

# Special terms and conditions of contract for Marbach moulds & automation (MMA)

(Version 05/2010)



## Clause 1: Collaboration by the customer

### 1.1 Machine data and installation drawings

- (1) The customer is responsible for timely provision of the special machine data required for the production of the tool and/or automation. MARBACH has available to it such data for commonly-used machine types; MARBACH uses the version of the data sheets most recently issued by the machine manufacturer if the customer provides no other data.
  - Clause 14 (7) of the MARBACH general terms and conditions of business shall apply to defects or damages caused by non-performance of the customer's obligation to collaborate.
  - Clauses 6 (2) and (4) of the MARBACH general terms and conditions of business shall apply to delays.
  - The customer shall pay any extra expenses in accordance with Clause 4 (7) of the MARBACH general terms and conditions of business.
- (2) If no publications by the machine manufacturer on the stipulated machine type are available or if the customer's machine does not correspond to the standard dimensions, the customer must provide the machine data needed for performance of the contract and the installation drawings for the construction of the tool/automation for the machine. The delivery period shall be extended by the duration of any such clarification.
- (3) By way of an alternative or supplemental to clause (2), MARBACH may, if requested to do so, communicate to the customer the installation data used for the construction of the tool/the automation to verify his machine. This offer relates to all specifications and manufacturing stages for the tool/automation, the supply of the tool/automation or the machine with media such as compressed air, power, water and if appropriate hydraulics and all other peripherals of the tool such as heating modules etc. MARBACH shall have no responsibility for the results of the customer's own verifications.

### 1.2 Provision of machinery

The used injection moulding machine will be provided by the customer free of charge for commissioning of the tool/automation and preliminary acceptance at the premises of MARBACH moulds & automation in Bad Urach. Configuration with commissioning and dismantling with preparation for transportation of the injection moulding machine shall be arranged by the injection moulding machine supplier or the customer. Any costs incurred and the responsibility for proper performance shall be borne by the customer.

### 1.3 Connections

- (1) The tool connections used by MARBACH for compressed air, power, water and any hydraulics are the appropriate standard connections of the machine manufacturer. MARBACH shall be notified in writing of any deviations from such standard connections before the start of construction.
  - Clause 14 (7) of the MARBACH general terms and conditions of business shall apply to defects or damages caused by non-performance of the customer's obligation to collaborate.
  - Clauses 6 (2) and (4) of the MARBACH general terms and conditions of business shall apply to delays.
  - The customer shall pay any and all extra expenses in accordance with Clause 4 (7) of the MARBACH general terms and conditions of business.We therefore recommend the customer, as a safeguard, to designate the current connections of his machine or to otherwise make them clear.
- (2) The customer is responsible for the electrical connection from the factory's main distribution board to the switchgear cabinet on the machine/machines.
- (3) The customer shall provide the heating cable for the tool free of charge for us.
- (4) The connection diagram for tools is provided by MARBACH. The customer shall insert the adjusting controller with temperature setting.
  - Clause 14 (7) of the MARBACH general terms and conditions of business applies to defects or damages caused by non-performance of this obligation to collaborate by the customer and any tool overheating caused thereby.

