BS EN 15969-2:2011

BSI Standards Publication

# Tanks for transport of dangerous goods — Digital interface for the data transfer between tank vehicle and with stationary facilities

## Part 2: Commercial and logistic data

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National foreword

This British Standard is the UK implementation of EN 15969-2:2011.

The UK participation in its preparation was entrusted to Technical Committee AUE/18, Tanks for the transport of dangerous goods.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.



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Compliance with a British Standard cannot confer immunity from legal obligations.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

**EN 15969-2**

September 2011

ICS 35.240.60

English Version

# Tanks for transport of dangerous goods - Digital interface for the data transfer between tank vehicle and with stationary facilities - Part 2: Commercial and logistic data

Citernes destinées au transport de matières dangereuses - Interface numérique pour le transfert de données sur des véhicules citernes et avec des installations fixes - Partie 2 : Données commerciales et logistiques

Tanks für die Beförderung gefährlicher Güter - Digitale Schnittstelle für den Datenaustausch zwischen Tankfahrzeugen und stationären Einrichtungen - Teil 2: Kommerzielle und logistische Daten

This European Standard was approved by CEN on 18 June 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 15969-2:2011: E

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# Foreword

This document (EN 15969-2:2011) has been prepared by Technical Committee CEN/TC 296 “Tanks for transport of dangerous goods”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2012, and conflicting national standards shall be withdrawn at the latest by March 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard EN 15969, *Tanks for transport of dangerous goods – Digital interface for the data transfer between tank vehicle and with stationary vehicles*, is divided into the following parts:

*Part 1 — Protocol Specification – Control, measurement and event data*

*Part 2 — Commercial and logistic data*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

# Introduction

FTL is an acronym for **F**uel **T**ruck **L**ink, the interface between electronic system(s) on board of a tank truck (Tank-Vehicle-Equipment) and any external computer, Part 2 mainly for a host installed in the office and connected via Internet (TCP/IP); for illustration, see Figure 1.

This European Standard specifies data format for all interconnecting communication paths for commercial issues.

This European Standard offers the user following features:

Multiple orders (batch processing);

Pricing;

Master data (e.g. products, customers, drivers, taxes);

Additional texts for the printout;

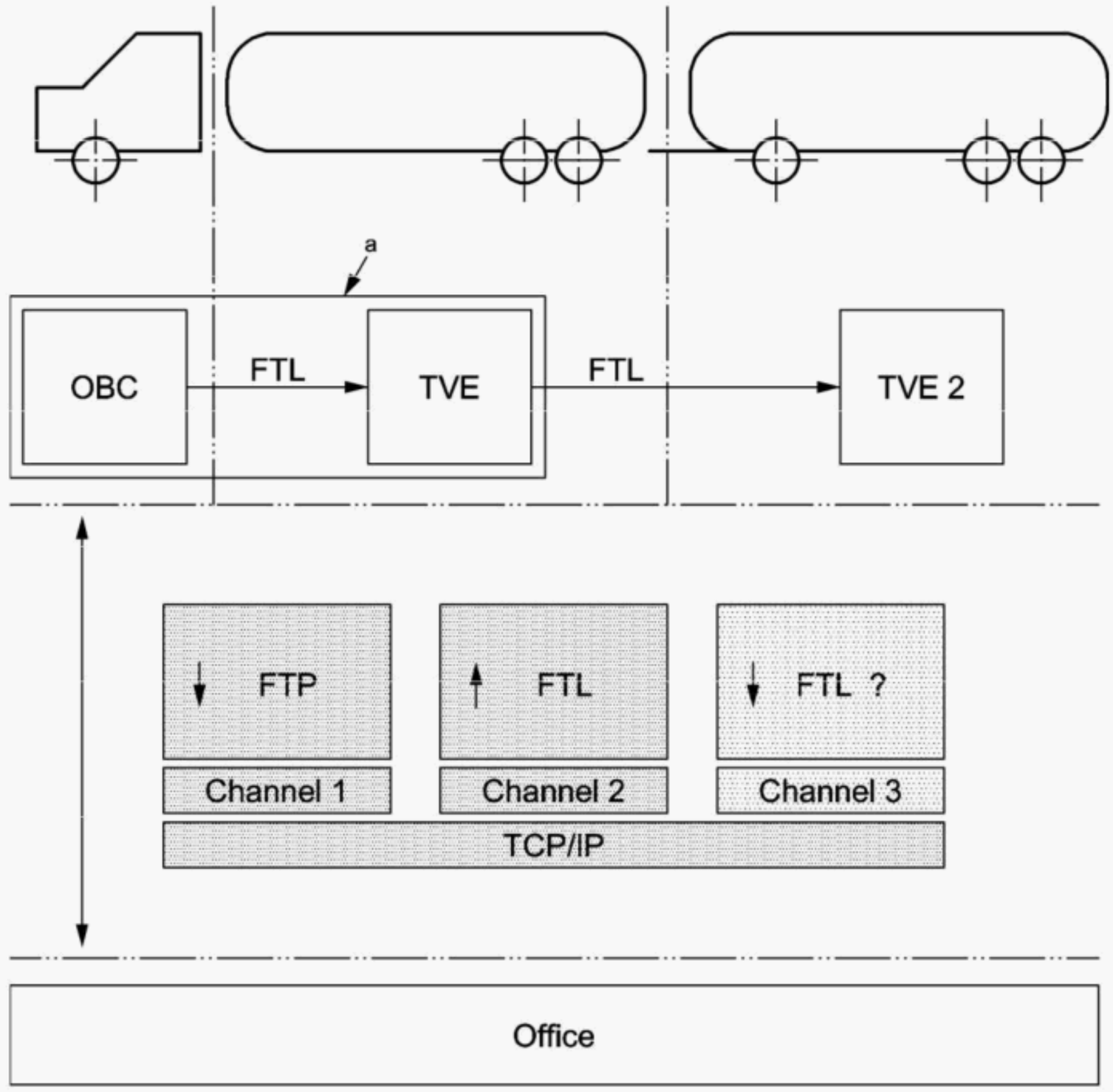
Information for the drivers;

Trip management;

Data for invoicing with surcharge;

Data for delivery packaged goods;

Handle planned and unplanned deliveries.




**Key**

→ direction of communication (client → server)

a may be either two independent units or one single unit which incorporates both functions OBC and TVE

**Figure 1 — Communication structure**

# 1 Scope

This European Standard specifies the data structure needed for tour management, scheduling orders of measured and unmeasured products online to the truck. Processed orders are transferred back to the host in the office at once or later every time the truck is online.

It specifies the transfer of commercial and logistic data between transport vehicle equipment, on board computer of the tank vehicle and stationary facilities for all communication channels between these parties.

# 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14116, *Tanks for transport of dangerous goods — Digital interface for the product recognition device*

EN 15969-1:2011, *Tanks for transport of dangerous goods — Digital interface for the data transfer between tank vehicle and with stationary facilities — Part 1: Protocol specification — Control, measurement and event data*

EN ISO 3166-1; *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (ISO 3166-1:2006)*

ISO 639-1, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

ISO 4217, *Codes for the representation of currencies and funds*

ISO/IEC 10646-1, *Information technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 1: Architecture and Basic Multilingual Plane*

# 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15969-1:2011 and the following apply.

**3.1**

**dispatcher**

person who planes tour at the host system

**3.2**

**operator (driver)**

person who operates the truck and the truck management computer

**3.3**

**tour**

set of at least one 'Order Record' and related records, which describes a collection of stops at different customers and the ordered products, so that the driver knows where to go and what to deliver

**3.4**

**article**

goods and/or services provided

6

# 4 General

This document shall only be used in conjunction with EN 15969-1 and shall not modify or override any of the requirements of EN 15969-1.

# 5 Files

## 5.1 Format identifiers

According to EN 15969-1.

