Technical Delivery Specification

D07 – General and Documentation



This document describes the requirements for the delivery and documentation of systems.

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This delivery regulation D06 replaces all previous regulations.

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Table of Content

1 General 5
1.1 Area of Application 5
1.2 Deviations 5
1.3 Regulations, Norms, and Industry Standards 5
1.4 Safety 5
1.5 CE label 6
1.6 Duration and start of warranty 6
1.7 Service during the warranty period 6
1.8 Spare parts supply 6
1.9 Spare part discontinuation 7
1.10 Spare part Package 7
2 Instruction and training of personnel 7
3 Documentation 8
3.1 Option model 8
3.2 Storage of the documentation 8
3.3 Changes and conversions 8
3.4 Operating manual 9
3.5 Maintenance plan 9
3.5.1 Maintenance planning 9
3.5.2 Operator maintenance plan 9
3.5.3 Maintenance instructions 9
3.5.4 Servicing and maintenance schedule 10
3.5.5 Information on maintenance 10
3.6 Machine settings data 10
3.7 Third party documentation 10
3.8 Mechanics 11
3.8.1 Assembly drawings / BOMs 11
3.8.2 Workpiece-specific accessories, production equipment, machining plan, special tools 11
3.8.3 Lubrication technical data sheets 11

3.9 Electrical, pneumatic and hydraulic circuit diagrams 11
3.10 Content: Documentation for delivery 11
3.11 Structuring of electrical circuit diagram 12
3.12 Step-by-step instructions 13
3.13 Handbooks and system descriptions 13
3.14 Replacement and wearing parts 13
3.15 Purchased parts 14
3.16 Spare and wear parts drawings 14
3.17 2D/3D Equipment models 14
4 Paintwork/Corrosion protection 14
4.1 Paintwork 14
4.1.1 Exceptions for paintwork 15
4.2 General corrosion protection 15

1 General

1.1 Area of Application

This Hirschmann factory standard specifies the delivery regulations for the documentation of machines, machinery systems and production facilities.

1.2 Deviations

Deviations from this delivery specification which may appear necessary or appropriate to the manufacturer, require written approval from Hirschmann Automotive.

1.3 Regulations, Norms, and Industry Standards

In addition to the requirements specified in this technical delivery specification, the contractor is fully responsible for all requirements applicable to their service arising from regulations (e.g. EC directives, regulations and other applicable laws) as well as from standards and generally accepted rules of technology, even if this technical delivery specification does not specify such in detail.

As far as regulations, standards and technical rules are referenced in this technical delivery specification, the contractor themselves must check whether they are applicable for their work and whether other regulations, standards and rules are also to be adhered to.

If in doubt, the contractor must immediately contact the client.

In addition, the contractor shall immediately notify the client if the contractor recognises or identifies, on the basis of their knowledge, that the service to be rendered by the contractor is not suitable for the intended purpose or suited only to a limited extent.

1.4 Safety

It must be ensured that both the personal and operational safety are guaranteed in the event of faults or failures in the supply of the system (electricity, water, air, etc.).

1.5 CE label

The manufacturer/supplier is obliged to provide the CE symbol on each machine and to issue a declaration of conformity in German according to the most recent machine directives, or to provide the manufacturer with a declaration according to the current machinery directive in the case of a machine which is not ready for use.

As an exception, for machines and equipment intended for delivery and use in Mexico, CE marking and the associated CE Declaration of Conformity are not mandatory. Irrespective of this exception, the manufacturer/supplier shall comply with all applicable local legal requirements, standards and safety regulations at the place of use.

1.6 Duration and start of warranty

The warranty period begins with the date of the defect-free final acceptance. The warranty period (total system, individual components) must have previously been disclosed to the client in the offer. The same shall apply to changes and additional work corresponding to the scope, which are subsequently carried out upon the system on request.

1.7 Service during the warranty period

During the warranty period, the supplier is obliged to provide the corresponding service personnel for on-site deployment within 48 hours for service calls (repairs, system changes etc.).

1.8 Spare parts supply

The contractor undertakes to provide a replacement part list, including delivery times, to the client and to include this in the documentation.