### 1.4 Test material, provision by the customer, label qualities

- (1) The material for an agreed test run, running in of the tool/automation and any process-optimisation work (tool mould sampling, e.g. to define the label contour) must be provided by the customer free of charge for MARBACH and in sufficient quantities. Label quality and characteristics must correspond to the labels ultimately used in the production process and must meet the requirements of modern thin-wall injection moulding. The labels must be properly and evenly die cut in order to obtain good end results. The properties of the labels/materials to be processed using the tool/the automation must correspond to normal market specifications where the order confirmation gives no particular specifications. Otherwise the standard machine manufacturer's specifications (e.g. for clamping forces) used by MARBACH in the construction of the tool/automation cannot be taken as a reference. The same applies to dimensional stability, direction of elongation or other mechanical and chemical characteristics of the labels and injection materials (e.g. granulate and colour batch) affecting the production process. In the case of new materials or material combinations, more extensive tests may be required at the customer's expense in order to be able to develop and construct a properly functioning tool/automation.
  - Clause 14 (7) of the MARBACH general terms and conditions of business shall apply to defects or damages caused by:
    - Non-performance of the customer's obligation to collaborate or
    - Deviations from the agreed label quality or
    - Deviations from agreed material characteristics or
    - Problems which were not perceivable on formation of the contract.
  - Clauses 6 (2) and (4) of the MARBACH general terms and conditions of business apply to delays.
  - The customer shall pay any extra expenses in accordance with Clause 4 (7) of the MARBACH general terms and conditions of business.
- (2) If the quality or characteristics of the label and injection materials seem problematic either in general or for the machining process or for the product to be manufactured or subsequent processing stages, MARBACH will give notice of the problems which became apparent after the order date. If the customer insists on the specification despite notification by MARBACH, the guarantee and liability of MARBACH is restricted to defects and consequences of defects which would have occurred even if the customer had acted on the notification.
- (3) If the label and injection materials are supplied in special packaging, MARBACH shall return this to the customer after use at the customer's expense and risk, provided the customer does not wish to or has not announced that it will collect it himself.
- (4) If the residual material cannot be disposed of locally and cost neutral, the customer shall bear the costs of disposal.

### 1.5 Shrinkage specifications

- (1) Shrinkage of the products to be processed using the tool is, among other things but not exclusively, dependant on the material used, the material additives, the process settings and the machine, item geometry and material distribution in the item do also have a not insignificant influence. The shrinkage specifications shall be provided by the customer if not otherwise agreed in the contract.
  - Clause 14 (7) of the MARBACH general terms and conditions of business shall apply to defects or damages attributable to defective shrinkage specifications from the customer.
  - Clauses 6 (2) and (4) of the MARBACH general terms and conditions of business shall apply to delays.
  - The customer shall pay any extra expenses in accordance with Clause 4 (7) of the MARBACH general terms and conditions of business.If requested, MARBACH may use its own empirical values; however, no responsibility can be accepted for the final form.
- (2) Approximate values may also be found by trials with a test tool.

### 1.6 Specification on PP labels

- (1) The film thickness (recommended 50 – 60 µm) depends on the product, winding method and winding radius. Film thickness specification is made by the customer or by MARBACH after appropriate product development.

- (2) Label dimensions with their tolerances shall comply with the label drawing.
- (3) Label characteristics to be exhibited are as follows:
  - Level, flat and without strain
  - Single label max. 1 mm bending on horizontal measuring plate
  - 1,000 units stacked max. 2 mm bending on horizontal measuring plate
  - Very good sliding properties
  - Very good separating qualities
  - No block formation in the stack (no labels sticking together)
  - No susceptibility to dust or powder
  - Labels must not be electrostatically charged
  - Where insertion systems with static charge are used, the label must be chargeable (including printed colour layer)
- (4) Printing of the label at the point of injection (as dark as possible, no barcode) must be present
- (5) The direction of elongation (c.f. Clause 1.7) of the label affects the shrinkage behaviour of the injection moulding or the handling of the label. The following stretching specifications must be complied with:
  - In the case of rectangular or oval cover in the longitudinal direction
  - In the case of rectangular or oval cups in the transverse direction
  - In the case of banderols, in the transverse direction
- (6) The die cutting of the labels must be clean, burr and lint free and free from die cutting residues.

### 1.7 Information on direction of extension

The label is stretched length and widthwise during production. The higher extension factor in length or width gives the main direction of extension as it is pulled more in this direction. During the injection process, the film is warmed and therefore tries to return to its former shape (resilience effect).

If one tries to extend a label manually, one can see that it can be stretched in one direction while remaining dimensionally stable in the other direction.

