettage test	100% overpressure load	WI
Leakage test	100% leakage test of welded housings	SOP
Dial printing	Printing of pressure range on the dial together with symbols, WIKAI/ customer logo and traceability marking	WI, production order
Preassembly	Assembly of movement, dial and pointer	WI, BOM
Calibration	Adjusting the pointer's transaction to the dial layout over the whole pressure range	WI
Final assembly	Assembly of window and closing ring	WI, BOM
Leakage test	100% leakage test of closed housings	SOP
Liquid filling	Optional filling of the housing	WI, BOM, production order
Final inspection	100% check of produced gauges done by production operator	WI, Production order
Final inspection	Random sample check of produced gauges done by quality inspector	WI, Production order
Packing and shipping	Packaging of gauges into a transport box, sampling of all gauges of a customer order, shipping gauges to customer	WI, BOM and customer specification

3.3 After sales service

Diaphragm seals which are out of function or calibration can be returned to WIKAI for service; the procedure is described on the website of WIKAI under "service" (product return form) and can be individually handled.

The service procedure is fixed in a SOP and/or WI depending on the type of diaphragm seals.

WIKAI Alexander Wiegand SE & Co. KG

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