

Warehouse

Logistics

Import

Logistics Guideline

of MAHLE
Filtersysteme GmbH

and its european
subsidiaries

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Abbreviations

Abb.	Abbildung
AEB	Allgemeine Einkaufsbedingungen
AIAG	Automotive Industry Action Group
ASN	Advanced Shipping Notification
EDI	Electronic Data Interchange
EDL	Externer Dienstleister
ERP	Enterprise Ressource Planning
EXW	Ex Works
FCA	Free Carrier
GLT	Großladungsträger
GTL	Global Transport Label
JAMA	Japan Automobile Manufacturers Association
JAPIA	Japan Auto Parts Industries Association
KLT	Kleinladungsträger
LAB	Lieferplanabruf
LPI	License Plate (Packstücknummer)
MILO	MAHLE Inbound Logistics Optimization
MHD	Mindesthaltbarkeitsdatum
MM	Materials Management
MSC	MAHLE Supply Concept
Odette	Organisation for Data Exchange by Tele Transmission in Europe (dieser ausgeschriebene Ausdruck wird allerdings nicht mehr verwendet, da sich die Schwerpunkte verändert haben)
PDF	Portable Data File
RBV	Rahmenbelieferungsvertrag
Tab.	Tabelle
TLB	Technische Lieferbedingungen
VDA	Verband der Automobilindustrie
VMI	Vendor Managed Inventory
WebEDI	Webbased Electronic Data Interchange

1. Objectives

The logistics guideline of MAHLE Filtersysteme GmbH (hereinafter referred to as "MAHLE") includes the principle requirements, which the MAHLE suppliers must fulfill. Adherence to the guidelines is required during the development, design and planning of logistics concepts.

Adherence to the following items is especially required:

- Appropriate protection of components to minimize damages
- Guarantee of process safety and guarantee of production supply
- Simplification when handling goods/containers
- Minimizing the logistics cost for the supply chain
- Automated data exchange
- Organized communication to guarantee a continued improvement process

The MAHLE logistics guideline will be sent to the potential suppliers of MAHLE with the request documents. The logistics guideline complements the MAHLE purchasing conditions—latest standard. With the dispatch of the order confirmation the supplier commits to meet the general and specific MAHLE logistics requirements.

This agreement is binding part of the order. In the case of contradictions the individual regulations of the framework supply contract or the general purchasing terms have priority.

2. Scope of Application

The guideline applies to the following plants:

Germany	Phone switchboard	Incoming goods times	
MAHLE Filtersysteme GmbH Maierhofstr. 1-3 73547 Lorch, Germany	+49 7172 182-0	Monday to Friday	7:00 a.m. to 4:30 p.m.
MAHLE Filtersysteme GmbH Schleifbachweg 49-53 74613 Öhringen, Germany	+49 7941 67-0	Monday to Friday	7:30 a.m. to 3:00 p.m.
Differing delivery address: Johann Mader Lager GmbH Verrenberger Weg 7 74613 Öhringen, Germany		Monday to Friday	7:30 a.m. to 3:30 p.m.

Austria	Phone switchboard	Incoming goods times	
MAHLE Filtersysteme Austria GmbH St. Michael 19 9143 St. Michael ob Bleiburg, Austria	+43 4235 5050-0	Monday to Friday	6:00 a.m. to 9:00 p.m.
MAHLE Filtersysteme Austria GmbH Salzburger Straße 27 5230 Mattighofen, Austria	+43 7742 5794-0	Monday to Thursday Friday	7:00 a.m. to 12:00 p.m. 12:30 p.m. to 4:00 p.m. 7:00 a.m. to 12:00 p.m.

France	Phone switchboard	Incoming goods times	
MAHLE Filtersysteme France SAS 55, Rue Robertine Dubois 02110 Seboncourt, France	+33 3 2309-3100	Monday to Friday	8:00 a.m. to 12:00 p.m. 1:00 p.m. to 5:00 p.m.

Great Britain	Phone switchboard	Incoming goods times	
MAHLE Filter Systems UK Ltd. Halesfield 25 TF7 4LP Telford, Great Britain	+44 1952 68-3600	Monday to Friday	6:00 a.m. to 4:00 p.m.
Romania	Phone switchboard	Incoming goods times	
MAHLE Componente de Motor SRL Calea Aradului DN69 Km. 6.6 300633 Timisoara, Romania	+40-256-265622	Monday to Friday	6:30 a.m. to 8:30 p.m.
Turkey	Phone switchboard	Incoming goods times	
MAHLE Filtre Sistemleri A. S. Pelitli Koyu, Ayaz Sokak No: 54 41480 Gebze/Kocaeli, Turkey	+90 262 7515301	Monday to Saturday	8:00 a.m. to 8:00 p.m.

Tab. 1: Scope of the guideline

Deliveries to all MAHLE plants outside the opening times must be approved in advance and must be reported to the incoming goods department. Deliveries on Sundays and on holidays must also be approved.

3. MILO – MAHLE Inbound Logistics Optimization

MAHLE has developed a new, streamlined process along the supply chain from the supplier to the customer, in order to reduce material processing times, identify defects at an early stage, and thus preemptively avoid short-term bottlenecks.

The supplier receives scheduling agreement schedules or stock levels and requirements via EDI or WebEDI in defined cycles. In return, the supplier sends the delivery note data back to MAHLE via EDI or WebEDI when the goods are issued. This Advanced Shipping Notification (ASN) includes packaging data and the license plates (package serial numbers or handling unit numbers). Registering the goods promptly avoids unnecessary communication between MAHLE's procurement teams and the supplier, while also achieving better capacity utilization in the goods receiving process.

The containers must be labeled by the supplier using labels in the format required by MAHLE (see Implementation guideline GLOBAL TRANSPORT LABEL (GTL)). The main feature of the label is the license plate in barcode form. When the goods are unloaded, the barcode of the license plate on the container's master label is scanned using a tablet. If the license plate has previously been sent via the ASN, the system will recognize the container. An unloading control is carried out. This makes it possible to immediately detect containers for which no notification has been sent.

Thanks to an app that clearly displays the packaging specification, incorrectly packed goods can be identified very early on, avoiding a great deal of effort in the warehouse at a later stage. Other divergences from the process (e.g., incorrect delivery note, damaged packag-

ing) can also be recorded directly in the goods receiving process using the tablet, and documented immediately with photographs.

The containers associated with a delivery note are booked into the system after all pallets from the same goods receiving posting have been scanned. The booking process requires the generation of a MAHLE-internal number for each license plate. This number only exists in the background but plays a crucial role in all storage and removal processes in the MAHLE warehouse. Accordingly, the supplier label remains in use throughout the process and the containers are not relabeled. The accuracy and quality of the label is therefore extremely important. Consistent use of the license plate guarantees the traceability of the finished product back to the supplier.

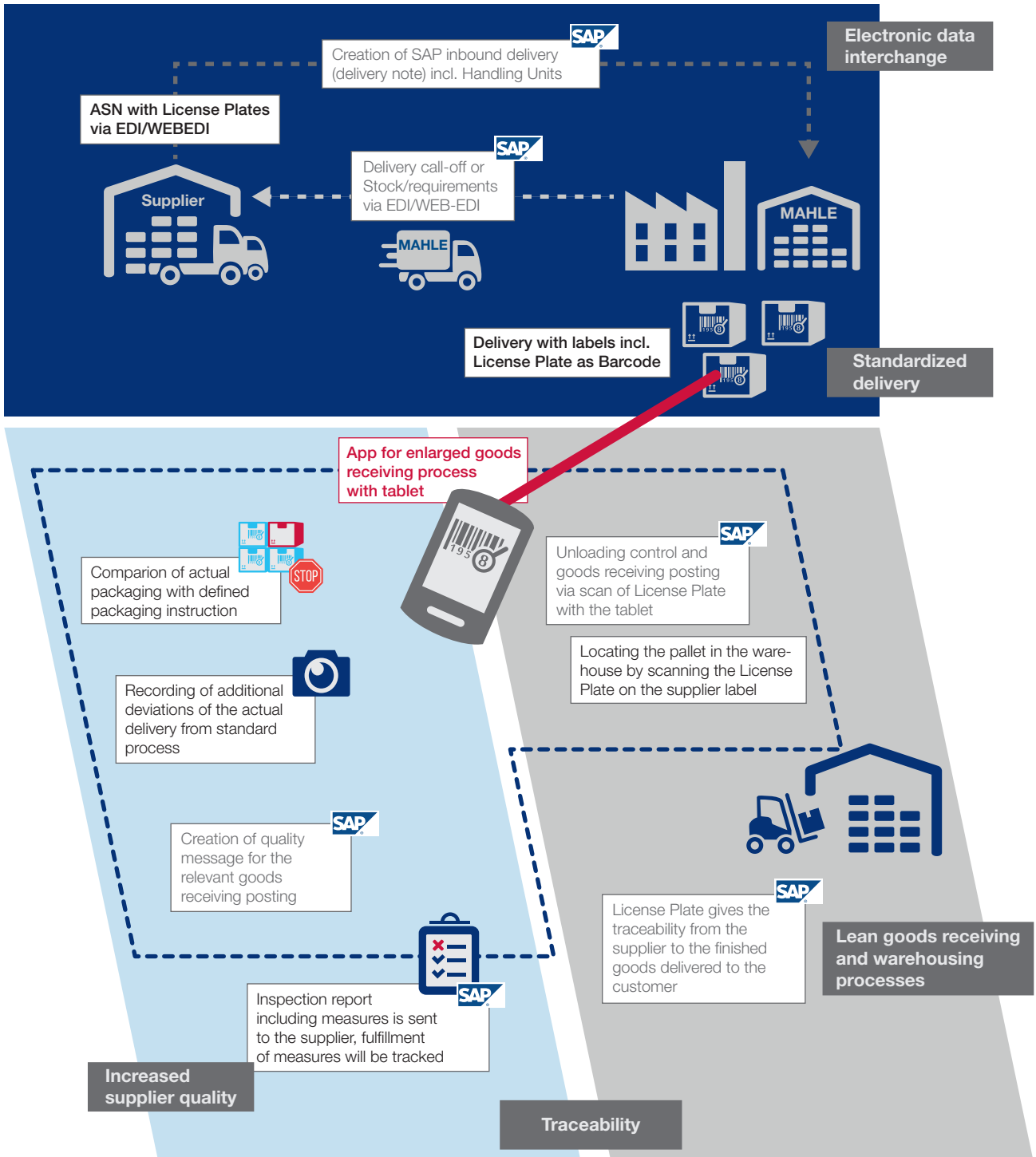


Fig. 1: MILO – MAHLE Inbound Logistics Optimization

4. Information Logistics

4.1 Communication supplier – MAHLE

Competent, efficient, and standardized communication between MAHLE and the supplier forms the basis for a successful cooperation. Compliance with agreements together with the immediate and honest provision of information in the event of any changes to the supply relationships constitute the basic components of a good cooperation.

4.1.1 Contacts

The supplier is to provide MAHLE with the names of those responsible for the entire supply chain (contacts, representatives and supervisors with their respective e-mail, phone, and fax numbers). The contact possesses the necessary expertise and is proficient in either the language of the corresponding MAHLE receiving plant or English as the standard language of international communication.

4.1.2 Availability

The contact named by the supplier must be available on working days (excluding public holidays) from at least 7:00 a.m. to 5:00 p.m. (local time of the respective supplier). Outside this period (or in the event of plant closures), an emergency phone number with the necessary expertise must be set up to ensure availability for MAHLE in urgent cases.

4.1.3 Delivery bottlenecks

The supplier must inform the affected MAHLE plant/supplier management proactively and immediately if the supplier finds out that a delivery date or a delivery quantity agreed with MAHLE cannot be met (e.g. due to technical deficiencies, capacity bottle necks, quality problems, etc.). The information must include the reasons, the expected duration of the delay and the impact of the measures taken to resolve the issue.

Express deliveries and special transports require always consultations with the MAHLE material planning. The cost must be covered by the party, which initiated the special transport.

4.2 Electronic data exchange

4.2.1 EDI (Electronic Data Interchange)

Business data can be exchanged between the information systems by using Electronic Data Interchange (EDI). For this purpose the standard formats VDA and EDIFACT are used. For both message formats there are MAHLE own guidelines existing.

MAHLE uses currently the following messages for its business processes:

Process	VDA	EDIFACT
Supplier orders	4905	DELFOR D97A
Credit note	4908	
Delivery and transport data (direct delivery or external service provider placement)	4913	DESADV D97A
ESP (external service provider) notifications (sample, inventory)	4913	
Single order/order changes		ORDERS D96A

Tab. 2: EDI messages

Should you have any technical questions concerning the electronic data exchange, please contact the following number, specifying your supplier ID number:

E-Mail: edi-team@mahle.com
 Phone: +49 711 501-38000

Note:

A classical EDI connection requires an appropriate infrastructure on the part of the supplier (IT system integration). MAHLE reserves the right to only connect suppliers with a significant volume via classical EDI connection.

