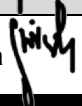
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Revision	Date	Description of Changes
1.0	09-May-2019	• Initial release

Prepared		Approved	Released
Process Leader	Subject Matter Expert	Process Champion	BOS Team
Larissa Shafarenko	Larissa Shafarenko	Larissa Shafarenko	Ewa Świerdza 

Approval records maintained by BOS Team

1.0 Purpose

This standard communicates Adient's minimum set of requirements to the suppliers. It is the expectation of Adient that all suppliers - Direct and Indirect, Supply Chain and Tooling, Machinery & Equipment - comply with all the requirements and expectations documented in the Global Supplier Standards Manual.

2.0 Scope

This standard applies to all Adient 3rd party suppliers.

3.0 Responsibility

All external suppliers (Direct and Indirect, Supply Chain and Tooling, Machinery & Equipment Suppliers) are expected to comply with all requirements and expectations documented in the GSSM.

Suppliers are responsible for reviewing new and revised Adient Requirements including Customer Requirements and determining the impact on their Quality Systems and promoting awareness of the GSSM at their locations

Each Direct and Indirect, Supply Chain and Tooling, Machinery & Equipment Supplier is expected to comply with all requirements and expectations documented in Adient's Global Supplier Standards.

4.0 Process

4.1 Secrecy/Confidentially

This specification and all other information we exchange are obliged to keep secret during the execution of the project. This secrecy clause shall apply for the time during and after the duration of the project. All documents you received from us must not be made available to third parties, and after completion of the contract, such documents have to be completely returned to us. The publication of information and documents you received during the execution of the project is subject to our explicit approval.


Tools, materials, samples and other objects you receive for the execution of the project remain our property. At end of the project, they have to be returned, unless they are consumed or destroyed.

4.2. Task

All quoted gages for the mentioned assemblies or individual parts (e.g. stampings) have to comply with this specification. Parts to be verified with this gages are pre-components as well as complete car seat structures.

This specification is a design guideline; furthermore the gages are to be designed with required tolerances and references in accordance with the component drawings & component CAD data in

Master files are stored electronically and are available to all team members.
Printed copies of the master files are for reference only.

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order to be able to measure the listed characteristics with the respective process capability. The specifications of chapter "Gage requirements / design specifications" are to be considered.

The required measuring equipment capability (MSA, see also chapter Proof of capability) has to be achieved and documentation has to be prepared and provided according to chapter 4.8.1.

As a fixed part of the contract, the tasks of this specification may be expanded also after award of contract and within the frame of feasibility meetings. Drawing updates and modifications of CAD data are also part of this expansion. Additional costs and deadline shifts are to be registered latest 3 days after the feasibility meeting.

The contractor guarantees to fulfill the valid legal, official and other regulations, in particular for safety and ergonomics as well as the Adient internal defaults and prove them in written if demanded by Adient.

This specification need to be returned with the quote. The “suppliers agreement” on the last page must be signed for the stage of procurement.

4.3. Additional Valid Documents

Along with this specification the following documents are binding for the machine manufacturer:

**List general specifications / documents
Please use the newest version !!!**

- MSA - measurement system analysis
 - o VDA volume 5: current edition

- Evaluation of MSA with:
 - o QS-Stat / Solara / Mini-Tab :
Current status
 - o Alternative – excel template:
Version x.x of xxx.xx.xxxx

- The procedure determined by PG M&M Europe is in accordance with IATF 16949
- Technical product documentation - drawings - Form and Position Tolerances (ISO)
- Gage Interface e.g. Steinwald-Box (or Micro-Ridge)

- Release 2D and 3D data as well as drawings. Data and drawings are distributed as data exchange only by the engineering department

4.4. Abbreviations

FA Final Assembly

FMEA Failure Mode Effect Analyses

AA / ODS Arbeitsanweisung / Operation Description Sheet

AFOWS Arbeitsfolge / Workflow sequence

attr. / a Attributive

CAQ computer aided quality

CC critical characteristic

Ind. Index

MSA Measurement system analysis

n/a not available

QA Quality assurance

SC significant characteristic

tbd. to be defined

var. / v variable

ZB Assembly unit

cg / cgk Capability values of gage

LL Gage clearance

IC Inspektion Characteristics

Add used abbreviations

4.5. Product Information

Example 1:

First row, Single Seat

WG Inner track tunnel man.

General information
about the project / car-
line /
seat row e.g.



