



Quality Management Directive for Purchasing

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KNORR-BREMSE
Systems for Rail Vehicles



Quality Management Directive for Purchasing



KNORR-BREMSE
Systeme für Schienenfahrzeuge GmbH

General Management

R. Graf

General Management

Dr. A. Köhler

General Management

Dr. D. Wilhelm

General Management

Dr. W. Schlosser

Strategical Purchasing

W. Holzgethan

Quality Management

T. Richardt

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General

KNORR-BREMSE Systeme für Schienenfahrzeuge GmbH, its affiliated and associated companies – hereinafter called "KB SfS" – develop, manufacture and distribute systems, equipment and units in the areas of rail vehicle brakes, on-board and auxiliary equipment, among a variety of other products, all of which are required to fulfil particularly high demands on safety and quality.

The logistic links between manufacturers in the rail vehicle industry and industrial suppliers are growing closer and more extensive all the time. Apart from competitive pricing, the importance of logistic efficiency and quality performance of partner companies is therefore becoming increasingly important.

The decision to purchase from a specific supplier therefore depends essentially on the Supplier's ability to meet quality and environmental safety standards. For this reason, the Supplier is bound to identify himself, without any restriction, with the quality and environmental safety goals of "KNORR-BREMSE Systeme für Schienenfahrzeuge GmbH" and to execute properly on them.

A KNORR-BREMSE PRODUCT IS A HIGH-QUALITY COMPETITIVE PRODUCT, DELIVERED ON-TIME AND SATISFYING THE HIGHEST REQUIREMENTS AND ENVIRONMENTAL SAFETY STANDARDS.

The responsibility for the products purchased lies exclusively with the Supplier!

Objective

The objective is to continuously improve the entire purchasing process, as well as quality, environmental compatibility and productivity in close co-operation with our suppliers.

KB SfS therefore expects its suppliers to implement the requirements resulting from this and hence improve overall quality and environmental safety.

**This Directive is part of every KB SfS purchasing contract
and
applies to the entire "Knorr-Bremse Systeme für Schienenfahrzeuge" Group.**

The name "Quality Management" also includes management activities in the areas of health, labour and environmental safety. These management systems are part of the KB SfS philosophy.

NOTE:

Due to the enormous variety prevailing among Commodity Groups this document is not exclusive. Additional requirements, may be defined and will be referenced on the purchase order or contract.

QMDP is only valid for production material.

The production and manufacture in compliance with the environmental requirements, which must be ensured by the Supplier, shall take place in accordance with the latest state of the art.

The German wording of the QMDP and its English translation are equally authentic, but in the event of conflict or uncertainty the meaning of the German version shall prevail.

Please copy this page and send a signed copy of it to the following address:

KNORR-BREMSE
Systeme für Schienenfahrzeuge GmbH
Supplier Quality Assurance
Moosacher Strasse 80
D – 80809 Munich
GERMANY

Quality Management Agreement

We hereby confirm receipt of and our agreement with the present Quality Management Directive for Purchasing of "KNORR-BREMSE Systeme für Schienenfahrzeuge GmbH", its affiliated and associated companies, shall meet the requirements stated within.

With the following exception (if applicable, continue and explain on a separate sheet of paper):

Address of the Supplier:
(incl. email address)

Name, date and signature
of the Supplier

General Management

Head of Quality Management

Suppliers who do not sign this agreement can no longer be considered for future business or enquiries.

This QMDP will remain the property of KB SfS, but the Supplier is authorised to make copies for their own use.

ADD COPY OF AN EXISTING AND VALID ISO9000:2000 CERTIFICATE

KB SfS:
Product Range:

Commodity Group:

1.0 General requirements for the quality management system

1.1 General

To satisfy the high demands of its customers, KB SfS aims at achieving close co-operation with its suppliers. The high portion of semi-finished products, intermediate products, parts and components purchased determines the product quality of KB SfS which increases the quality requirements imposed on the suppliers.

The Supplier's Quality Management System (QM System) shall meet the following demands:

- The Supplier shall meet the requirements of the ISO 9000:2000 series standards, the ISO 14001 or the EC ecological audit regulation.
 - The Supplier shall focus his efficient management system on customers' needs.
 - The basic strategy of the Supplier shall be a to set up a systematic company-wide procedure to achieve a purposeful improvement of all processes generating high-quality products and services.
- Process improvement**
- KB SfS expects active co-operation in improving products and processes to open up potentials for environmental protection and cost reduction.
- Environmental safety**
- KB SfS understands that the Supplier will take an active hand in environmental protection activities.
 - The Supplier shall be engaged in continuous improvement of products/services with respect to their effects on humans and their environment throughout the entire product life cycle and/or service chain.
 - The Supplier shall promote and increase the ability of the products to be recycled and disassembled (use of compound materials) and the preservation of resources.
 - The Supplier shall avoid the use of hazardous materials and shall substitute such materials with other, non-hazardous materials.
 - KB SfS understands that the Supplier will take an active hand in overarching tasks, such as, for example, recycling, packaging and logistics.
- Communication**
- For this purpose the Supplier shall endeavour to set up a system of exchange of information between all partners involved, i.e. between customer, supplier, user and the entity engaged in the disposal of the products.
 - KB SfS expects the supply of products and services with due observance of delivery due dates and quantity schedules
 - The activities of the Management must be focused on detecting risks, preventing defects through appropriate analyses and identifying and removing causes for defects.
- Fault avoidance**
- Quality improvement**
- The Supplier shall, as a matter of principle, apply modern techniques of preventive quality assurance, of continued quality improvement (e.g. SPC, FMEA, etc.).
- KB SfS auditors**
- The Supplier shall support all verification and surveillance audits carried out by KB SfS auditors (adequate restrictions, in particular to protect Supplier know-how, are acceptable).
 - The Supplier shall observe and accept any product and test specifications that are part of this order, provided that such procedure has been agreed upon.
- Product liability Insurance**
- The Supplier shall commit himself to concluding employers and product liability insurance with a well-known insurance company which shall include coverage for economic loss caused by products as well as costs of any recall.
 - The know-how brought in by the Supplier in the form of innovations and drafts bearing on the competitive situation will be kept confidential. Any use for other purposes shall only be permitted within the framework of the contract and in pursuance to an agreement with the Supplier. The question of know-how protection and the manner of remuneration for it shall by all means be dealt with before the respective problem becomes apparent.
 - To ensure that know-how protection is legally covered in the planning phase, both on the part of KB SfS and of the Supplier, mutual agreements to maintain confidentiality shall be signed.

- Results from research, development and production by KB SfS can be made available to our suppliers within the framework of a contractual agreement (e.g. development agreement).
- Duty of mutual information**
- The contractual parties shall commit themselves to inform each other immediately in writing if any relevant events should occur or if any party should deviate from the agreements concluded.
- Subcontractors**
- In general, the Supplier shall be free to choose his subcontractors. In case the scope of the delivery is subject to special conditions, agreements departing from this rule shall have to be entered into.
 - The Supplier shall cascade these requirements to their suppliers and ensure that his subcontractors also use an appropriate QM system.

The terms "shall," "must," "has to" or "is to" used in the QMDP express an indispensable requirement, whereas the word "should" denotes a desirable requirement. Suppliers that have chosen different management approaches must be able to prove that their approaches comply with the requirements laid down in this KB SfS Directive.

1.2 Vendor rating

- | | |
|--------------|--|
| A1 suppliers | <ul style="list-style-type: none"> - strategic target suppliers for: - new parts, components or products - product relocations - switching suppliers |
| A supplier | <ul style="list-style-type: none"> - parts already marketed/delivered - new parts with modifications made on existing tooling |
| B supplier | <ul style="list-style-type: none"> - to be eliminated in the coming year |
| C supplier | <ul style="list-style-type: none"> - to be eliminated in the current year |
| D supplier | <ul style="list-style-type: none"> - potential new supplier – to be rated or eliminated after 12 months |
| E supplier | <ul style="list-style-type: none"> - cannot be relocated or eliminated economically |
| R supplier | <ul style="list-style-type: none"> - already eliminated |

The following Commodity Groups for production material are distinguished:

- castings and forgings
- treated, but un-machined parts
- machined parts
- electronic parts
- rubber and plastic parts
- standard parts
- components

Non-production material:

- indirect material and services

The vendor rating will be made at least once per year by Strategic Purchasing. The assessment will take account of

- audit results,
- delivery performance.

1.3 Assessment of Supplier's QM system and production technology

KB SfS will perform process audits at the Supplier's premises in the following instances:

- Existing quality concerns;
- unacceptable delivery performance;
- Relocation of production by the Supplier

Within the framework of the audit the criteria

- QM system;
- Product, process knowledge;
- Evidence of process control;
- Evidence of product conformance;
- Logistics

will be examined and assessed for compliance with KB SfS requirements (e.g. ISO 9000:2000, QMDP).

- A = fully compliant
- AB = mainly compliant
- B = conditionally compliant
- C = not compliant

All suppliers must reach the compliance level "A," but at least the level "AB."

If the vendor rating score should be lower than A, KB SfS expects an improvement plan with corrective actions, responsibilities and time schedules to be drawn up.

A re-audit shall be carried out for suppliers with a rating lower than B within six months to review the corrective actions taken.

Besides, KB SfS will also consider whether new purchase orders should be placed with a B (conditionally compliant) supplier or the parts be purchased from an A (fully compliant) supplier. In the event of a "C" audit rating, the Supplier shall be eliminated from the supplier portfolio for all future orders. Should a Supplier who has been assigned a "B" or "C" score not succeed in getting at least an "AB" rating within the six months following that rating, he will be eliminated.

1.4 Supplies from third parties

In the event the Supplier should obtain production or testing equipment, software, services, material or other supplies from third parties for the production or quality assurance of his products, he shall make sure that this takes place in accordance with his QM system and the current QMDP.

The Supplier shall transfer the KB SfS requirements (e.g. QMDP, drawings) to his subcontractors without any restrictions. Furthermore, the Supplier shall convince himself of the correct implementation of the KB SfS requirements by his subcontractors in the form of audits performed by the Supplier.

The Supplier shall maintain a list of his approved subcontractors with documentation of the audit reports.

2.0 General remarks

2.1 Supplier selection

It is the aim of KB SfS to call only upon reliable and approved suppliers for new products and services.

A new supplier shall meet at least the basic requirements which are the following:

- he must accept and implement this QMDP;
- he must fill in the supplier's self-assessment form (also with regard to the quality requirements) which will be submitted to him prior to starting any co-operation;
- he must implement and maintain a functioning QM system, according to the DIN EN ISO 9000 standards series.

To obtain "Approved Supplier" status the Supplier shall meet the following prerequisites:

- he must acknowledge acceptance and implementation of this QMDP;
- he must be awarded an "A1" or "A" rating by Strategic Purchasing;
- he must achieve a positive result to the audit taken for him;
- his offer(s) must be judged positively;
- he must achieve a positive performance assessment.

2.2 Purchasing at the KB SfS organisation

2.2.1 Strategic Purchasing Department

The task of Strategic Purchasing is supplier management encompassing all CoCs and locations. This includes, besides other tasks, supplier marketing, selection and qualification, the regular vendor rating procedure and the conclusion of general supplier agreements. The objective pursued is to place purchase orders with the least possible number of suppliers who must, however, still be efficient and also offer the most favourable conditions possible.

Besides the optimising of the KB SfS suppliers' portfolio in agreement with the CoCs, the Strategic Purchasing Department ensures the co-operation with the Purchasing Department of "Knorr-Bremse Systeme für Nutzfahrzeuge (KB SfN)."

*) CoC = Center of Competence – HY = Hydraulics; BC = Brake Control; BE = Bogie Equipment; AS = Air Supply; ...

2.2.2 Purchasing activities of the CoCs

Material in the various Commodity Groups is procured by the purchasing departments at the CoCs. These departments co-operate closely with development/design departments and production departments at the CoCs. Their tasks include "make-or-buy" decisions, the setting up of value analyses, the selection of suppliers from the approved A1 suppliers range, the follow-up to prototype units (initial samples) and the activities for initiating series manufacture (after approval of initial samples).

2.2.3 Purchased materials planning

The Purchased Materials Planning Department is responsible for the materials supply at the various locations, thus ensuring everyday business with the suppliers.

2.3 Purchased material within the KB SfS organisation

2.3.1 Production material

The term "production material" includes all parts, production materials and services purchased when these are consumed/used in the production process, also including commodities and spare parts.

2.3.2 Indirect material

Indirect material and services are components which are not directly included in a final KB SfS product (general cost materials, including capital goods and services).

2.4 The "use by" date in the KB SfS organisation

Many different parts or pieces of equipment significantly change their physical properties after a prolonged period of storage, usually as a result of the storage conditions (in particular light, temperature and humidity). This applies to air reservoirs, elastomers and units in which elastomers are used. For this reason, such products cannot be used for an indefinite amount of time.

When considering permissible "use by" periods, two different product groups are distinguished (refer to the respective Commodity Groups).

2.4.1 Definition of periods

Maximum permissible age at delivery:

- This is the period starting from the date of manufacture within which the goods must arrive at KB SfS.
- The period will be prescribed to the Supplier by KB SfS.

2.4.2 Determination of periods

The periods have been derived from various relevant standards and customer requirements (in particular of DB AG) and have been determined with binding effect (refer to respective Commodity Groups).

2.4.3 Material ordering

For all parts with limited durability, Suppliers shall always stipulate the date of manufacture on the Delivery Note (for deliveries from Group companies on the Batch Card), giving either the month and year of manufacture or at least the quarter and year of manufacture. This information shall always be furnished, not only in those cases where the date of manufacture is specified on the respective drawing. Whenever the parts themselves are marked with the date of manufacture, the respective mark shall be shown on the delivery note as well.

These requirements shall be laid down in the text of the Purchase Order by the respective Purchasing Department.

If this information should be missing on the Delivery Note or Batch Card when the goods are delivered, they can only be recorded as received after the date of manufacture of the lot delivered has been provided by the competent purchasing department.

Moreover, the Purchase Order shall contain a mention of the 'maximum permissible age at the time of delivery'. If this period should be exceeded, the goods shall be rejected prior to booking in.

3.0 Product realisation

3.1 Advance Quality Planning

The term "Advance Quality Planning" describes a systematic planning process to ensure that products fulfil the desired quality requirements. If required, the planning activities may take place in co-operation with KB Sfs.