MAHLE also provides free use of a WebEDI platform as an alternative for small volumes and/or missing technical requirements.

An electronic communication is a forcing premise for a successful business process with MAHLE. Therefore the suppliers need to be connected either via classical EDI or WEB-EDI.

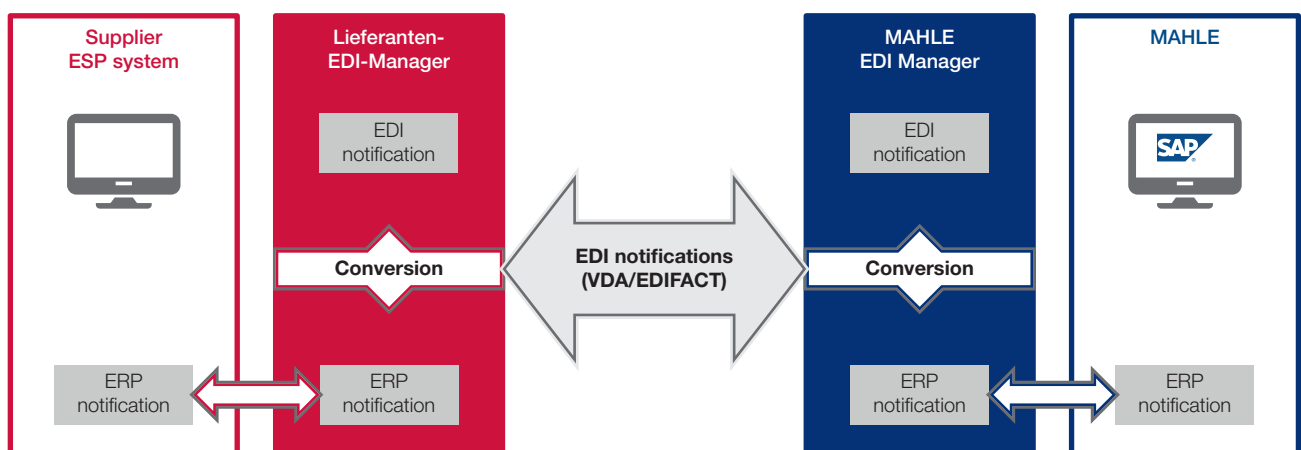


Fig. 2: Communication structure MAHLE—supplier via EDI

4.2.2 WebEDI

WebEDI is used by suppliers who do not have an EDI interface available.

The WebEDI system stores the data to be sent to the business partner on a web server. The supplier must then log onto the server with his own user name and password in order to view, print or download the stored data in various formats, as well as send data back to MAHLE. In Figure 3, the process is shown.

During a nightly SAP job run, master data from the plants such as scheduling agreements, packaging instructions, etc. as well as the available supply schedule orders for existing supply schedules are transmitted to the SNC with the date and quantity. After this job run, the data becomes available for the supplier. All relevant supply schedules with the last order

date are listed in an overview where the user can switch between the details incl. the schedule data and quantities.

Receipt of the orders is to be acknowledged by the supplier once he has viewed them. In the event of a bottleneck, the supplier must immediately contact the respective plant's procurement team as soon as the new order appears in order to discuss how to proceed. Without this consultation, the order and the schedules contained therein are deemed to be accepted and confirmed.

A due date list shows all the items due to be shipped according to the supply schedules. On the day of the delivery to a MAHLE plant, the supplier must create an electronic delivery note (ASN) for the material to be supplied and its packaging incl. License Plate, specifying the delivery note number, shipping date, delivery date, batch, version number and if nec-

essary, the best before date (cf. chapter 4.6.2).

Once the ASN has been successfully created, it is saved and published. From this point on, the delivery is visible in MAHLE SAP. A separate function within the WebEDI platform prints the labels and the delivery note for this ASN in the defined MAHLE format.

As soon as the goods have arrived at the MAHLE plant, all of the components and packaging materials of the goods receiving contained in the electronic delivery note are posted. This goods receiving information is transferred during a nightly SAP job run to the platform and can be viewed the next day.

Contacts:

Anna Sakova (Supplier Management Logistics BU2 Europe), Marco Boll (IT)

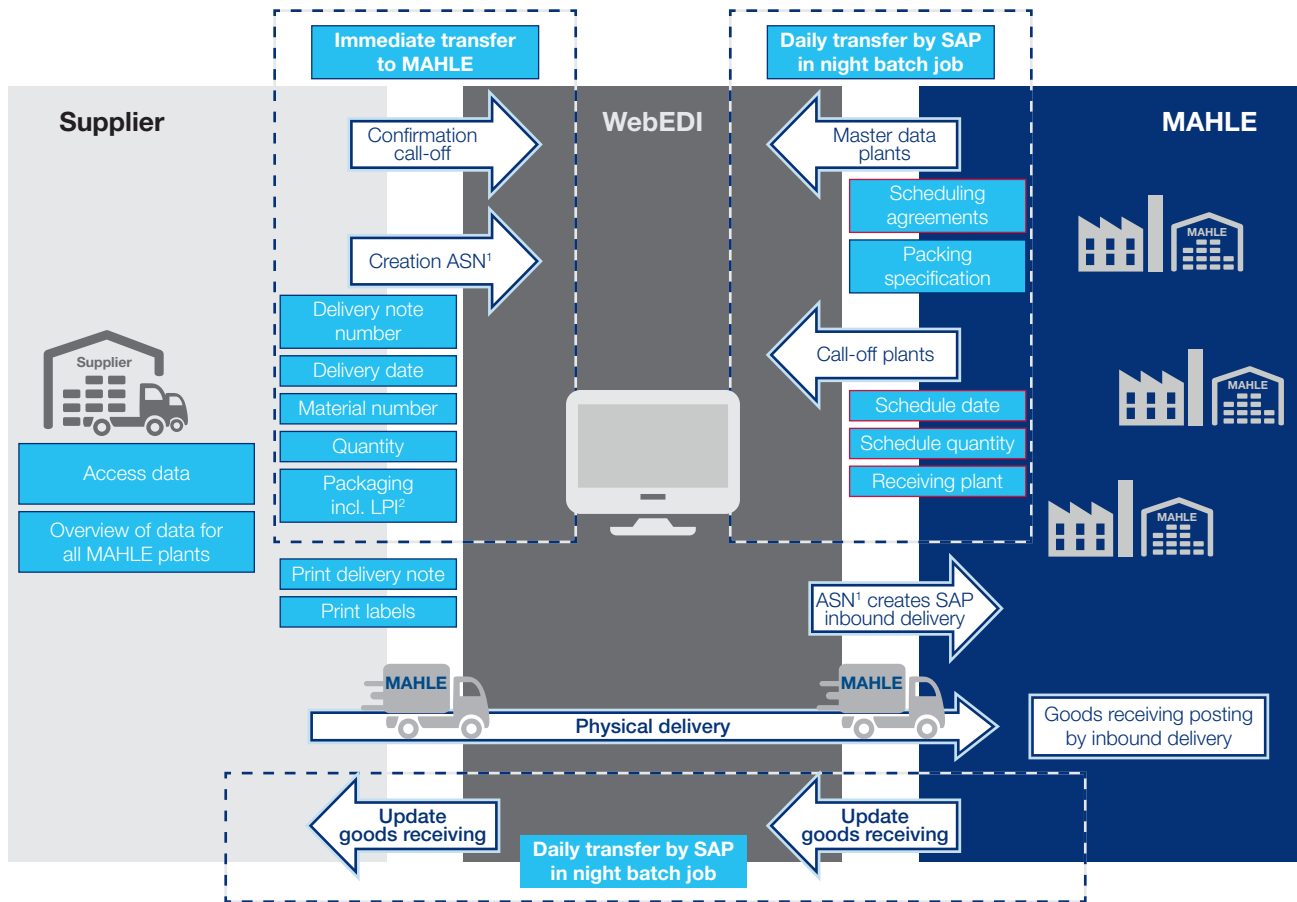


Fig. 3: WebEDI at MAHLE

¹ ASN = Advanced Shipping Notification
² LPI = License Plate → Handling unit number

4.3 Advanced Shipping Notification (ASN)

The ASN (Advanced Shipping Notification) must be sent upon request by the receiving plant and is the basis of subsequent goods receiving postings.

The supplier sends a notification as preliminary information in parallel to the delivery by using the EDI in accordance with VDA 4913/EDIFACT DESADV D97A or via WebEDI.

The shipping notification must also include packaging information alongside the information regarding the production material to be delivered. Notification of the the valid MAHLE packaging number and the respective package serial number, hereinafter referred to as "license plate" must be sent for each large and

small container (in the case of two-layer packaging), which can later be seen on the label in the form of a barcode.

In order to manage all delivered containers with the system, it is imperative that notification of disposable packaging is also sent. However, neither goods receiving is posted nor an empties account is kept for such.

The returnable packaging material numbers requiring notification are provided in chapter 7.2.

On the day of dispatch, the dispatch notification must be sent to MAHLE no later than 30 minutes after the dispatch of the delivery.

4.4 Delivery dates

It is important to note that the due dates listed in the supply orders are goods receiving dates at the respective MAHLE plant.

Whenever MAHLE is the freight payer, the valid routing order for the plant to be supplied will provide the forwarder's date of registration, pick-up date at the supplier's plant, and delivery date at the MAHLE plant (running times) along with the means of transport.

4.5 Delivery concepts

MAHLE generally distinguishes between the following concepts for controlling a supply chain:

- Schedule processing
- Vendor Managed Inventory (VMI)
- Supplier kanban

We determine which delivery concept to use depends on the material to be supplied and its requirements, the supplier's distance from the MAHLE plant, and the intrinsic value.

4.5.1 Schedule processing

4.5.1.1

Traditional schedule processing

Here, supply orders are transferred on a rolling basis, depending on the order creation profile agreed between MAHLE and the supplier (daily, weekly, etc.). These are updated regularly and contain general data with a scope of at least 6 months. The latest supply order is binding and replaces earlier supply orders.

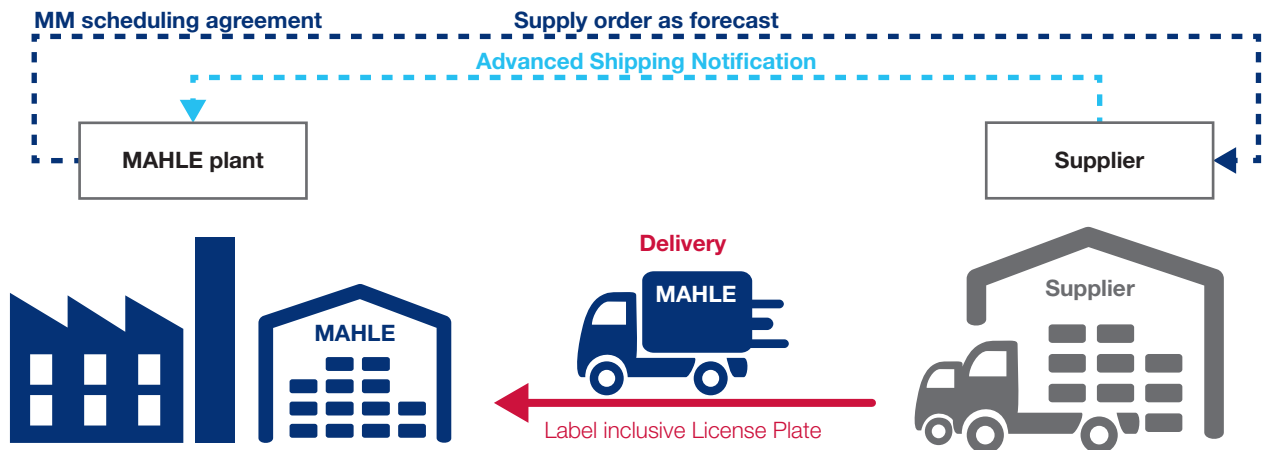


Fig. 4: Traditional schedule processing

**4.5.1.2
Schedule processing with
consignment contract**

In a departure from the traditional schedule processing described above, the consignment warehouse concept is additionally used for certain materials/suppliers. In this case, the supplier maintains a consignment stock at a logistical service provider (LSP) assigned by MAHLE or directly at an appropriate MAHLE plant

in accordance with a single stage delivery processing. Depending on the contract the supplier is responsible to deliver the appropriate demands either on his own authority or according to the supply orders.

The consignment stock will be agreed to individually in advance by the procurement department in cooperation with the logistics department.

The supplier is responsible for the stock levels at the external or MAHLE internal consignment stock.