The reason for this is that the label on manufacture has reached its elasticity limit in one direction by stretching. This direction, which can no longer be stretched manually, is the direction of extension.

## Clause 2: Warranty, liability

### 2.1 Environmental conditions

- (1) In order to achieve optimum quality, maximum tool life and durability, our tools/automations are made from precision components. In order to maintain their function and lifetime, the environmental conditions must be optimal.

#### 2.1.1 Environmental conditions / transport

- (1) After transport, during which the constant base temperature of 20°C cannot be guaranteed, all tools/automation shall be stress-relieved in particular by loosening the bolts and properly readjusted at a temperature of 20°C in accordance with specifications. Tools/automation operated under stress become damaged.
- (2) In transport (in particular in the case of transport by sea) the tool/automation may be subject to vibration. Therefore, before commissioning, all screws and attachments must be checked by a specialist to ensure that they are tight.

#### 2.1.2 Environmental conditions / operating temperatures

- (1) The tools/automations are designed for an environmental temperature of 20°C. If this temperature is exceeded or fallen below, condensation and dimensional changes may arise. The tool must be conditioned using a sufficiently high-performance system at a sufficient operating pressure. Technical specifications regarding this can be found in the operating instructions. We expressly recommend that temperature-stabilization devices should be used. Simply cooling with cold water, possibly in cyclic operation, is often insufficient.
- (2) Temperature monitoring: In the case of injection moulding tools, automatic (permanent) temperature monitoring is necessary in the tool which prevents dimensional variations in the product in the event of excessive temperature differences. The maximum possible temperature variations are set out in the operating instructions.

#### 2.1.3 Environmental conditions / quality of external media

- (1) The external media (e.g. coolant, environmental air, compressed air, power etc.) must at least comply with the requirements of modern mechanical engineering and the machine specifications and be provided in sufficient quantity and quality.
- (2) The relevant special conditions shall be complied with for the manufacture of food packaging.
- (3) Regular maintenance of the components in the tool/automation in contact with media shall be observed. If the media do not correspond to the optimum values, maintenance intervals shall be shortened correspondingly or, if available, a version of the tool/automation or its components should be ordered that is in line with the characteristics of the media used.
- (4) In particular water quality must be suitable for the operation of tools and machinery. Precise values for this are set out in the operating instructions. In order to reduce corrosion due to electrical voltage differences, all units in the water circuits must be made of voltage-neutral materials wherever possible.

#### 2.1.4 Environmental conditions/storage

- (1) Some of the tool/automation components are coated to protect them against corrosion. Please note that coatings in principle can only retard corrosion.
- (2) In order to preserve the life of the components for as long as possible, it is important that the tool/automation components are properly stored and water is at no point lying on or in the tool.
- (3) In the case of lengthy storage periods, the components must be protected by oils as permitted. The storage temperature shall not fall below 10 C, as otherwise the seals could become prematurely brittle, among other things.
- (4) In principle, before commissioning after a lengthy period of storage, a complete function test shall be carried out.

#### 2.1.5 Environmental conditions/new and recommissioning

Production process, transport and storage may result in residues collecting in the tool which only become detached during commissioning and despite the greatest care cannot initially be identified. Startup products must therefore be separated out. Before release for production, the production parts must be subjected to a quality check to ensure that they are clean and dimensionally stable.

### 2.2 Cycle time specifications

- (1) The target cycle times specified by MARBACH are based on the one hand on empirical values with average-performance machines and production systems, or, where the machines and systems of the customer are known, their expected capability. On the other hand the specification is based on the requirements for the finished product issued to MARBACH and its expected material characteristics.

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- (2) In addition to forming and cooling times, the cycle time is determined by some other factors (such as stacking, system drying cycle time, control unit and valve reaction times, kinematics and smooth running of the system, heating and automation etc.). Therefore the specifications cannot be binding and relate to a system in optimum condition and average requirements for product quality and dimensional stability. In order to obtain more precise cycle time estimates, a forming time analysis may be made using a test tool. If the forming time alone is added to the ancillary times of the system concerned, the customer will obtain a relatively accurate estimate of cycle time.