When proceeding with Advance Quality Planning, the following points shall be considered:

3.1.1 Production feasibility

The analysis of production feasibility shall include an assessment of all phases of product execution (e.g. purchasing, assembly), with due regard to the delivery deadline, price and quality.

This production feasibility analysis must be conducted by the Supplier in the offer stage. All pending points must be pointed out by the Supplier and be clarified with KB Sfs.

As a supporting document, the Supplier should use a check list "Production Feasibility Check – Purchased Parts" (refer to Appendix) drawn up by KB Sfs. The documents for specific parts and specified in the production feasibility analysis must be submitted on request. Whenever any modifications are made relating to important or critical features, a new production feasibility analysis must be made or the existing one be updated.

3.1.2 FMEA Process

If requested by KB Sfs, a P-FMEA shall be submitted for inspection according to the VDA standard or equivalent for all specified parts (new or modified design, significant modifications of the drawing).

3.1.3 Control plan

The Control plan shall incorporate all

- Manufacturing steps,
- inspection steps

to be performed within product implementation (e.g. purchasing, manufacture, etc.).

The Control plan must be drawn up individually for each product or product family.

The Control plan shall be illustrated by

- a process flow diagram (batch card),
- process plans,
- inspection plans.

The process flow diagram shall contain the sequence of the individual manufacturing and inspection steps with a brief description of the process steps.

The process plans shall cover:

- manufacturing parameters (e.g. casting temperature),
- machinery/equipment,
- tooling/operating materials, raw materials

The control plans shall reveal how product quality is controlled in accordance with the specification during the entire process from incoming goods to final inspection.

The inspection plan shall include the following characteristics, with reference to the KB Sfs drawings:

- description;
- specification of process parameters and important features;
- inspection method;

- inspection means;
- random sample size;
- random sample frequency;
- documentation of the inspection results and
- documentation of corrective actions in case of process deviations.

If required, the Supplier shall, on his own initiative, take measures to ensure the desired quality beyond those provided for in the control plan.

Ideally, design and process FMEAs shall be performed before the Control plans are drawn up. When this takes place, statistical methods for process control should be used.

3.1.4 Calibration system and administration

A planned and systematic calibration and monitoring/administration system, which must comply with the applicable standards (e.g. accredited by an approved testing laboratory – ISO/IEC 170125), shall be used to ensure that only such equipment is used for testing that is sufficiently accurate, reliable and operational at any time in so far as its technical specifications are concerned. The fulfilment of these requirements is a prerequisite for a correct assessment of the measuring results of a product feature or a process parameter.

3.1.4.1 Inspection/testing means

The term "inspection/testing means" comprises all kinds of measuring devices, measuring sensors, indicating devices, gauges, test benches and test rigs, including testing software, that are used in operational processes of production, quality assurance, testing and, where applicable, also in the service department.

3.1.5 Statistical methods

On account of the project-based business of KB SfS and the resulting small quantities handled, statistical methods can be used to a limited extent and will be defined in a Control Plan.

As a matter of principle, the use of statistical methods should be checked in advance quality planning and, whenever possible, should be applied accordingly.

KB SfS reserves the right to agree with the Supplier on the use of statistical methods for particular products and whenever quality problems should exist.

As examples the following methods should be quoted:

- machine capability tests;
- process capability tests;
- quality control charts;
- error packed card;
- etc.

3.2 Submission of new/ modified products

ON REQUEST OF KB SFS

3.2.1 Pre-production samples (development)

Pre-production samples are parts produced in accordance with drawings not yet released and/or under conditions that do not yet correspond to those for series production.

Reasons for the submission of pre-production samples:

- new designs and pre-series delivery;
- modifications of existing products (parts, components or equipment) of KB SfS.

These pre-productions samples shall be supplied to KB SfS together with a pre-production test report containing the results of the quality inspections on dimensions, material properties and functions, with mention of both the specified and the actual values.

The decision on whether pre-production samples are required or not will be made by the responsible development department of KB SfS.

The pre-production samples will be released by the responsible development department.

Prior to the release for series production, an initial sample inspection must by all means be performed.

3.2.2 Initial samples

Initial samples are products and materials entirely manufactured in conformity with released drawings, with series production tooling and under series production conditions.

3.2.2.1 Reasons for the submission of initial samples:

- new supplier to KB SfS;
- change of KB SfS supplier;
- new part in the KB SfS product range;
- modification to existing products with effects on assembly, application or function and manufacture;
- modification to existing manufacturing processes or conditions on the Supplier's premises;
- change of the Supplier's place of production;
- change of a subcontractor of the Supplier;
- suspension of production for a period of at least three years.

In the above-mentioned cases, the Supplier shall submit initial samples on his own initiative, independently of whether an initial sample order has been ordered by KB SfS or not. The Supplier shall communicate the possible date of delivery of the initial samples to the KB SfS purchasing department responsible at the earliest possible date (at least ten working days in advance).

Initial sample test report after a product modification

The request for an initial sample inspection report (ISIR) issued upon modification of existing products/assemblies, etc. having an effect on assembly, application and/or function and manufacture, will be initiated by the KB SfS Purchasing Department. When this takes place, the release key for the "old" revision index will be set.

In such a case, the Supplier shall communicate in writing the delivery date of the products complying with the "new" revision, together with the entire existing inventory.

Initial samples shall generally be supplied separately from other material, with a separate delivery note and clearly identified as "initial samples."

The initial samples shall be accompanied by a copy of a drawing released by KB SfS in which all features are clearly itemised as well as by the complete initial sample inspection report (ISIR).

To document the inspection of the initial sample, either the KB SfS form "Sample Inspection Report" (see Appendix) or a form in accordance with the VDA form "Initial Sample Inspection Report" shall be used.

The ISIR shall document all quality inspection results regarding dimensions, material properties and functions with a mention of both the specified and the actual values obtained.

The place of production and/or manufacture shall be identified on the cover sheet of the initial sample inspection report.

All sample inspection reports shall be provided with the binding signature of the employee in charge.

3.2.2.2 Result of the initial sample inspection

The KB SfS department entrusted with initial sample inspections will review the samples on the basis of the Supplier's initial sample inspection report for compliance with the specified features (comparison of specified/actual values).

The review of the parts may result in

- a release of the part(s);
- a conditional release of the part(s);
- a rejection of the part(s);
- a rejection of the part(s) with the request for new samples to be submitted.

In case of a "conditional approval," the Supplier shall rectify the features that were found to be non-compliant and re-submit at least one initial sample inspection report (ISIR) which will then be required to contain the specified/actual values of those features that were objected to.

Note from the Purchaser:

A = The feature must be rectified by the Supplier.

Another condition may be that KB SfS will carry out the amendments/adaptations of the drawings or specifications.

Note from the Purchaser:

B = The drawing will be amended/changed by the Purchaser.

The KB SfS Development Department will be informed of the inspection result.

The Supplier will be informed by KB SfS of the result and the decision taken.

The release of the samples by KB SfS will not release the Supplier from the responsibility for the quality of his products.

The release does not constitute any order for delivery.

3.3 Control of non-conforming products and corrective actions

The Supplier shall maintain a system for controlling non-conforming products:

- the inspection status shall be clearly visible in the Control plan (e.g. batch card);
- the parts shall be marked physically (e.g. non-conforming parts to be marked with a red pen);
- they shall be separated unmistakably from conforming parts (e.g. controlled quarantine area, scrap box).

Furthermore, the process of manufacture must be back-traceable down to the production lot/batch to enable determination of the cause of the deviation in case of parts detected as non-conforming either internally or externally.

After detecting any non-conforming units, KB SfS will agree with the Supplier on how to proceed further with the parts. He will receive an inspection report in which the decision of KB SfS will be communicated to him.

The following possibilities exist for KB SfS:

- a) immediate rejection of the whole delivery;
- b) sorting and/or reworking by the Supplier at KB's premises;
- c) sorting and/or reworking, 100% inspection by KB SfS or, after prior agreement, by a hired subcontractor of KB SfS at the Supplier's expense;
- d) the delivery can be used conditionally – a non-recurrent release (concession) will be granted.

8D-Report

The Supplier shall initiate corrective actions immediately after the detection of non-conforming parts in conjunction with the SQA personnel of the KB SfS location. Upon receipt of an inspection report from KB SfS, the Supplier shall, within two weeks, submit a written comment in the form of an "**8 D report**" (see Appendix) which must contain adequate information on the corrective actions envisaged. A short description of the 8 D report may be found in the Appendix.

The employees at the Supplier in charge of these actions shall be obliged to observe the deadlines imposed upon them.

Should drafting of the "8 D report" last longer than two weeks, immediate actions should at least be taken (e.g. review of the inventory). Thereafter the completed "8 D report" shall be submitted to KB SfS SQA activity.

Special Release

In exceptional cases, applications for a **special release** (concession) will be approved by the Supplier. The respective application must be filed with KB SfS in writing (see Appendix). The KB SfS employee to be contacted will be mentioned in the text of the purchase order.

The Supplier shall initiate appropriate measures to prevent the same non-conformity from occurring again.

Moreover, KB SfS reserves itself the right to claim, in accord with the Supplier, a flat rate fee to be paid for each special release.

The special release, which is limited in time, will only be granted for a limited number of parts and will have no effect whatsoever on any future deliveries.

In the event of **infringement** of the above regulations, the Supplier shall bear the costs for

- replacement;
- exchange;
- removal and installation;
- purchasing the new part;
- remedying the non-conformance;
- sorting out or exchanging the parts in the inventory, pursuant to an accord with the Supplier;
- information of the consumers;
- implementing the inspection/test programme;
- compensation of any consequential damage in connection with any recall actions that may be necessary;
- etc.

The warranty claim provisions as laid down in the "General Terms and Conditions for Purchasing and Ordering" and the individual and/or basic delivery agreements or contracts have priority over the QMDP.

If supplying to more than one KB SfS location, the Supplier shall inform all other KB SfS purchasers of the problem.

3.4 Modifications

Suppliers who are manufacturing to a KB SfS design OR a supplier designed product MUST seek written approval from the suitable KB SfS authority prior to implementing any changes.

It is not permissible for any Supplier to make unauthorised changes on manufacturing processes, materials, location or documentation that may affect product safety, quality or reliability in service.

In case any drawings, test specifications, KB SfS standards and the like should be amended/changed by KB SfS, the Supplier shall be responsible for any reproductions he makes for his own use and shall ensure a regular updating routine within his own organisation. Documents will be issued by KB SfS only once and, in case of any amendments/changes made, the amended/changed documents will be made available in writing to the Supplier who will be requested to provide them with his counter-signature. The Supplier shall acknowledge receipt of KB SfS's drawings with the latest revision index and shall inform KB SfS when he will start production according to the latest revision status. Besides he shall also advise KB SfS of the exact status of his inventory, particularly with respect to current orders.

3.5 Documentation

3.5.1 Quality documents

The purchasing organisation of KB SfS will provide the Supplier with all KB SfS documents essential for him to fulfil the criteria required of the product to be supplied.

When a new drawing-based part is ordered, the Supplier will be provided with the following documents:

- drawing in a clearly legible form and reflecting the latest updating status, a separate updating routine being ensured;
- KB SfS standards to the extent required;
- instructions on protection/packaging of the parts to the extent required.

DIN, EN and ISO standards reflect the latest state of the art. The Supplier shall be responsible for obtaining these standards in their latest revision.

3.5.2 Quality records

Records of tooling, purchase orders and modifications/changes shall be retained by the Supplier for the full length of time that the respective part (or the part family) is produced and spare parts supplied, in conformity with the contractual obligation assumed by the latter, plus an additional period of one calendar year, unless a different arrangement has been made with him.

Unless otherwise specified by KB SfS, quality assurance records and other documents relevant for quality purposes (e.g. production approvals, control charts, inspection and test results) must be retained for a period of at least **15 years** after production has ended. After the period of retention has expired or in case of premature shutdown of the company, the quality records must be offered in writing to KB SfS.

Records of internal quality audits and any assessments by the Supplier's management shall be retained for three years, unless otherwise agreed upon with KB SfS.

All quality records must be legible and should be stored and retained in a way that they are easily retrievable in facilities that provide a suitable environment to prevent damage or deterioration and to prevent loss.

Retention times of quality records shall be established and documented within the Supplier's company. Whenever contractually provided for, quality records shall be made available for evaluation/analyses by KB SfS or its representative for a period agreed upon.

KB SfS shall be authorised to inspect the records and documents at any time after a date for such inspection has been agreed upon.

3.5.3 Inspection certificates

Inspection certificates are documents and, if agreed upon, part of the purchase order. These documents must reach KB SfS at the same time as the goods and the delivery documents.

The inspection certificates shall be mentioned in the purchase order/drawing and may reach from KB SfS internal standards (e.g. N10199), over DIN/ISO standards (e.g. EN 10204) to railway standards (BN) of DB AG.

To permit the parts inspected to be better identified/retraced, the inspection certificates must show the respective reference number of the part.

The Supplier shall manufacture the products from the materials specified and/or subject surface treatments to the appropriate, duly documented tests, and these obligations shall be imposed by the latter on his subcontractors, if applicable.

The documentation of the inspection results shall include a mention of the specified/actual values of all the inspections specified in the respective standards.

The inspection certificates shall be handed over when the goods are delivered by the driver of the forwarding agency to the KB SfS incoming goods department in a closed envelope, addressed to the "Incoming Goods Inspection Department" to be passed onward in accordance with the instructions given in the purchase order.

In case the lot/ordered quantity should be split up into several partial deliveries, the following procedure shall be adopted:

- The first partial delivery shall be accompanied by the original inspection certificate (attached to the goods delivered).
- The subsequent partial deliveries shall be accompanied by a copy of the respective inspection certificate.
- The final delivery shall be accompanied by a copy of the respective inspection certificate with the note "final delivery" and "change of lot."

If not accompanied by the inspection certificates ordered, the goods delivered will be considered as being of no value and not delivered and will not be accepted by KB SfS.

If agreed upon, the inspection certificates shall be stored by the Supplier and, on KB SfS's request, submitted to the requesting department electronically or by fax, within 48 hours.

KB SfS will regularly assess the quality performance and capability of the Supplier as follows:

3.6 Vendor rating

3.6.1 Quality of parts delivered (parts per million)

$$\text{quality [ppm]} = \frac{\sum \text{all non-conforming parts}}{\sum \text{all delivered parts}} \times 1.000.000$$

The above assessment will cover all parts which have been delivered to KB SfS plants and the availability of which has also been confirmed by the Materials Management Department. Parts produced on the basis of a special release procedure are not exceptions to this and are included in the assessment. Initial samples are not included in the assessment.