**Table 1 — Record identifier and file type**

| Record identifier | Short description | Description of file contents and possible destinations of the file | Primary Key | Deletion Identifier |
|---|---|---|---|---|
| A | Article | List of all goods and/or services provided | a_art_id | a_deleted |
| C | Customer | Customer database | c_cus_id | c_deleted |
| FB | FTL batch | Record type used to mark batch commands inside RC_file; see Table 11. | - | - |

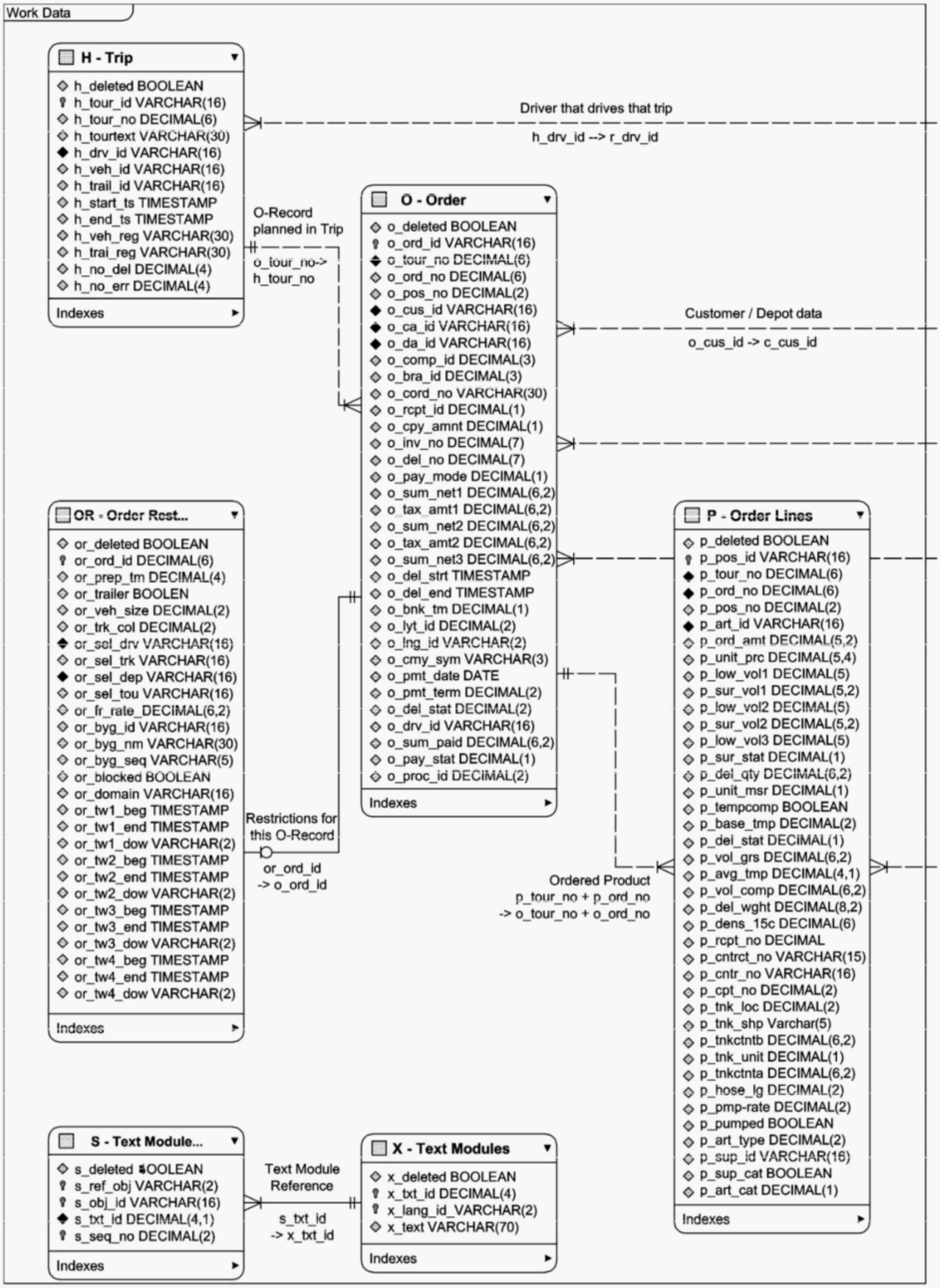
**Table 1 (*continued*)**

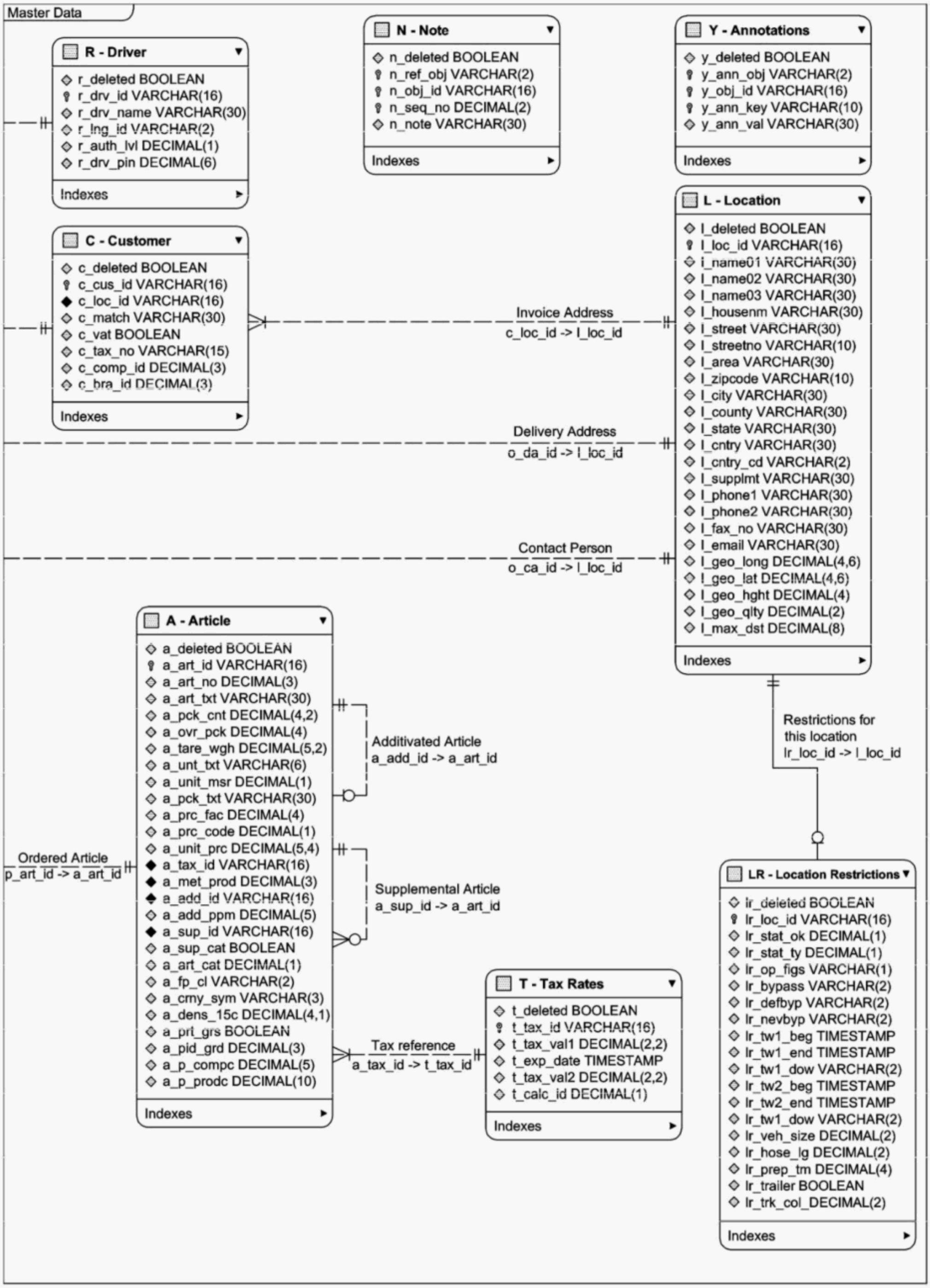
| Record | Short description | Description of file contents and possible destinations of the file | Primary Key | Deletion Identifier |
|---|---|---|---|---|
| **identifier** | **description** | A trip consists of a list of trip stops, which could be stops at customers (typ. unloading) or depots (typ. loading). | h_tour_no | h_deleted |
| H | Trip | | | |
| L | Location | All locations (depots, customers, etc) | l_loc_id | l_deleted |
| LR | Location restriction | Restrictions for a location (time windows, vehicle accessibility, permitted actions) | lr_loc_id | lr_deleted |
| N | Notes | Notes that can be specified for any object.<br><br>Represents a stop in a trip. This could | n_ref_obj<br>n_obj_id<br>n_seq_no<br>o_tour_no | n_deleted<br><br><br><br>o_deleted |
| | | be both a loadstop and an orderstop. per stop, several actions can be | o_ord_no | |
| O | Order | performed. These are specified in the p-records of this o-record.<br>If field o_ord_id is 0, the order is unplanned | | |
| OR | Order restrictions | Order restrictions, used for scheduling and routing. | or_ord_id | or_deleted |
| | | Specifies the goods and services to be delivered at this stop (o-record). | p_tour_no | p_deleted |
| P | Order lines | | p_ord_no<br>p_pos_no | |
| R | Driver | List of all drivers | r_drv_id | r_deleted |
| S | Text-module reference | Static texts for any object. provides text module references, to add a variable number of static texts to an object for printout. | s_ref_obj<br><br>s_obj_id<br><br>s_seq_no | s_deleted |
| T | Tax | Different applicable VAT rates, used for invoice calculation. | t_tax_id | t_deleted |
| X | Text modules | Texts which are repetitively used, may be stored in this database and referred to by a three-digit numeric code in the S-record. | x_blk_id<br>x_lang_id | x_deleted |
| | | Optional annotations to any other type, | y_ann_obj | y_deleted |