## 2.3 Maintenance, in-process quality control, corrosion protection, operating instructions

- (1) In order to ensure reliable operation of the tools/automation, regular maintenance is mandatory. In addition to the normal cleaning work, we recommend regular inspection and careful changing of wear parts (e.g. seals etc.). Depending on the scope of maintenance work, such operations must be carried out by a tool or automation expert in order to restore the tool/automation to an operational condition.
- (2) All maintenance instructions in the operating instructions must absolutely be complied with.
- (3) It should also be noted that wear parts such as seals may in some cases have defects without any advance signs of wear being apparent. In order to be able to recognise any effects on production immediately, it is therefore necessary to carry out, during production, permanent quality control of the products manufactured using the tool/automation.
- (4) MARBACH assumes no responsibility for consequential costs or damages attributable to late, insufficient or unprofessional maintenance or neglected or inadequate quality control in production.

## Clause 3: Replacement and wear parts

- (1) We recommend that a complete set of replacement and wear parts should be ordered at the time of ordering tools/automation. Subsequent and individual production of replacement and wear parts is time consuming and cost-intensive.
- (2) Wear parts shall not be covered by the warranty in accordance with Clause 14.7 of the MARBACH general terms and conditions of business concerning natural wear and tear.

## Clause 4: Development, construction

- (1) Development services shall be subject to separate express agreement. The success of the development is no obligation unless expressly agreed otherwise.
- (2) In relation to payment, subject to an agreement to the contrary, the provisions of Clause 5 of the MARBACH terms and conditions of assembly and repair shall apply accordingly.
- (3) Subject to an agreement to the contrary, jigs, tools/automation, processes, procedures etc. developed by MARBACH shall remain in the ownership and the intellectual property of MARBACH. A non-exclusive licence to use the developed tool / the developed automation, restricted to the use specified in the contract, shall be granted to the customer. The same applies to usable partial results after premature termination of services according to Clause 5 (4).
- (4) If in the course of development work, new findings yield that substantially change the result of the development, the planned costs, the planned timeframe or other framework conditions, MARBACH shall inform the customer in the normal course of business. Both parties have the right to terminate (cancel) the development order with future effect if within two weeks after receipt of the information no agreement can be reached regarding the continuation of the development work.

## Clause 5: Optional services, commissioning

### 5.1 Optional: functional test, running-in, setting parameters

- (1) On request (and where the tools/automation match the available test systems), MARBACH offers, before delivery, the running-in and/or a function test of the tools/automation. Setting parameters and process data may be determined in this context. The functional test itself does not include any optimisation measures.
- (2) During running-in of the tool/automation, optimisations are stipulated for the process. The setting parameters found are however machine and material dependent. The specifications determined by MARBACH may therefore only be guide values; subsequent deviations are possible and probable, despite due care. Fine-tuning may only be optimised over a long production period by the customer himself.
- (3) In relation to payment, subject to an agreement to the contrary, the provisions of Clause 5 of the MARBACH terms and conditions of assembly and repair shall apply accordingly.

### 5.2 Optional: optimisation measures before or after supply

- (1) If in the context of process optimisation, mechanical adjustments are sensible to the tool/automation or expressly requested by the customer, these are modifications or additional services in terms of Clause 4. (6) of the MARBACH general terms and conditions of business. Please note that such adjustments take the necessary time and therefore the delivery period will be extended in accordance with Clause 6. (4) of the MARBACH general terms and conditions of business.
- (2) All adjustment measures are restricted to the capabilities of the agreed geometry and function and shall not affect the property rights of third parties.