Non-conforming parts will be considered:

- all parts which are returned to the Supplier (entire lot or part hereof);
- all parts that are reworked;
- all parts that are returned from production, assembly and field operation;
- parts that are scrapped by KB SfS at the Supplier's expense, pursuant to an agreement with the Supplier;
- all parts accompanied by an incomplete or non-conforming documentation (e.g. inspection certificate).
- all parts given a Special Release

3.6.2 Compliance with delivery due dates

Delivery due dates confirmed shall be adhered to in their entirety. If the Supplier should become aware that a delivery due date cannot be kept, he shall inform KB SfS of this at once. All appropriate steps to reduce the delay in delivery shall then be initiated immediately.

$$\text{Compliance with delivery due dates [\%]} = \frac{\sum \text{of all timely deliveries}}{\sum \text{of all deliveries performed.}} \times 100$$

The term "timely" is understood to cover the period from five working days before to two working days after the promised and agreed due date of the goods' arrival in the Incoming Goods Department and include the obligation to comply with the specified quantity schedule.

The targets for delivery quality and due dates will be published once a year. Suppliers who do not reach the required targets or are assessed as having insufficient results in the benchmarking scheme will be eliminated.

3.7 Safety and environment

All materials delivered by the Supplier to KB SfS must fulfil the legal requirements in force respectively with regard to their packing, transport, storage and the materials that they are composed of. Likewise, all regulations pertaining to issues of environmental safety as well as electric and electromagnetic features, regardless as to whether they have been issued in the country of the manufacturer or in the country of the user, must be adhered to.

The list with "prohibited materials" (black list) as well as the list with "materials subject to declaration" (grey list) is part of this Directive and must be observed for future purchase orders and for the manufacture of the respective products. The aforementioned lists are an integral part of each purchase order. When hazardous substances are delivered, the local regulations for labelling and transport of such substances must be adhered to. The associated safety data sheets must be made available before delivery to KB SfS. The packaging must be so designed that only one packaging material is used to make it easy to separate and recycle. Whenever possible, renewable raw materials should be used for this purpose. Appropriate literature on the product and the materials used must be made available.

4.0 Knorr-Bremse SFS – Commodity Group-specific requirements

4.1 Products under the design responsibility of the Supplier ("black box products")

The term "black box products" stands for specific products that have been specially developed by the Supplier for KB SFS.

To ensure an efficient design control by the Supplier, the following requirements must be met:

APPLICABLE TO: Development and software suppliers

- The Supplier shall assume full responsibility for quality and sustained, environmentally compatible development/design activities.
- He shall furnish proof of having performed appropriate sample inspection and reliability tests. The design quality shall be assessed during the different phases of development.
- In order to detect and avoid potential failures of the product as early as possible, the Supplier shall, jointly with KB SFS, perform a design FMEA right from the start of the development phase and maintain such analysis.
- He shall fulfil KB SFS's requirements with respect to the agreed critical features.
- The design FMEA shall be maintained during the entire development process. All experience gathered during agreed field tests, service life studies and field experience shall be taken into account without any restrictions.
- The Supplier shall retain all relevant documents and records for inspection by KB SFS.
- The Supplier shall make available to KB SFS a test device to permit the latter to test the products, e.g. at the customers' premises.

4.2 Catalogue parts

Technical modifications

Whenever technical modifications (e.g. design modifications, use of other materials) of so-called "catalogue parts" are made, a corresponding notification must be given.

If KB SFS places orders for "catalogue parts," the following possibilities must be considered:

APPLICABLE TO: Suppliers of the Commodity Groups components, standard parts, electric/electronic components

- a) KB SFS places a purchase order without stipulating a KB SFS part number: The Supplier must disclose to KB SFS modifications of all kinds performed by him.
- b) KB SFS places a purchase order, stipulating both the KB SFS part number and the catalogue number of the Supplier: The KB SFS development department in charge will make the same remark on the drawings as under a).

4.3 Purchased parts with DB quality inspection

4.3.1 General

The "Deutsche Bahn AG" (DB AG) is an important customer for the supply of rail vehicle products. Against this background, the purchasing activities of KB SFS for the DB AG with respect to production and supply of high-quality products are of paramount importance.

In the entire complex of supplier/customer relationships, the DB AG Quality Inspection Department plays an important role by backing up the Central Purchasing Department of the DB AG in achieving its declared objective of ensuring and maintaining on a long-term basis quality and reliability of all parts/products it purchases directly or indirectly.

APPLICABLE TO: Suppliers of all commodity groups of production material for DEUTSCHE BAHN AG

4.3.2 Quality Inspection Department

The essential tasks of the Quality Inspection Department are as follows:

1. product-specific inspections at the Supplier's premises;
2. implementation of the vendor rating (assessment and qualification) system;
3. elaboration and definition of quality assurance measures;
4. execution of measures aimed at upgrading the Supplier to a position where he is able to supply parts on a zero-error basis.

e.g.:
**WELDING SHOPS,
SUPPLIERS OF
CASTINGS AND FOR-
GINGS**

4.3.3 Quality inspection levels

With a view to point 1 in particular, the DB AG has defined two quality inspection categories (levels) in appropriate product-oriented quality inspection check lists, distinguished by the degree of criticality and complexity of the products:

Inspection level I: These products must be inspected and accepted by a quality inspector in the manufacturing plant prior to each delivery. For subcontracted parts, if any, an application for sub-inspection must be filed with the Supplier.

Inspection level II: For these products a quality assessment performed by a quality inspector is no longer compulsory. A criterion for making a decision is the vendor rating scheme of the DB AG.

Further details of the processes and cost allocation are laid down in the "Complementary Conditions for Quality Inspections" ("EVB Güteprüfungen") (ref. no. 164.0240.02) of the "DB AG." Together with the product check lists for quality inspections, they form the basis for the purchase of parts/products subject to quality inspections.

The exact purpose of this Directive is to impose the customer quality inspection requirements specified in contracts or purchase orders for its Suppliers under the auspices of the KB Sfs purchasing departments. This must be observed in the purchasing process, as laid down in the

"Complementary Contractual Conditions for Quality Inspections",
and must be initiated by means of an application for sub-inspection to be filed with the Supplier.

4.3.4 Initial samples

For every part made with the same tool, a separate ISIR must be issued. In case a tool should consist of several nests, a separate dimensional report must be drawn up for each nest.

4.3.5 Permits

Suppliers in possession of a permit required under respective regulations must ensure the renewal of such permit in due time and without restrictions. Any changes which might occur must be communicated to KB Sfs immediately.

4.3.6 Specifications

The **required railway standards** (BN), issued by the "Deutsche Bahn AG", in their latest revision must be obtained by the Supplier from one of the following addresses

DB Services
Technische Dienste GmbH
Druck und Informationslogistik
Logistikcenter
D-76131 Karlsruhe
GERMANY

DB-Systemtechnik
Standardisierungsanwendung (TZD 2)
Karl-Marx-Str. 39
D-04509 Delitzsch
GERMANY

Any requirements issued by railway companies of other countries will be communicated to the Supplier in the respective inquiries/purchase orders.

4.4 Quality requirements for suppliers of welded components

**APPLICABLE TO:
WELDING SHOPS,
SUPPLIERS OF
CASTINGS AND
FORGINGS**

4.4.1 Regulations

The DIN 6700-2 standard, generally applicable regulation for welding activities in the railway field, specifies that welding plants as well as their subcontractors must furnish appropriate evidence of their qualification. The requirements to be met by such evidence depend on the kind of the components to be welded.

If the "Deutsche Bahn AG" (DB AG) is involved in any projects, the specific requirements of the Directive 951 of the DB AG shall be met, in addition to the specifications of the standard DIN 6700-2.

Suppliers within the meaning of these regulations are all companies involved in the process of manufacturing products ordered by the customer. This means that if a supplier of KB SfS places orders with other subcontractors he, in turn, becomes a customer himself.

The assessment of welding plants will take place on the basis of the specifications laid down in the standard DIN 6700-2 in association with the standard DIN EN 729.

The above specifications shall be applicable also if production takes place outside the Federal Republic of Germany.

The Purchasing Department will only be allowed to conclude respective contracts if the Supplier meets all requirements laid down in the standards stipulated.

4.4.2 Regulations for air reservoirs

Manufacturers of air reservoirs are subject to other regulations which are stipulated later, namely:

- certificate issued by a recognized institution evidencing the qualification of a manufacturer according to the "AD" leaflet HPO in association with standard DIN EN 729-3 or similar approvals;
- requirements set forth in the specifications of the standard DIN EN 286 and following.

4.4.2.1 Use-by date

Product	Age at delivery	
Air reservoirs	≤ 9 months	All air reservoirs whose overall durability has expired must be inspected again by an expert and provided with a new inspection stamp before being delivered.

4.4.3 Qualifications of foundry and forging plants

- Foundry plants doing production welding on castings (cast steel, cast iron, aluminium cast iron, etc.) for components attributable to the classes C1 to C3 of the DIN 6700-2 standard and forging plants manufacturing parts with the same requirements must have a welding authorisation for these activities according to the specifications of the DIN 6700-2 standard.

4.5 Suppliers of castings and forgings

Both cast and forged parts may be ordered with the Supplier either as non-machined parts, in machined condition or in the form of assemblies. All technical and inspection requirements must be defined on the drawings. Any further requirements that might arise will be dealt with in additional texts to be included in the purchase order. Casting and forging plants manufacturing parts subject to quality inspection of Inspection Level I require manufacturer-based product qualification (HPQ approval) issued by DB AG.

The requirements laid down in Art. 4.4 may have to be observed for this Commodity Group!

4.5.1 Quantity of initial samples to be submitted

Unless otherwise agreed, the Supplier shall submit the following quantities for initial sample inspection and also identify them as such:

Castings and forgings three non-machined castings or forgings, together with one approved non-machined part drawing; at least one non-machined part per nest

4.6 Suppliers of plastic and elastomeric parts

4.6.1 Use-by dates

On account of the use-by dates fixed for elastomeric products, point 2.4 and following sections of this QMDP must be observed.

If the date of manufacture should be missing, the responsible Purchasing Department will procure this information from the Supplier of the lot delivered.

In case the 'maximum permissible age at the moment of delivery' should already have been exceeded, a return to the Supplier will be initiated by the same department.

Products	Age at delivery	
Hose pipes	≤ 6 months	Hose pipes are defined as being hoses connected to hose fittings, thus forming complete operational units. Hose pipes in stock whose overall durability has expired must be scrapped.
Elastomers, such as - moulded rubber parts without metal - rubber metal and piston collars - rubber hoses - membranes - O rings and K seals - shaft seals	≤ 12 months	Elastomeric parts in stock whose overall durability has expired must be scrapped.
Units with installed elastomeric parts, such as - O rings and K seals - driver brake valves, independent brake valves, emergency brake valves, load brake valves, magnet and control/distributor valves, pressure transformers, brake control units, brake control panels and containers	≤ 12 months	

For specifications also refer to

DIN 7716 "Rubber Products"
 Requirements for storage, cleaning and maintenance
DIN 20066, part 5 Fluid technology; hose pipes, judgement of working order

4.6.2 Initial samples

For every part made with the same tool, a separate ISIR must be issued. In case a tool should consist of several nests, a separate dimensional report must be drawn up for each nest.

4.6.3 Quantities of initial samples to be submitted

Unless otherwise agreed, the Supplier shall submit the following quantities for initial sample inspection which must also be identified as such:

4.6.3.1 Plastic parts, finished elastomeric parts

and elastomeric compound parts (after material release)	five finished parts, at least two finished parts per nest
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4.6.3.2 Elastomers

(for material release)	plate 1 ± 0.2 mm thick; surface about 100 cm ² plate 2 ± 0.3 mm thick; surface about 700 cm ² plate 3 ± 0.3 mm thick; surface about 400 cm ²
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4.7 Suppliers of glass products

4.7.1 Technical parameters

The manufacture of glass panes in their different versions shall be made exclusively in accordance with the regulation

ECE-R 43 "Uniform specifications for the approval of compound glass materials"
or with other standards applicable in the respective countries.

These specifications contain statutory regulations comprising the following items:

- scope of application;
- definitions;
- type of labelling;
- type of approval;
- general requirements;
- particular requirements;
- inspection methods;
- amendments or extension of the approval of a compound glass material;
- etc.

All customer-specific requirements, such as dimensions, serigraphy, glass colour, glass structure, cut-outs, company logotype and test stamp, etc., shall be quoted on the respective drawings accompanying the purchase order.

The specifications in the drawings (in particular the test stamp) shall be checked and confirmed by the glass supplier based on the data furnished by KB SfS. The remaining data specified in the drawings must be verified and released by means of the initial sample inspection (two units are to be submitted for initial sample inspection), which will be performed by the respective Quality Assurance Departments.

4.7.2 Packaging

Unless otherwise stipulated in the purchase order, the following packaging requirements must be met with for the transport of glass panes:

- use of shipping crates or wooden boxes (screwed, with facilities for front opening) must be used;
- the glass panes must be in a vertical position or have a slight inclination;

- they must rest (in a vertical or horizontal position) on a soft base (e.g. rubber, felt, card board, plastic, etc.) and be loaded evenly;
- there must be provision in the form of a lateral safety appliance to prevent the glass panes from tilting over (e.g. belts, plastic material, etc.)
- etc.

4.7.3 Test documentation

Test certificates according to 3.1 B of the EN 10204 standard are expressly stipulated in the purchase order and must always be supplied with the goods.

4.8 Suppliers of

- **electronic**
- **electromechanical**
- **mechatronic parts**
- **assemblies and components**

4.8.1 Technical specifications

Manufacturers or suppliers of electronic components, controls and assemblies, control cabinets, pipelines, cables, cable trees or mechatronic products will be provided with the latest works standards which must accompany the purchase order to the extent they are required for the respective products.

As a general rule, international standards and directives, such as the IPC standards, shall be observed.

Detailed data or requirements are laid down in the specific manufacturing or supplementary documents.

For distributors of electronic components, a CECC approval is desirable as it contains requirements, such as the FIFO principle, an adequate type of component storage (e.g. in a nitrogen atmosphere), with due consideration of ESD protective measures.

4.8.2 Testing

Tests shall be performed on the basis of the relevant IPC standards. Should any special inspections/tests be requested, they must be agreed upon with the Supplier.