Attention: Only the left site is depicted!

MSA-Plan for the shown assembly / sub-assembly

Master Data						Product/Process Specification and Tolerance in Appropriate Units							
AME						AQE	AQE	AQE	AQE	AQE	AQE	AQE	AQE
Position / Process Step Number	Part / Drawing No.	Revision Level	Description	Process	IMTE (Gage) ID Number	No on drawing	Special Characteristic (SC / CC / IC)	Product/Process Characteristic Being Measured	Nominal Value	Tolerance Min	Tolerance Max	Unit	IMTE (Gage) Type (variable or attribute)
						1	IC	Position	-	-	1	mm	Atributiv
						2	IC	Distance	225.1	0,25	0,25	mm	Variable
						3	IC	Position	-	-	0,5	mm	Atributiv
						4	IC	Position	-	-	0,5	mm	Atributiv
						5	IC	Distance	103.5	0,6	0,6	mm	Atributiv
B250	P1-14568-01 21586-01		⊕ WG Inner track tunnel man.	WELDING									

(*) Respective characteristic allocations (e.g. numbering) & detailing (e.g. tolerance zone & tolerance type) can be retrieved from the provided 2D & 3D data or the 'stamped' or handwritten marked drawings.

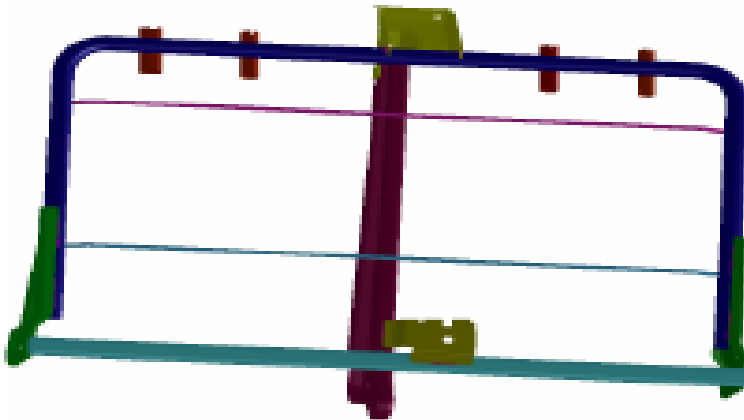
Example 2:

Second row, Backrest

Welding Group Backrest


General information
about the project / car-
line /

seat row e.g.




Attention: Only the left hand back-frame is depicted!

MSA-Plan for the shown assembly / sub-assembly

Responsible:	Master Data					Product/Process Specification and Tolerance in Appropriate Units									
	AME					AQE	AQE	AQE	AQE	AQE	AQE	AQE	AQE	AQE	AQE
Position / Process Step Number	Part / Drawing No.	Revision Level	Description	Process	IMTE (Gage) ID Number	No on drawing	Special Characteristic (SC / CC / IC)	Product/Process Characteristic Being Measured	Nominal Value	Tolerance Min	Tolerance Max	Unit	IMTE (Gage) Type (variable or attribute)		
 B690	P1-12114-01 (P1-19355-01)		WG backrest	WELDING		3	IC	Position			2	mm	Atributiv		
						5	IC	Position			1	mm	Atributiv		
						6	IC	Position			1	mm	Atributiv		
						7	IC	Distance	110		0,3	mm	Atributiv		
						8	IC	Position			2	mm	Atributiv		
						9	IC	Distance	110	-0,3	0,3	mm	Atributiv		
						10	IC	Distance	110	-0,3	0,3	mm	Atributiv		
						12	IC	Distance	110	-0,3	0,3	mm	Atributiv		
						13	IC	Distance	210	-1	1	mm	Atributiv		
						15	IC	fitting					Atributiv		
						16	IC	Position			2,5	mm	Atributiv		
						19.1	IC	Angle	8.1		1	mm	Atributiv		
						19.2	IC	Angle	8.1		1	mm	Atributiv		
						19.3	IC	Angle	8.1		1	mm	Atributiv		
						19.4	IC	Angle	8.1		1	mm	Atributiv		
						21	IC	Position			2	mm	Atributiv		
						22	IC	Position			2	mm	Atributiv		
						28	IC	Parallelism			1	mm	Atributiv		
						29	IC	Distance	356.1	0	1	mm	Variable		
						30	IC	Distance	370	0	1	mm	Variable		
						31	IC	Parallelism			1	mm	Atributiv		

(*) Respective characteristic allocations (e.g. numbering) & detailing (e.g. tolerance zone & tolerance type) can be retrieved from the provided 2D & 3D data or the 'stamped' or handwritten marked drawings.