### 5.3 Optional: test tools

- (1) On request, MARBACH may offer test tools for the creation of prototypes and to determine approximate shrinkage values. It should be noted that such tools are produced as one-off activities and the process parameters therefore may not necessarily meet exactly the requirements for the production tool, despite all due care. Deviations between prototype and end product are therefore possible in particular if the production machine is not identical to the test machine.
- (2) Test tools are designed for prototyping (manufacture of prototypes of the product to be produced using the tool) and are therefore not suitable for production (manufacture of large quantities of product). The test tools are normally inserts and may be cooling block units that have to be mounted onto the MARBACH test structure in order to be tested. The test structure is not part of the scope of supply for the test tool.
- (3) The individual parts of the test tool (form parts etc.) are kept, free of charge, for the customer by MARBACH for 6 months from release of tool production by the customer or, if no release is made, for 6 months from notification of the test result, after which they are scrapped without prior notification. On request, they may be delivered to the customer at his own expense and risk.

### 5.4 Optional: item-development services

- (1) On request, MARBACH may assist item development. Engineers can develop 3D models in accordance with the customer's specifications and concepts. We will carry out stacking studies and material distribution analyses with due diligence. Optimisation of the details for injection moulding can also be undertaken. Final release must however be carried out by an experienced packaging technician at the premises of the customer and/or end customer. All values and dimensions stated in the item drawing or other working results are subject to the usual tolerances for the injection moulding process.
- (2) In relation to payment, subject to an agreement to the contrary, the provisions of Clause 5 of the MARBACH terms and conditions of assembly and repair shall apply accordingly.

### 5.5 Test run, prototyping, special test and production conditions

- (1) Unless agreed otherwise, during the test run on the tool, the moulding part may be reworked up to max. 2x without price adjustment. Further reworking of the moulding part and adaptation of the other tool units will be calculated according to cost, in accordance with Clause 5 of the MARBACH terms and conditions of assembly and repair.
- (2) MARBACH recommends for critical elements that a replacement part should also be ordered with oversize. This can considerably reduce cost and time expenditure in the event of any adjustment work that may become necessary.
- (3) The MARBACH installations are part of a metalworking operation; therefore it is not possible to establish food compatibility or clean-room conditions.

### 5.6 Commissioning at the customer's premises

- (1) Commissioning and initial acceptance of the tool/automation shall take place, where possible, at the premises of MARBACH. The acceptance run under production conditions takes place at the customer's works. The duration of the acceptance run is 4 hours with at least 90% availability of the tool/automation.
- (2) If our assistance with the commissioning of the tool/automation at the customer's premises has been agreed, our service engineer will provide support with the installation of the tool/automation. He will also give instructions in maintenance and care to an employee of the customer on site. In order to be able to efficiently organise running-in, the machine must be in an operational condition when the engineer arrives and the necessary material must be available.
- (3) The MARBACH engineers cannot and must not operate injection moulding systems. Operation of the system must be conducted by a trained employee of the customer. The customer must make available the required number of suitable staff for the task at the appointed time.
- (4) Waiting times or additional travel costs shall be paid for separately in accordance with Clause 5 of the MARBACH terms and conditions of assembly and repair.
- (5) Only experienced users can determine the optimum setting parameters; MARBACH engineers will provide support. Perfect operation of the entire injection moulding installation and all upstream and downstream units is essential. Otherwise the manufacturing of a perfect product cannot be guaranteed. The materials to be processed must be available or be produced in consistently the best quality.
- (6) The period of installation support defined in the offer is a guide value. If more time is required, MARBACH will, subject to agreement to the contrary, charge for the engineer at a daily flat rate of 1,000 Euros plus VAT at the rate applying at the time of provision of the service. If an immediate extension of the agreed commissioning date is not possible for MARBACH due to internal reasons, we reserve the right to discuss and agree a replacement date with the customer and if appropriate a different engineer.
- (7) To facilitate optimised planning, the service engineer must be requested from MARBACH at least 3 weeks before the planned appointment.