Inspection/test records must be retained for at least ten years; they will accompany the goods only if this has expressly been requested.

4.8.3 Quantities of initial samples to be submitted

Unless otherwise agreed, the Supplier shall submit the following quantities for initial sample inspection which must also be identified as such:

4.8.3.1 Control circuits or electronic assemblies	three units or assemblies
4.8.3.2 Electric/electronic components	five units, meters or similar units
4.8.3.3 Mechatronic components	two units or assemblies
4.8.3.4 Cable tree	two finished products
4.8.3.5 Control cabinets	at least one unit

In the case of so-called catalogue parts, an initial sample inspection report can be dispensed with. As mentioned before, the appropriate requirements must always be defined in the respective purchase order issued by KB SfS.

For defined products, a test certificate 3.1 B according to the DIN EN 10204 standard shall be submitted.

4.8.4 Use-by date

Products	Age at delivery	
Batteries	≤ 12 months	Batteries in stock which have expired must be scrapped. Batteries which have expired overall and which are installed in assemblies must be replaced together with the adhesive tags (note for customer on first battery replacement) before being delivered.
Assemblies with installed batteries	≤ 12 months	

Components are complete units, systems and assemblies for air compressors, pneumatic and/or hydraulic control elements, fittings, electric motors, clutches, couplers, transmissions, etc.

4.9 Suppliers of components

4.9.1 Quantities of initial samples to be submitted

Unless otherwise agreed, the Supplier shall submit the following quantities for initial sample inspection which must also be identified as such:

Complete units and assemblies two units or assemblies

In the case of so-called catalogue parts, an initial sample inspection report can be dispensed with.

For electric motors the type test certificate submitted by the Supplier can be recognized by KB SfS.

As mentioned before, the appropriate requirements must always be defined in the purchase order issued by KB SfS.

4.10 Suppliers of stampings, bent parts and springs

4.10.1 Quantities of initial samples to be submitted

Unless otherwise agreed, the Supplier shall submit the following quantities for initial sample inspection which must also be identified as such:

Stampings and bent parts, springs five finished parts

A valid inspection plan of the Supplier, together with certificates of inspection for all used materials and surface treatments (in conformity with DIN EN 10204), must be attached.

4.11 Suppliers of standard parts

This merchandise group covers the following materials:

- semi-finished steel
- semi-finished non-ferrous metals
- packaging materials, plates, tags
- connecting elements
- bearings, sleeves
- paints
- bonding and sealing agents
- glass (see section 3.6)
- raw materials

The different materials have been manufactured in accordance with the current EN, ISO or DIN standards and the latest "Stahlschlüssel" (steel guide) (for editor and sales see Appendix).

4.11.1 Connecting elements

As provided for in the wording of the purchase order form, special requirements are placed on screws/nuts, the compliance with which appropriate evidence must be furnished according to DIN EN 10204/3.1B.

This concerns the following products:

- screws and nuts, starting from the strength classes 10.9 and 12.9;
- screws and nuts, starting from the strength class 8.8 with a >- M16 thread.

This category also includes the respective necked-down bolts and dowel screws.

Surface: please observe section 4.14.4 of this QMDP!

4.11.2 Quantities of initial samples to be submitted

Unless otherwise agreed, the Supplier shall submit the following quantities for initial sample inspection which must also be identified as such:

4.11.2.1 Standardised elements five finished parts
(in accordance with the existing standards (DIN, CSN, etc.)

4.11.2.2 Lubricants oils, greases:
at least 2 kg in a receptacle

In case of so-called catalogue parts, an initial sample inspection report can be dispensed with.

As mentioned before, the respective requirements must always be defined in the purchase order, issued by KB SfS.

A valid inspection plan of the Supplier, together with certificates of inspection for all used materials and surface treatments (in conformity with DIN EN 10204), must be attached.

For the sake of better identification/traceability, the respective part numbers must be noted on the inspection certificates; this also applies to deliveries performed in accordance with the Kanban system.

4.12 Suppliers of machined parts

4.12.1 Requirements

- Suppliers delivering products with a surface treatment will be provided with the current KB SfS works standards from the different divisions/departments together with the purchase order.
- Suppliers delivering cast machined products on their own shall purchase the respective castings from **suppliers of castings previously approved** by KB SfS.

The materials used must have been manufactured according to the applicable EN, ISO or DIN standards and the current "Stahlschlüssel" (steel guide).

4.12.2 Quantities of initial samples to be submitted

Unless otherwise agreed, the Supplier shall submit the following quantities for initial sample inspection which will also be identified as such:

4.12.2.1 Treated parts three parts
(thermal treatment, surface coating, etc.)

4.12.2.2 Machined parts five finished parts

A valid inspection plan of the Supplier, together with certificates of inspection for all materials and surface treatments used (in conformity with DIN EN 10204), must be attached.

4.13 Suppliers of software

4.13.1 Purchasing COTS software

COTS software (commercial off-the-shelf software) is software designed to fulfil market requirements. It is commercially available and its suitability for the intended application has been proven by a wide spectrum of commercial users.

According to the standard EN 50128:2001, Section 9.4.5, the use of COTS software is subject to the following restrictions:

1. For software integrity level 0, the use of COTS software shall be accepted without further precautions.
2. If COTS software in compliance with software safety integrity levels 1 or 2 is to be used, it shall be included in the software validation process.
3. If COTS software in compliance with software safety integrity levels 3 or 4 is to be used, the following precautions shall be taken:
 - the COTS software shall be included in validation testing;
 - an analysis of potential failures shall be carried out;
 - a strategy shall be defined to detect potential failures in the COTS software and to protect the system from these failures;
 - the protective strategy shall be subject to validation testing;
 - error logs shall exist and be evaluated;
 - to the extent feasible, only the simplest functions of the COTS software shall be used.

4.13.2 Special case: purchasing compilers/translators

According to the EN 50128:2001 standard, Section 10.4.9, the selected translator/compiler shall have one of the following features, according to the extent defined by the respective software safety integrity level:

- a "Certificate of Validation", according to a national/international standard;
- an assessment report certifying its suitability for the intended use;
- a redundant, signature-based control process that allows detection of any translation errors.

4.13.3 Purchasing non-COTS software

Ideally, the software supplier will be experienced in software development according to the standard EN 50128:2001. If the software supplier should have no experience in software development according to EN 50128:2001, the Supplier and/or Developer should at least possess and use a Quality Management System that is compliant with the DIN EN ISO 9000 standards series. A certification according to EN DIN ISO 9001:2000 is highly recommended.

As a minimum requirement, the Supplier and/or developer shall comply with those parts of the DIN EN ISO 9001 standard that are relevant for software development in accordance with the guidelines laid down in the DIN EN ISO 9000-3 standard.

The Supplier and/or Developer shall, on a project-by-project basis, set up a Software Quality Assurance Plan to fulfil the requirements according to Sections 15.4.1 and 15.4.2 of the EN 50128:2001 standard.

The configuration management shall at least be carried out in compliance with the guidelines laid down in the DIN EN ISO 9000-3 standard.

The least requirement is to ensure that the adequacy and results of the software verification plans are examined.

As a minimum, the Supplier and/or developer shall set up, document and maintain a reporting procedure to show any problems that might arise and to adopt the appropriate corrective actions. These procedures, which form a part of the Quality Management System, must comply with the essential parts of the DIN EN ISO 9001 standard.

4.14 Suppliers of surface treatment substances

4.14.1 Fundamentals

This section, entitled "surface treatment," concerns **ALL SUPPLIERS**, that are called on to provide, by way of own manufacture or purchase from subcontractors, various surface treatments for their products according to the respective KB SfS drawing, such as coatings for the most different kinds of springs, paints for components, anodic oxidation of aluminium parts, coatings in accordance with the "Dacromet" procedure, galvanic and chemical coatings, etc. The requirements/standards/works standards/manufacturing instructions (e.g. N12005) to be observed will be noted on the respective KB SfS drawings and submitted to the Supplier, together with the initial order.

Suppliers of paints for DB AG products shall be in possession of the required approval of "Deutsche Bahn AG." Paints shall be supplied according to the DB AG standard BN 18 300.

The Supplier must obtain the required standards on paints/implementing regulations issued by other railway companies in accordance with the instructions received from KB SfS.

4.14.2 Paints

The different standards/works standards/manufacturing instructions/leaflets, such as the DB AG standard BN 918 301, in their respective versions, shall be applicable.

4.14.2.1 Door leaves

Execution:

- IFE manual – technical manufacturing conditions for paints (manufacturing instructions, testing criteria and documentation);
- initial sampling for coloration of door leaves according to IFE works regulations;
- (manufacture of initial samples under series production conditions, inspection and documentation by the manufacturer, counter-check and release for series production by IFE;
- IFE project-specific painting specification and product sheets (painting materials/ manufacturer, shades, gloss, layer thickness will be defined in dependence of the component);
- drawings on paint seams (multicoloured component).

4.14.2.2 Testing

The test specifications to be observed will also be noted on the respective drawings or in the purchase order.

Inspection of the door leaves, for example, will be subject to the following standards:

- measurement of the layer thickness: DIN EN ISO 2178;
- adhesion: DIN EN ISO 2409;
- gloss assessment: DIN EN ISO 67 530;
- colour and appearance in accordance with DIN 6175 or DIN 6174 respectively.

The documentation required will be dependent on the specific order and be agreed upon individually for every new order.

4.14.3 Quantity of initial samples to be submitted

Unless otherwise agreed, the Supplier shall submit the following quantities for initial sample inspection which will also be identified as such:

Paints, varnishes and similar products at least 2.5 l in a receptacle

- appropriate quantity of thinner;
- appropriate quantity of hardener.

4.14.4 Galvanic treatment

The different standards/works standards/manufacturing instructions/leaflets, such as the works standard N 12005, in their respective versions, will be applicable. The limit values mentioned in the certificate can be found in the appropriate specifications, drawings or other quoted standards.

I. Appendix

Important terms and abbreviations

In order to avoid misunderstandings and to allow an unmistakable interpretation of this Directive, the most important terms used are defined hereafter.

AD leaflet	"AD" stands for "Arbeitsgemeinschaft Druckbehälter" ("Air Reservoir Association"). The AD leaflets of the HP series deal with the rules for designing and manufacturing air reservoirs which belong to plants subject to supervision. The manufacturers of air reservoirs must fulfil various prerequisites.
AEB	General Terms and Conditions of Purchasing and Ordering
Assessment	is another term meaning "judgement" or "appraisal."
CECC approval	The CECC approval is a certificate-based examination of the handling processes in the goods distributing realm with regard to the appropriate handling and storage of electronic components on the basis of the British Standard 9000.
CoC	Center of Competence
Corrective measure	<p>A corrective measure is a measure adopted to eliminate the cause of a detected fault/error or any other potential undesired situation.</p> <p>A corrective measure is taken to avoid the fault/error to occur again, whereas a preventive measure is taken to avoid the fault/error to occur from the beginning.</p>
Critical characteristics	Critical characteristics are product characteristics that make it seem probable that, if they are widely spread, they might substantially affect product and personal safety, public health or the observance of statutory provisions.
COTS – Software	Commercial off-the-shelf software: purchasable software e.g. Microsoft Windows, Word etc. That means a non-specific software which is self-produced according to customer requirements.
Deviation	means the difference between the reference value of a characteristic and its actual value.
ESD	Protective measure to avoid any damages by electrostatic charge at electronic parts, components and devices.
FIFO	"First In First Out"
FMEA	F ailure M ode and E ffects A nalysis
HSE	This term means "Health – Safety – Environment"

IPC Standards	are issued by "The Institute for Interconnecting and Packaging Electronic Circuits"
ppm	means "parts per million" = quantity of non-conforming parts per one million units
Process engineering products	Process engineering products include, for example, bulk goods, such as adhesives and sealants (solders, elastomers), chemicals (rinsing agents, polishes, additives, treatments, colours/pigments, solvents etc.), coatings (top coats, undercoats, primers, phosphates, surface treatments), engine coolants (antifreeze), fabrics, foil and film laminates, ferrous and non-ferrous metals (raw steel, aluminium, coils, ingots), casting products (sand, silicates, alloying materials etc.), other minerals/ores, glass and glass constituents, lubricants (oils, greases, etc.), monomers, pre-polymers and polymers (rubbers, plastics, resins and their precursors), etc.
Quality planning	This is a structured procedure in order to determine the methods (i.e. inspections, tests) which must be applied for the manufacture of a determined product or a product family (i.e. parts, materials). The quality planning includes the idea of error prevention and continuous improvements, by contrast to error detection.
Quality records	Quality records serve to provide written evidence attesting that the Supplier's processes were performed in accordance with the QM system documentation (e.g. test/inspection results, internal audit reports, calibration data) and informing on the results.
Special Release	<p>Special releases are exceptional approvals which are granted by the KB SfS SQA (in association with the Design Department) only for a defined number of parts and/or for a limited period of time.</p> <ul style="list-style-type: none"> - The Special release must be applied for with sufficient time in advance before the delivery takes place. - The goods must not be forwarded before the Special release has been granted in writing.
SPC	<p>Statistical Process Control</p> <p>This term describes the use of statistical methods, such as quality control cards, to analyse the process or its respective results and to carry out adequate measures to maintain process control and to improve process capability.</p>
Supplier Quality Assurance (SQA)	Supplier Quality Assurance is part of the KB SfS quality organisation which is responsible for all quality aspects in relation with the suppliers.
Traceability	denotes the capability of the history, the application of something to be traced back. When referred to a product, the term "traceability" relates to:

- the origin of materials or parts,
- its processing phases and
- the distribution and position of the product after its delivery.