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4.6 Quote Requirements

Quote structure

- Task
 - Detailed description of the gage and the gage concept

- Timing for deliveries
 - Gage time schedule (lead time after PO)
 - Timing for requirements provided (CAD-Data, # of prototype components) to fulfill RFQ-requirements

- Training

- Documentation optional in local language

Add or cancel quote-
requirements if
necessary

4.7 Deadlines



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Request the following milestones based on Adient project time schedule

Deadline for submission of quotation: mmm dd, yyyy
Provision of samples for MSA: mmm dd, yyyy
Delivery release / preliminary acceptance: mmm dd, yyyy
Shipping: mmm dd, yyyy
SOP mmm dd, yyyy
Final Acceptance: mmm dd, yyyy

Add the project-related deadlines.

4.8 Change Log

Index	Date	Changes	Name
		A listing of the past versions of the specifications.	

4.9 Adient Project Team

Department	Contact Person	Phone	Email
Program AME			
Plant AME			
Program AQE			
AQE(gage specialist)			
Plant AQE			


Add the project involved persons.

4.10 General Gage requirements / design specifications

4.10.1 General information/Specification

The presented design information and concepts as well as the described process (variable or attributive) are to be observed. However, some of them only represent the basic design or process and serve as a guideline. The objective during design phase is to quote an optimized and suitable solution!

- Only current and released drawings are valid. Attention: Drawings are subject of a change service (consider index).
- Requirements or determined inspection characteristics are to be implemented according to "marked component drawing" as well as data exchange based on a 2D & 3-D format.
- Manufacturing tolerances of gages: tolerance +/- 0,05 mm in accordance to BS969 or equivalent DIN standard. Are more precise requirements needed according to drawing, the execution of the gage tolerances has to be confirmed from Adient Quality Gage Expert.
- Resolution of the measuring system: $\leq 5\%$ of characteristic tolerance (guideline of automotive industry). Deviations has to be confirmed from Adient Gage Expert.
- Measurement uncertainty of reference standard $\leq 5\%$ of characteristic tolerance. Deviations has to be confirmed from Adient Gage Expert.
- Characteristic number according to specification and described in the required gage criteria has to be designated in gage drawing (in agreement with PG M&M Europe!).
- Checking dimensions of component drawings have to match with gage drawings (acceptance or test dimension have to be comprehensible).

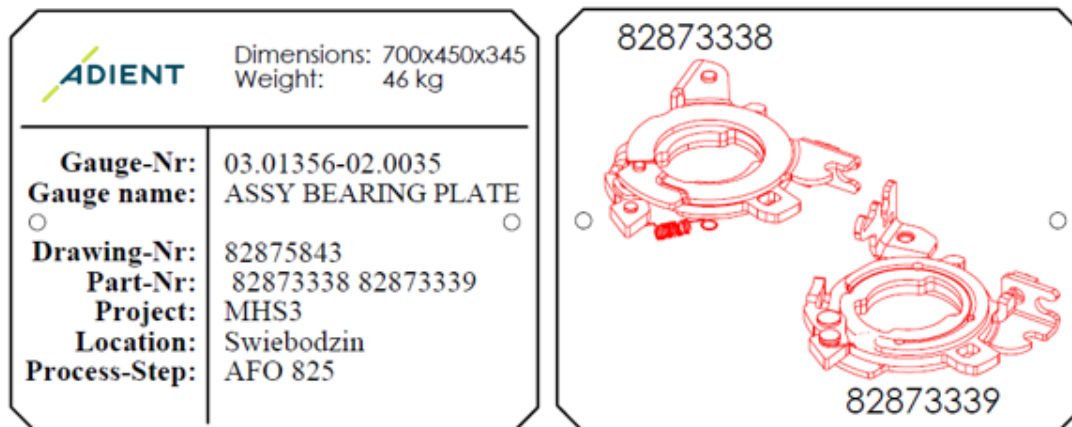
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- Checking of SC / CC characteristics are to be aligned with PG M&M Europe for each individual feature
- A Referenz "Bill Of Material" (BOM) has to be prepared for all components and single parts of a gage.
- In order to remove the test specimen more easily from the gage, the gage should provide clearance zones in case removal is difficult due to accessibility.
- It is required for measuring gages to display the maximum and minimum limit clearly and easy exchangeable at the gauging station (e.g. with labeling device).
- Only Mitutoyo measuring devices with data connection are allowed for measuring check units / systems. Manual reading of measuring equipment and an analysis by a Steinwald box is to be ensured. Provision of a Steinwald box has to be coordinated between gage supplier and PG M&M AME
- Materials for gages to prevent corrosion and increase life (protective coatings) to be considered
- Feeler pins diameter can not be below 3.0mm in diameter
- Feeler pins must be hardened
- Contact areas must be handened min HRC 60