| | | | |
|---|---|---|---|
| Y | Annotations | this annotations are used to add manufacturer specific fields to any record, which trigger an action on the truck and are not only used for printout. It is not allowed to define fields of type y within this standard. | y_obj_id<br>y_ann_key |

## 5.2 Relations

Figure 2 shows the relations between the different record types and contains only the fields relevant for these relations.


Work Data
H - Trip
h_deleted BOOLEAN
h_tour_id VARCHAR(16)
h_tour_no DECIMAL(6)
h_tourtext VARCHAR(30)
h_drv_id VARCHAR(16)
h_veh_id VARCHAR(16)
h_trail_id VARCHAR(16)
h_start_ts TIMESTAMP
h_end_ts TIMESTAMP
h_veh_reg VARCHAR(30)
h_trai_reg VARCHAR(30)
h_no_del DECIMAL(4)
h_no_err DECIMAL(4)
Indexes
Driver that drives that trip
h_drv_id --> r_drv_id
O-Record planned in Trip
o_tour_no-> h_tour_no
O - Order
o_deleted BOOLEAN
o_ord_id VARCHAR(16)
o_tour_no DECIMAL(6)
o_ord_no DECIMAL(6)
o_pos_no DECIMAL(2)
o_cus_id VARCHAR(16)
o_ca_id VARCHAR(16)
o_da_id VARCHAR(16)
o_comp_id DECIMAL(3)
o_bra_id DECIMAL(3)
o_cord_no VARCHAR(30)
o_rcpt_id DECIMAL(1)
o_cpy_amnt DECIMAL(1)
o_inv_no DECIMAL(7)
o_del_no DECIMAL(7)
o_pay_mode DECIMAL(1)
o_sum_net1 DECIMAL(6,2)
o_tax_amt1 DECIMAL(6,2)
o_sum_net2 DECIMAL(6,2)
o_tax_amt2 DECIMAL(6,2)
o_sum_net3 DECIMAL(6,2)
o_del_strt TIMESTAMP
o_del_end TIMESTAMP
o_bnk_tm DECIMAL(1)
o_lyt_id DECIMAL(2)
o_lng_id VARCHAR(2)
o_cmy_sym VARCHAR(3)
o_pmt_date DATE
o_pmt_term DECIMAL(2)
o_del_stat DECIMAL(2)
o_drv_id VARCHAR(16)
o_sum_paid DECIMAL(6,2)
o_pay_stat DECIMAL(1)
o_proc_id DECIMAL(2)
Indexes
Customer / Depot data
o_cus_id -> c_cus_id
OR - Order Rest...
or_deleted BOOLEAN
or_ord_id DECIMAL(6)
or_prep_tm DECIMAL(4)
or_trailer BOOLEN
or_veh_size DECIMAL(2)
or_trk_col DECIMAL(2)
or_sel_drv VARCHAR(16)
or_sel_trk VARCHAR(16)
or_sel_dep VARCHAR(16)
or_sel_tou VARCHAR(16)
or_fr_rate_DECIMAL(6,2)
or_byg_id VARCHAR(16)
or_byg_nm VARCHAR(30)
or_byg_seq VARCHAR(5)
or_blocked BOOLEAN
or_domain VARCHAR(16)
or_tw1_beg TIMESTAMP
or_tw1_end TIMESTAMP
or_tw1_dow VARCHAR(2)
or_tw2_beg TIMESTAMP
or_tw2_end TIMESTAMP
or_tw2_dow VARCHAR(2)
or_tw3_beg TIMESTAMP
or_tw3_end TIMESTAMP
or_tw3_dow VARCHAR(2)
or_tw4_beg TIMESTAMP
or_tw4_end TIMESTAMP
or_tw4_dow VARCHAR(2)
Indexes
Restrictions for this O-Record
or_ord_id -> o_ord_id
Ordered Product
p_tour_no + p_ord_no -> o_tour_no + o_ord_no
P - Order Lines
p_deleted BOOLEAN
p_pos_id VARCHAR(16)
p_tour_no DECIMAL(6)
p_ord_no DECIMAL(6)
p_pos_no DECIMAL(2)
p_art_id VARCHAR(16)
p_ord_amt DECIMAL(5,2)
p_unit_prc DECIMAL(5,4)
p_low_vol1 DECIMAL(5)
p_sur_vol1 DECIMAL(5,2)
p_low_vol2 DECIMAL(5)
p_sur_vol2 DECIMAL(5,2)
p_low_vol3 DECIMAL(5)
p_sur_stat DECIMAL(1)
p_del_qty DECIMAL(6,2)
p_unit_msr DECIMAL(1)
p_tempcomp BOOLEAN
p_base_tmp DECIMAL(2)
p_del_stat DECIMAL(1)
p_vol_grs DECIMAL(6,2)
p_avg_tmp DECIMAL(4,1)
p_vol_comp DECIMAL(6,2)
p_del_wght DECIMAL(8,2)
p_dens_15c DECIMAL(6)
p_rcpt_no DECIMAL
p_cntrct_no VARCHAR(15)
p_cntr_no VARCHAR(16)
p_cpt_no DECIMAL(2)
p_tnk_loc DECIMAL(2)
p_tnk_shp Varchar(5)
p_tnkctntb DECIMAL(6,2)
p_tnk_unit DECIMAL(1)
p_tnkctnta DECIMAL(6,2)
p_hose_lg DECIMAL(2)
p_pmp-rate DECIMAL(2)
p_pumped BOOLEAN
p_art_type DECIMAL(2)
p_sup_id VARCHAR(16)
p_sup_cat BOOLEAN
p_art_cat DECIMAL(1)
Indexes
S - Text Module...
s_deleted BOOLEAN
s_ref_obj VARCHAR(2)
s_obj_id VARCHAR(16)
s_txt_id DECIMAL(4,1)
s_seq_no DECIMAL(2)
Indexes
Text Module Reference
s_txt_id -> x_txt_id
X - Text Modules
x_deleted BOOLEAN
x_txt_id DECIMAL(4)
x_lang_id_VARCHAR(2)
x_text VARCHAR(70)
Indexes