UIC "Union Internationale des Chemins de fer" =
"International Railway Union"

UMS Environmental Management System

Quality-related and environmentally relevant standards

(Excerpt; status as of 02/2003)	DIN EN ISO 9000 2000-12	Quality Management Systems – fundamentals and terminology (ISO 9000:2000); three-language edition EN ISO 9000:2000
	ISO 9000-3 1997-12	Quality Management and Quality Assurance standards – part 3: Manual for the application of ISO 9001:1994 for development, supply, installation and maintenance of computer software
	DIN EN ISO 9000-3 1998-08	Standards for Quality Management and Quality Assurance/QM Representation – part 3: Manual for the application of ISO 9001:1994 for development, supply, installation and maintenance of computer software (ISO 9000-3: 1997); two-language edition EN ISO 9000-3:1997
	DIN ISO 9000-4 1994-06	Standards for Quality Management and representation of quality management problems; manual for the management of reliability programmes (identical with ISO 9000-4:1993 or IEC 60300-1:1993); German edition EN 60300-1:1993
	DIN EN ISO 9001 2000-12	Quality Management Systems – requirements (ISO 9001:2000-09, three-language edition EN ISO 9001:2000)
	DIN EN ISO 9004 2000-12	Quality Management Systems – manual for efficiency improvement (IOS 9004:2000); three-language edition EN ISO 9004:2000
	DIN ISO 9004-2 1992-06	Quality Management and elements of a Quality Assurance System; manual for services; identical with ISO 9004-2:1991
	ISO 9004-4 1993-06	Quality Management and elements of a Quality Assurance System; part 4: Manual for quality improvement
	ISO 14001 1996-10	Environmental Management Systems – specification with instructions for use
	ISO 14004 1996	Environmental Management Systems – general manual on principles, systems and auxiliary instruments

ISO 14010
1996

Manual for environmental audits – general principles

E DIN ISO 19011
2001-07

DRAFT: Manual for auditing of quality management and/or environmental management systems

Publications can be obtained from:

Beuth Verlag GmbH
Burggrafenstr. 6
D-10787 Berlin
GERMANY

2.1 "Stahlschlüssel"
(steel guide)

Edited and sold by:
"Verlag Stahlschlüssel Wegst GmbH"
Theodor-Heuss-Straße 36
D-71672 Marbach
GERMANY
Tel.: 0049 7144 6039

Contacts and informations

VDA manuals "Qualitätsmanagement in der Automobilindustrie" ("Quality Management in the Automotive Industry") may be used as sources of information for the different quality requirements/problem solutions. Please watch for the latest edition available.

Volume 1	Nachweisführung Leitfaden zur Dokumentation und Archivierung von Qualitätsforderungen <i>Evidencing/Manual for Documentation and Filing of Quality Requirements</i>
Volume 2	Sicherung der Qualität von Lieferungen - Lieferantenauswahl/Bemusterung/Qualitätsleistung in der Serie - <i>Quality Assurance of Supplies</i> - <i>Supplier Selection/Sampling/Quality Assurance in Series Production</i> -
Volume 3	Zuverlässigkeitssicherung bei Automobilherstellern und Lieferanten - Verfahren und Beispiele - <i>Reliability Assurance for Automobile Manufacturers and Suppliers</i> - <i>Procedures and examples</i> -
Volume 4 part 1	Sicherung der Qualität vor Serieneinsatz - Partnerschaftliche Zusammenarbeit, Abläufe, Methoden - <i>Quality Assurance prior to Series Production Start-Up</i> - <i>Partnership Co-Operation, Processes, Methods</i> -
Volume 4 part 2	Sicherung der Qualität vor Serieneinsatz - System-FMEA - <i>Quality Assurance prior to Series Production Start-Up</i> - <i>System FMEA</i> -

Volume 4 part 3	Sicherung der Qualität vor Serieneinsatz - Projektplanung - <i>Quality Assurance prior to Series Production Start-Up</i> - Project Planning -
Volume 6	Grundlagen für Qualitätsaudits <i>Fundamentals for Quality Audits</i>
Volume 6 part 1	QM-Systemaudit, Grundlage DIN EN ISO 9001 und DIN EN ISO 9004 <i>QM System Audit, based on DIN EN ISO 9001 and</i> <i>DIN EN ISO 9004</i>
Volume 6 part 2	Systemaudit – Dienstleistungen <i>System Audit – Services</i>
Volume 6 part 3	Prozessaudit <i>Process Audit</i>
Volume 6 part 5	Produktaudit <i>Product Audit</i>
Volume 7	Grundlagen zum Austausch von Qualitätsdaten - Abwicklung von Qualitätsdaten-Nachrichten - <i>Fundamentals for the Exchange of Quality Data</i> - Handling of Quality Data News -
Volume 8	Leitfaden zur Qualitätssicherung bei Anhänger-, Aufbauten- und Containerherstellern <i>Quality Assurance Manual for Trailer, Chassis and</i> <i>Container Manufacturers</i>
Volume 9	Emissionen und Verbrauch <i>Emissions and Consumption</i>

PUBLICATIONS CAN BE
OBTAINED FROM:

Verband der Automobilindustrie e.V. (VDA)
Qualitätsmanagement Center (QMC)
Lindenstraße 5
D-60325 Frankfurt
GERMANY
Telefax 0049 69 9 75 07-331

FORMS
INITIAL SAMPLE
INSPECTION REPORT
New edition

The following forms can be obtained under the reference numbers mentioned
hereafter:
"EMPB-Deckblatt" (ISIR cover sheet), ref. no. 3501;
"EMPB-Prüfergebnis" (ISIR inspection result), ref. no. 3502;
"EMPB-Materialdatenblatt" (ISIR material data sheet), only in connection with
the table, ref. no. 3503;
"EMPB-Tabelle" (ISIR table), ref. no. 3504

from Druckerei Heinrich GmbH
Schwanheimer Straße 110
D-60528 Frankfurt
GERMANY

Summary of the inspection/test certificates

Excerpt from EN 10204:1991 + A1:1995					
Standard designation	Certificate	Type of test/ inspection	Contents of certificate	Terms and conditions of delivery	Certificate to be confirmed by
2.1	certificate of compliance with the order	non-specific	no mention of test/inspection results	according to the terms and conditions of delivery of the purchase order or, if requested, according to statutory instruments and associated technical rules	the manufacturer
2.2	test report		test/inspection results on the basis of a non-specific test		
2.3	Specific test report	specific	test/inspection results on the basis of a specific test	according to statutory instruments and associated technical rules	the expert named in statutory instruments
3.1.A	Inspection certificate 3.1.A				
3.1.B	Inspection certificate 3.1.B			according to the terms and conditions of delivery of the purchase order or, if requested, according to statutory instruments and associated technical rules	the expert mandated by the manufacturer, who must be independent of the manufacturing department ("works expert")
3.1.C	Inspection certificate 3.1.C			according to the terms and conditions of delivery of the purchase order	the expert mandated by the Purchaser
3.2	Inspection report			the expert mandated by the manufacturer, who must be independent of the manufacturing department, and the expert mandated by the Purchaser	

Designations of the inspection/test certificates according to EN 10204		
German	English	French
Werksbescheinigung	Certificate of compliance with the order	Attestation de conformité à la commande
Werkszeugnis	Test report	Relevé de contrôle
Werksprüfzeugnis	Specific test report	Relevé de contrôle spécifique
Abnahmeprüfzeugnis	Inspection certificate	Certificat de réception
Abnahmeprüfprotokoll	Inspection report	Procès-verbal de réception

II. APPENDIX - FORMS

Special release form

EDITOR / SUPPLIER	Company:		Special Release for suppliers (if released, attached to the goods)	number:
				issued on:
				by:
	Supplier no.:		Lot no.:	
	Supplier:		Delivery note no.:	
	Ref. no.:		Inspection report no./date:	
	Drawing no.:		Goods receipt note no.:	
	Revision index (Rev.):		Quantity delivered:	
	Designation:		Quantity rejected:	
	Non-machined part no./Rev.:		Stock available:	
Location:		Center of Competence (CoC)		
Complaint caused by supplier		<input type="checkbox"/>	Complaint caused by subcontractor	
		<input type="checkbox"/>		

SUPPLIER				KNORR-BREMSE SFS	
Item	Specified	Actual	Variation	Decision *)	Note
1.					
2.					
3.					
4.					
5.					
Cause of variation:				*) A = acceptance; NA = non-acceptance	
To be filled in by the Supplier:					
Repetitive error		<input type="checkbox"/>	Initial sampling		<input type="checkbox"/>
					8D report

DECIDER / KB SFS	1. REQUIREMENTS FOR RELEASE:				rejected	<input type="checkbox"/>		
	<input type="checkbox"/>	to be reworked	<input type="checkbox"/>	drawing to be amended	<input type="checkbox"/>	customer to be informed		
	<input type="checkbox"/>	to be 100 % inspected	<input type="checkbox"/>	parts list to be amended	<input type="checkbox"/>	to be released by customer		
	<input type="checkbox"/>	100 % functional test to be performed	<input type="checkbox"/>	to be entered into lifetime file	<input type="checkbox"/>			
	<input type="checkbox"/>	non-recurring for above lot size	<input type="checkbox"/>	inventory to be verified	<input type="checkbox"/>			
	2. CORRECTIVE ACTION:					Deadline:.....		
	e.g. modification of tool, process, adaptation of drawing					Responsible:.....		
	3. EFFICIENCY PROOF OF CORRECTIVE ACTION PERFORMED							
	<input type="checkbox"/>	8-D report	<input type="checkbox"/>	ISIR	<input type="checkbox"/>	stat. Proof	<input type="checkbox"/>	others
	Remark:							
Release issued	yes <input type="checkbox"/>	no <input type="checkbox"/>						
Name, department, date Signature		CoC Development/Design		CoC Quality		Customer		

LOC / CoC-QS intern	Inspection plan to be adapted	<input type="checkbox"/> yes	<input type="checkbox"/> no	Number of goods receipt notes, dyn.	QM number:
	Concluded:	<input type="checkbox"/> yes	<input type="checkbox"/> no	Date/Signature	
	Further actions:	<input type="checkbox"/> yes	<input type="checkbox"/> no		
	Remarks:				

To be distributed to: Supplier, CoC Purchasing, CoC-QS

"Production feasibility check – purchased parts" form

Production feasibility check – purchased parts

Supplier:

Supplier no.

Ref. no.:

Drawing no.:

Designation:

The following points must be observed when submitting an offer

yes no

- | | | |
|--|--------------------------|--------------------------|
| 1. Does a preliminary time schedule from the Supplier exist that includes all important operational sequences and QA measures? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Will the due date for submission of initial samples be observed with regard to the requested production capacity? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are all characteristics shown in the drawing and mentioned in the specification clearly and unambiguously? If not, which are not? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Does a preliminary manufacturing layout with manufacturing and inspection steps exist? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Does the Supplier have appropriate tools and measuring means to obtain the required precision? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Is the Supplier in a position to observe the required features and tolerances? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Can the machining and process capability for series manufacture be ensured and can this be proved by furnishing appropriate evidence? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Has an appropriate type of packing for protection of the parts during transport and storage been provided? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Can the respective production lots be traced back and have provisions been made to ensure the FIFO principle? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Does the manufacturer take an active hand in environmental safety activities? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Does the Supplier avoid the use of hazardous materials and substitute them by others? | <input type="checkbox"/> | <input type="checkbox"/> |

For remarks on questions 1 to 11 use additional pages!

Attention:

An order can only be placed if this check list has completely been filled in and all pending points have fully been clarified. Supporting documents and measures performed regarding all questions must be attached to this list.

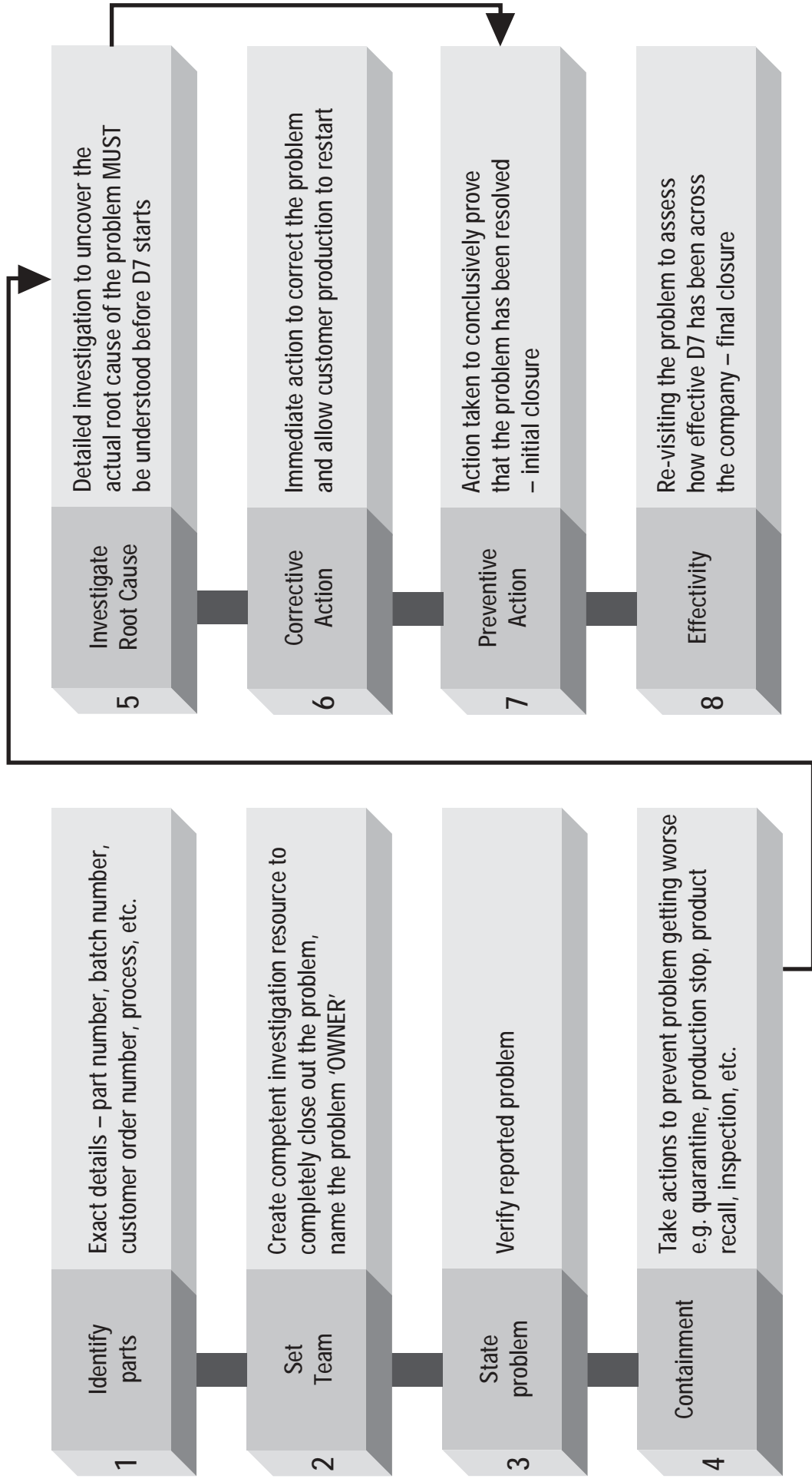
Date / Signature of the Supplier

To be distributed to:


"8D Report" form

To be filled in by the Supplier within two weeks and to be returned to Knorr-Bremse Sfs	Company:		<h1>8D Report</h1>	8 D report number:	
				issued on:	
				by:	
	Problem title:				
	1. General data				
	Supplier no.:		Inspection report no.:		
	Ref. no.:		Date of inspection report:		
	Designation:		Quantity supplied:		
	Delivery note no.:		Quantity rejected:		
	Lot/batch no.:		KB Sfs location:		
2. Team:			3. Problem description:		
4. Temporary actions (within 48 hours):				Deadline/responsible:	
Production:		Inventory:		Circulating:	
5. Root causes:				Deadline/responsible:	
6. Corrective actions:				Deadline/responsible:	
7. Preventive actions:				Deadline/responsible:	
Supplier: after first to fifth delivery	8. Efficiency:				Deadline/responsible:
	Team Manager/Dept.:		Date/Signature:		
Tel.:		Fax:			
Customer	Concluded:		<input type="checkbox"/> yes <input type="checkbox"/> no		
	Remarks:		Date/Signature:		
			to be distributed to:		

Explanations on the 8D Report



"Sample Inspection Report"


(1) Supplier  Address of ordering plant	<input type="checkbox"/> Initial <input type="checkbox"/> Pre-production <input type="checkbox"/> Intermediate <input type="checkbox"/> Test <input type="checkbox"/> Other <h2 style="text-align: center;">Sample Inspection Report</h2> <p>Result of Report Issued on:</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">(3) Dimensional report</td> <td style="width: 33%;">(4) Materials report</td> <td style="width: 33%;">(5) Functional report</td> </tr> <tr> <td>Supplier</td> <td>(6) Report no.</td> <td>(7) Ref.:</td> </tr> <tr> <td>Customer (purchaser)</td> <td>(8) Report no.</td> <td>(9) Ref.:</td> </tr> </table> <p style="text-align: right;">Supplier no. Sheet 1 of sheets</p>	(3) Dimensional report	(4) Materials report	(5) Functional report	Supplier	(6) Report no.	(7) Ref.:	Customer (purchaser)	(8) Report no.	(9) Ref.:
(3) Dimensional report	(4) Materials report	(5) Functional report								
Supplier	(6) Report no.	(7) Ref.:								
Customer (purchaser)	(8) Report no.	(9) Ref.:								

<h3>Supplier</h3> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">(10) Part no. (drawing no.)</td> <td>(11) Rev./date</td> </tr> <tr> <td colspan="2">(12) Designation</td> </tr> </table> <p>(16) Order/call no. (17) Order/call no. (18) Forwarding address</p> <p>(19) Delivery note no. (20) Date of delivery note (21) Number of samples</p> <p>"D" part (subject to documentation)</p> <p> <input type="radio"/> (22) yes <input type="radio"/> (23) no </p> <p>Reason for initial sample inspection</p> <p> <input type="radio"/> (24) new supplier <input type="radio"/> (25) new part <input type="radio"/> (26) specifications modified <input type="radio"/> (27) manufacturing conditions modified <input type="radio"/> (28) new place of manufacture <input type="radio"/> (29) production suspended for prolonged interval <input type="radio"/> </p> <p>For inspection results refer to following sheets Characteristics subject to documentation are identified by "D". The actual values are reproduced in the same succession as the samples. Specifications not complied with are underlined for identification.</p>	(10) Part no. (drawing no.)	(11) Rev./date	(12) Designation		<h3>Customer (purchaser)</h3> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">(13) Part no. (drawing no.)</td> <td>(14) Rev./date</td> </tr> <tr> <td colspan="2">(15) Designation</td> </tr> </table>	(13) Part no. (drawing no.)	(14) Rev./date	(15) Designation	
(10) Part no. (drawing no.)	(11) Rev./date								
(12) Designation									
(13) Part no. (drawing no.)	(14) Rev./date								
(15) Designation									

Remarks	Remarks
---------	---------

<h3>Confirmation</h3> <p style="text-align: right;">(applies to initial samples only)</p> <p>We herewith confirm:</p> <ol style="list-style-type: none"> 1. that the initial samples submitted have completely been manufactured with series production tooling and under series production conditions; 2. that both the initial sample inspection and its description in this report have been made correctly (variations herefrom have especially been mentioned in this report); 3. that a release does not relieve the Supplier of his responsibility to deliver the part(s) in compliance with the applicable drawing or gauge in such a way that they fulfil the specified function. <p>_____</p> <p>Name/extension (for inquiries)</p> <p>Date Binding signatures (Suppliers)</p>	<h3>Decision</h3> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%;">released</td> <td style="width: 25%;">conditionally released</td> <td style="width: 25%;">rejected - new samples required</td> </tr> <tr> <td>Material</td> <td>(30)</td> <td>(34)</td> <td>(38)</td> </tr> <tr> <td>Function</td> <td>(31)</td> <td>(35)</td> <td>(39)</td> </tr> <tr> <td>Decision</td> <td>(32)</td> <td>(36)</td> <td>(40)</td> </tr> <tr> <td>Conditions</td> <td>(33)</td> <td>(37)</td> <td>(41)</td> </tr> </table> <p>Conditions</p> <p>Department</p> <p>Date Binding signatures (Customer)</p>		released	conditionally released	rejected - new samples required	Material	(30)	(34)	(38)	Function	(31)	(35)	(39)	Decision	(32)	(36)	(40)	Conditions	(33)	(37)	(41)
	released	conditionally released	rejected - new samples required																		
Material	(30)	(34)	(38)																		
Function	(31)	(35)	(39)																		
Decision	(32)	(36)	(40)																		
Conditions	(33)	(37)	(41)																		

"Sample Inspection Report"

 KNORR-BREMSE Supplier:	<input type="checkbox"/> Initial <input type="checkbox"/> Pre-production <input type="checkbox"/> Intermediate <input type="checkbox"/> Test <input type="checkbox"/> Other			
	<h2>Sample Inspection Report</h2> Result of Report			Issued on:
		<input type="checkbox"/> (3) Measuring report	<input type="checkbox"/> (4) Materials report	<input type="checkbox"/> (5) Functional report
Supplier	(6) Report no.	(7) Ref.:		
Customer (purchaser)	(8) Report no.	(9) Ref.:		
Supplier no.		Sheet 1 of sheets		

Supplier		Customer (purchaser)	
(10) Part no. (drawing no.)	(11) Rev./date	(13) Part no. (drawing no.)	(14) Rev./date
(12) Designation		(15) Designation	

Legend of feature identifiers (KB-M, internal design identifier) **A** = Supplier must rectify characteristics
B = Customer will modify the drawing

(42) Item	(43) Characteristics (specified value)	(44) Actual value (Supplier)	(45) Actual value (Customer)	Cust. ident.

(46) Remarks (Supplier)							
(46) Remarks (Customer)							
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 45%; border: none;">Date</td> <td style="width: 5%; border: none;"></td> <td style="width: 45%; border: none;">Binding signatures (Supplier)</td> </tr> <tr> <td style="width: 45%; border: none;">Date</td> <td style="width: 5%; border: none;"></td> <td style="width: 45%; border: none;">Binding signatures (Customer)</td> </tr> </table>		Date		Binding signatures (Supplier)	Date		Binding signatures (Customer)
Date		Binding signatures (Supplier)					
Date		Binding signatures (Customer)					

III. Appendix – BLACK AND GREY LIST OF CHEMICALS

List of substances which shall be limited and must be declared (GREY LIST)

KC-No.	Material/Substance	EU-INDEX-No.:	CAS-No.	Source (Legal, requirements, regulations)	Danger/Risk	Examples for usage / existence	Remarks and Comments (contents, deviation from 0,1%)	VDA classification
1	Acetaldehyde	605-003-00-6	75-07-0		C ₃			D
2	Acetamide	616-022-00-4	60-35-5	EU-RL 67/548/EWG	C ₃	Solvent additive, stabilizer for plasticisers		D
3	Acrylamide	616-003-00-0	79-06-1	EU-RL 67/548/EWG	C ₂ , M ₂	Manufacture of polyacrylamide (residual monomer)		D
4	Acrylonitrile	608-001-00-3	107-13-1	EU-RL 67/548/EWG	C ₂	Manufacture of plastics, resins and rubbers eg. ABS (residual monomer)		D
5	Aliphatic chlorohydrocarbons refer to Chlorinated hydrocarbons							D
7	Ammonia separating substances	(007-001-00-5)	(7664-41-7)	TRGS 900, GefStoffV		Cleavage product from vehicle assembly parts	Odour problems in car interior	D
8	Aniline and its salts	(612-008-00-7)	(62-53-3)	EU-RL 67/548/EWG	C ₃	Pigments, sulfonamides, isocyanate-plastics		D
9	Antifouling dyes: refer to: Arsenic Hexachlorocyclohexane Mercury Organo-tin-compounds			GefStoffV incl. App. IV Nr. 5		Mainly used as protective coating – contained in colophony, resin esters or modified vulcanized resins in combination with tar or bitumen, small amounts chlorine latex, chlorinated Polypropylenes and Vinyl resins	For substances and preparations there is in force a prohibition according to German ChemVerbotsV	D
10	Antimonytrioxide (Diantimonytrioxide)	051-001-00-X	1309-64-4	EU-RL 67/548/EWG	C ₃	Flame retardant for plastics and rubber/latex, opacifier in smelting coverings, friction lining in vehicle assembly		D
15	Barium compounds (organic or water soluble) except Ba-carboxylate	-	(7440-39-3)	EU-RL 67/548/EWG	X _n	Colour pigments, stabilizers for PVC, lubricant additives	BaSO ₄ , and pigments are exempted, threshold-limit: 1 %	D

19	Benzyl butyl phthalate	-	(85-68-7)		Adhesives, paints		D
20	Beryllium or Beryllium compounds	(004-001-00-7)	(7440-41-7)	EU-RL 67/548/EWG	Electric contacts, relays and switches	Duty to declare if used as alloy element in metals	D
21	Beryllium salts or -oxides	(004-001-00-7)	(7440-41-7)	EU-RL 67/548/EWG	Ceramic materials in electrical insulation	soluble Beryllium salts are undesirable, all others must be declared	D
22	Biocides Chlorocresol (meta-) Chlorocresol (ortho-) Chlormethyl isothiazolinone Methyl isothiazolinone Organotin comp. (trialkyl) Thiram (TMTD)	(604-014-00-3) (604-050-00-X) 006-005-00-4	59-50-7 1570-64-5 26172-55-4 2682-20-4 several 137-26-8		Lubricants, paints, aqueous solutions, cooling water	no value limitation	D
23	Lead or it's compounds	-	(7439-92-1)	EU-RL 67/548/EWG	Lead as component in metals and alloys: e.g. bearing metals, steel, brass, Aluminium to be processed in automated machines; other compounds. Pb-containing stabilizers and pigments, corrosion inhibitors, (fuel additive)		D
25	Brominated flame retardants see also PBB, PBDE, PBT	-	-		Textiles and plastics		D
26	Butadiene (1,3 - Butadiene)	601-013-00-X	106-99-0	EU-RL 67/548/EWG	Production of synthetic latex for tyres, as homopolymerisate (BR), as copolymerisate with Styrene (SBR) or Acrylonitrile (NR), production of Sulfolane, Chloroprene, Hexadamine, softeners, Tetrahydrophthalic acid anhydride, rest monomer in ABS		D
28	Chloroaniline	612-010-00-8	106-47-8	EU-RL 67/548/EWG	Hardener or cross linking agent for polymers and epoxy resins		D
29	Chlorepoxypropane (Epichlorhydrine), see: 1-Chloro-2,3-epoxy-propane						
30	1-Chloro-2,3-epoxy-propane	603-026-00-6	106-89-8	EU-RL 67/548/EWG	residual monomers in Epoxy resins		D

31	Chlorinated Biphenyls see: Polychlorinated Biphenyls (PCB)											
34	Chlorinated hydrocarbons (CHC), see as well: Chloroparaffines, unbranched								(C ₃)	Cleaners, solvents, impregnation agent, Fungicides, Pesticides	As solvents for surface cleaning are allowed only: Trichloroethene, Perchloroethene and Dichloromethane. Mind regulations in 2. BImSchV	D
35	Chloroparaffines, unbranched (C ₁₀ -H ₂₂ nCl _n to C ₃₀ -H ₆₂ nCl _n ; n = 1-28)									Flame retarder substances		D
37	Cobalt or Cobalt compounds; Co alloys	(027-001-00-9)	(7440-48-4)						C ₃	Hard metal Galvanic Zn-Co-plating, ingredient in metals	Dangers caused by dusts, aerosols and smokes	D
38	Distillation products: Creosote Coal-tar									Distillation products, filler, wood-conservation		D
40	Dibutylphthalate (DBP)	-	84-74-2							Plasticiser for plastics e.g. PVC		D
41	1-2 Dichlorethane	602-012-00-7	107-06-2						T, C2	Additive for fuels		D
42	DEHP (Di-(2-ethyl)-hexylphthalate)		117-81-7							Plasticiser for plastics e.g. PVC		D
43	Dichloropropanole (1,3-Dichloro-2-propanole)	602-064-00-0	96-23-1						C ₂	Solvent for anti-wrinkle agents and flame retardants for textiles and for production of epoxy resins		D
44	Di-(2-ethyl)hexylphthalate (DEHP, see as well DOP)	-	117-81-7							Plasticiser for plastics e.g. PVC		D
45	Dioxines or Furanes, see: chlorinated or brominated Dioxines or Furanes											