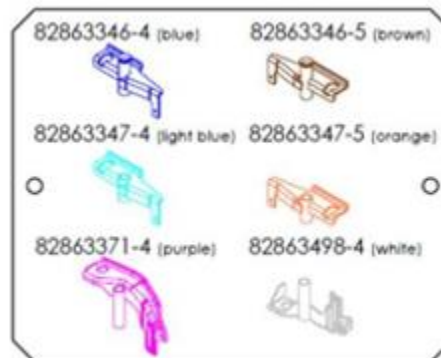
4.10.2 Labeling

- Each gage has to be labeled at least with the following information: Gauge-Nr. Gauge Name, Drawing-Nr., Part-Nr. Project name, Location, Process-Step, 3-D ISO view and gage owner (e.g. Adient as specified). Also Information regarding Dimension and Weight of the gauge.

Example



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- This label(s) is to be positioned between 2 Plexiglas® panes (105 x 70 x min. 3 mm / 2x), one of which is to be attached to the gage. The second Plexiglas® pane is to be attached to the first with 2 screws (countersunk screw with hex socket). The supplier gage number only is to be inscribed into the gages base plate.
- Further labeling (e.g. company label of gage manufacturer) is to be coordinated individually.
- Gage components such as fixation pins, test pins and covering pins as well as dial gages, caliper, calibrator (gager), measuring bridge and other measuring units have to be visibly allocated to the respective gauging station (inscription, embossed number or numbering with colored marking - not sticker or adhesive foil!). Coordination with PG M&M Europe required.
- The respective gage number is to be engraved in all loose components. Also parking position, setting position (for variable measuring equipment, e.g. resetting the dial gage) and place of use are to be indicated. Furthermore, the marking position should be clearly visible when a test specimen is loaded in the gage. Indication of position (embossed number or engraving and color) is to be described in the operation description sheet/gage description according to the meaning/usage.
- In general the OK / NOK side of all attributive test equipment (e.g. rig pin, slide, plug gage, etc.) is to be marked (red/green colored ring or red/green dot). Furthermore the red/green colored rings or respective areas of rig pins are to be implemented accordingly in order to visualize the correct end position/limit stop.

4.10.3 Ground plane (base plate)

- The following options are given for the design of the base plate:
 - Aluminum plate with a thickness depending on stability and gage size (weight).
 - Hardened (HRC 56) and grinded steel plate and a thickness depending on stability and gage size (weight) (with specific approval of PG M&M Europe).
 - Cast steel frame (with specific approval of PG M&M Europe).
- Paint coating and color (preferred silver) of the base structure without functional surfaces is to be coordinated with PG M&M Europe.
- Locating and alignment pins in the base plate are to be hardened on principle. They are either pressed into the base plate or bolted from the opposite side. Bolts have to be fail-safe (collar). Diamond shaped pins have to be torsion-proof.

4.10.4 Loading / clamping of part

- In general, a correct positional loading of parts has to be ensured. Incorrect positioning must not be possible. Therefore, mechanical Poka Yoke solutions should be implemented (e.g. obstruction).

To optimize position finding and repositioning, prealignment guides and graving of the test specimen geometry should be provided on the base plate (if not explicitly included in the contour of the bottom tool).