By using the EDI, the LSP in abbreviations or the appropriate MAHLE plant make information available on each work-day about stock levels and consumption.

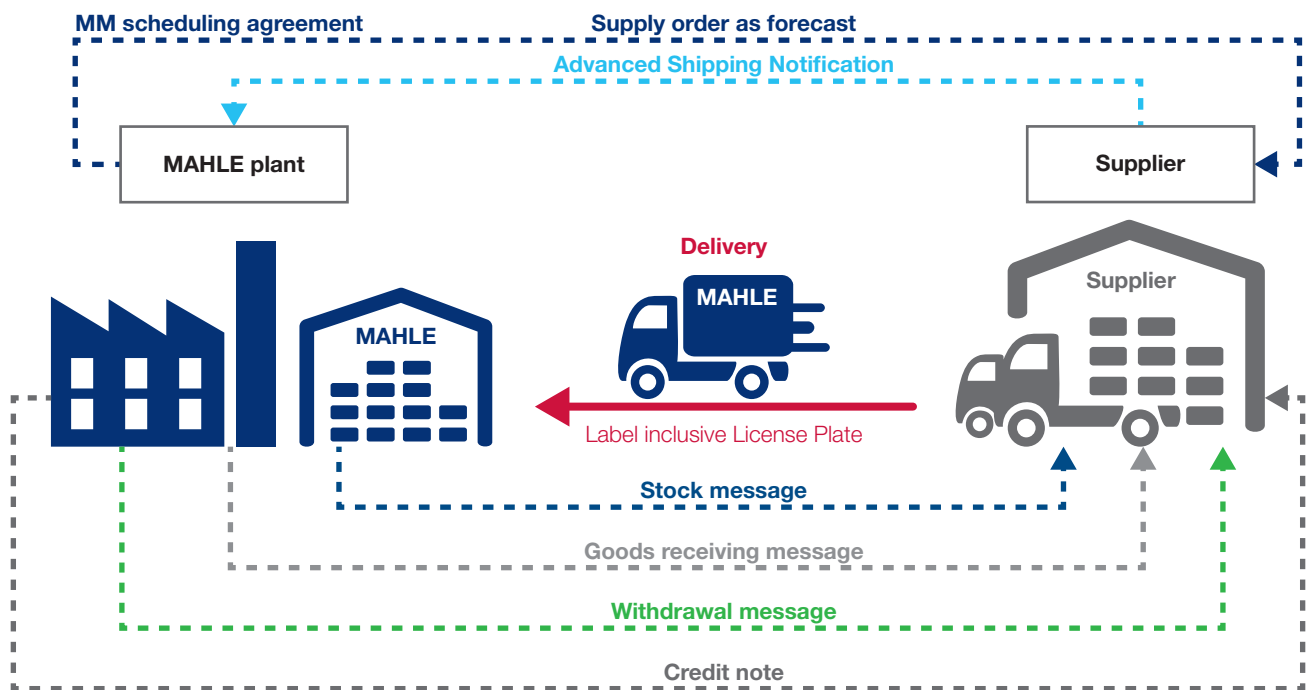


Fig. 5: Consignment warehouse processing

The following standard formats are provided for the individual types of notification:

Message type	VDA	EDIFACT
Supply order	4905	DELFOR D97A
Advanced Shipping Notification	4913	DESADV D97A
Goods receiving message	4913 VA30	
Stock message	4913 VA35	
Withdrawal message	4913 VA36	

Tab. 3: EDI message types

4.5.2 Vendor Managed Inventory (VMI)

When using the VMI concept, the supplier assumes responsibility for the material requirements planning. The supplier does not receive any supply orders via the WebEDI platform; instead, he receives requirements and a projected inventory development for a defined period of time.

Minimum/maximum limits for specific material numbers, within which the inventory fluctuates, are agreed in advance with the MAHLE plant.

The inventory development is simulated for the future, depending on requirements and the current inventory levels. The supplier is responsible for entering planned receipts in the VMI monitor so that the projected inventory remains within the inventory limits agreed upon with MAHLE.

To provide a better overview, the periods are color-coded depending on the projected inventory level:

- 1. Green**
The projected inventory lies within the minimum and maximum inventory limits
→ Target state
- 2. Blue**
The projected inventory lies above the maximum
→ Inventory level is too high
- 3. Orange**
The projected inventory lies below the minimum
→ Inventory level is too low
- 4. Red**
The projected inventory lies below zero
→ Shortfall

The great advantage of such a procedure is that the supplier has a detailed overview of the future requirement situation of the receiving plant, and can thus optimize his internal processes and plans accordingly as long as the inventory level lies within the defined limits.

On the day of delivery, an ASN must be created for the planned receipt and packaging. This is similar to the previously described process in chapter 4.2.2.

This procedure is particularly suited for parts with relatively constant requirements.

Contacts:
Anna Sakova (Supplier Management Logistics BU2 Europe), Marco Boll (IT)

Kennzahl	Initial	10.04.2015	11.04.2015	12.04.2015	13.04.2015	14.04.2015	15.04.2015	16.04.2015	17.04.2015	18.04.2015	19.04.2015	20.04.2015	21.04.2015	22.04.2015	23.04.2015
Produkt/Kundenlokation/Kennzahl															
70564408															
2270															
• Bedarf	8.750					2.408	5.184	4.020				6.912		5.184	
• Geplante Zugänge															
• Unterwegsmenge															
• Projizierter Bestand	15.957	15.967	15.967	15.957	15.957	13.548	8.365	4.339	4.339	4.339	4.339	-2.673	-2.673	-7.767	-7.767
• Mindestvorschlag							2.972	6.998	6.998	6.998	6.998	13.910	13.910	19.094	19.094
• Maximalvorschlag	5.686	5.686	5.686	5.686	5.686	7.993	13.177	17.203	17.203	17.203	17.203	24.115	24.115	29.299	29.299
• Mindestbestand	11.337	11.337	11.337	11.337	11.337	11.337	11.337	11.337	11.337	11.337	11.337	11.337	11.337	11.337	11.337
• Höchstbestand	21.542	21.542	21.542	21.542	21.542	21.542	21.542	21.542	21.542	21.542	21.542	21.542	21.542	21.542	21.542

Fig. 6: VMI-product view

Produkt	Produktbeschr.	ME	LpB	GZ AH	I	PD1	PD2	PD3	PD4	PD5	PD6	PD7	PD8	Dauer	RW BZ	RW AH	PBlB BZ	PBlB AH
70360827	EW0_0001__00_0012Platine Z	ST	25.914	0										48.00	9.999.00	9.999.00	20.118	20.118
70518334	KH_0020__06 Platine Z	ST	3.355	0										48.00	17.43	15.43	3.355	3.355
70564408	KH_0020__14 Platine Z	ST	24.713	262.080										48.00	7,63	9,63	15.957	15.957

Fig. 7: VMI-Overview

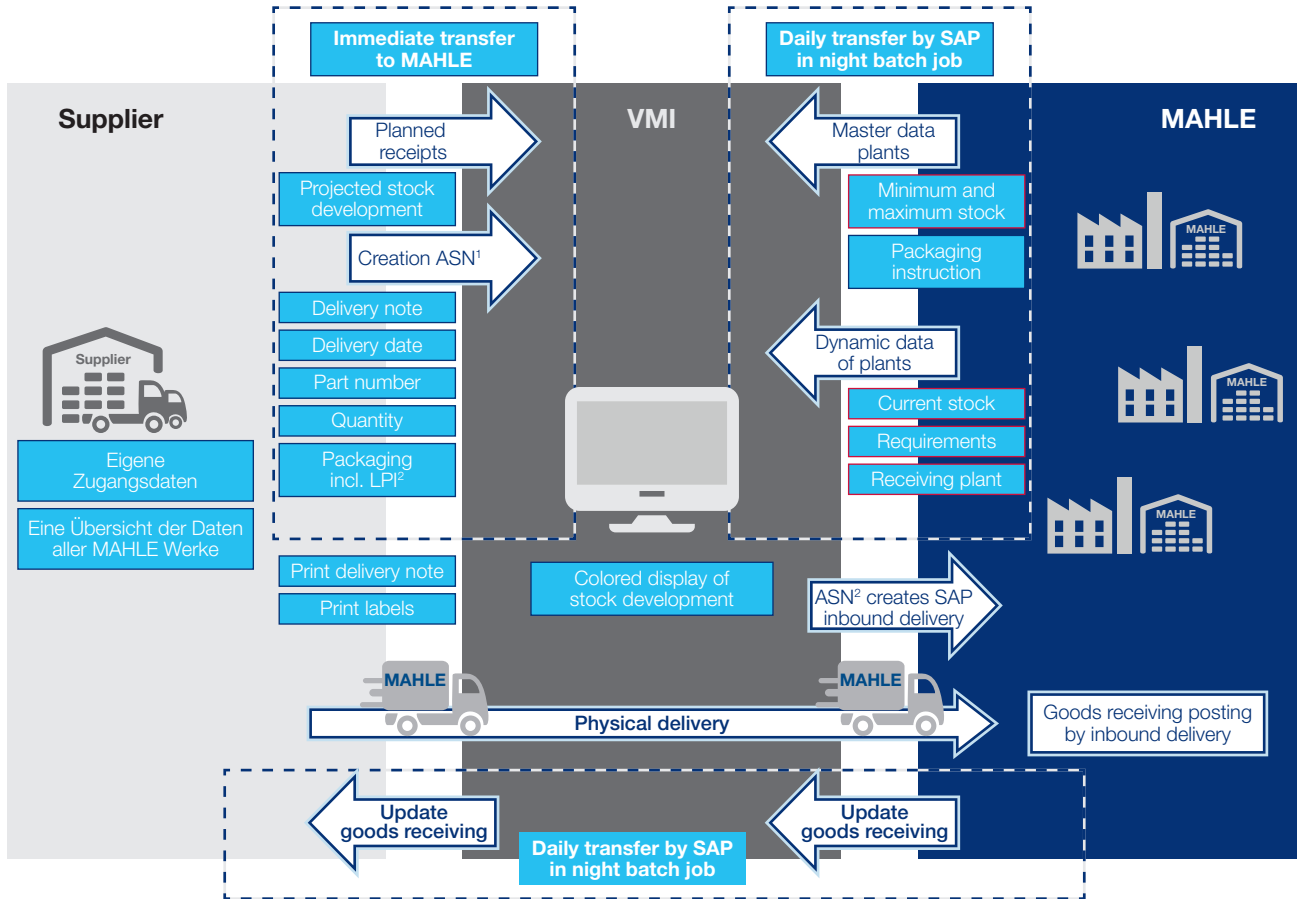


Fig. 8: Process description VMI at MAHLE

¹ ASN = Advanced Shipping Notification
² LPI = License Plate → Packstücknummer

4.5.3 Supplier Kanban

In the Kanban process, as the name already implies, cards (Kanban = card) are used for either physical or electronic control. As soon as a container is empty at the MAHLE plant, a kanban card is assigned the “empty” status and sent to the supplier.

Depending on the agreement, the supplier may collect kanban cards and fill the kanban warehouse again once a certain

number of cards has been reached. Color-coded limits are agreed upon for this.

All red cards must be replenished, all yellow cards may be replenished, and green cards mean there is currently no demand. Upon delivery to the MAHLE plant, the kanban cards are given the “full” status again.

The advantage of this procedure is that the supplier is directly informed about the goods that were taken from the plant and only those goods are thus replen-

ished. The concept therefore embodies a self-regulating control loop and is used for products with unchanging requirements and with a usually relatively short distance between the supplier and MAHLE.

Individual Kanban arrangements can be agreed upon between the supplier (depending on the product and general conditions), the MAHLE plant and the central supplier management logistics.