47	DOP (Di-octyl-phthalate) s. DEHP (Di-(2-ethyl)-hexylphthalate)											
48	Dibutyl phthalate	(84-74-2)							N, R _{F2} , R _{E2}	Adhesives, paints		D
49	Dimethyl phthalate		(131-11-3)							Hardeners, paints, protection against mosquitos		D
50	Dipenten (Limonene)	601-029-00-7	138-86-3 5989-27-5						N	Solvent	Limitation value > 1%	D
51	Epichlorhydrine see: 1-Chloro-2,3-epoxy-propane											
52	Ethyl-/ Methyl-Glycols or their Acetates e.g. Ethyleneglycol- ethyletheracetate, Ethyleneglycol-methylether	- 607-037-00-7 603-011-00-4	111-15-9 109-86-4			EU-RL 67/548/EWG		R _{F2} , R _{E2}		Solvent for Celluloseester, waxes, colors, PES- and PU-Enamels, synthetic resins, plasticisers for Polyester resins, PES-fibers, Polyvinylalcohol, Polyvinylpyrrolidone	mind usage restrictions acc. to TRGS 609	D
55	Hydrofluoric acid (HF)	009-002-00-6	7664-39-3					T ₊		Pickling, etching, galvanisation		D
57	Halogenated aliphatic Hydrocarbons: see: Chlorinated Hydrocarbons (CHC) and Chloroparaffins											
59	Hexane (n-Hexane)	601-037-00-0	110-54-3					N, C ₃		Solvent		D
61	Hydrazine	007-008-00-3	302-01-2			EU-RL 67/548/EWG		C ₂		Residual monomers in plastics, pigments and adhesives, antioxidants for the stabilizing of Amines, Phenols, in oils, greases, natural latex; blowing agents for foamed plastics		D
62	Colophony (rosin)	650-015-00-7	8050-09-7							Adhesives, paints, cutting fluids	apply declaration > 1%	D
63	Methylacrylamidomethoxy- acetate	607-190-00-X	77402-03-0			EU-RL 67/548/EWG		C ₂ , M ₂		production of polymers	Substance may contain Acrylamide	D

64	Mineral fibers: natural and synthetic (e.g. glass, ceramic fibers)	-	-	-		C _x	Friction lining, screens, re-enforcement, insulation, cables	Danger caused by dusts K-values in EU-RL 76/769/EWG mind WHO - criteria	D
65	Mono- and Dialkyle-Tin compounds						Catalyst for PUR-foams and stabilizer for PVC		D
69	Sodiumazide	011-004-00-7	26628-22-8	EU-RL 67/548/EWG	T ₊		Gas generators e.g. airbags	For substances and preparations there is in force a prohibition according to German ChemVerbotsV	D
70	Sodiumnitrite	007-010-0-4	7632-00-0		T		Anti-rust agent		D
72	Nickel or Nickel compounds, Ni-alloys	028-002-00-7	(7440-20-0)	EU-RL 76/769/EWG, GefStoffV	(C ₃)		Welding electrodes, flame spraying, special materials, component in alloys	Risk from dusts, aerosols and welding smoke	D
74	Nitrocellulose						Gas generators e.g. Airbags		D
76	Nitroso amines exclusion of: Nitrosamines acc. to TRGS 552 see Nitrites			TRGS 552			Synthetic latex, cleavage and reaction products of the polymerization system, prohibition of exposure with exception: TRGS 552	a) Mixtures, nitrites, containing amines and/or amides, which could result in nitrosoamine or nitrosoamide formation b) Mixtures of aromatic nitrosamines with secondary aliphatic amines, or with substances that could result in formation of sec. amines, which could eventually result in nitrosoamine or nitrosoamide formation	D
80	Phenol	604-001-00-2	108-95-2	EU-RL 67/548/EWG	T		Residual monomer in phenolic resins, epoxy resins, anti-oxidant in phenol derivatives, decomposition product in polymeric materials, wooden materials and textiles		D
81	Phenylendiamine	612-028-00-6	25265-76-3				Pesticides, dyes		D

82	Phthalates: see: Di-(2 ethyl)-phthalate and DOP Dibutyl phthalate Dimehyl phthalate Benzyl butyl phthalat									
85	Polybrominated Terphenyls (PBT)			US TSCA				Flame retarders in plastics and textiles.	Possibly formation of Dioxines and Furanes during recycling processes, in cases of fires or re-use	D
88	Polycyclic aromatic hydrocarbons (PAH's) see: Benzo(a)pyren									
90	Radioactive substances			Regulation on Protection Against Radiation (StrSchV) §§ 10-12				High intensity discharge lamps	mind: Regulation on Protection Against Radiation	D
91	Radioactive metal scrap			Regulation on Protection Against Radiation (StrSchV) §§ 10-12				Metal scrap	mind: Regulation on Protection Against Radiation	D
92	Hydrogen Sulphide releasing substances	016-001-00-4	7783-06-4				T ₊	Cleavage products during vulcanization	Smell in vehicle components; partly company-internal prohibitions	D
93	Heavy metals or their compounds as pigments in paints or enamels: Chromium, Nickel, Mercury, Lead, Cobalt, Zinc, Tin							In primers, fillers and finishing coats (varnishes): Corrosion inhibitor in paints	Dialogue for balancing purposes	D

94	Styrene (Vinyl benzene)	601-026-00-0	100-42-5	EU-RL 67/548/EWG		Residual monomer in ABS-, Polystyrene-, SMC-, UPE-resin-parts	Evaporation from vehicle components	D
95	Styrene oxide (Epoxy styrene)	603-084-00-2	96-09-3	EU-RL 67/548/EWG	C ₂	Residual monomer e.g. in SMC		D
96	Strontium chromate	024-009-0-4	77-89-06-2		T, N	Pigments		D
97	Thallium or it's compounds	081-001-00-3	7440-28-0	EU-RL 67/548/EWG	T ₊	electric components, sensors		D
98	Tetrachloromethane refer to Hydrochlorocarbons							
99	Surface-active agents DHTDMAC DSDMAC DTDMAC		61789-80-8 107-64-2 68783-78-8		N	Softner, ringsing agent, vehicle care product		D
102	Toluidine (o-Toluidine)	(612-091-00-X)	(95-53-4)	EU-RL 67/548/EWG	C ₂	Substance for the production of dyes, textile aids, as reagent for lignin		D
103	2,4-Toluene diisocyanate	615-006-00-4	584-84-9		T ₊	Pur foams, adhesives		D
104	2,6-Toluene diisocyanate	615-006-00-4	91-08-7		T ₊	Pur foams, adhesives		D
105	Trichlorethylene (Tri)	602-027-00-9	79-01-6		C ₃	Solvent, cleaner		D
106	Trichlorophenol or it's salts (2,4,6 -Trichlorophenol)	(604-018-00-5)	(88-06-2)	EU-RL 67/548/EWG	(C ₃)	Fungicide, bactericide, preservative for leather and textiles		D
107	Trichloropropane (1,2,3 - Trichloropropane)	602-062-00-X	96-18-4	EU-RL 67/548/EWG	X _n	As solvent and as trifunctional cross-linking agent e.g. for polysulphide elastomers		D
108	Triglycidylisocyanurat (TGIC)	615-021-00-6	2451-62-9		T,R _{f2}	Powder Paints		D
110	Triphenyl phosphate		115-86-6		N	Flame retardants and antioxidant		D
111	Vinyl chloride	602-023-00-7	75-01-4	EU-RL 67/548/EWG	C ₁	Residual monomer in polymers		D

112 Zinc chromate	024-007-00-3	13530-65-9			T, N	Pigments		D
113 Organic Tin compounds: refer to Trialkyle- and Triaryle- Tin compounds as well as Mono- and Dialkyle-Tin compounds								

III. Anhang – BLACK AND GREY LIST OF CHEMICALS List of prohibited substances (BLACK LIST)

KC-No.	Material/Substance	EU-INDEX-No.:	CAS-No.	Source (Legal requirements, regulations)	Danger/Risk	Examples for usage / existence	Remarks and Comments (contents, deviation from 0,1%)	VDA-classification
6	4-Aminobiphenyl and its salts	(612-072-00-6)	(92-67-1)	EU-RL 76/769/EWG EU-RL 67/548/EWG, ChemVerbotsV. GefStoffV incl. Appendix IV No. 2	C ₁	Contaminant in textile and leather paints; antioxidants in lubricants, rubber/latex, plastics	For substances and preparations there is in force a prohibition according to German ChemVerbotsV (no limitation value)	V
11	Aromatic amines or their salts: 4-Aminobiphenyl or its salts Benzidine or its salts 2-Naphthylamine or its salts 4-Nitrobiphenyl or its salts Diphenylamine Phenyl-beta-naphthalamine	(612-072-00-6) (612-042-00-2) (612-022-00-3) 609-039 00 3 612-026-00-5 612-135-00-8	(92-67-1) (92-87-5) (91-59-8) 92-93-3 122-39-4 135-88-6	EU-RL 67/548/EWG EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV Nr. 2	C ₁ -C ₃	Possibly impurities in certain colours for natural textiles (in Europe prohibited to produce), additive in lubricants, antioxidant	For substances and preparations there is in force a prohibition according to German ChemVerbotsV (no limit value)	V
12	Arsenic or its compounds	033-001-00-X	(7440-38-2)	EU-RL 67/548/EWG EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV Nr. 3	T	Paints and smelting coverings, wood preservative, leather and textile finishes, water treatment, plane glass, metal glue, pyrotechnic objects, metal finishes, proofing agent for wood	If used elemental in metal alloys the declaration limit is 400 ppm. For substances, preparations and articles there applies a limitation or a prohibition acc. to ChemVerbotsV	V
13	Asbestos	650-013-00-6	1332-21-4	EU-RL 76/769/EWG, ChemVerbotsV GefStoffV incl. Appendix IV Nr. 1	C ₁	Friction pads, gaskets, insulations	For substances, preparations and articles there applies a limitation or a prohibition acc. to ChemVerbotsV. (no limitation value)	V
14	Azo-dyes as defined by TRGS 614 containing carcinogenic amine components	-		Articles-of-Consumption-Regulation TRGS 614, 905	C ₁ -C ₂	in dyes	Restricted for use in textiles	V

16	Benzidine or its salts	(612-042-00-2)	(92-87-5)	EU-RL 67/548/EWG EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV No. 2	C ₁	Kongo dyes (benzidine dyes: mainly azo dyes) textile and leather dyes, antioxidants in rubber and elastomers	Substitute materials TRgA 603 Declaration limit: 0,01 %. For substances and preparations there is in force a prohibition according to German ChemVerbotsV (no limitation value)	V
17	Benzo(a)pyrene or other corresponding PAH's	(601-032-00-3)	(50-32-8)	EU-RL 67/548/EWG EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV No. 13	(C ₂ , M ₂), R _{F2} , R _{E2}	Mineral oils, soot, tar	Incomplete burning of organic substances. Differing declaration limits; in softening oils for tires: 1 ppm, in wood preservatives: 50 ppm, in lubricants: 10 ppm (12 PAHs) i.e. 1 ppm for Benzo- (a)pyren. For substances and preparations: see ChemVerbotsV. (no limitation value)	V
18	Benzene	601-020-00-8	71-43-2	EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV Nr. 4	C ₁ , M ₂	Fuel, solvent for latex enamels, raw material for other chemicals	No value limitation, Deviating declaration of impurities limit: 0,01%; for substances and preparations there is in force a limitation acc. to ChemVerbotsV.	V
24	Lead salts (Lead sulphate, -hydrogencarbonate, carbonate etc.) Lead chromate: see Chromium(VI)-salts	-	-	EU-RL 67/548/EWG EU-RL 76/769/EWG	R _{F1} , R _{E1}	Cable insulation, containers and tubes for aggressive fluids, production of pigments, Lead alloys, corrosion inhibitors (fuel additive)	Duty to declare for: Pb-stabilizers and -pigments. Prohibited: water free, neutral. Lead carbonate, Lead hydrogencarbonate and Lead sulphate as colour pigment	V
27	Cadmium or it's compounds	(7440-43-9)	(7440-43-9)	EU-RL 67/548/EWG EU-RL 76/769/EWG	(C ₂)	Surface protection of metals, stabilizers in polymers, pigments, in enamels and plastics	Deviation agreed: Cd- contamination (impurities) is tolerated up to 75 ppm, alloys and security warnings excluded; for substances and preparations there is in force a limitation / prohibition acc. to ChemVerbotsV. (no value limitation)	V

32	Chlorinated or brominated Dioxines or Furanes				ChemVerbotsV	T	Impurities in products	Possibly formation of Dioxines and Furanes during recycling processes, in cases of fires or re-use 1 ppb, 5 ppb, 100 ppb -up to the grade of halogenation	V
33	Chlorinated hydrocarbons: Methylen chloride Tetrachloromethane (Tetrachlorocarbon) 1.1.2.2 Tetrachloroethane 1.1.1.2 Tetrachloroethane Tetrachlorethylene Pentachloroethane Hexachlorbutadiene Trichloromethane (Chloroform) 1.1.2 Trichloroethane 1.1 Dichloroethylene 1.1.1 Trichloroethane	602-004-00-3 602-008-00-5 (602-015-00-3) 602-028-00-4 602-017-00-4 602-006-00-4 602-014-00-8 602-025-00-8 602-013-00-2	75-09-2 56-23-5 79-34-5 630-20-6 127-18-4 76-01-7 87-68-3 67-66-3 79-00-5 75-35-4 71-55-6		EU-RL 67/548/EWG EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV Nr. 11	C ₃	Cleaners, solvents impregnating/proofing agents, fungicides, pesticides, fuel additive	For substances and preparations there is in force a prohibition according to German ChemVerbotsV (no limiting value)	V
36	Chromium(VI)-salts	(024-005-00-2)	(14977-61-8)		EU-RL 67/548/EWG	C ₂	Chromium pigments (Lead chromate: Chromium Yellow, Barium chromate, Baryte Yellow), chromated surfaces e.g. Chromium Yellow, corrosion inhibitors, residues from dyeing and tanning.	Lead chromate without limit value	V
39	Diamino-diphenyl-methane (4,4'-Diaminodiphenylmethane)	(612-051-00-1)	(101-77-9)		EU-RL 67/548/EWG	C ₂	Pre- and intermediate product of synthetic resins, adhesives, colors, vulcanization accelerators	no limit value	V
46	Di-μ-oxo-di-n-butylstannohydroxyborane (DBB) see: Tin organic compounds				EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV No. 9			For substances and preparations there is in force a prohibition according to German ChemVerbotsV	V