- The obstruction design to position the test specimen correctly should also ensure smooth loading of components with maximum dimension.
- Points of contact according to the reference / datum system of the component drawing are to be considered when the test specimen is positioned in the gage. References and tolerances are to be implemented according to the drawing.
- Locating pins are to be designed conical/spring loaded. Coordination is mandatory!
- The contact surfaces are hardened and, after assembly to the base plate, grinded.
- If optimized alignment or positioning and clamping cannot be guaranteed due to the selected references/points of contact, respective countermeasures have to be implemented (e.g. tilting of component when fixed because of a too small contact surface, eccentric clamping (if possible clamping via positioning pins).
- Clamping (clamping force) must not deform the test specimen.
- The design of the clamps has to ensure a subsequent adjustment (readjustment) of the clamping force.
- The pressure points of the clamps have to be adapted to the contact surfaces; this means that the pressure points have to be adjustable and mounted to a movable bridge.
- The force has to be applied in normal direction towards the component surface.
- The maximum material requirement (M requirement) is to be observed.
- There should always co-rotating- or Plunger-clamps used to prevent injury. If this is not possible the deviations must be separately approved by Adient AME
- In case a special clamping sequence is necessary or specified, the clamps are to be marked with numbers according to the respective sequence (engraving or embossed number) and included in the respective operation description sheet.


4.10.5 Design of test units (including datum location pins etc.)

- Marking and also Poka Yoke is to be provided to ensure a correct use of rig pins and to prevent mix-up.
- Vent holes are to be used to prevent air bolsters or vacuum in test and parking positions of the test units.
- Handle area, guidance area and measuring area for manually used checking units are to be designed so that the different areas can be distinguished clearly from each other.
- Handle areas of checking units (e.g. slide, dial gage holder) have to be knurled.
- Design of guidance has to ensure zero freeplay during the lifetime of the gage and to prevent wearing. Rig pins or slides have to be hardened at least in their functional areas and have to slide without freeplay.
- Also slidable guidance units (e.g. 'slide' systems with implemented variable or attributive measuring units) have to slide without freeplay.
- Test units must not selfadjust because of their weight and must not fall out of their guidance or measuring and parking position.
- Guided checking units (e.g. plug-in depth gage in bottom tool) are to be secured with a groove against twisting in order to ensure repeatable correct positioning.
- The design of slidable guidance should ensure locking in unoperated position or even in testing position (e.g. locking mechanism, ball plunger). In order to prevent damage (e.g. when the test specimen is loaded or the slidable guidance is moved) the measuring systems (e.g. dial gage) need to lock the feeler in unoperated position and move in measuring position only when released.

- Rigid pins to check the presence of holes are to be placed in bushings or designed interchangeable.
- Parking positions or storage features fixed to the gage (e.g. box for contour masks, drawer below gage) are to be provided for loose gage parts (e.g. sliding parts, dial gages, rig pins). These storage features are to be equipped with foam padding in order to prevent damage.
- An attachment (e.g. chain, wire cable < 600 mm long or wire cable with rewind unit similar to key back clip > 600 mm long) is to be provided for loose gage parts (e.g. rig pins). In case of more than five (5) attachments other solutions are necessary e.g. drawer system with contour mask (see photo below). Execution has to be aligned with Adient Gage Expert.



- Loose screw-in pins or other such elements, if required for measuring (e.g. thread positions), are to be marked with bright color and to be stored in a separately and lockable box (if not already secured against loss with a chain or similar).
- A floating measuring unit is to be used if a characteristic, located on a reference point, is to be measured.
- Setting standard or calibration equipment (reference unit, calibrator [gager]) are to be provided per gage and are part of the gage. A Calibrator (gager) have to be produced and attached to the gage and secured against damage especially for gages with variable checking units (e.g. dial gage). Handling of the setting (calibration of dial gage or similar measuring units) has to be described in the gage description/operation description sheet. A calibration record has to be attached to each checking unit (e.g. dial gage).
- A feeler gage with appropriate dimensions is to be delivered to verify inspection characteristic with prepared gage clearance. Areas to be tested have to be marked accordingly (color coding and tolerance marked on the feeler gage).
- Design of the gage must consider a multiple use of the dial gages. If more than one dial gage have to be used, a color coding must clearly assign the dial gage to the measurement point.