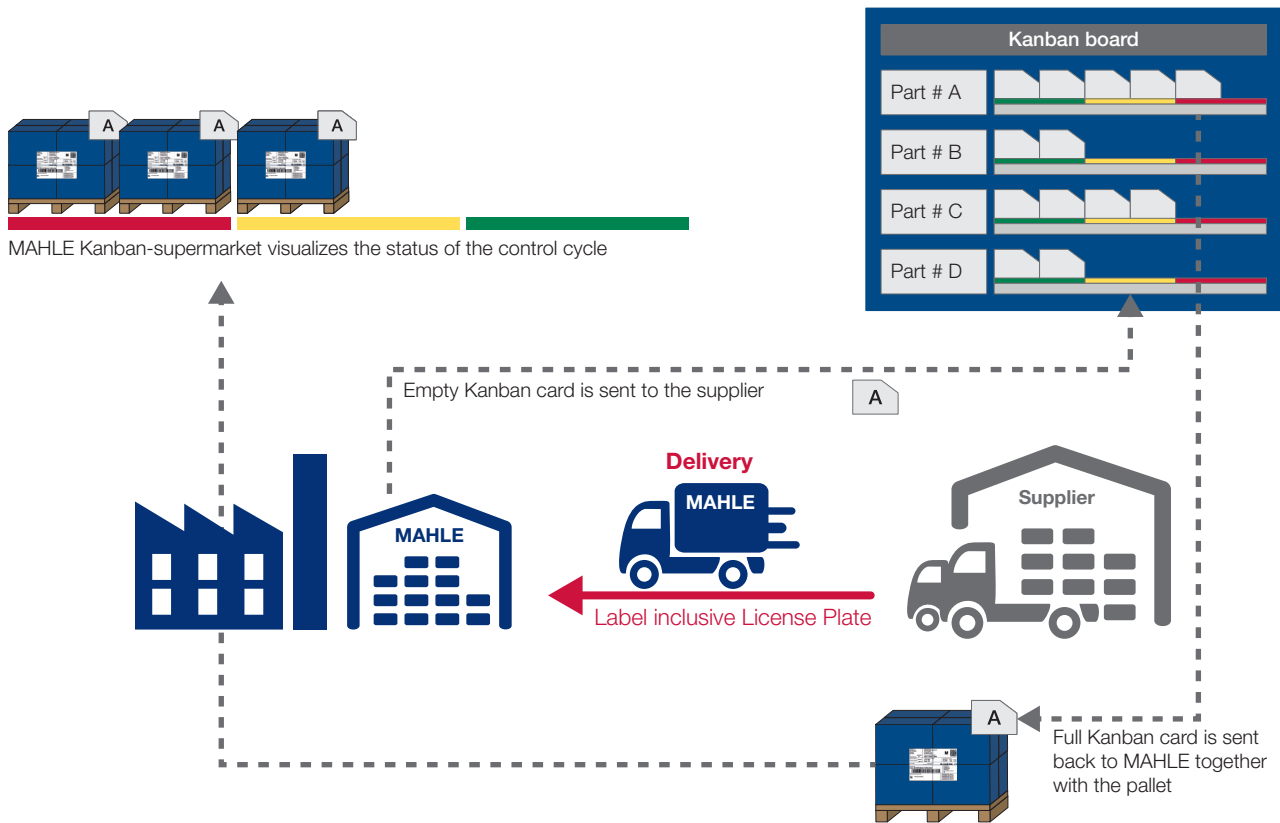


Fig. 9: Example of Kanban process

4.6 Accompanying documents

The supplier is responsible for the orderly establishment of the delivery documents in accordance with the respective standards. The supplier ensures that all required data and information for the transport logistics are completely documented and free of errors on the shipping papers as well as on the EDI transmissions.

The freight forwarder must receive a freight forwarding order and if required the export documents. The delivery note must be attached to the package in accordance with section 4.6.2.

The following standards are required for the accompanying documents:

Material tags

- GTL standard transport label
(GTL → Global Transport Label)

Delivery note/accompanying document

- DIN 4994 Delivery note
- VDA 4912 EDI accompanying document

Freight forwarder order/waybill

- VDA 4922 Forwarder order/waybill
(domestic transport)

All documents must be in the local language of the recipient or in English.

4.6.1 Material tags

Clear, systematic labeling of products and transport units allows easy identification. Packaging units must always be labeled with uniform, standardized, and barcode-readable transport labels that are described in the following chapter.

Representatives from Europe (Odette), Japan (JAMA/JAPIA), and North America (AIAG) have jointly developed a “Global Transport Label” (GTL) standard that can be used worldwide for supplier and customer relationships.

For this standard the new VDA guideline 4994 “Recommendation for utilization of the Global Transport Label (GTL)” has been published in March 2016.

MAHLE has complied with this standard in the design of its transport label, which suppliers must use for labeling goods.

There are three different forms of the GTL:

- Master Label for homogeneous loading unit
- Single Label for simplified loading unit or inner packaging
- Single Label in KLT format for inner packaging

Single Labels for simplified loading unit or inner packaging are used for containers with no subunits (e.g., cage pallets).

For containers with two-layer packaging, with the same material found in each small load carrier (e.g., pallets of SLCs), the pallet is given a master label for homogeneous loading unit, while each small load carrier (SLC, carton, etc.) is given a single Label in KLT format for inner packaging.

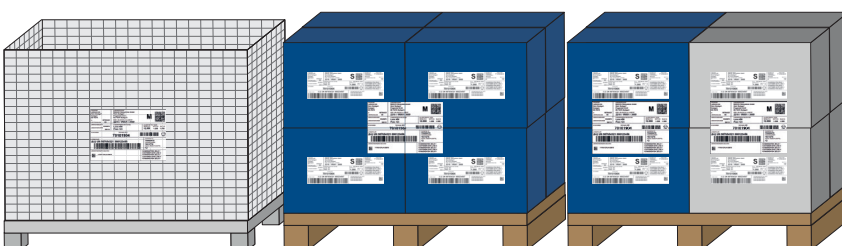


Fig. 10: Use of Master and Single labels

In the case of mixed pallets, each SLC is given its own single Label in KLT format and additionally there needs to be a master label for homogeneous loading units for each part number on the pallet. Agreements to the contrary must be coordinated with the MAHLE plant receiving the delivery and the central logistics department. The labels differ in size and in the information contained to some extent.

The license plate/Package ID is the decisive element. It is a package serial number that is made up as follows:

Qualifier

+ UN

+ globally unique DUNS Nr (9-digit number filled in).

+ sequential package serial number (9-digit number, with leading zeros filled in)

Example: 1J UN 987654321 000000001

The package serial number is not allowed to repeat within one year.

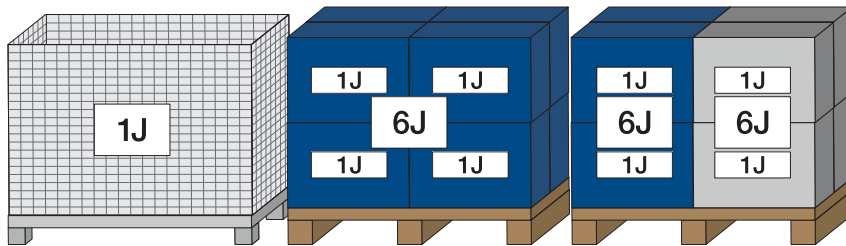


Fig. 11: Qualifier License Plate

The qualifiers can be divided into the following two cases:

Single-layer packaging:

- Big load carrier has the qualifier 1J

Two-layer packaging:

- Big load carrier has the qualifier 6J
- Small load carrier has the qualifier 1J




If small load carriers with several different material numbers are transported on one big load carrier, the individual small load carriers are, by default, to be labeled with a KLT label with qualifier 1J and additionally for each material number a master label with qualifier 6J needs to be put on the big load carrier.

Deviations from this system must be agreed with the relevant plant and the central logistics planning.

The quality of the transport label should be such that it remains visually and machine-readable at all times, despite environmental influences and transport damage at the place of delivery.

The transport labels for small load carrier packaging must have a paper quality of $\geq 140 \text{ g/m}^2$.

A more detailed description of the layout and content of the MAHLE GTL can be found in the currently valid "Implementation Guideline Global Transport Label (GTL) at MAHLE".

VERSENDER Lieferant AG Werk Stuttgart Stuttgart DE-70376 ID: 987654321 URSPRUNGSLAND: DE	WARENEMPFÄNGER MAHLE Filtersysteme GmbH Werk Stuttgart Pragstraße 26-46 DE 70376 Stuttgart WERK / ABLADESTELLE / LAGERORT 2210 / 1R001 / 3000	M 
LIEFERSCHENNUMMER 12345678 LIEFERANTENNUMMER 399110	KUNDENSPEZIFISCHES ROUTING Linie 456 Platz 123	ETA 2017-06-19 / 12:00 MENGE (PCS) NETTO KG BRUTTO KG 12.000 1.200 1.300
SACHNUMMER Schraube ABC 70101904		
LICENSE PLATE (6J) UN 987654321 000123456 		PACKMITELTYP 70669470 CHARGENUMMER 1631276 ANZAHL INNERE PACKMITTEL 12
LIEFERANTENSPEZIFISCHE DATEN  1T1631276;A126873	KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATE LINE 4 KUNDENDATEN ZEILE 5	




VERSENDER Lieferant AG Werk Stuttgart Stuttgart DE-70376 ID: 987654321 URSPRUNGSLAND: DE	WARENEMPFÄNGER MAHLE Filtersysteme GmbH Werk Stuttgart Pragstraße 26-46 DE 70376 Stuttgart WERK / ABLADESTELLE / LAGERORT 2210 / 1R001 / 3000	S 
LIEFERSCHENNUMMER 12345678 LIEFERANTENNUMMER 399110	KUNDENSPEZIFISCHES ROUTING Linie 456 Platz 123	ETA 2017-06-19 / 12:00 MENGE (PCS) NETTO KG BRUTTO KG 12.000 1.200 1.300
SACHNUMMER Schraube ABC 70101904		
LICENSE PLATE (1J) UN 987654321 000123456 		PACKMITELTYP PROD.DATUM 70669473 P 2016-06-01 CHARGENUMMER 1631276 TELEGENERATIONSSTAND 01
LIEFERANTENSPEZIFISCHE DATEN  1T1631276;A126873	KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATE LINE 4 KUNDENDATEN ZEILE 5	

Fig. 12: MAHLE Master label GTL format

VERSENDER Lieferant AG Werk Stuttgart Stuttgart DE-70376 ID: 87654321 URSPRUNGSLAND: DE	WARENEMPFÄNGER MAHLE Filtersysteme GmbH Werk Stuttgart DE 70376 Stuttgart WERK / ABLADESTELLE / LAGERORT 2210 / 1R001 / 3000	S 	PACKMITELTYP PROD.DATUM 70669469 P 2016-06-20 CHARGENUMMER 1631276 ANZ. PCS TELEGENERATIONSSTAND 01 12
LIEFERSCHENNUMMER 12345678 LIEFERANTENNUMMER 399110	KUNDENSPEZIFISCHES ROUTING Linie 456 Platz 123	ETA 2017-06-19 / 12:00 MENGE (PCS) BRUTTO NETTO 1.000 105 100	KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATE LINE 4 KUNDENDATEN ZEILE 5
SACHNUMMER Schraube ABC 70101904			
LICENSE PLATE (1J) UN 987654321 000234567 		LIEFERANTENSPEZIFISCHE DATEN Lieferatendaten Zeile 1 Lieferatendaten Zeile 2 Lieferatendaten Zeile 3 	

Fig. 13: MAHLE Single label GTL format

4.6.2 Delivery note

Three copies of the delivery note in accordance with DIN 4994 must accompany the goods. The delivery note must be attached on the front end by using a delivery note pocket. A dedicated delivery note must be established for each order.

If it is economically sensible for delivery notes to include several items, this may be agreed upon with the plant.

One delivery note set must be established for each unloading location.

The following data must be on the delivery note:

- Delivery note number
- Purchase order number or scheduling agreement number
- with position number
- MAHLE material number
- MAHLE description of commodities
- Total quantity and quantity of each packaging unit
- The type and quantity of transport packaging
- MAHLE part number, description and quantity of transport packaging
- Depending on the agreement with the MAHLE plant, the license plates of the master labels of the delivered containers

Muster GmbH
Musterstraße 815
D-70376 Stuttgart

(5) Account no. at recipient		(2) Notices of receipt and processing				Delivery note	
2220 MAHLE Filtersysteme GmbH Fertigung Lorch Maierhofstr. 1 - 3 D-73547 LORCH						(3) Number 16401547	
Customer number at supplier		(6) Freight		(7) Inbound delivery (actual)		(4) Shipping date 23.03.2016	
		Freight prepaid Unit EUR	Freight collect	Railway car	Carrier	(8) Invoice Number	
				Freight	External vehicle	Page 1 / 1	
				Express	Own vehicle	(9) from	
				Mail			
				Air freight			
(10) Your reference	(11) Purchase order number	Date	(12) Department	(13) Extension number	(14) Our order number		
(15) Additional data of orderer	(16) Shipping type	Freight prepaid (20) freight collect	(21) Picking type	(22) Shipment reference	(23) Gross weight	Total weight	(24) Net weight
(25) Ship-to address 2220 MAHLE Filtersysteme GmbH D-73547 LORCH					0,000	0,000	0,000
					(26) Receiving/unloading point		
(27) Item	(28) PO number / Ref. no.	(29) PO description (21) Packing type (details)		(30) Quantity	(31) UoM	(40) Item	
						Quantity (actual)	+ / -
							Comments
	000001	70311827 5500052750/00010 Batch:40648 Change number: Packing Information: 70669470 70669462 70669469		3024,000	1		
		KL_0229__-00 TEX20cover packed					
		KLT A1208		3	1		
		KLT 6428		3	1		
		1J000334692000003875		36	1		
		12 KLT 6428 à 84 ST					
		1J000334692000003888					
		12 KLT 6428 à 84 ST					
		1J000334692000003901					
		12 KLT 6428 à 84 ST					
Date	Notices of receipt	Quantity check	Quality check / Inspection report	Recipient	Invoice verification		
Name							
Number							

Fig. 14: Delivery note

4.6.3 Freight forwarder order/waybill

At least three copies of the freight forwarder order/waybill in accordance with VDA 4922 must be handed to the freight forwarder.