53	special Glycols 2-Ethoxyethanol 2-Ethoxyethanol acetate 2-Methoxyethanol 2-Methoxyethanol acetat	603-012-00-X 607-037-00-7 603-011-00-4 607-036-00-1	110-80-5 111-15-9 109-86-4 110-49-6			T, R ₂ , R ₂₂	Solvent for Celluloseester, waxes, colors, PES- and PU-Enamels, synthetic resins, plasticisers for Polyester resins, PES-fibers, Polyvinylalcohol, Polyvinylpyrrolidone	no limitation value	V
54	Chloro-fluoro-carbons (CFC) or other Ozone depleting substances	-	-	EU-Regulation 594/91/EWG			Coolants, propellants, cleaners, solvents, impregnating agents, blowing agents (PU production)	prohibited substances: see CFC-Halone-Prohibition Regulation, all others: D	V
56	Formaldehyde	605-001-00-5	50-00-0	EU-RL 67/548/EWG ChemVerbotsV	C ₃		Residues and degradation products of plastics (Aminoplasts, Urea- and Melamine resins, foam plastics, vulcanization accelerators, basis for synthetic tannins, Biocides (e.g. Disinfectants), adhesives, pressed wood elements	Mind limitations for wood material. For substances and preparations there is in force a restriction or a prohibition acc. to ChemVerbotsV.	V
58	Halons: Bromochlorodifluoromethane (Halon 1211) Bromotrifluoromethane (Halon 1301) Dibromotetrafluoroethane (Halon 2402)	353-59-3 74-83-9 124-73-2		EU-Regulation 594/91/EWG			Fire extinguishers		V
60	Hexachlorocyclohexane	200-401-2	58-89-9	GefStoffV with Appendix IV Nr. 5			Insecticide, substance in wood protecting compounds	Prohibited in Antifouling paints for boats Listing of Biocides in VDA-List currently under discussion	V
66	Monomethyldibromodiphenylmethane	602-071-00-9	99688-47-8	EU-RL 67/548/EWG			Residues and decomposition products in manufacture of polymers	For substances and preparations there is in force a prohibition according to German ChemVerbotsV.	V
67	Monomethyldichlorodiphenylmethane	607-204-00-4	81161-70-8	EU-RL 67/548/EWG			Residues and decomposition products in manufacture of polymers	For substances and preparations there is in force a prohibition according to German ChemVerbotsV	V

68	Monomethyltetrachloro-diphenylmethane	602-072-00-4	76253-60-6	EU-RL 67/548/EWG		Residues and decomposition products in manufacture of polymers	For substances and preparations there is in force a prohibition according to German ChemVerbotsV	V
71	2-Naphthylamine or it's salts	612-071-00-0	(91-59-8)	EU-RL 67/548/EWG EU-RL 76/769/EWG, ChemVerbotsV GefStoffV with Appendix IV Nr. 18	C ₁	Textile and leather dyes, antioxidants in polymers	For substances and preparations there is in force a prohibition according to German ChemVerbotsV	V
73	Nitrites (cancer causing and Nitrosamine forming) s. "Nitrosamines"			EU-RL 67/548/EWG GefStoffV with Appendix IV Nr. 19		Additives in engine coolants and metal cutting fluids, vulcanizers in technical rubber products, preservative in friction linings	TRGS 611: there must not be present nitrosating agents and nitrosatable amines. In cutting fluids: Prohibition of usage: mind Appendix IV Nr. 19 GefStoffV	V
75	4 - Nitrophenyl	202-204-7	92-93-3	EU-RL 67/548/EWG EU-RL 76/769/EWG, ChemVerbotsV GefStoffV with Appendix IV Nr. 2	C ₂		For substances and preparations there is in force a prohibition according to German ChemVerbotsV	V
78	Surface active agents 4-Nonylphenol Octylphenol Nonylphenoethoxylates Octylphenoethoxylates		104-40-5 9016-45-9 n.n. n.n.		N	Production of ethoxylates, cleaner, antioxidative additives, rubber, adhesives, hardener, paints, cutting fluids, lubricants	no limitation value	V
79	Pentachlorophenol (PCP) or it's compounds	604-002-00-8	(87-86-5)	EU-RL 67/548/EWG EU-RL 76/769/EWG, ChemVerbotsV GefStoffV with Appendix IV Nr. 12	C ₃	Wood preservative, salt used in treating leather and animal skins, stabilizer for latex	0,01 % for manufactured products. 5 ppm for substances and preparations, consider ChemVerbotsV	V

83	Polybrominated Biphenyls (PBB)		59536-65-1	US TSCA EU-RL 76/769/EWG	Flame retarders in plastics and textiles.	Possibly formation of Dioxines and Furanes during recycling processes, in cases of fires or re-use (no limitation value, declaration concentration of impurities 0,001%)	V
84	Polybrominated Diphenylethers (PBDE)				Flame retarders in plastics and textiles.	Possibly formation of Dioxines and Furanes during recycling processes, in cases of fires or re-use (no limitation value)	V
86	Polychlorinated Biphenyls (PCB)	602-039-00-4	(1336-36-3)	EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV Nr. 14	Insulation fluid in electrical systems, switch boards transformers and condensers, in wood and paper impregnation, as a softening agent	No limit value, declaration of impurities limit: 50 ppm. For substances and preparations there is in force a prohibition according to ChemVerbotsV	V
87	Polychlorinated Terphenyls (PCT)		(61788-33-8)	EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV Nr. 14	Insulation fluid in electrical systems, switch boards transformers and condensers, in wood and paper impregnation, as a softening agent	Declaration limit: 0,001% For substances and preparations there is in force a prohibition according to ChemVerbotsV	V
89	Mercury or Mercury compounds	080-001-00-0	7439-97-6	EU-RL 67/548/EWG EU-RL 76/769/EWG ChemVerbotsV GefStoffV incl. Appendix IV Nr. 7	High intensity discharge lamps, electric switches	For substances and preparations there is in force a prohibition according to German ChemVerbotsV (no limitation value)	V
109	Trimethylphosphate or related compounds		(512-56-1)	(EU-RL 76/769/EWG)	Flame retardant		V

CONTACT ADDRESSES - KNORR-BREMSE SFS

Subsidiaries and Associated Companies

Knorr-Bremse

Systeme für Schienenfahrzeuge GmbH

Moosacher Straße 80
80809 Munich
Germany
Tel: +49 89 3547-0
Fax: +49 89 3547-2767

Knorr-Bremse GmbH

Division IFE Automatic Door Systems

Patertal 20
3340 Waidhofen an der Ybbs
Austria
Tel: +43 7442 515-0
Fax: +43 7442 515-12

Knorr-Bremse NAF Broms AB

Gasverksgatan 1
22105 Lund
Sweden
Tel: +46 46 3293-50
Fax: +46 46 148971

Knorr-Bremse Berlin

Zweigniederlassung der Knorr-Bremse Systeme für Schienenfahrzeuge GmbH

Georg-Knorr-Straße 4
12681 Berlin
Germany
Tel: +49 30 9392-0
Fax: +49 89 9392-2409

Westinghouse Brakes (UK) Ltd.

Foundry Lane, Chippenham,
Wiltshire, SN15 1JB
Great Britain
Tel: +44 1249 442000
Fax: +44 1249 655040

Knorr-Bremse

Vasúti Jármű Rendszerek Hungaria Kft.

Helsinki út 86
1201 Budapest
Hungary
Tel: +36 1 421-1100
Fax: +36 1 421-1192

Oerlikon-Knorr Eisenbahntechnik AG

Mandachstraße 50
8155 Niederhasli
Switzerland
Tel: +41 185231-11
Fax: +41 185231-31

Freinrail Systèmes Ferroviaires S.A.

47-49 Rue Gosset
51100 Reims
France
Tel: +33 3 267972-00
Fax: +33 3 267972-01

Knorr-Bremse

Systemy dla Kolejowych Srodków

Lokomocji PL. Sp. z.o.o.
ul. Sowinskiego 16
35-500 Chrzanów
Poland
Tel: +48 32 6240270
Fax: +48 32 6232244

Knorr-Bremse GmbH

Beethovengasse 43 – 45
2340 Mödling
Austria
Tel: +43 2236 409-0
Fax: +43 2236 409-412

Frensissemi S.r.l.

Via della Cupola, 112
50145 Firenze
Italy
Tel: +39 055 3020-1
Fax: +39 055 3020-333

IFE CR a.s.

Brnenská 839
66442 Modrice
Czech Republic
Tel: +420 532 159-0
Fax: +420 532 159-115

Dr. tech. Josef Zelisko GmbH

Beethovengasse 43 – 45
2340 Mödling
Austria
Tel: +43 2236 409-290
Fax: +43 2236 409-328

Sociedad Española de Frenos Calefacción y Señales, S.A.

Calle Nicolás Fúster, 2
28320 Pinto (Madrid)
Spain
Tel: +34 91 691 0054
Fax: +34 91 691 0100

Associated company Corporación Albatros

C/Ruiz de Alarcón 13,30
28014 Madrid
Spain
Tel: +34 91 532 41 81
Fax: +34 91 524 96 76

► **Knorr-Bremse Systeme für Schienenfahrzeuge GmbH**
Moosacher Straße 80
80809 Munich
Germany
Phone: +49 89 3547-0
Fax: +49 89 3547-2767

► **Knorr-Bremse Berlin Zweigniederlassung der Knorr-Bremse Systeme für Schienenfahrzeuge GmbH**
Georg-Knorr-Straße 4
D-12681 Berlin
Germany
Phone: +49 30 9392-0
Fax: +49 30 9392-2409

► **Oerlikon-Knorr Eisenbahntechnik AG**
Mandachstraße 50
8155 Niederhasli
Switzerland
Phone: +41 1 85231 11
Fax: +41 1 85231 31

► **Knorr-Bremse GmbH**
Beethovenstraße 43-45
2340 Mödling
Austria
Phone: +43 2236 409-0
Fax: +43 2236 409-412

► **Dr. techn. J. ZELISKO GmbH**
Beethovenstraße 43-45
2340 Mödling
Austria
Phone: +43 2236 409-0
Fax: +43 2236 409-561

► **Knorr-Bremse GmbH Division IFE Automatic Door Systems**
Patertal 20
3340 Waidhofen an der Ybbs
Austria
Phone: +43 7442 515-0
Fax: +43 7442 515-12

► **Westinghouse Brakes (UK) Ltd.**
Foundry Lane
Chippenham
Wiltshire
SN15 1JB
United Kingdom
Phone: +44 1249 442000
Fax: +44 1249 655040

► **Freinrail Systèmes Ferroviaires S.A.**
47-49 rue Gosset
BP 185
51057 Reims Cedex
France
Phone: +33 3 2679-7200
Fax: +33 3 2679-7201

► **Dehousse Industries**
Avenue Gaston-Lacoste
64007 Pau
France
Phone: +33 5 5927-0044
Fax: +33 5 5927-2904

► **Frensisemi S.r.l.**
Via della Cupola, 112
50145 Firenze
Italy
Phone: +39 055 3020-1
Fax: +39 055 3020-333

► **Sociedad Española de Frenos Calefacción y Señales, S.A.**
Calle Nicolás Fúster, 2
28320 Pinto (Madrid)
Spain
Phone: +34 91 6910-054
Fax: +34 91 6910-100

► **Knorr-Bremse Nordic Rail Services AB**
Gasverksgatan 1
22105 Lund
Sweden
Phone: +46 46 3293-50
Fax: +46 46 1489-71

► **Knorr-Bremse Vasúti Jármű Rendszerek Hungaria Kft.**
Budapest
Helsinki út 86.
1201
Hungary
Phone: +36 1 421 1100
Fax: +36 1 421 1192

► **Knorr-Bremse Systemy dla Kolejowych Środków Lokomocji PL Sp. z o.o.**
Ul. Sowińskiego 46
40-018 Katowice
Poland
Phone: +48 32 355-9550
Fax: +48 32 355-9555

► **New York Air Brake Corporation**
748 Starbuck Avenue
Watertown, NY 13601
USA
Phone: +1 315 786-5200
Fax: +1 315 786-5676

► **Knorr Brake Corporation**
861 Baltimore Boulevard
Westminster, MD 21157
USA
Phone: +1 410 875-0900
Fax: +1 410 875-9053

► **Knorr Brake Ltd.**
675 Development Drive
Kingston, Ontario K7M 4W6
Canada
Phone: +1 613 389-4660
Fax: +1 613 389-8703

► **Knorr-Bremse Sistemas para Veículos Ferroviários Ltda.**
Av. Engenheiro Eusébio Stevaux, 1071
Jurubatuba
São Paulo-SP
Cep: 04696-902
Brazil
Phone: +55 11 5681-1121
Fax: +55 11 5686-8344

► **Knorr-Bremse S.A. Pty. Ltd.**
3 Derrick Road
(corner Chestnut Road)
1610 Kempton Park
South Africa
Phone: +27 11 961-7800
Fax: +27 11 975-8249

► **Knorr-Bremse India Private Ltd.**
14/6 Mathura Road
Faridabad-121003 Haryana
India
Phone: +91 129 527-6409
Fax: +91 129 527-5935

► **Knorr-Bremse Rail Systems Japan Ltd.**
Nishiikebukuro TS Bldg., 8F
3-1-15 Nishiikebukuro
Toshima-ku
Tokyo, 171-0021
Japan
Phone: +81 3 5391-1013
Fax: +81 3 5391-1022

► **Knorr-Bremse Rail Systems Korea Ltd.**
6th Floor, Bongwoo Bldg.
31-7, 1 Ka, Changchung-Dong
Choong-Ku
Seoul 100-391
Korea
Phone: +82 2 5388-727
Fax: +82 2 5388-729

► **Knorr-Bremse Far East Ltd. Rail Systems Division**
Suite 2901, 29/FI Central Plaza
18 Harbour Road
Wanchai
Hong Kong SAR
China
Phone: +852 2861-2669
Fax: +852 2520-6000

► **Knorr-Bremse Brake Equipment (Shanghai) Co. Ltd.**
Section C, Building 9, District F
353 Ruying North Road
Shanghai Waigaoqiao Free Trade Zone
Post code: 200131
China
Phone: +86 21 5046-0776
Fax: +86 21 5046-0417

► **Knorr-Bremse Australia Pty Ltd.**
1/2D Factory Street
PO Box 180
Granville NSW 2142
Australia
Phone: +61 2 8863-6500
Fax: +61 2 9897-9980

Knorr-Bremse holds an investment in

► **Corporación Albatros**
C/Ruiz de Alarcón 13, 3º
28014 Madrid
Spain
Phone: +34 91 532 41 81
Fax: +34 91 524 96 76

 **KNORR-BREMSE**
Systeme für Schienenfahrzeuge GmbH

Moosacher Straße 80 · 80809 Munich · Germany · Phone: +49 89 3547-0
Fax: +49 89 3547-2767 · Homepage: www.knorr-bremse.com