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4.10.6 Miscellaneous

- Supporting stands are required for gage weight > 5 kg
- Carrying handles required for gage weight > 10 kg
- Hoisting eye required for gage weight > 20 kg
- Workbenches for gages are to be quoted optionally.
- Design of gage bench with standard components (e.g. perforated plate as back wall, A4 board from Bosch, lighting, socket's, document clamp storage area for test specimen, hook for samples, storage area for initial/last test specimen, etc.) and further details (e.g. storage below base plate for large contour mask).
- Test units (e.g. dial gages) should be easy to repair and a quick-changing system should be provided.
- The entire gage including check units is to be designed very simple (complex measuring systems such as scissors lifting kinematics for position measurement of an Isofix bar should be avoided).
- Safety end stops for function movements of test specimen (e.g. swivel parts under spring tension) are to be provided (occupational safety!).
- Accessibility, obstruction for unlocking unit, clamp, bottom tool are to be considered in case of function movements of the test specimen. Further all tests intended for one gage should be performed without changing the position of the test specimen. If different positions of the test specimen are required during testing (e.g. seat in design and flat-floor position), the respective adjustment travels and positions have to be possible without removing the test specimen.
- Vehicle-based function end stops (e.g. rattling of seat in flat-floor position) are to be coordinated separately with the development department.
- The gage may also be required to act as a jig to restrain a part to datums while the part is being measured on a CMM (reference points e.g. hardened pins or bushings in base plate).
- An error-free, quick and easy change-over should be possible in case of type or variant change.
- The gage has to be accessible from at least 2 sides.
- Travel end stops, for example slide or cross roller tables etc. are to be made of steel and have to be firmly attached to the gage. Rubber pads or other buffers are to be provided in or at these end stops to buffer for example the slide before it reaches the end stop position.
- Gages stored in racks (e.g. gages for stamping parts) are to be provided with guidances below the base plate for easier forklift handling. This requirement will be individually determined during the gage design phase.
- All gages that are stored in racks are to be equipped with spacers at the edges to prevent damage (screw solution). These spacers have to be higher than the highest point of the gage. Open clamps, slides etc. have to be considered.


Additional point for big gages that are used at an angle of 45°

- In order to roughly fix big or heavy test specimen in an inclined position, two stop pins are to be mounted in the lower area of the gage (Ø 20mm). The position of these end stops is determined during the gage design phase.

4.10.7 Feasibility & design approval

Feasibility meetings between PG M&M Europe and the gage supplier are mandatory prior to the structural design of the gage.

The gage supplier has to give notice about critical tolerances concerning measurement accuracy and capability according to MSA during feasibility meetings.

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Notification is mandatory if optimal alignment or positioning and clamping is not possible due to selected references or points of contact as stated in the drawings and appropriate countermeasures are to be suggested.

- After the first feasibility meeting, a 3D model of the gage is to be prepared for further discussion .
- Prior to gage production a gage production approval based on the prepared gage design is mandatory by PG M&M Europe.
- Any warranty obligations of the gage supplier concerning the gage are not affected by our approval for 3D data, drawings, calculations and other documents handed over to us.

4.10.8 Proof of capability (MSA)

In order to ensure measured values are sufficiently exact and reliable, the gages have to be verified based on the following aptitude test.

The systematic measuring error and repeatability (for variable and attributive characteristics) is to be conducted at the supplier and the gage is to be designed to ensure repeatability and reproducibility (Gage R&R, variable and attributive) in the producing plant.

Systematic measuring error and repeatability

For variable characteristics

- Conducted at the gage supplier (for preliminary acceptance)
- Responsible: gage supplier
- To be conducted according to Measurement Systems Analysis by AIAG
- Provision of measured parts by PG M&M Europe
- $C_g, C_{gk} \geq 1,33$
- Evaluation with qs-STAT, MiniTab (equivalent system or excel template)


For attributive characteristics

- Conducted at the gage supplier (for preliminary acceptance)
- Responsible: gage supplier
- 1 measured part, 10x to be checked
- Provision of measured parts by PG M&M Europe
- Evaluation with Excel template

Repeatability and reproducibility (R&R)

For variable characteristics

- To be conducted at the producing plant
- Responsible for execution: PG M&M Europe
- To be conducted according to PG M&M Europe AE-MOS-FR-21
- Provision of measured parts by PG M&M Europe (producing plant)
- $\%R\&R \leq 10\%$ OK
- $\%R\&R \leq 20\%$ Conditional OK (for new measuring systems)

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%R&R > 20% NOK

- Evaluation with qs-STAT, MiniTab (or excel template)

For attributive characteristics

- To be conducted at the producing plant
- Responsible for execution: PG M&M Europe
- To be conducted according to PG M&M Europe AE-MOS-FR-21
- Provision of measured parts by PG M&M Europe (producing plant)
- Evaluation with Excel template

Prior to delivery, the gage supplier has to prove at least the systematic measuring error and repeatability (as previously described).