1) Shipper/Supplier Firma MAHLE Filtersysteme GmbH Industriestraße 28 D-71266 RENNINGEN		2) Suppliers-no. 1366408		3) B/L No.		Page: 1 / 1			
5) Loading Point Industriestraße 28		8) Shipment reference No. 0002490516		4) Contract No. of Carrier:		Shipping Order 6) Date 23.03.2016 7) Relations No. <input type="text"/> 9) Forwarder DHL Freight GmbH Industriestr. 28 71272 Renningen Fax. 06151 3909 11224 10) Forwarder No. 600858			
11) Consignee Nissan Motor Parts Center B.V. Hornweg 32 1044 AN AMSTERDAM NIEDERLANDE		12) Consignee No. 514413		13) Packlist Number		15) Shipping Note Forwarder			
14) Delivery Point AM1-				16) Arrival Date		17) Arrival Time			
18) Sign and No. Delivery note No.	19) Amount	20) Package	21) S F	22) Content	23) Net Weight KG	24) Gross Weight			
77266836	6	1200x1000 wooden pallet #	0	16546ED000	96	703			
77266837	11	1200x1000 wooden pallet #	0	1654630P00	176	1.133			
77266838	2	1200x1000 wooden pallet #	0	165461HC2A	32	416			
25) Sum		19		26) Volume/Loading Meters		27) 304			
28) 2.252				29) Dangerous goods classification		30) Dangerous Goods description			
31) Incoterm DDU Amsterdam		32) Value of goods		33) Transport insurance supplier to the amount of:		34) Reimbursement EUR			
35) Instructions				36) Customers Order Number SR071148 004		37) Assignment			
				38) Transport no.					
				39) Truck No.					
				40) Sort of Transport Truck		41) Allocation Code			
43) carrier acknowledgment: Above shipment complete and taken in proper condition. The securing of the cargo/load is done as described in Norm DIN EN 12195-1:2011 and the guidelines of the VDI 2700 "load securing of trucks". The loading personnel has made the final verification/inspection. The carrier of the transport is obligated to reorganize the securing of the cargo/load as described in the guidelines of the VDI 2700 and Norm DIN EN 12195-1:2011 if necessary. Date 23.03.2016 Time of Day 11:54:30				42) Carrier acknowledgment: above shipment complete and taken in proper condition					
Signature Driver				Signature and Stamp of the Consignee for receiving					
Signature Loader				44) The shipment contains					
				Euro Flat Pal. (FP)					
				Euro Gitter-Pal. (GP)					
				exchanged goods					
				Euro Flat Pal. (FP)					
				Euro Gitter-Pal. (GP)					
45) Our General Terms and Conditions according to the applicable regulations of the Department of Transportation						46) For Consignee			
(02) Supplier-no				(08) Shipment reference No.					

Fig. 15: MAHLE freight forwarder order in accordance with VDA 4922

4.6.4 Labeling changes

In order to immediately identify first delivery containers with

- a) a new component or
- b) a new MAHLE change index

during goods receiving process, these must be marked with a change label.

This change label must contain the following information

MAHLE	
Änderung - Neuteil / Change - New Part	
<i>MAHLE Werk / MAHLE plant</i>	<i>Lieferant / Supplier</i>
MAHLE Filtersyst. AT GmbH - St. Michael ob Bleiburg	Muster GmbH
<i>MAHLE Mat.Nr / MAHLE Part Number</i>	<i>Produkt Bezeichnung / Product Description</i>
77486905	OC__0194__-00 Leaf spring
<i>MAHLE Zeichnungsnummer und Änderungsindex / MAHLE drawing Nr. and change index</i>	<i>Bauabweichungsnummer / Deviation Request</i>
5214-57486905-S00 / 02	4657879
<i>Beschreibung der Änderung / Description of change</i>	
Diameter has been changed to 0.40 mm instead of 0.35 mm	

Fig. 16: Change label

5. Shipment of Goods for MAHLE

It is the objective of MAHLE to minimize the number of transports either by avoidance or by optimization or by combining of transports.

Therefore, FCA ("Free Carrier") Incoterms are generally agreed upon with the supplier. For product groups with specific transport require-

ments or in order to reduce costs, diverging Incoterms may be agreed if necessary.

Expenditures generated by non-observance of the following transport guidelines will be charged to the supplier

5.1 Delivery frequency

In consultation with the supplier, MAHLE reserves the right to specify and change the selected delivery frequency. Deviations from the specified delivery frequen-

cy by the supplier are only possible after approval by the responsible MAHLE logistics functions.

5.2 Routing Order

The routing order describes the procedure of transports, transported at the expense of MAHLE. It is issued by MAHLE (either via the respective plant or the central logistics) and transmitted to the suppliers via the usual means of communication per email or mail.

All relevant information such as the approved forwarding companies, the process of notification, the transit times etc. are described in the routing order in detail. The confirmation of the routing order has to be done by the supplier in writing within the prescribed period. Incurred extra costs caused by failure to observe the routing order must be borne by the supplier.

5.3 Transport processing

5.3.1 Packet shipments

The transport assignment for “freight collect” delivery conditions must be made by the supplier at the freight forwarder approved by MAHLE. Possible additional cost due to the assignment of unapproved freight forwarders must be paid by the supplier.

The supplier is responsible for the orderly determination of the gross weight and the average load weight of the shipment. Additional cost due to erroneous weight information must be paid by the supplier.

5.3.2 Truck, sea and air freight shipping

All packet shipments up to 30 kg, for that MAHLE is paying for the transport (Incoterm „EXW resp. FCA“) must be notified and handed over to the parcel service determined by MAHLE. Detailed information concerning the correct processing

of the parcels need to be taken out of the routing order. A shipment is defined as the sum of all goods of a sender to a recipient per day of dispatch that are loaded on a collecting vehicle.

All deliveries heavier than 30 kg, for that MAHLE is paying for the transport (Incoterm „EXW resp. FCA“), must be notified and handed over to the forwarding company or freight carrier determined by MAHLE. Detailed information concerning

the correct processing of the deliveries need to be taken out of the routing order. A shipment is defined as the sum of all goods of a sender to a recipient per day of dispatch that are loaded on a collecting vehicle.

5.3.3 Express shipments

Short notice, unplanned shipments are normally organized by the supplier and will be processed by the freight forwarder selected by the MAHLE logistics department. The respective MAHLE plant has always the authority to give the approval.

The cost of express shipments, which are the responsibility of the supplier, will be invoiced to the supplier. Express shipments, which are not approved by MAHLE, must always be paid by the supplier.

5.3.4 Provision

For “EXW supplier” or “FCA supplier” shipments, the provision of the goods must always be made on the shipping day starting at 8:00 a.m. The supplier must pay the cost for possibly required special activities, downtimes of the freight forwarder or unnecessary trips by

the freight forwarder if the provision is not made in time. The supplier and the freight forwarder have the right to amicably establish provision periods during normal business hours, however, at the latest until 4:00 p.m.

5.3.5 Loading

The loading must be done immediately after the vehicle is available. The following processing windows (loading of full loads, unloading of empties and administrative processing) are applicable assumed the loading units are available within the agreed upon loading time window:

- Parcels and express deliveries immediately
- Shipments up to 2.5 to max. 60 minutes
- Partial and total loads max. 90 minutes

The additional expenditures will be invoiced to the originator if the supplier causes inadequately long processing

times. The fault of third parties (e.g. customs processing) is excluded from this regulation.

The supplier must guarantee the on-time delivery of the goods based on his own initiative if an orderly pick-up by the freight forwarder is not possible due to faults of the supplier (e.g. goods are not available at the forecasted time, unreasonable waiting times, etc.).

The supplier must organize the transport on his own expense to guarantee an on-time delivery if the defined pick-up time window for freight forwarders, e.g. as part of milk runs, are not met due to a fault of the supplier.

5.3.6 Unloading

Unloading at the MAHLE plant can in principle be carried out from the side or from behind, however it is not possible to do both at every plant.

The following options are available:

Plant		Unloading	
		Side	Rear
Germany	MAHLE Filtersysteme GmbH, Lorch	X	
	MAHLE Filtersysteme GmbH, Öhringen	X	X
Austria	MAHLE Filtersysteme Austria GmbH, St. Michael	X	X
	MAHLE Filtersysteme Austria GmbH, Mattighofen		X
France	MAHLE Filtersysteme France SAS, Seboncourt	X	X
Great Britain	MAHLE Filtersystems UK Ltd., Telford	X	X
Romania	MAHLE Componente de Motor SRL, Timisoara	X	X
Turkey	MAHLE Filtre Sistemleri A.S., Gebze	X	X

Tab. 4: Unloading possibilities

5.3.7

Shipments of dangerous goods

The dispatch of reduced quantities (within the hazardous goods definition) and any goods to be declared as hazardous goods may only be brought into circulation under consideration of valid legal regulations for hazardous goods. The supplier is obligated, when notifying the goods, to transmit to the forwarding agent the classification according to ADR (European Agreement concerning the international carriage of dangerous goods

by road) and any special demands on the transport (demand on the means of transport, equipment etc.). Additionally, the supplier must create all documents and papers necessary for the shipping/ transportation of the hazardous goods and transmit them to the freight forwarder upon collection latest. The labelling of the loading units by the supplier must be done according to the legally specified conditions.

5.3.8

Return shipments

Return shipments, which are generated based on a fault of the supplier, will be organized by MAHLE, assumed no other agreements were made in writing.

The supplier is responsible for the cost.

5.4 Confirmation of arrival

The European MAHLE plants in countries outside Germany proactively generate for all deliveries from Germany collected within one calendar month physically in the incoming goods area of the respective plant a cumulative certification of entry and transmit it by electronical means (currently via email) to the suppliers. In individual cases, the plants create cumulative certification of entry per quar-

ter. This is in the discretion of the respective issuing plant.

The creation of the cumulative certification of entry and also its transmission by electronical means (by email) is expressly permitted according to the BMF (Federal Ministry of Finance) – with regard to the letter dated 16. September 2013.

6. Foreign Trade Issues

6.1 Invoice for customs clearance

For customs purposes the supplier must add to the shipping documents a commercial invoice in duplicate in the specified necessary language (dependent on the recipient's country). Deviations to this are only permitted with prior written approval by MAHLE.

In case of customs relevant deliveries the following items must be separately shown in the invoice:

- the correct declaration of the value (purchase price of the goods)
- costs not included in the price (e.g. commissions, broker fees,
- development costs, license costs, equipment costs, free issue parts from MAHLE, etc.)
- costs included in the price (e.g. assembly costs, freight costs etc.)
- cost of repair according to material and personnel costs

Free deliveries also require a declaration of value including the indication „For Customs Purposes Only“. On the invoice the reason for the free delivery must be indicated (e.g. free sample delivery) If in case of imports or exports further official documents for the intended use of the delivery objects are required, the supplier is obligated to deliver these documents without delay on his own expenses and make them available to MAHLE immediately.

MAHLE reserves the right to invoice the supplier for possible additional expenditures and disadvantages due to not correctly processed customs issues.

6.2 Proof of preference, certificate of origin and indications of origin

The supplier is obligated to bindingly inform MAHLE about the origin of his goods especially the non-preferential origin and the preferential origin, by making the original data in written form (e.g. European Union (EU): long-term supplier declaration according to UCC; US: CBP Form 434 (NAFTA declaration of origin etc.) available within a period of 14 days after receiving the request.

The supplier commits to provide MAHLE all relevant foreign trade and export control data (especially customs tariff numbers according to HS-Code, the non-preferential and preferential origin, the export control data (e.g. export control classification according to the European Export List, export control classification number according to the US (Re) export regulations (ECCN, ERA etc.), US-percentage if goods have an US origin, Binding Tariff Information (BTI) etc.) within a period of 14 days after receiving the request.

The supplier agrees to issue the declarations of origin explicitly on the forms of MAHLE. Own documents and tem-

plates of the supplier are not accepted by MAHLE. The supplier commits to communicate changes in the origin of the goods in written form immediately to MAHLE. If the supplier delivers goods, that can get preferential treatment in the country of importation, he commits to enclose a proof of origin (e.g. movement certificate A.TR, EUR1 etc.). The certificate of origin must be issued for each related delivery.