Master Data
R - Driver
r_deleted BOOLEAN
r_drv_id VARCHAR(16)
r_drv_name VARCHAR(30)
r_lng_id VARCHAR(2)
r_auth_lvl DECIMAL(1)
r_drv_pin DECIMAL(6)
Indexes
N - Note
n_deleted BOOLEAN
n_ref_obj VARCHAR(2)
n_obj_id VARCHAR(16)
n_seq_no DECIMAL(2)
n_note VARCHAR(30)
Indexes
Y - Annotations
y_deleted BOOLEAN
y_ann_obj VARCHAR(2)
y_obj_id VARCHAR(16)
y_ann_key VARCHAR(10)
y_ann_val VARCHAR(30)
Indexes
L - Location
l_deleted BOOLEAN
l_loc_id VARCHAR(16)
l_name01 VARCHAR(30)
l_name02 VARCHAR(30)
l_name03 VARCHAR(30)
l_housenm VARCHAR(30)
l_street VARCHAR(30)
l_streetno VARCHAR(10)
l_area VARCHAR(30)
l_zipcode VARCHAR(10)
l_city VARCHAR(30)
l_county VARCHAR(30)
l_state VARCHAR(30)
l_cntry VARCHAR(30)
l_cntry_cd VARCHAR(2)
l_supplmt VARCHAR(30)
l_phone1 VARCHAR(30)
l_phone2 VARCHAR(30)
l_fax_no VARCHAR(30)
l_email VARCHAR(30)
l_geo_long DECIMAL(4,6)
l_geo_lat DECIMAL(4,6)
l_geo_hght DECIMAL(4)
l_geo_qlty DECIMAL(2)
l_max_dst DECIMAL(8)
Indexes
C - Customer
c_deleted BOOLEAN
c_cus_id VARCHAR(16)
c_loc_id VARCHAR(16)
c_match VARCHAR(30)
c_vat BOOLEAN
c_tax_no VARCHAR(15)
c_comp_id DECIMAL(3)
c_bra_id DECIMAL(3)
Indexes
Invoice Address
c_loc_id -> l_loc_id
Delivery Address
o_da_id -> l_loc_id
Contact Person
o_ca_id -> l_loc_id
A - Article
a_deleted BOOLEAN
a_art_id VARCHAR(16)
a_art_no DECIMAL(3)
a_art_txt VARCHAR(30)
a_pck_cnt DECIMAL(4,2)
a_ovr_pck DECIMAL(4)
a_tare_wgh DECIMAL(5,2)
a_unt_txt VARCHAR(6)
a_unit_msr DECIMAL(1)
a_pck_txt VARCHAR(30)
a_prc_fac DECIMAL(4)
a_prc_code DECIMAL(1)
a_unit_prc DECIMAL(5,4)
a_tax_id VARCHAR(16)
a_met_prod DECIMAL(3)
a_add_id VARCHAR(16)
a_add_ppm DECIMAL(5)
a_sup_id VARCHAR(16)
a_sup_cat BOOLEAN
a_art_cat DECIMAL(1)
a_fp_cl VARCHAR(2)
a_crny_sym VARCHAR(3)
a_dens_15c DECIMAL(4,1)
a_prt_grs BOOLEAN
a_pid_grd DECIMAL(3)
a_p_compc DECIMAL(5)
a_p_prodc DECIMAL(10)
Indexes
Additivated Article
a_add_id -> a_art_id
Supplemental Article
a_sup_id -> a_art_id
Ordered Article
p_art_id -> a_art_id
Tax reference
a_tax_id -> t_tax_id
T - Tax Rates
t_deleted BOOLEAN
t_tax_id VARCHAR(16)
t_tax_val1 DECIMAL(2,2)
t_exp_date TIMESTAMP
t_tax_val2 DECIMAL(2,2)
t_calc_id DECIMAL(1)
Indexes
Restrictions for
this location
lr_loc_id -> l_loc_id
LR - Location Restrictions
lr_deleted BOOLEAN
lr_loc_id VARCHAR(16)
lr_stat_ok DECIMAL(1)
lr_stat_ty DECIMAL(1)
lr_op_figs VARCHAR(1)
lr_bypass VARCHAR(2)
lr_defbyp VARCHAR(2)
lr_nevbyp VARCHAR(2)
lr_tw1_beg TIMESTAMP
lr_tw1_end TIMESTAMP
lr_tw1_dow VARCHAR(2)
lr_tw2_beg TIMESTAMP
lr_tw2_end TIMESTAMP
lr_tw1_dow VARCHAR(2)
lr_veh_size DECIMAL(2)
lr_hose_lg DECIMAL(2)
lr_prep_tm DECIMAL(4)
lr_trailer BOOLEAN
lr_trk_col_DECIMAL(2)
Indexes

**Key**

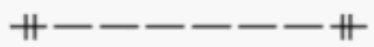
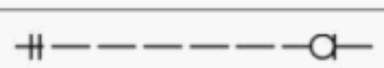
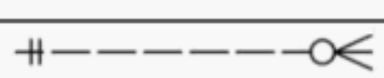
| *Symbol* | *Meaning* |
|---|---|
|  | Primary key, shall be unique |
|  | Foreign key, this attribute is referencing/reference |
|  | Attribute |
|  | One-to-one relationship, both objects shall exist |
|  | One-to-one relationship, the object on the right side is optional (zero or one) |
|  | One-to-many relationship, both objects shall exist |
|  | One-to-many relationship, the object on the right side is optional (zero, one or many) |

**Figure 2 — Work data and master data**

## 5.3 File naming conventions

When files are being transferred using FTP connection, the file(s) shall be named RC_CCYYMMDDhhmmss.FTL. CCYYMMDDhhmmss is the timestamp according to Table 3 of EN 15969-1:2011.

If more than one file is transferred, they shall be processed in ascending order of file names.

# 6 Fields of special types

## 6.1 Text module reference

**Table 2 — Text module reference**

| Type | Size | Explanation |
|---|---|---|
| R | N4.1 | Text module reference |

Text module fields according to Table 2 have the special functionality described below.

The text module selection will be done by a key number. Each record of type X can be used as a single line or as a set of lines. To differentiate between single line and set, the pointer has a special structure.

The text module reference s_txt_id is defined as a numeric value with the size: 4.1.

The text module reference s_txt_id, is defined as a numeric value with the size: 4.1. The leading 4 digit number is the key-field of the record of type X (field x_txt_id). The 1 digit number behind the decimal point counts the number of records following the first record, i.e. this number is used to increment the pointer.

EXAMPLE

| Value | Explanation |
|---|---|
| 99.0 | Only record no. 99 is printed. |
| 99.2 | Record no. 99, 100, 101 are printed. |

## 6.2 Geo-Coordinates

Geo-coordinate fields shall be according to Table 3.

**Table 3 — Geo-coordinate field**

| Type | Size | Explanation |
|---|---|---|
| G | N4.6 | Longitude and latitude values shall be in degrees and decimal fractions of degree:<br>negative value of longitude is west of Greenwich; positive value is east of Greenwich;<br>positive value of latitude is north of equator; negative value is south of equator.<br><br>Examples for longitude GPS:<br>+007.512500 = 7,512500° E = 7° 30' 45" E = 7° 0,750' E<br>7. 5125 = 7,512500° E = 7° 30' 45" E<br>-007. 512500 = 7,512500° W = 7° 30' 45" W<br><br>Examples for latitude GPS:<br>+07.512500 = 7,512500° N = 7° 30' 45" N |

## 6.3 UTF-8 strings

UTF-8 strings according to Table 4.

**Table 4 — UTF-8 string field**

| Type | Explanation |
|---|---|
| Ux | Text with maximum length of x printable characters coded in UTF-8 according to ISO/IEC 10646-1. At most, x-times four bytes are required for storage. |

# 7 Price calculation rules

## 7.1 General

All prices shall be net prices.

## 7.2 Low volume (surcharge)

In the event of the actual delivered volume being less than the planned delivered volume, negative price discounts (surcharges) may be applied.

These fields are used to calculate the applicable surcharges. Two surcharge levels are allowed, depending on the difference between the actual delivered volume and the planned delivered volume. For example, if this difference is between "p_low_vol1" and "p_low_vol2" then surcharge "p_sur_vol1" shall be used, and if between "p_low_vol2" and "p_low_vol3" then surcharge "p_sur_vol2" shall be used.

In any of these cases the driver has the possibility to change from invoice to delivery note.

Where the actual delivered volume is so small that it is less than "p_low_vol3", (the limit of prior agreed surcharges) then no price calculation shall be made and only a delivery ticket issued.