The delivery times of critical components must be noted in the offer already.

The contractor must ensure that the procurement of spare parts for the machine/machinery is ensured for the client. This also applies to its sub-contractors.

If the contractor is unable to fulfil his obligations in the short or long term - whether this is his fault or not - or if the risk of this occurring exists, they will immediately notify the client and coordinate the necessary measures.

If special parts are fitted, the contractor grants the client the right to purchase the spare parts directly from the manufacturer.

1.9 Spare part discontinuation

The contractor is obliged to give the client information about discontinuation of spare parts.

Also, compatible spare parts must be offered in place of the discontinued spare part and be changed in the system documentation.

1.10 Spare part Package

When purchasing new equipment, a defined spare parts package must be offered. This should include the most important electrical and mechanical wear/spare parts. So that the parts are available at the final acceptance. The positions offered must be listed on a separate quote.

- Standard parts
- Product specific parts

2 Instruction and training of personnel

Successfully performed training and instruction of the client's maintenance personnel is to be documented by the contractor (scope, name of the participants, signature of the trainer and the participants). If, due to the fault of the contractor, the client's operating and maintenance personnel are insufficiently or incorrectly trained, the contractor shall ensure the availability of the machine/ machinery by use of its own personnel at no cost to the client until the required level of training is reached.

The training of the client's operating and maintenance personnel is included in the machine/machinery delivery scope. The contractor has to agree with the client the place, date and duration as well as the topics of the training.

Separate instruction of the operator, process and maintenance personnel must be carried out.

For the briefing, the following topics must be dealt with in detail and bindingly:

- Overall function of the machine/mechanical system
- Automation concept
- Hardware structure
- Installation concept
- Operating and maintenance service plan
- Operating and reporting concept (e.g. operating and fault messages)
- Software structure
- Modules for units (unit module, connecting module)
- Structure of the data coupling (e.g. data exchange between machine controller and superordinate controller)
- Explanation of the access options to change parameters and texts (inc. the performance of practical examples)
- Troubleshooting and tracking using the documentation, e.g. with the help of a programming device

- Safety and protective equipment
- Restrictions of the machine/mechanical system

3 Documentation

3.1 Option model

The documentation shall be created in accordance with Point 1.3. All documents must be prepared in the language of the place of operation and in English (in compliance with the requirement of European product directives). The technical documentation is to be delivered in paper form and on data carriers. All documentation prescribed for putting on the market (CE mark) must be present for operationally ready handover.

3.2 Storage of the documentation

The documentation must be collated in a stable folder or ring binder made from cardboard with four interlocks and be provided with a table of contents and an index (including third party documentation).

Documentation which is in a format larger than DIN A3 must have reinforced holes.

3.3 Changes and conversions

All changes to the system made by the client to the machine/machinery during the manufacture, setup, assembly, commissioning, and the test run are immediately to be incorporated in the relevant technical documents by the contractor.

The final technical documentation must correspond to the state of the machine/machinery at the time of final acceptance.

If at a later time, which may also lie after expiry of the warranty period, the documentation produced by the contractor does not match the delivered objects, the contractor is obliged to bear the costs for the resulting improvement or replacement delivery of the technical documentation.

Changes, extensions or conversions to the existing machine/machinery are, if nothing else has been agreed with the client, to be listed in the relevant technical documentation with the original drawing and naming system.

3.4 Operating manual

The requirements of the machinery guideline and the applicable standards are to be considered in the operating manual.

The operating manual also to contain all necessary details of how the machine/mechanical system can be brought back into the starting position or restarted after a fault.

It is also to be described how all the functions available on the operating stations (can be initiated both via switching elements as well as via the visualisation) work and which mutual locks may have to be observed.

The sequences of the system and process steps must be explained in a step-by-step guide. It must be self-explanatory.