If a certificate of origin is required because of other local import regulations in the country of importation, the supplier must make this certificate available for MAHLE for each delivery related at his own expense.

Each change on the provided declarations (e.g. origin, customs tariff number, export control data, foreign trade data etc.) is to be shown to MAHLE at once.

The supplier must support MAHLE with all necessary and required instruments that are necessary for the reduction or minimization of MAHLE's payment obligations concerning duties.

6.3 Security of the supply chain security

The supplier commits to ensure the security of the supply chain security. If needed and required by MAHLE the supplier commits to confirm it by adequate proofs (for example AEO certificate, security declaration, C TPAT certificate etc.) The

supplier has the obligation to ensure comparable due diligence with his business partners.

6.4 Export control, export regulations and instructions

The supplier is responsible to inform MAHLE if goods (products, equipment, software or technology) are subject to measures of prohibition or restriction on exportation in the country of production and/or country of delivery.

If there is a requirement for an export license / authorization for the goods (products, equipment, software or technology) delivered to MAHLE by the supplier according to the European exports restrictions (goods are subject to the Dual use or armaments etc.) and their national implementation, the supplier commits to inform MAHLE about it in written form.

Additionally the supplier commits to inform MAHLE, if the goods (products, equipment, software or technology) are

subject to the US (Re) export control regulations.

The supplier also communicates the significant classification number (e.g. export control classification according to the European Export List, export control classification number according to the US (Re) export regulations (ECCN, ERA etc.) if required, etc.) and possible export license/authorization requirements for goods (products, equipment, software or technology) to MAHLE.

The supplier is obliged to inform MAHLE about any possible change of the authorization requirements of his delivered goods because of legislative changes, regulatory determinations, technical changes etc.

7. Packaging

7.1 Requirements for the packaging

The specifications for the packaging are based on the following requirements:

- Packaging suitable for transport and handling
- Damage free delivery
- Compatibility to transport and storage systems of the individual MAHLE plants
- Increased use of reusable packagings, otherwise
- Use of recyclable nonreturnable packagings
- Optimal utilization of the containers
- Stackability
- Protection against dirt

The supplier bears the responsibility for ensuring the packaging is suitable for transport and handling, thus assuming damage-free delivery.

Returnables are made available and delivered by MAHLE undamaged and “clean-swept”.

Special attention must be paid to the fact that

- old product labels are removed;
- the load carriers are undamaged and in accordance with the component requirements.

The supplier is liable for quality reduction caused by the use of damaged or contaminated packaging.

For material with special requirements concerning cleanliness, special regulations concerning take-over of cleaning process of the returnables apply. These special regulations need to be defined in the packaging data sheet.

Detailed exchange capability criteria have been specified for Euro flat pallets and Euro barred boxes—please refer to recommendation EPAL: www.gpal.de.

Required repairs for reusable packagings must be performed in accordance with the EPAL recommendation.

For wood packaging materials, adherence to the regulations of the receiving country is required in accordance with the IPPC standard ISPM No. 15.

Load carriers and packaging pieces with a weight above 40 kg must be fork lift accessible (min. 100 mm fork lift height). The weight of transport packagings (small load carrier, cardboard) with bulk cargo must not exceed 15 kg. The transport packagings can weigh up to 50 kg (tare) if the parts are also packaged (for example in PE bags or small cardboard boxes).

Further information and specifications can be found in the currently valid Packaging Manual of MAHLE Filter systems.

7.2 Standard load carrier catalog

MAHLE mainly uses the following as reusable packaging or exchange packaging:



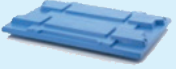
- VDA small load carriers
- Euro barred boxes in accordance with UIC 435-3

- Euro flat pallets in accordance with UIC 435-3






Other load carriers may also be used upon agreement with the MAHLE plant.

The following load carriers are used as standard:

Big Load Carriers (BLC)

Description	MAHLE part number	Outer dimension [mm]			Inner dimension [mm]			Load volume [l]	Tara weight [kg]	Returnable packaging	Picture
		L	W	H	L	W	H				
EURO wooden pallet 1200x800	70669470	1200	800	100	1200	800	100		24.00	X	
Cage pallet 1200x800x1000	70669473	1240	835	970	1200	800	810		70.00	X	
KLT A1208 end plate	70669462	1210	810		1210	800			6.10	X	

Small Load Carriers (SLC)

Description	MAHLE part number	Outer dimension [mm]			Inner dimension [mm]			Load volume [l]	Tara weight [kg]	Returnable packaging	Picture
		L	W	H	L	W	H				
R-KLT 3215	76686224	300	200	150	243	162	129	5.3	0.57	X	
R-KLT 4315	76673636	400	300	147	346	265	109	10	1.3	X	
R-KLT 6415	70328522	600	400	147	544	364	109	22	2.2	X	
RL-KLT 6147	70357850	600	400	147	568	370	132	25.0	1.82	X	
RL-KLT 6280	70669467	594	396	280	544	359	262	51.9	2.67	X	

Tab. 5: Standard load carrier catalog

7.3 Labeling of packaging units

7.3.1 Cage pallet

The labels are to be attached generally loss-proof at the front side. Only with the agreement of the receiving plant it is possible to attach the labels loss-proof at the upper side of the long side of the cage pallet.



Fig. 17: Labeling cage pallet

Each packaging unit must be clearly marked. The labeling of the load carrier using the MAHLE GTL must be clearly legible and not exceed the external dimensions of the load carrier. In addition, the label must not be covered by pack-

7.3.2 Small load carrier

The labels for small load carriers must be attached at the slots designated for this purpose and must be fastened with glue dots that can be removed completely. The small load carriers must be arranged on the pallet in such a way that all labels of the small load carriers placed visible on the pallet from the outside can be read.

The labels for the entire pallet must be placed at the same position as for the cage pallet, i.e. on a small load carrier or on the encasement.



Fig. 18: Labeling pallet with small load carriers

aging materials. The labels of the pallet need to be attached at the front if it is not agreed deviating together with the receiving plant. Labels need to be attached lossproof (e.g. by protecting with residue-free stickers or a pocket).

7.3.3 Cardboard box

The cardboard boxes must be arranged on the pallet in such a way that all labels of the cardboard boxes placed on the pallet and visible from outside can be read. The marking for the entire pallet must be placed at the same position as for the pallet, i.e. on a cardboard boxes or on the encasement.



Fig. 19: Labeling pallet with cardboard boxes

7.3.4 Bag (or smallest load unit)

If the smallest load unit is a bag or something similar, it must also be labeled with the following minimum information:

- MAHLE part number
- Quantity
- Production date
- Best-before date (if required by the MAHLE plant)

7.4 Processing of empties

The supplier must ensure the early availability of the required transport containers for his delivery quantities by contacting the receiving plant early and ordering the required amount of reusable containers.

The transport containers must be used for the transport of the materials ordered and not for storage purposes. It needs to be defined in advance together with MAHLE how many days the supplier is entitled to have returnables for (see chapter 7.2). He must ensure that even in the event of missing transport containers, the supply for the MAHLE plants is secured.

The supplier must carry out a monthly balance of the empties accounts with the responsible MAHLE container management. Unless otherwise specified, packaging account statements are created by the 10th working day of the following month and are made available to the supplier for approval.

Required alternative packagings must be coordinated in advance with the MAHLE plants (please refer to section 7.1 Packaging data sheet).

7.5 Accounting for empties

Together with the responsible MAHLE container management, the supplier must execute a monthly balance of the empties accounts.

Packaging account statements will be established at the 10th working day of the month and made available to the supplier for balancing, assumed no other provisions have been made. The review of the account statement must be completed within 14 days.

The documented accounting stocks will be viewed as accepted and legally binding in accordance with the inventory processing if no objections are raised during this period at the plant responsible for the accounting. Difference notifications must be made in writing to the responsible MAHLE container management.

7.6 Quantity differences of reusable packaging

Quantity differences or loss are to be compensated for immediately in accordance with the principle of causation at the value of replacement.

8. MAHLE Supply Concept

The MAHLE supply concept (MSC) describes the supply process incl. packaging and its circulating stock calculation as well as the delivery

conditions, and is defined during the project phase in cooperation with the MAHLE receiving plant and the supplier.

The aim of the MSC is to establish and ensure a standardized, lean and stable supply chain from the outset.

8.1 Packaging data sheet

The packaging requirements as specified by the MAHLE plant are determined between the MAHLE receiving plant and the supplier in the packaging data sheet. The packaging data sheet provided by MAHLE to the supplier must be sent back to MAHLE before the first delivery.

If required, a packaging test must be executed in cooperation with the receiving plant. In addition to the standard packaging, alternative packaging must always be agreed upon with the receiving plant and documented under the “Alternative Packaging” tab on the form. Packaging changes must be coordinated in advance with the respective MAHLE plant.

Nonreturnable packagings must be used if no packaging was defined. The dimensions of the package must not exceed 1,200 x 800 x 1,000 mm and must be at least stackable twice.

Packaging data sheet: Series

MAHLE production plant: MAHLE Filtersysteme Austria GmbH St. Michael | Plant: 0276 | Version: 1 | Date: 01.02.2016

1. Contact data / release

MAHLE SAP-no: 2270 | Name of MAHLE plant / supplier: MAHLE Filtersysteme Austria GmbH St. Michael | Released from: Peter Müller | Date: 01.02.2016 | Phone: 0711-801-1 | Ext.: 0 | Fax: 0711-801-1 | Email: info@mahle.com

Supplier: 2270 | Name: Maier GmbH | Max Mustermann | 01.02.2016 | 06664424 | 00

2. Product data

Identification	Article code	Unit	Weight (kg)	Dimensions (mm)
MAHLE KL_0241_02 2012 filter washing	79645021	pc	0.25	1 10 20
Supplier	02394			

4. Instruction / Comment

Description of the production process, tool, and absorption for ISO. MAHLE pays the packaging costs and orders the empty, supplier orders 3 days before delivery the empty at the MAHLE plant.

Description of the production process, tool, and absorption if necessary. Shippers are shipped from MAHLE for the existing amount/CC, then washed and from there sent to the supplier; supplier pays the washing process at the external service provider and is responsible for the clearance of the empty.

3. Packing bill of material

Package type	QTY	SP	Identification / Description	MAHLE	Supplier	Ext. Dimensions (mm)	Int. Dimensions	Net weight per Unit (kg)	Stacking	Procurement / Dimensioning	Empty accounting				
Other packaging						1200	800	1000		MAHLE					
Standard LLC 7' large pallet															
Other LLC															
Pallet	1	*	wooden pallet 1200x800		70564712	1200	800	100	24	Maier	Yes				
Standard SLC	16	*	SLC-IT 1219		70562224	300	200	150	200	162	129.5	5.97	54.72	Maier	Yes
Other SLC*															
Carton															
Inner packaging															
Fast bag															
Coating of LLC															
Cover															
Divider	1	*	KLTA100 cover		70564452	1200	800	6			6	5	Maier	Yes	
Inter															
Other															

Other (e.g. shrinkage foil, strapping etc.):

Weight (kg) per bundle	Amount of filling per unit	Number of	Stackability	Delivery (in pieces)					
net	gross	bundle	Layer	LLC	Carton	Layers per LLC	Cartons per layer	Minimum for size	Rounding quantity
0.25	0.25	16	1	100	5	16	5	340	350

Shipping: Length (cm) / Cross (cm)

Photos: outer packaging (blue pallet) and inner packaging (blue container).

Signature MAHLE: Peter Müller | Signature Supplier: Max Mustermann

* LLC - large load carrier | * SLC - small load carrier | * FP - in stable packaging

Die Verpackungsbilanz ist Bestandteil der "Logistiklinie der MAHLE Filtersysteme GmbH"

Stand: 29.01.2016

Fig. 20: MSC – Packaging data sheet

8.2 Calculating the circulating stock of reusable packaging

The form is filled out based on the quantities to be supplied, transport times, delivery cycles, etc.

In the event that the supplier must procure reusable packaging, the form shows the quantity that the supplier needs

to have ready for a functioning cycle. MAHLE must not advance anything. The MAHLE container management at the receiving plant is the contact point for questions regarding the process, etc.