*Formula:*

price = p_del_qty * p_unit_price / a_prc_fac

surcharge = p_del_qty * p_sur_voln / a_prc_fac

## 7.3 Pricing of packed products, container, pieces

### 7.3.1 Article records

Packed goods can also be delivered, packed goods have no a_met_prod, a_met_prod is the reference to the metered product on the truck.

### 7.3.2 Low volume (surcharge)

For this type of product there are also quantity limits available. The conditions are the same as for liquid products.

### 7.3.3 Price calculation methods

by piece ('a_prc_code' = 0)

If a_pck_cnt=0 the driver inputs the number of pieces, which is stored in p_del_qty. If a_pck_cnt>0, the driver inputs the number of packings, the quantity is calculated by a multiplication of the number of packings and a_pck_cnt is stored in the data field p_del_qty. The price will be the unit price p_unit_prc. The a_prc_fac shall be taken into consideration. The text for unit of measure is given in a_unit_txt, e.g. can.

*Price-Formula:*

price = p_del_qty * p_unit_prc / a_prc_fac

by quantity ('a_prc_code' = 1)

If a_case_cnt>0, a special calculation shall be made to get the delivered quantity 'p_del_qty'. The text for unit of measure is given in 'p_unit_msr'. If a_case_cnt=0, the driver inputs the quantity directly.

*Formula:*

p_del_qty = number of packings * a_pck_cnt
price = p_del_qty * p_unit_prc / a_prc_fac

by fixed price ('a_prc_code' = 2)

A price calculation is not needed because this price is negotiated. No quantity input is necessary, the delivered quantity is the preset quantity, text for unit of measure is given in 'p_unit_msr'.

*Formula:*

price = p_unit_prc

### 7.4 Taxes

Taxes are defined in the 'Tax Records' and will be referenced by the ordered products and thereby ordered article (a_tax_id). If tax id is zero, this product is tax free.

The tax records contain an expiration date that defines the start of a new tax value that is also defined in this record.

*Formula:*

tax = (price * t_tax_val1) / 100

If expiration date is reached:

tax = (price * t_tax_val2) / 100

## 8 Description of trip management

### 8.1 Handling of several trips

Any number of orders of record type O, combined in trips of record type H, can be transferred to the truck. Each order record may be followed by 0 to n product records of type P.

The operator selects one of the pre-planned trips at the truck. This trip record is duplicated into the return data, filled with the actual data and saved. The internal trip number h_tour_no in the return data starts at 1 and is incremented by 1 at every trip. The internal tour number in the return data is not related with the internal tour number in the planned data. In the office, the correlation of the planned data to the return data is shown in field h_tour_id. If field h_tour_id is empty, it is an unplanned trip. If a planned trip is selected repetitively, field h_tour_id in the return data contains the original information. The field h_tour_id is unique in the planned data, but it may not be unique in the return data.

### 8.2 Handling of a pseudo-trip with a pool of orders

It is also possible to work with only one (pseudo-) trip with a pool of orders. The office deletes executed orders and adds new orders or modifies existing orders of this pool, but always within this trip. This trip is a pseudo trip and always contains the orders for the next few hours. There is no need to select a trip at the truck. This option is configurable at the truck. Within the return data, the trip data contains the completed orders in chronological sequence, e.g. by day, or by shift, after a driver change.

### 8.3 Handling of orders

Within a trip 0 to n orders exist. The operator chooses one of the given orders at the truck, this order record is duplicated into the return data and will be filled with the actual processed data and saved. The internal order number o_ord_no within the trip is created in the return data, starts at 1 and is incremented by 1 at every order. The internal order number in the return data is not related to the internal order number in the planned data. In the office, the correlation of the planned data to the return data is shown in the field o_ord_id. If field o_ord_id is empty, it is an unplanned order, which has to be processed manually. If a planned order is selected a second time, e.g. because the first processing was not completed, field o_ord_id in the return data contains the original information. The field o_ord_id is unique in the planned data and may not be unique in the return data. If the field o_ord_id is empty, this order has to be handled manually in the office.

### 8.4 Handling of products

Within an order, 0 to 99 product records may exist. The operator chooses one of the given product records at the truck. This record is duplicated into the return data, filled with the actual data of the transaction (loading or delivery), and saved. The internal number p_pos_no within the order is created in the return data, starts at 1 and is incremented by 1 for every product record. The internal number in the return data is not related with the internal number in the planning data. In the office, the correlation of the planned data to the return data is shown in field p_pos_id. If field p_pos_id is empty, it is an unplanned product record. If a planned product record is chosen a second time, e.g. because the first time failed, field p_pos_id in the return data contains the original information. The field p_pos_id is unique in the planned data and may not be unique in the return data. If an order contains unplanned product records or product records which are handled twice, is must be processed in the office.

## 9 Fields and records of RC_File

A record container (RC) file may contain records of one or more different types.

Fields and records of RC_File according to Table 5

Table 5— Fields and records of RC_File

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| **A-Article**<br>**Goods and service description** | | | | | | |
| A00 | a_deleted | B | X | | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system.<br>If an article record is deleted, all corresponding S records shall be deleted automatically! |
| A01 | a_art_id | C16 | PK | T | Unique article identification. primary key. | e.g. SAP product no. |
| A02 | a_art_no | N3 | U | T | Short product code number, as defined by the host system | Short product no, used for manual input from driver, e.g. CPDP code |
| A03 | a_art_txt | U30 | X | T | Article name | |
| A04 | a_pck_cnt | N4.2 | | T | Content of packing in unit, as given in #A07 for pricing | |
| A05 | a_ovr_pck | N4 | | | Number of items in overpack | e.g. 20 cans per box (only for information, not used for any calculation) |
| A06 | a_tare_wgh | N5.2 | | T | Empty weight of packing (in kg) | |
| A07 | a_unit_txt | U6 | X | T | Abbreviation of unit of measure (SI units shall be used when applicable) | e.g. 'L', kg', 'm³', 'pieces' |
| A08 | a_unit_msr | N1 | X | T | Unit of measure | 0: litres<br>1: gallons<br>2: kilograms<br>3: cubic metres<br>4: millimetres<br>5: hPa<br>6 pieces<br>See #L1007 of EN 15969-1:2011 |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| A09 | a_pck_txt | U30 | | T | Packing name | e.g. “Pieces”, “Drum”,... |
| A10 | a_prc_fac | N4 | | T | Unit price factor | This factor will typically be 1, 10, 100 or 1000 |
| A11 | a_prc_code | N1 | | T | Price code | This code indicates how to handle 'a_unit_prc' within calculations:<br>0 = piece, the multiplier for 'p_unit_prc' ist field #P14<br>1 = quantity, the multiplier for 'p_unit_prc' is field #P14<br>2 = fixed price, the field #P07 'p_unit_prc' is the valid price. No calculations will take place. |
| A12 | a_unit_prc | N5.4 | | T | Price for unplanned delivery | |
| A13 | a_tax_id | C16 | | T | Tax reference | links to #T01. |
| A14 | a_met_prod | N3 | X | T | Metered product code | 0 - all unmetered products<br>1 to 99 - metered products (met_prod) according to EN 14116 |
| A15 | a_add_id | C16 | | T | Product code of additive that shall be injected | links to #A01. |
| A16 | a_add_ppm | N5 | | T | Ratio in ppm | Ratio concerning #A14; may be used to set on board injection system |
| A17 | a_sup_id | C16 | | T | code of supplementary product that might be added | links to #A01. The article referenced may be added when this article is delivered. e.g. deposit, ADR surcharge, see #A18 |
| A18 | a_sup_cat | B | | T | Category of supplementary product | If an supplementary product is specified in #A17 this field specifies whether it is:<br>0 – mandatory<br>1 - optional |
| A19 | a_art_cat | N1 | | T | Category of product | 0 – available product<br>1 – common product (frequently used)<br>2 – fixed charge incurred (common supplementary product) |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| A20 | a_fp_cl | C2 | | T | Flashpoint classes | A1: flashpoint < 21 °C<br>A2: flashpoint ≥ 21 °C, < 55 °C<br>A3: flashpoint ≥ 55 °C |
| A21 | a_crny_sym | C3 | | T | Currency symbol | according to ISO 4217, e.g. EUR, GBP, DKK, SEK, ... |
| A22 | a_dens_15c | N4.1 | | HT | Density at 15°C | kg $m^{-3}$ |
| A23 | a_prt_grs | B | | T | Print gross quantity | 0 – not print gross quantity, only net quantity<br>1 - print both, gross and net quantity<br>In accordance with national regulations |
| A24 | a_pid_grd | N3 | X | | PID - Grade | according to EN 14116,<br>0 non oil products |
| A25 | a_p_compc | N5 | X | | Company code | Unique oil company code according to EN 14116<br>0 not specified<br>> 0 specific company code |
| A26 | a_p_prodc | N10 | X | | Product code | Company specific unique product code according to EN 14116.<br>0 not specified<br>> 0 specific product code |
| A27 | a_lead_r | N3 | | T | Lead rate | mg/l |
| A28 | a_sulphur | N4 | | T | Sulphur content | Unit PPM |
| A29 | a_lubr | N4 | | T | Lubricant agent | Unit PPM |
| A30 | a_freez | N4 | | T | Anti-freezing agent | Unit PPM |
| A31 | a_dye_c | N1 | | T | Dye code | Dyed product<br>d=0: unknown – don't care<br>d=1: undyed product<br>d=2: dyed product, red |