3.5 Maintenance plan

3.5.1 Maintenance planning

For maintenance planning, the following points must be specified in the quotation for design approval, pre-acceptance, and end-acceptance:

- Maintenance interval
- Estimation of the maintenance effort
- Definition of the maintenance package
- Spare parts to be replaced during maintenance with target price
- Wearing parts that are replaced depending on the number of units with target price

3.5.2 Operator maintenance plan

The inspection and maintenance work which is to be carried out by the operator is listed in the operator's maintenance plan. All measures necessary or those to be carried out, including sub-contractors' and suppliers' measures, must be compiled centrally in a list. Otherwise, they shall not be binding for the client.

3.5.3 Maintenance instructions

Special details for the proper inspection, maintenance and repair of the machine/machinery, diagnostic aids as well as error listings and detailed fault descriptions in the event of faults must be indicated in the documentation.

This includes a list of required project software (e.g. for visualisation, axis assemblies, frequency converter) and communication software (e.g. for CPs, COM software).

Required setup and alignment aids for machine components are to be specified.

3.5.4 Servicing and maintenance schedule

The inspection and maintenance work which is to be carried out by experts is listed in the maintenance plan. If necessary, the respective client's form is to be used.

All measures necessary or those to be carried out, including sub-contractors' and suppliers' measures, must be compiled centrally in a list. Otherwise, they shall not be binding for the client.

3.5.5 Information on maintenance

The contractor must provide the necessary information on maintenance and operation, which clearly includes the following points.

- Description of the start-up and shut-down processes
- All necessary instructions to de-pressurise the system and to identify parts of the system which are not de-pressurised by the normal pressure relief device
- Description of the adjustment processes
- Description of external lubrication points, the type of lubricant required and the inspection intervals
- Description of maintenance procedures for special assemblies
- Identification of all pneumatic components. These parts must be marked with the part number of the component manufacturer and the designation provided in the standard
- A list of the recommended replacement and wear parts

3.6 Machine settings data

All settings are to be documented. Here, the setting parameters, such as pressures, forces, flow quantities, parameter lists for electrical system, workpiece specific data are to be delivered as they were parametrized in the final acceptance.

3.7 Third party documentation

The technical documents of the assemblies and components which were supplied by a sub-supplier, e.g. control components, measuring control, servo drive, etc. are also to be supplied and, if necessary, stored in a separate folder. These documents must contain setting advice and functional descriptions.

The provision of general catalogues is not sufficient.

3.8 Mechanics

3.8.1 Assembly drawings / BOMs

Compilation drawings (assembly drawings), if necessary, explosion drawings are to be enclosed with the documentation. Possible assembly and disassembly instructions for the components are to be shown in separate drawings. A reference to the BOM must be given.

Compilation drawings with weight indications for the individual assemblies, transport plan, attachment points, load and service data must be created.

For all system parts which are in direct contact with our components, 3D data and drawings of the respective parts also be included in the documentation.

3.8.2 Workpiece-specific accessories, production equipment, machining plan, special tools

If certain special tools or other special accessories are required for the installation, these must be stated in the offer.

If special operational plans or special tools are necessary for maintenance and servicing tasks, this must also be stated in the offer.

The scope and the procedure must be agreed with the client.

3.8.3 Lubrication technical data sheets

The lubrication data sheet must contain all information on the lubricants and hydraulic fluids required to operate the machine/machinery.

3.9 Electrical, pneumatic and hydraulic circuit diagrams

One copy of the electrical, pneumatic and hydraulic schematics is to be delivered at final acceptance, at the latest, and additionally in digital format (e.g. PDF).

If the schematics are drawn with EPLAN, the EPLAN project must also be delivered.

3.10 Content: Documentation for delivery

The contractor must hand over the following documents to the client when.

handing over the installation if no other agreement between the client and the contractor

is made:

- Final circuit diagrams
- BOMs
- Assembly drawings
- Connection and wiring diagrams
- Time, flow and function plans
- Device and tool plans (if applicable)
- Installation plans
- Installation drawings and notes
- Other required drawings
- Maintenance and operating data and manuals
- Results of performance tests
- EC Declaration of Conformity
- CE Labelling

The final acceptance of the complete system can only take place once the updated documentation

has been handed over

All items must match the approved system.