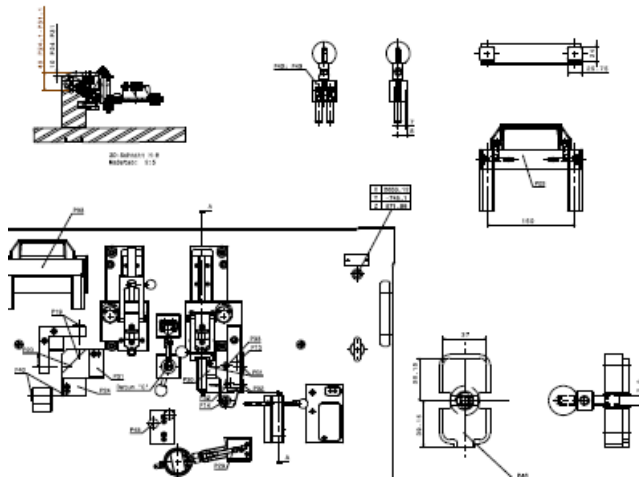
In case of gage modification (e.g. new characteristic added) the measurement report and MSA are to be conducted by the supplier (and PG M&M Europe) for all modifications. If the modification refers to the reference system or the alignment basis, the entire gage is to be re-measured and the capability for all integrated characteristics are to be proven again. If only tolerances are adjusted, no new MSA is required.

- The executive staff has to be trained
- If needed, the inspecting plant shall conduct a control measurement.
- Testing parts with measurement reports to conduct the MSA are provided by PG M&M Europe to the gage supplier.
- Ambient temperature 20°±2°C.

4.10.9 Acceptance gages

4.10.9.1 Documentation


- A time schedule providing plan data and current data is to be prepared and communicated on a 2-week basis. Deviations are to be pointed out immediately and respective corrective actions are to be initiated. PG M&M Europe reserve the right to ask for the current status at short intervals in case of a critical time frame.
- Drawings (including all design data), as well as 3D and 2D data of the gage (1:1 Catia V5 or converted V5 compatible data) / including all components, bill of materials and spare part lists are to be handed over. Additionally the final design has to be delivered as 3D-PDF-file. Minimum requirement: 2D drawing of the complete gage with a table which is showing the complete dimensions with the tolerances (see example below) and the measuring coordinates.



	X	Y	Z	tol. X	tol. Y	tol. Z
Datum A1/B	2217	-132,26	293	+/- 0,05	+/- 0,05	+/- 0,05
Datum A2	2217	-555,55	293	+/- 0,05	+/- 0,05	+/- 0,05
Datum C	2466,97	-343	741,588	+/- 0,05	+/- 0,05	+/- 0,05
Datum C mit Beckpanel	2467,425	-343	741,379	+/- 0,05	+/- 0,05	+/- 0,05

	dimension	X	Y	Z	tol. X	tol. Y	tol. Z
P01	71,0	2421,409	-430,5	760,824	+/- 0,2	+/- 0,05	+/- 0,2
P02	71,0	2411,315	-430,5	723,263	+/- 0,2	+/- 0,05	+/- 0,2
P03	see drawing						
P04	24x25,75	2428,344	-265	769,419	+/- 0,05	+/- 0,2	+/- 0,05
P05	24x25,75	2428,344	-415	769,419	+/- 0,05	+/- 0,2	+/- 0,05
P06	71,0	2415,053	-265	772,977	+/- 0,2	+/- 0,2	+/- 0,05
P07	71,0	2415,053	-415	772,977	+/- 0,2	+/- 0,2	+/- 0,05
P08	Ø 5,85	2414,708	-519	678,014	+/- 0,1	+/- 0,1	+/- 0,1
P09	Ø 5,85	2389,83	-519	639,556	+/- 0,1	+/- 0,1	+/- 0,1
P10	71,0	2427,392	-519	674,209	+/- 0,2	+/- 0,05	+/- 0,2
P11	71,0	2361,292	-519	627,414	+/- 0,2	+/- 0,05	+/- 0,2
P12	71,0	2214,911	-555,55	288,457	+/- 0,2	+/- 0,05	+/- 0,2
P13	Ø 7,0	2470,415	-489,934	747,881	+/- 0,1	+/- 0,1	+/- 0,1
P14	Ø 5,0	2434,723	-484,515	676,264	+/- 0,1	+/- 0,1	+/- 0,1

- References, tolerances and test dimensions are to be included in the gage drawing.
- All results, parameter etc. have to be documented comprehensibly for traceability purposes of calculation algorithms.
- A measurement report is to be prepared for each gage and to be handed over upon acceptance (record of measured gages).
- Evaluation of variable and attributive MSA results (hardcopy and data record).
- Test certificate, calibration record of standard measuring devices, setting standard, traceability, standards and guidelines to be used etc. are to be handed over upon acceptance
- Required inspection of Standard measuring devices (e.g. dial gages) are to be documented.