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| | | | | | | d=3: dyed product, green<br>d=4: dyed product, blue<br>d=5: dyed product, yellow<br>d=6: dyed product, purple<br>d=7: dyed product, brown |
| A32 | a_dye_r | N3 | | T | Dye ratio | Unit PPM |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| **C – Customer**<br>**Customer data** | | | | | | |
| C00 | c_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system.<br>If a customer record is deleted, all corresponding S,N records shall be deleted automatically. |
| C01 | c_cus_id | C16 | PK | T | Customer number | |
| C02 | c_loc_id | C16 | X | T | Invoice address | links to #L01 |
| C03 | c_match | U30 | | T | Match code | |
| C04 | c_vat | B | | T | VAT identification: yes or no | 0 = customer shall be charged for VAT<br>1 = customer is VAT exempted |
| C05 | c_tax_no | C15 | | T | European community tax identification number | |
| C06 | c_comp_id | N3 | | HT | Company identification | used for several applications.<br>0 = default company ( setup at truck computer) |
| C07 | c_bra_id | N3 | | HT | Branch identification | used for several applications.<br>0 = default branch ( setup at truck computer) |
| C08 | c_pay_mode | N1 | | HT | Payment mode | For description see #O15. |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| **H – Tour header** | | | | | | |
| H00 | h_deleted | B | X | | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system.<br>If a trip is deleted, the corresponding O- and P-records shall be deleted automatically! |
| H01 | h_tour_id | C16 | U | HT | External tour number | This number shall be unique in the planned data and may not be unique in the return data. |
| H02 | h_tour_no | N6 | PK | HT | Internal tour no | links to #O02 |
| H03 | h_tourtext | U30 | | T | Short information about the tour | |
| H04 | h_drv_id | C16 | X | HT | Driver identification number | see #R01 |
| H05 | h_veh_id | C16 | X | HT | Truck ID number | Tractor or |
| rigid vehicle | | | | | | |
| H06 | h_trail_id | C16 | | HT | Trailer ID | Semi- |
| trailer or draw-bar trailer | | | | | | |
| H07 | h_start_ts | S | | HT | Timestamp of trip start H08 | h_end_ts |
| S | HT | Timestamp of trip end | | | | |
| H09 | h_veh_reg | C30 | | HT | Truck's registration number | |
| H10 | h_trai_reg | C30 | | HT | Trailer's registration number | |
| H11 | h_no_del | N4 | | HT | Total number of orders | Total account of orders that have to be / have been delivered (number of o-records for this trip) |
| H12 | h_no_err | N4 | | H | Total numbers of errors | Account of errors that occurred when driving this tour. |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| L – Location<br>Static: Location data | | | | | | |
| L00 | l_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| L01 | l_loc_id | C16 | PK | T | Unique location ID | |
| L02 | l_name01 | U30 | | T | Name of customer | |
| L03 | l_name02 | U30 | | T | Name of customer, line 2 | |
| L04 | l_name03 | U30 | | T | Name of customer, line 3 | |
| L05 | l_housenm | U30 | | T | House name | e.g. "Medical centre" |
| L06 | l_street | U30 | | T | Street name | |
| L07 | l_streetno | U10 | | T | House number | e.g. "2a" |
| L08 | l_area | U30 | | T | Area | Part of town |
| L09 | l_zipcode | U10 | | T | Post code | |
| L10 | l_city | U30 | | T | Name of town | |
| L11 | l_county | U30 | | T | County, district | |
| L12 | l_state | U30 | | T | Federal state | |
| L13 | l_cntry | U30 | | T | Country | |
| L14 | l_cntrycd | C2 | | T | Country code | Two letter code according to EN ISO 3166-1 |
| L15 | l_supplmt | U30 | | T | Supplement | e.g. "near station" |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| L16 | l_phone1 | U30 | | T | Phone number | e.g. land line |
| L17 | l_phone2 | U30 | | T | Phone number | e.g. mobile |
| phone | | | | | | |
| L18 | l_fax_no | U30 | | T | Fax number L19 l_email | U30 |
| T | Email address | | | | | |
| L20 | l_geo_long | G | | T | Longitude | See #L0802 of EN 15969-1:2011.<br>Positive value is east of Greenwich; negative value is west of Greenwich. |
| L21 | l_geo_lat | G | | T | Latitude | See #L0803 of EN 15969-1:2011.<br>Positive value is north of equator; negative value is south of equator. |
| L22 | l_geo_hght | N4 | | T | Altitude | See #L0804 of EN 15969-1:2011.<br>metres above sea level |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| L23 | l_geo_qlty | N2 | | T | Geo quality | See #L0805 of EN 15969-1:2011.<br>Quality of position data<br>0 no position data or unknown quality<br>1 Matching Postcode only<br>2 Matching Town only<br>3 Matching Postcode and Town (uncertain)<br>4 Matching Postcode and Town (exact match)<br>5 Matching up to Town district (uncertain)<br>6 Matching up to Street (uncertain)<br>7 Matching up to Street No. (uncertain)<br>8 Matching up to Town District (exact match)<br>9 Matching up to Street (exact match)<br>10 Matching up to Street No. (exact match)<br>11 GPS positioning (unknown quality)<br>12 Manually assigned in digital map 13 GPS positioning (dead reckoning)<br>14 GPS positioning (single measurement)<br>15 GPS positioning (differential)<br>16 GPS positioning (averaged) |
| L24 | l_max_dst | N8 | | T | Maximum distance between TVE position and position given by #L20 and #L21 | |
| **LR – Location restriction** | | | | | | |
| **Restrictions for a location (time windows, vehicle accessibility, permitted actions)** | | | | | | |
| LR00 | lr_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| LR01 | lr_loc_id | C16 | PK | T | Unique location ID | links to #L01 |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| LR02 | lr_stat_ok | N1 | | T | geofencing<br>0 use TVE defaults<br>1 manual override by OBC<br>2 correct position detected by OBC | See Table 9 of EN 15969-1:2011. |
| LR03 | lr_stat_ty | N1 | | T | 0 tank vehicle<br>1 gantry<br>2 refinery<br>3 workshop<br>4 service station<br>5 client<br>6 trailer | See Table 9 of EN 15969-1:2011. |
| LR04 | lr_op_flgs | H1 | | T | Permitted operations<br>Bit0: discharge permitted<br>Bit1: loading permitted<br>Bit2: service functions permitted (e.g. workshop) | See Table 9 of EN 15969-1:2011. |