3.11 Structuring of electrical circuit diagram

Wiring diagrams must be drawn using the Eplan program.

The structure of the electrical circuit diagram should be as follows:

- Cover sheet
- Supplements/comments (with order data, wire colours, fuses, performance data, software deployed and software versions)
- Table of contents
- Change history
- Construction drawings of the control cabinets
- Mounting plates, consoles and terminal boxes, arrangement plan of the components outside the control cabinet: circuit diagrams, layout plans signal exchange, installation plan, connection plans and terminal plans
- Parts list with manufacturer's specifications

The following contents must be included in the circuit diagrams: Voltages, frequency, rated currents of the fuses, nominal and setting values (e.g. motors, etc.)

Bus structures and the hardware configuration of the visualization system must also be presented in the circuit diagram.

The hardware and firmware versions delivered as well as the hardware settings (DIL switches) are to be noted in the circuit diagram for all intelligent assemblies (also PC).

The format of the lists is to be agreed with the client.

The PLC inputs and outputs are to be shown as a connected, continuous block.

Consistency/similarity of the labelling which makes sense must be ensured between sensor/actuators levels and PLC/controller.

3.12 Step-by-step instructions

The following points are to be included in a step-by-step guide:

- Type change
- Adjustment work
- Adaptations
- Test/calibration of a test station
- Maintenance plans

3.13 Handbooks and system descriptions

A simple software license is to be delivered for all operating systems, visualisation systems and the software of all programmable systems.

The scope of delivery includes handbooks and system descriptions, installation discs, bootable media, drivers used (GSD files) and the description of the structure/data storage.

3.14 Replacement and wearing parts

Assemblies and components, which in the contractor's opinion are to be stored in the client's warehouse, are to be shown centrally in a list. This also applies for purchased parts and the scopes of sub-contractors.

Among other things, the spare and wearing parts lists must contain:

- Manufacturer of the part or the component
- Purchase order number of the manufacturer
- Description incl. type designation
- Quantity (Totals List)
- Label spare part (E) or wearing parts (V)
- References to drawings and also the installation location

3.15 Purchased parts

In the technical documentation, only instructions and names of equipment may be used which is also actually used.

3.16 Spare and wear parts drawings

The contractor is obliged to provide all technical documents for the execution of repair work as well as for the production of spare and wear parts, and also of the client-specific standard parts, free of charge.

On request, dimensioned production drawings (in a corresponding digital file) must also be provided for standard parts.

3.17 2D/3D Equipment models

The supplier has to provide Hirschmann Automotive the following files free of costs, after the design review.

- 2D Top view of machine incl. peripheral equipments
  File format: .dwg or .dxf
- 3D of machine incl. peripheral equipments
  File format: stp

4 Paintwork/Corrosion protection

4.1 Paintwork

The varnishing of a system has to be done considering the following aspects. Deviations must be clarified in advance with the client.

The machine have to be varnished in the colours RAL 5010 (gentian blue) and RAL 7012 (basalt grey). How the machine has to be varnished has to be clarified with Hirschmann Automotive GmbH.

The alternative colour RAL 7040 (window grey) has to be used if it’s not possible to paint the parts in RAL 7012 (basalt grey).

It’s not allowed to use the colours RAL 7012 (basalt grey) and RAL 7040 (window grey) together.

If additional costs are incurred by Hirschmann Automotive GmbH due to use of the colour shades defined above, this must be clarified with the client.

4.1.1 Exceptions for paintwork

Control cabinets and machine elements made from chrome steel, coated surfaces and anodized aluminum profiles do not have to be painted.

4.2 General corrosion protection

By means of suitable material selection and/or appropriate surface treatments, it must be ensured that no visible corrosion occurs on the machine components for a period of 3 years.

Over the life cycle of the system, functional errors should not arise as a result of rust or corrosion.

Contact corrosion between different metals, crack corrosion and abrasive wear must be minimised either through design measures or by appropriate surface treatments.

Moving components without rolling and plain bearings must be treated with a suitable coating (e.g. rust- and corrosion-proofing) and approved in advance by Hirschmann Automotive.