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- The entire testing procedure is to be described in an operating manual / gage description and ODS sheets (especially indication of clamp sequence, characteristics number according to specification and gage drawing).
- Briefing document signed by trained employees.
- Spare parts list (including contact data of sub-supplier).
- List of critical wearing parts including life expectancy & potential expiration date.
- Maintenance plan with required utilities (manufacturer) and intervals, listed based on components, for instance plain bearing guidance, etc., textual and visual.
- Indication of service response time.
- Hazard analysis (if required / coordination with PG M&M Europe) during preliminary acceptance.
- Declaration of conformity, CE mark (if required / coordination with PG M&M Europe)
- Gage documentation in English and the respective local language of the receiving country.
- Documentation folder as hardcopy and electronic copy

4.10.9.2 Preliminary acceptance at gage supplier / delivery release

The following documents have to be present at the supplier during preliminary acceptance:

- at least Gage capability of systemic measuring error and repeatability including the function verification of the *Steinwaldbox*
- Gage measurement record (comprehensible)
- Hazard analysis has to be available (if required)
- Declaration of conformity, CE mark (if required)
- Training/briefing incl. signed briefing documentation (separate coordination if required at preliminary acceptance or at start-up)
- Operating manual (ODS / Instructions)
- Besides English at least translation into language of the country
- Documentation
 - Gage drawing (hard copy)
 - 3D Datamodel (Catia, stp, igs, coordination with PG M&M Europe)
 - 2D & 3D PDF-File
 - Bill of materials (Hard copy)
 - Calibration certificates (hard copy)
- Approval by signed Gage Approval Form together with open issue list and, where applicable, action list.

4.10.9.3 Start-up at location of production (SOP)

The following additional documents have to be available for start-up at the production site:

- Current status of drawing, part list, spare part list, etc. (according to PG M&M Europe specification) as hardcopy and as data to import into the CAD CATIA system (at least V5).
- Maintenance plan, list of critical wearing parts, etc.
- Documentation as hardcopy and data set (CD/DVD)

- Approval by signed Gage Approval Form together with open issue list and, where applicable, action list.

4.10.9.4 Final acceptance at location of production

The following documents have to be available for final acceptance at the production site:

- Drawing, data set and parts list (according to PG M&M Europe specification) import into the CAD CATIA V5 system (at least V5).
- Test certificate of used standard measuring devices from laboratory with ISO 17025
- Further documentation
- Acceptance (repeatability and reproducibility (R&R)) under production condition at the production site.
- Approval (final acceptance) by PG M&M Europe by production site, registration in test equipment management system
- Approval by signed Gage Approval Form together with open issue list and, where applicable, action list.

4.10.10 Provision & location

Delivery of gages incl. documentation to production location (tbd) only after a positive prior preliminary acceptance at gage supplier.

Optional: Preliminary acceptance for gages at a supplier for production equipment (for equipment- and fixture-acceptance). Therefore the above mentioned documentation and the gage are to be delivered to the equipment supplier. Then the gage is to be returned to the gage supplier for rework (if necessary).


Furthermore, on-schedule provision of measured samples to perform a MSA is to be mutually agreed and to be coordinated by PG M&M Europe.

The objective is a preliminary acceptance at the gage supplier and a start-up at the production site.

4.11 Release

Mandatory	Name/signature
Program AME	
AQE (gage specialist)	
Plant QE	
Purchasing	

The listed persons required to sign the specification.

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4.12 Supplier agreements

This specification is part of our contract and lays the foundation for delivery-release, SOP and final acceptance. All deviations of the requirements of this specification have to be marked or commented in this document. Divergent items to the quotation are not valid because specification has priority.

Date/Signature Supplier

The supplier's agreement
must be signed by the
supplier.

5.0 Records

Not applicable

6.0 References

Adient Supplier Portal: www.adiant.com/suppliers