Table 5 (continued)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| LR05 | lr_bypass | H2 | | T | Explicit allowed bypass<br>Bit0: magnetic product code<br>Bit1: electrical product code (PID according to EN 14116)<br>Bit2: overfill protection system assignment<br>Bit3: vapour recovery hose assignment<br>Bit4: overfill protection system present<br>Bit5: vapour recovery hose present<br>Bit6: hose supervision system present | See Table 9 of EN 15969-1:2011. |
| LR06 | lr_defbyp | H2 | | T | Shall be bypassed for this location | See Table 9 of EN 15969-1:2011. |
| LR07 | lr_nevbyp | H2 | | T | List according to #LR05<br>May in no case be bypassed<br>List according to #LR05 | See Table 9 of EN 15969-1:2011. |
| LR08 | lr_tw1_beg | S | | T | Time window 1: Begin | |
| LR09 | lr_tw1_end | S | | T | Time window 1: End | |
| LR10 | lr_tw1_dow | H2 | | T | Time window 1: Day of Week | SUN=6, SAT=5, FRI=4, THU=3, WED=2, TUE=1, MON=0 |
| LR11 | lr_tw2_beg | S | | T | Time window 2: Begin | |
| LR12 | lr_tw2_end | S | | T | Time window 2: End | |
| LR13 | lr_tw2_dow | H2 | | T | Time window 2: Day of week | SUN=6, SAT=5, FRI=4, THU=3, WED=2, TUE=1, MON=0 |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| LR14 | lr_veh_size | N2 | | T | Max. vehicle size | |
| LR15 | lr_hose_lg | N2 | | T | Necessary hose length | In metres. Truck delivering this order position shall have a hose at least this long. |
| LR16 | lr_prep_tm | N4 | | T | Additional time in minutes | |
| LR17 | lr_trailer | B | | T | Trailer allowed | |
| LR18 | lr_trk_col | N2 | | T | Desired vehicle colour | |
| **N – Notes** | | | | | | |
| **Arbitrary dynamic notes for any object** | | | | | | |
| N00 | n_deleted | B | X | T | Cancelled-Flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system |
| N01 | n_ref_obj | C2 | PK | T | specifies type of referenced record | e.g. "A", "O", "P", ... |
| N02 | n_obj_id | C16 | PK | T | referenced object ID | e.g. content of o_ord_id if an O record is the referenced object |
| N03 | n_seq_no | N2 | PK | T | Reference No, identifies a note | e.g. this is note "No. 1" for this order |
| N04 | n_note | U30 | X | T | Text string | |
| **O – Order record** | | | | | | |
| O00 | o_deleted | B | X | T | Cancelled-Flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system.<br>If an order is deleted, the corresponding P, S, N and OR-records shall be deleted automatically! |
| O01 | o_ord_id | C16 | U | HT | Order number | Order number from host system. This number shall be unique in the planned data and may not be unique in the return data. |
| O02 | o_tour_no | N6 | PK | HT | Trip ID | links to #H01. |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| O03 | o_ord_no | N6 | PK | HT | Internal order number | Internal order number for reference between order and items of the order. |
| O04 | o_pos_no | N2 | X | HT | Number of products in this order | Sends and returns the number of valid entries in the 'Ordered Product Database' for this order, including unplanned products. |
| O05 | o_cus_id | C16 | X | HT | Customer/depot/refinery number | links to #C01 |
| O06 | o_ca_id | C16 | | | Contact person | links to #L01 |
| O07 | o_da_id | C16 | X | | Delivery address | links to #L01 |
| O08 | o_comp_id | N3 | | HT | Company identification | used for several applications.<br>0 = default company ( setup at truck computer) |
| O09 | o_bra_id | N3 | | HT | Branch identification | used for several applications.<br>0 = default branch ( setup at truck computer) |
| O10 | o_cord_no | U30 | | HT | Customer order number | Order number given by customer |
| O11 | o_rcpt_id | N1 | | HT | Kind of receipt | 0 = delivery note without price<br>1 = delivery note with price<br>2 = invoice. |
| O12 | o_cpy_amnt | N1 | | HT | Amount (number) of copies | Amount of documents (delivery notes/invoices) to be printed after issuing the printout interaction of the operator. More than these copies can be initialized by the operator (depends on truck system). |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| O13 | o_inv_no | N6 | | HT | Invoice number | Sequence number of the invoice. If only a delivery note is printed, this field is returned empty to the host. |
| O14 | o_del_no | N6 | | HT | Delivery note number | Sequence number of the delivery note If only an invoice and no delivery note was printed, this field is returned empty to the host. |
| O15 | o_pay_mode | N1 | | HT | Payment mode | At the beginning of the delivery a message shall inform the operator of how the customer should pay. This opens the possibility to interrupt the delivery e.g. in the case that the customer is not able to pay.<br>0 = no<br>1 = cash<br>2 = cheque<br>3 = credit card<br>4 = remittance slip<br>5 = direct debit |
| O16 | o_sum_net1 | N6.2 | | H | Net amount tax 1 | |
| O17 | o_tax_amt1 | N6.2 | | H | Tax 1 amount | |
| O18 | o_sum_net2 | N6.2 | | H | Net amount tax 2 | |
| O19 | o_tax_amt2 | N6.2 | | H | Tax 2 amount | |
| O20 | o_sum_net3 | N6.2 | | H | Net amount no tax | These fields contain all necessary amounts to validate the invoice. |
| O21 | o_del_strt | S | | H | Delivery start: date and time | |
| O22 | o_del_end | S | | H | Delivery end: date and time | |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| | | | | | | |
| O23 | o_lyt_id | N2 | | T | Printer layout identification | 0 = standard layout<br>>1 = number of layout to be used |
| O24 | o_lng_id | C2 | | T | Language identification | ID of language according to ISO 639-1 to use for this order |
| O25 | o_crny_sym | C3 | | HT | Currency symbol | according to ISO 4217, e.g. EUR, DKR ... |
| O26 | o_pmt_date | S | | HT | Payment date | |
| O27 | o_pmt_term | N2 | | T | Payment terms | Used on printout to calculate the payment term<br>o_pmt_date o_pmt_term when to pay<br>D - due on date D<br>0 X delivery date + X days<br>0 0 immediate |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| O28 | o_del_stat | N2 | | | Delivery status | This field indicates the break reasons. This content may effect a force printout of a delivery note.<br>0 = completed delivery<br>1 = customer not present<br>2 = no demand<br>3 = no money (-> #O15)<br>4 = technical disturbance on truck<br>5 = technical disturbance at customer<br>6 = dispatcher order<br>7 = truck empty O29 o_drv_id |
| C16 | T | Driver ID | | | links to #R01 | only necessary, if driver changes within trip. |
| O30 | o_sum_paid | N6.2 | | H | Amount paid by the customer to the driver | |
| O31 | o_pay_stat | N1 | | H | Payment state | |
| O32 | o_proc_id | N2 | X | HT | Process identification | 0=delivery at customer<br>1=loading from customer<br>2=loading from depot<br>3=delivery at depot<br>4=loading from refinery<br>5=delivery at refinery<br>6 = dip only (no product order, but only used to force the driver to dip the tank and enter the result into the OBC) |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| **OR – Order restrictions**<br><br>**Delivery restrictions and time windows** | | | | | | |
| OR00 | or_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| OR01 | or_ord_id | C16 | PK | T | Reference to order | links to #O01 |
| OR02 | or_prep_tm | N4 | | T | Additional time in minutes | |
| OR03 | or_trailer | B | | T | Trailer allowed | |
| OR04 | or_veh_size | N2 | | T | Max. vehicle size | |
| OR05 | or_trk_col | N2 | | T | Desired vehicle colour | |
| OR06 | or_sel_drv | C16 | | | Preferred driver | links to #R01 |
| OR07 | or_sel_trk | C16 | | | Preferred vehicle | |
| OR08 | or_sel_dep | C16 | | T | Preferred depot | links to #C01 |
| OR09 | or_sel_tou | C16 | | T | Preferred standard trip | |
| OR10 | or_fr_rate | N6.2 | | T | Order specific freight rate | |
| OR11 | or_byg_id | C16 | | T | Buying group ID | |
| OR12 | or_byg_nm | U30 | | T | Name of buying group | |