Calculation of circulating stock of reusable packaging **MAHLE**

Client: MAHLE Filtersysteme Austria GmbH SL Michale | Version: 1 | Date: 01.02.2016

Customer packaging Supplier packaging MAHLE internal transport packaging

1. Product Data

Identification	MAHLE article code	Quantity / bundle	working days / year
KK_0341 -00 form sealing	7564321	9.600	230
			working days / month
			20

2. Determination of circulation in working days

Input number of working days during the respective process for 1 bundle

Period (after SOP)	1	2	3	4	5
Year	2016	2017	2018	2019	2020
Planned quantity per year	100.000	950.000	800.000	2.000.000	1.500.000
Pieces / Month	8.511	25.787	42.553	170.213	127.660
Bundles / Month	1	3	4	18	13

Input ACB Tool (Base: Peak)

	Loop days	Number of bundles
Stage 2 WE	4,00 WD	3,5 LU
Stage 5 WE	7,00 WD	6,2 LU
Stage v. WE	1,00 WD	0,9 LU
Stage LH	5,00 WD	4,4 LU
Total	17,00 WD	16 LU

	Loop days	Number of bundles	Number of bundles	Number of bundles	Number of bundles	Number of bundles
Supplier						
1. Empty stock (incl. washing)	1,00 WD	0,0	0,2	0,2	0,9	0,7
2. Production	1,00 WD	0,0	0,2	0,2	0,9	0,7
3. Stock of finished goods (incl. safety stock)	5,00 WD	0,2	0,8	1,1	4,4	3,3
Customer						
4. Transport zu MAHLE	1,00 WD	0,0	0,2	0,2	0,9	0,7
MAHLE						
5. Raw material stock	3,00 WD	0,1	0,5	0,7	2,7	2,0
6. Production	1,00 WD	0,0	0,2	0,2	0,9	0,7
7. Empty stock (incl. washing)	1,00 WD	0,0	0,2	0,2	0,9	0,7
Ext.						
8. Transport to service provider	1,00 WD	0,0	0,2	0,2	0,9	0,7
Washing	2,00 WD	0,1	0,3	0,4	1,8	1,3
Customer						
10. Transport empties to supplier	1,00 WD	0,0	0,2	0,2	0,9	0,7
	17,00 WD	0,1	3,1	4,4	16,1	12,1

3. Verpackungsdaten

QTY.	RP ¹⁾	Identification / Description	Owner of RP ²⁾	MAHLE-No	Price / RP	Required stock of RP of the respective period					Investment per period					Total		
						2016	2017	2018	2019	2020	2016	2017	2018	2019	2020			
		Standard LLC / cage pallet																- €
		Other LLC																- €
1	x	wooden-pallet 1200x800	MAHLE	70669470	10,00 €	1	3	4	16	12	10 €	30 €	20 €	130 €	- €	- €	180 €	
96	x	R-KLT 2215	MAHLE	75643224	4,50 €	96	288	384	1.536	1.152	432 €	864 €	864 €	5.616 €	- €	- €	7.776 €	
		Other SLC															- €	
		Carton															- €	
		Foil bag															- €	
		Clothing of LLC															- €	
		Cover															- €	
1	x	KLT A1208 cover	MAHLE	70669462	15,00 €	1	3	4	16	12	15 €	30 €	30 €	195 €	- €	- €	270 €	
		Inlay															- €	
		Other															- €	
Total											457 €	914 €	914 €	5.941 €	- €	- €	8.226 €	

¹⁾ RP = re-usable packaging ²⁾ owner of the re-usable packaging: MAHLE, Customer, Supplier

Fig. 21a: MSC – Calculation of circulating stock of reusable packaging

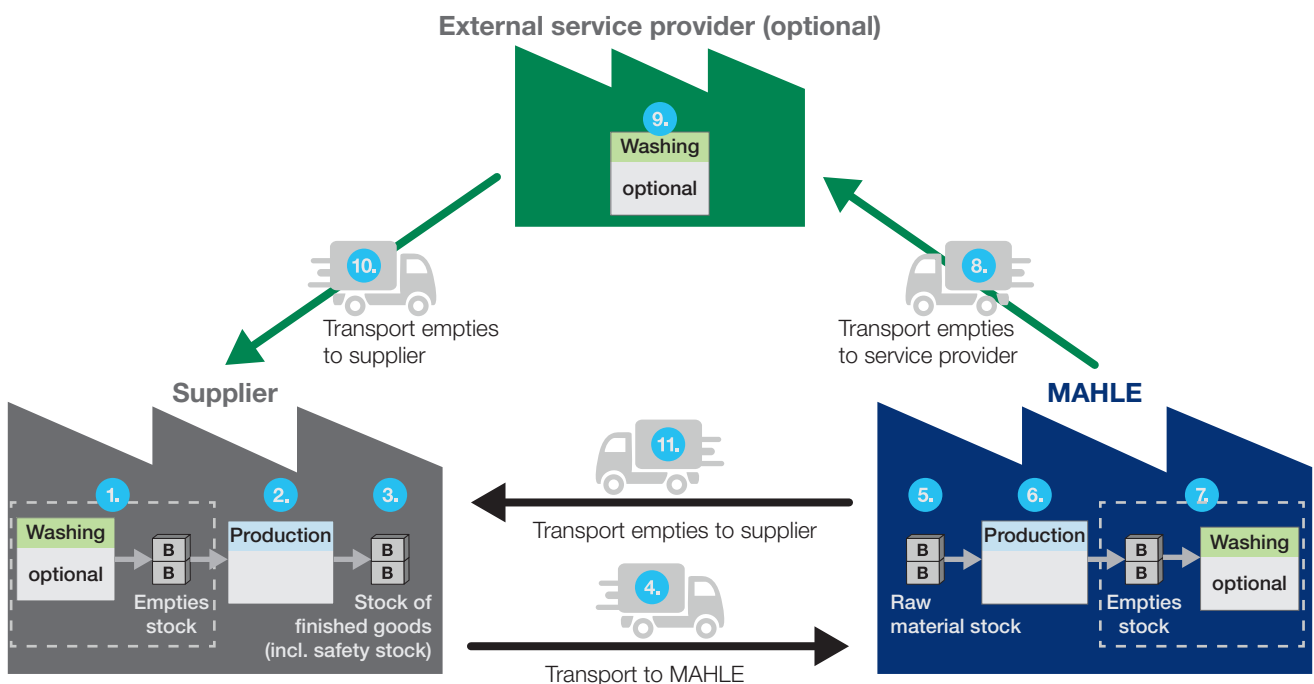


Fig. 21b: Empties process

8.3 Delivery conditions

The type of delivery will be specified by the receiving MAHLE plant and the respective supplier and will be recorded on the form "Delivery Conditions".

Upon consultation between MAHLE and the supplier, the delivery conditions may

be adjusted to changes in the general conditions at a later date.

If required, the form will be made available to the supplier by the receiving plant.

Delivery conditions							MAHLE		
MAHLE production plant:	Mahle Filtersysteme Austria GmbH St. Michael	Plant No.:	2270	Version:	1	Date:	01.02.2016		
1. Contact data		Name		SAP No.	Contact person:	Phone	Fax	E-Mail	
MAHLE production plant		Mahle Filtersysteme Austria GmbH St. Michael		2270	Peter Möller	0711 501	0	info@mahle.com	
Supplier:		Muster GmbH		31000	Max Mustermann	065654234	20	m.mustermann@muster.com	
Supplier ordering address:		Country	Postal code	City	Street / House number				
Supplier pick-up address:		Deutschland	71522	Backnang	Musterstraße 9				
		Deutschland	71522	Backnang	Musterstraße 9				
2. Product data		Identification		Article code	Quantity Unit				
MAHLE:		KX_0341_00 form sealing		75645321	pc				
Supplier:		3210 form sealing		012345	pc				
3. Quality agreement		<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No					
4. Ordering process		<input type="checkbox"/> EDI		Formats:	<input checked="" type="checkbox"/> Delivery call-off: VDA 4905	<input checked="" type="checkbox"/> Delivery and transport details: VDA 4913	<input type="checkbox"/> Credit advice:		
IT-connection to the supplier		<input type="checkbox"/> Single order / order change:				<input type="checkbox"/> EDL-notifications: (removals, stocks):			
		<input type="checkbox"/> WEB-EDI							
*deviations from the standard EDI / Web-EDI are only possible in consultation with the central logistics		<input type="checkbox"/> E-mail		e-mail address:					
		<input type="checkbox"/> Fax		fax number:					
Release creation profile:		<input checked="" type="checkbox"/> 1 x per week		<input type="checkbox"/> 1 x per day		<input type="checkbox"/> every demand change		<input type="checkbox"/> other:	
Day of the delivery call-off		<input type="checkbox"/> Mon		<input checked="" type="checkbox"/> Tue		<input type="checkbox"/> Wed		<input type="checkbox"/> Thu	
								<input checked="" type="checkbox"/> Fri	
Demand transmission in weeks:		12		first weeks - transmission of the daily dates					
		12		following weeks - transmission of the week dates					
		24		following weeks - transmission of the monthly dates					
Data transmission		<input type="checkbox"/> Delivery call on framework contract		<input type="checkbox"/> Single order					
5. Delivery		5.1 Concept							
		<input checked="" type="checkbox"/> Standard-delivery (scheduled delivery)		Transportation frequency:					
				<input type="checkbox"/> daily		<input checked="" type="checkbox"/> weekly		<input type="checkbox"/> 14-daily	
				<input type="checkbox"/> monthly		<input type="checkbox"/> on call		<input type="checkbox"/> other	
		Delivery day/s		<input type="checkbox"/> Mon		<input type="checkbox"/> Tue		<input type="checkbox"/> Wed	
				<input checked="" type="checkbox"/> Thu		<input type="checkbox"/> Fri			
		<input type="checkbox"/> Incl Consignment contract		<input type="checkbox"/> Yes		<input type="checkbox"/> No			
		Consignment warehouse at:		<input type="checkbox"/> Mahle		<input type="checkbox"/> External service provider:			
		Storage cost assumption		<input type="checkbox"/> Supplier		<input type="checkbox"/> Mahle			
		<input type="checkbox"/> VMI (Vendor Managed Inventory)		Consignment warehouse at:		<input type="checkbox"/> Mahle		<input type="checkbox"/> External service provider:	
				<input type="checkbox"/> Lieferant		<input type="checkbox"/> Mahle		WD ¹⁾ Minimum stocks [RI ²⁾ in WD]	
								WD Maximum stocks [RI in WD]	
		<input type="checkbox"/> Supplier-Kanban		Description:					
				Definition of the KANBAN control cycle:					
5.2 Receiving point:		<input type="checkbox"/> Mahle plant		Unloading point:				<input type="checkbox"/> External service provider:	
5. Incoterms (2010)		Incoterm:		FCA		Designated place / designated place of destination / designated shipping port / designated port of arrival:			
						Lieferant (München)			
6. Transportatton		<input checked="" type="checkbox"/> truck		<input type="checkbox"/> ship		<input type="checkbox"/> train		<input type="checkbox"/> other:	
Traffic connection									
		Special requests:							
¹⁾ WD - working days				²⁾ RI - range of inventories					

Fig. 22: MSC – Delivery conditions

9. Supplier Performance

9.1 Supplier evaluation

MAHLE evaluates the supplier capabilities.

The delivery reliability and the quality of the supplier will be measured and analyzed continuously. With respect to the supplier evaluation, it must be the objective of the supplier to achieve a delivery reliability of 100%, a quality evaluation of 100% and 0 ppm.

The requirements listed in the following will be used for the analysis of the logistics supplier evaluation:

Delivery reliability

- Date reliability (60%)—tolerance for date reliability:

The time window for the delivery date will be coordinated with the receiving plant

- Quantity reliability (40%)—tolerance for quantity reliability:

The quantity tolerance for the delivery quantity is agreed upon with the receiving plant

Consignment

- Inventory reliability (100%)—the inventory lies within the minimum and maximum limits agreed upon with MAHLE

In the course of the monthly supplier evaluation, the supplier receives the overall rating of the current month in %, as color-coded in the ABC categorization.

In addition, a diagram shows the development of the delivery service over the last 12 months according to quantity and punctuality and compliance with inventory limits in the case of consignment material. Lastly, the development of the overall delivery service of logistics over the past 12 months is also illustrated.

In addition to the tracking of punctuality and quantity reliability, the following process deviations are monitored in monthly reports:

- Special trips
- Incorrect deliveries
- Incorrect/missing shipping notifications
- Incorrect/missing delivery documents
- Incorrect/missing labels
- Deviations from the agreed packaging specification

These deviations are included in the escalation scenario described in chapter 8.3.

Lieferantenbewertung Logistik
Supplier Evaluation Logistics



Muster GmbH

Monat / Month	03.2016	Datum / Date	10.06.2016
Lieferant / Supplier	XXXXXXXXXX	Muster GmbH	
MAHLE Werke /	2270 St. Michael ob Bleiburg		
MAHLE Plants			

Werk / Plant	Ort / Place	Gesamtbewertung / total evaluation	Lieferung / delivery	Konsignation / consignment	VMI
Total Logistik / Total Logistics		84			
2270	St. Michael ob Bleiburg	84	85	82	

100 >= A >= 90
90 > AB >= 80
80 > B >= 60
60 > C

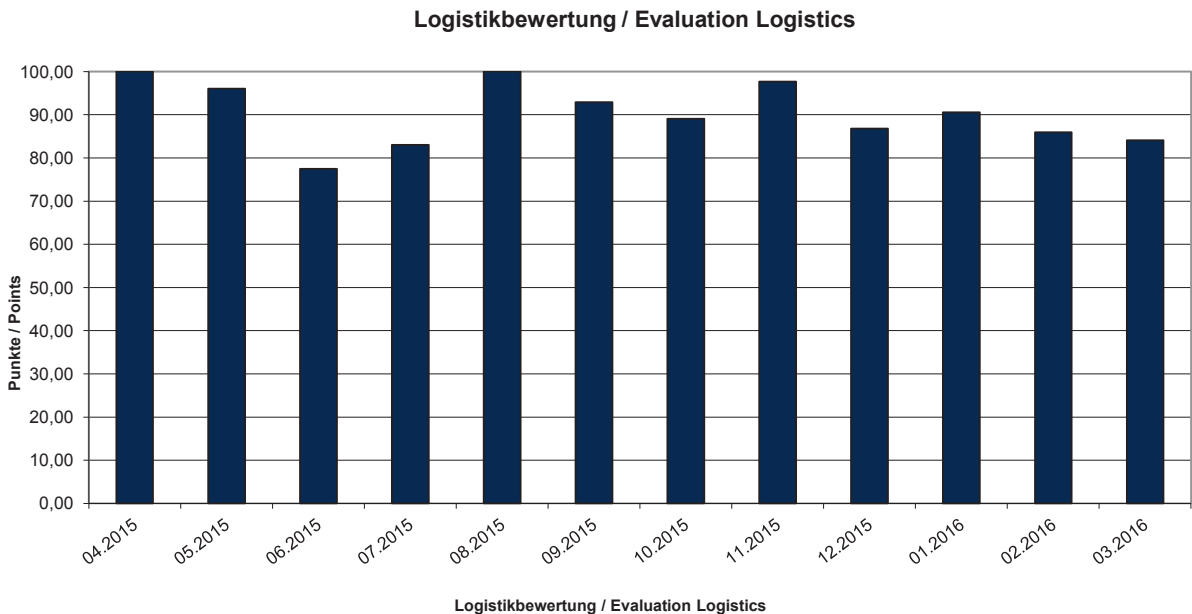
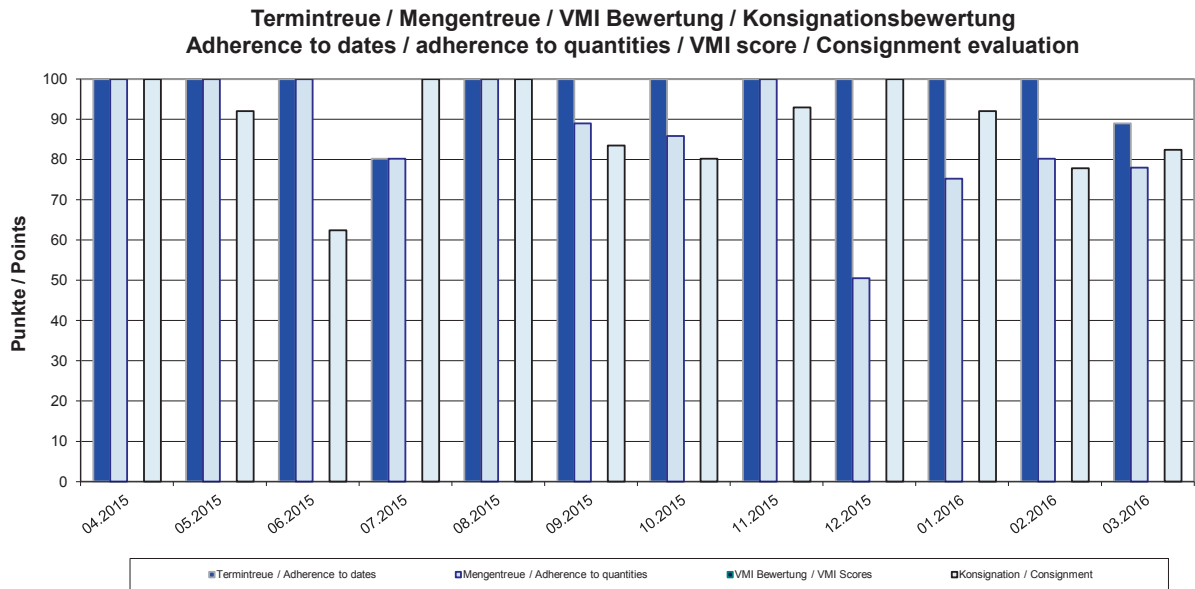


Fig. 23: Supplier evaluation logistics

9.2 Transfer of process costs in the event of process deviations

A delivery performance close to 100% is essential in order to achieve lean processes within the MAHLE plants. Standardized and thus economical processes are only possible if the supplier reliably adheres to the agreed standards.

Each deviation from the defined procedures requires manual intervention and the use of a special process, which causes unnecessary additional expenses on the part of MAHLE.

Should there be an increase in deviations as described in the table below, then MAHLE reserves the right to charge the supplier with the following additional expenses incurred.

The supplier is entitled to produce evidence proving that no damage has been caused by fault on his part or the resulting damage is less than the amount specified by MAHLE.

Transfer of process costs in the event of process deviations

Deviation		MAHLE plant in DE, FR, GB, AT 100% [EURO]	MAHLE plant in RO, TR 60% [EURO]	Einheit
1	Incorrect or no delivery note/way bill/ material accompanying notes	90.00	54.00	per document
2	Damage in transit	150.00	90.00	per transport
3	Incorrect delivery (delivery of a part number differing from the delivery note)	150.00	90.00	per delivery item
4	Differences in the quantity of the actual delivery and the quantities in the delivery note	130.00	78.00	per delivery note
5	Wrong/incomplete EDI data	140.00	84.00	per delivery note
6	Delivery differing from the packaging instructions	120.00	72.00	per wrongly packed container
7	Wrong or missing label of a handling unit (big or small load carrier)	50.00	30.00	per label
8	Damaged big load carrier	90.00	54.00	per damaged unit
9	Damaged small load carrier (VDA SLC, tray etc.)	50.00	30.00	per damaged unit
10	Special transport	110.00	66.00	per special transport
11	Dirty packaging	50.00	30.00	per dirty unit
12	Backlog/early delivery	150.00	90.00	per delivery note

Tab. 6: Transfer of process costs in the event of process deviations

9.3 Escalation scenario in the event of process deviations

As described above, noncompliance with standards in the delivery process impedes a consistently lean and efficient supply chain from the suppliers to the MAHLE plants.

Should an increase in deviations occur, then MAHLE follows the escalation scenario described below:

MAHLE		Daily business: Procurement in the plant		Escalation level 1: Logistics Manager Plant/ Supplier Management Logistics Plant/ Plant Manager		Escalation level 2: Supplier Management Logistics BU2		Escalation level 3 Commodity Purchasing BU2
Process deviation	Problem identification	Action	Trigger for escalation	Action	Trigger for escalation	Action	Trigger for escalation	Action
Special trips	Root cause analysis: Has the supplier caused the process deviation or was it caused by MAHLE → SUPPLIER has caused	Supplier needs to pay for the special freight, invoicing costs according to claims catalog, measures included in logistics complaint	TOP 5 worst suppliers of current month concerning special freights	1) Meeting with supplier preferable held at the MAHLE plant (with logistics manager) or in a telephone conference, Discuss process deviations 2) Define action plan and 8D report directly at meeting or request within one week 3) Review telephone conference after 3 weeks	Result of review: Measures are deferred with regards to content/due dates, respective agreements are not kept, insufficient preparation for meeting	1) Meeting with supplier preferably held at the supplier plant and process analysis 2) Define action plan directly at meeting or request within one week 3) Review at MAHLE headquarters after 3 weeks	Supplier is not able to prove that the measures taken lead to a solution of the problems root cause (effectiveness)	Recommendation of logistics manager Europe to Head of Purchasing: Supplier blocked for new business Potential next steps: New Business Hold (notification letter sent to the supplier by Head of Purchasing) Decision concerning the future with the supplier (supplier development or phase out)
Delivery of wrong parts (right label ↔ wrong content, mixed content)		Supplier needs to organize the return shipment by himself within one week, supplier needs to send the correct parts and pays for freight, invoicing costs according to claims catalog, measures included in logistics complaint	TOP 5 worst suppliers of current month concerning wrong deliveries					
Wrong advanced shipping notification (ASN), wrong delivery papers (e.g. delivery note)		Invoicing costs according to claims catalog, measures included in logistics complaint	TOP 5 worst suppliers of current month concerning logistics delivery standards					
Deviation of label from defined standard								
Deviation from defined serial or alternative packaging								
Supplier evaluation: Over/underdelivery, early/late delivery, stock not between min./max.		Send supplier evaluation	TOP 5 worst suppliers concerning logistics supplier evaluation (development over past 6 months)					
Supplier audit	Supplier audit	C-supplier	At the day of audit: request action plan to solve top 5 problems, review after 3 weeks via telephone conference					

Tab. 7: Escalation scenario

The first time one of the described deviations occurs, the problem is handled between procurement at the MAHLE plant and the supplier. Should problem occur more frequently and the respective supplier correspondingly appear in the "TOP5 worst supplier" list, a consultation at the first level of escalation takes place between the plant's supplier management logistics and logistics manager together with the supplier, in which actions for remedying this problem are defined. This body also reviews the effectiveness and execution of the actions on the part of supplier. If the problem is effectively eliminated, the escalation is deemed completed and the status reset.

However, if it is ascertained that the effectiveness of actions are not consistent and the problem has not been remedied, then the central supplier management logistics intervenes with escalation level two.

This level analyzes why a problem persists and why the defined actions were not effective. Series purchasing is also informed about the poor logistics performance. An action plan is also derived from this escalation level, the adherence of which is constantly reviewed by MAHLE.

Should these measures also prove to be ineffective, the third and thus last escalation level is reached. The supplier is placed on the list of suppliers banned by logistics. At this level, series purchasing has to decide whether the supplier receives the "new business hold" status or whether to invest intensively in supplier development.

10. Inventory

A physical inventory will be executed annually for the in-stock assets (sub-contracting parts, transport containers, tools, etc.). This requires an annual balance of the book inventory balance with the actually available stocks. The supplier

is obligated to provide the counting for the execution of the inventory tracking.

The inventory lists of parts, transport containers and tools have to be sent after the inventory unrequested to MAHLE.

Quantity differences or shrinkage must be paid immediately in accordance with the causer-pays principle based on the repurchasing value.

11. History

Version	Date	Changes/History
1	03/2009	First version of Logistic Guideline of MAHLE Filtersysteme GmbH
2	03/2010	Chapter 2: New plants Austria (page 5) Chapter 8: New graphics (page 31/32)
3	01/2012	Chapter 2: New plant Germany (page 5) Chapter 3.6: Guideline for missing shipping notification (page 12) Chapter 4.2: Disappearance of barcode on delivery note (page 16/17) Chapter 6.2: Update of packaging data sheet (page 25)
4	02/2012	Chapter 8: Update of quality evaluation (page 30) Update of graphics (page 31/32)
5	08/2012	Chapter 2: Change of incoming good times of MAHLE Filter Systems UK Ltd. (page 6)
6	02/2016	Complete revision of the logistics guideline
7	03/2018	Chapter 4.6.1: Adaption to VDA standard 4994 Chapter 4.6.3: Purchase order/scheduling agreement number and position not mandatory on the shipping order Chapter 5.3.1: Adaption of weight from 31,5 kg to 30 kg Chapter 5.3.6: Adaption of unloading in Mattighofen Chapter 6: Integration foreign trade issues: duties, origin, supply chain security and export control Chapter 7.1: Adaption of the requirements to the packaging Chapter 7.2: One-way packaging not included anymore in the overview Chapter 7.3: The labels need to be attached at the front and loss-proove, all labels placed on the pallet and visible from outside need to be readable Chapter 7.4: Change in mandatory fields on a bag
8	10/2018	Chapter 4.6.1: Change in Figure 12
9	09/2020	Chapter 2: Adaptation of the plants concerned (page 7) Chapter 3: Reference to GTL Directive (page 10) Chapter 4: Adaptation of contact persons (pages 14 and 18) Chapter 5: Minor content adjustments (pages 26/28) Chapter 7: Reference to packaging manual (page 32) Chapter 9: Adjustment of the process cost to 8D logistic errors (page 41)

Tab. 8: Change history Logistic Guideline

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