| OR13 | or_byg_seq | C5 | | T | Seq. No. within BG | |
| OR14 | or_blocked | B | | T | Order type: can be planned / not be planned | 0: can be planned<br>1: cannot be planned |
| OR15 | or_domain | C16 | | T | Order domain: specifies the domain (e.g. area) the order belongs to | e.g. "SOUTH", "NORTH", etc. |
| OR16 | or_tw1_beg | S | | T | Time window 1: Begin | |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| OR17 | or_tw1_end | S | | T | Time window 1: End | |
| OR18 | or_tw1_dow | H2 | | T | Time window 1: Day of Week | SUN=6, SAT=5, FRI=4, THU=3, WED=2, TUE=1, MON=0 |
| OR19 | or_tw2_beg | S | | T | Time window 2: Begin | |
| OR20 | or_tw2_end | S | | T | Time window 2: End | |
| OR21 | or_tw2_dow | H2 | | T | Time window 2: Day of Week | SUN=6, SAT=5, FRI=4, THU=3, WED=2, TUE=1, MON=0 |
| OR22 | or_tw3_beg | S | | T | Time window 3: Begin | |
| OR23 | or_tw3_end | S | | T | Time window 3: End | |
| OR24 | or_tw3_dow | H2 | | T | Time window 3: Day of week | SUN=6, SAT=5, FRI=4, THU=3, WED=2, TUE=1, MON=0 |
| OR25 | or_tw4_beg | S | | T | Time window 4: Begin | |
| OR26 | or_tw4_end | S | | T | Time window 4: End | |
| OR27 | or_tw4_dow | H2 | | T | Time window 4: Day of week | SUN=6, SAT=5, FRI=4, THU=3, WED=2, TUE=1, MON=0 |
| **P – Order Lines** | | | | | | |
| P00 | p_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| P01 | p_pos_id | C16 | U | HT | External unique ID | This number shall be unique in the planned data and may not be unique in the return data. |
| P02 | p_tour_no | N6 | PK | HT | Tour ID | links to #H02 |
| P03 | p_ord_no | N6 | PK | HT | Internal order number | links to #O03 |
| P04 | p_pos_no | N2 | PK | HT | Internal order line counter | Numbers the order lines within one order from 1 to 99. |
| P05 | p_art_id | C16 | X | T | Article identification | links to #A01 |
| P06 | p_ord_amt | N5.2 | X | T | Ordered amount (volume, weight, pieces) | Amount of volume ordered in accordance with the compensation temperature. Type of compensation can be reported by data field P16 and P17. |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| P07 | p_unit_prc | N5.4 | | T | Price per unit (pieces or amount) | The price is calculated by the volume of the product. It is also possible to use a fixed price (p_prc_code=2). The fixed price is independent to the delivered quantity. Price calculations are inhibited. The fixed price is always a net price. Tax calculation is not inhibited. |
| P08 | p_low_vol1 | N5 | | T | Quantity for surcharging 1 | |
| P09 | p_sur_vol1 | N5.2 | | HT | Surcharge 1 | |
| P10 | p_low_vol2 | N5 | | T | Quantity for surcharging 2 | |
| P11 | p_sur_vol2 | N5.2 | | HT | Surcharge 2 | |
| P12 | p_low_vol3 | N5 | | T | Quantity for surcharge 3 | This fields are used to calculate surcharges. If the quantity is between 'p_low_vol1' and 'p_low_vol2, 'p_sur_vol1' shall be used for calculations. If the quantity is between 'p_low_vol2' and 'p_low_vol3', 'p_sur_vol2' shall be taken for calculations. Below 'p_low_vol3' the calculation of the complete delivery shall stopped. Invoice is automatically turned to delivery note. |
| P13 | p_sur_stat | N1 | | HT | Surcharge status | This status indicates which surcharge is used.<br>0 = no surcharge<br>1 = surcharge 1<br>2 = surcharge 2<br>3 = surcharge 3 |
| P14 | p_del_qty | N6.2 | | H | Actual delivered quantity | Same unit as specified in #P15.<br><br>If the unit was 'pieces', the details on the delivered packaging can be found in #A04. |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| P15 | p_unit_msr | N1 | | H | This is the unit that has been used by the truck. May differ from the unit that this product is normally sold in (#A08).<br>Shall be filled when sent from truck. | 0: litres<br>1: gallons<br>2: kilograms<br>3: cubic metres<br>4: millimetres<br>5: hPa<br>6 pieces<br>See #L1007 of EN 15969-1:2011 |
| P16 | p_tempcomp | B | | H | Volume has been temperature compensated. | 0: not compensated<br>1: compensated |
| P17 | p_base_tmp | N2 | | H | Base temperature to use for compensation | In degrees Celsius |
| P18 | p_del_stat | N1 | | H | Delivery status | If there are quantities and/or products that were not delivered, there should be a code number for the reason:<br>0 = completely delivered<br>1 = truck empty<br>2 = customer tank full<br>3 = technical disturbance. |
| P19 | p_vol_grs | N6.2 | | H | Uncompensated total volume | Same unit as specified in #P15 |
| P20 | p_avg_tmp | N4.1 | | H | Average temperature with sign, e.g. +025,1 | |
| P21 | p_vol_comp | N6.2 | | H | Compensated volume at base temperature | Compensated at temperature given in #P17 |
| | | | | | | Same unit as specified in #P15 |
| P22 | p_del_wght | N8.2 | | H | Delivered weight in kilogram | Only calculated value |
| P23 | p_dens_15c | N4.1 | | H | Density at 15°C | The measured density is returned. |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| P24 | p_rcpt_no | N6 | | H | Receipt number of electronic counter head | |
| P25 | p_ctrct_no | C15 | | HT | Contract number | Host: Contract No. to use<br>Truck: Will be returned if loaded/delivered to/from depot/refinery |
| P26 | p_cntr_no | C16 | | H | Counter number | Number of electronic counter head. |
| P27 | p_cpt_no | H4 | | HT | Compartment number | Sends the compartment proposal to the truck computer and the used compartment back to the host.<br>List of compartments with a bit pattern. 1 represents compartment 1 and so on. |
| P28 | p_tnk_loc | N2 | | HT | Tank location on station | |
| P29 | p_tnk_shp | C5 | | T | Tank type code | Description of tank. Code includes max. tank content. |
| P30 | p_tnkctntb | N6.2 | | H | Tank content before delivery | |
| P31 | p_tnk_unit | N1 | | HT | Tank measurement unit identifier | See #P30 and #P32<br>0 = cm<br>1 = l |
| P32 | p_tnkctnta | N6.2 | | H | Tank content after delivery | |
| P33 | p_hose_lg | N2 | | T | Necessary hose length | In metres. Truck delivering this order position shall have a hose at least this long. |
| P34 | p_pmp_rate | N2 | | TH | Maximum pumping rate | In litres per minute. Truck's pump rate power shall be reduced to this value while delivering this order position |
| P35 | p_pumped | B | | HT | 0 = unpumped;<br>1 = pumped | Reference to EN 15969-1– existing field "transaction" |
| P36 | p_art_type | N2 | | T | Type of product order | 0 - delivery mandatory, no decision to be made<br>1 - proposal to operator, may chose to deliver or not |
| P37 | p_sup_id | C16 | | T | Code of supplementary product that might be added | See #A17. |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| P38 | p_sup_cat | B | | T | Category of supplementary product | See #A18. |
| P39 | p_art_cat | N1 | | T | Category of product | See #A19. |
| **R – Driver**<br>**Driver data** | | | | | | |
| R00 | r_deleted | B | X | T | Cancelled-Flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| R01 | r_drv_id | C16 | PK | T | Driver ID | |
| R02 | r_drv_name | U30 | X | T | Driver name | |
| R03 | r_lng_id | C2 | | T | Code of language to be used for user interface of OBC and other truck equipment | Same definition as #O25 |
| R04 | r_auth_lvl | N1 | | T | Driver authorisation level | 0 acceptable<br>1 not acceptable |
| R05 | r_drv_pin | N6 | | T | PIN code of driver | |
| **S – Text-module reference**<br>**Static texts for any object** | | | | | | |
| S00 | s_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| S01 | s_ref_obj | C2 | PK | T | Specifies type of referenced record | e.g. "A", "O", "P", ... |
| S02 | s_obj_id | C16 | PK | T | Referenced object ID | e.g. content of o_ord_id if an O record is the referenced object |
| S03 | s_txt_id | R | X | T | Reference to text module | links to #X01 |
| S04 | s_seq_no | N2 | PK | T | Reference No, identifies a text module reference. | e.g. this is text module "No. 1" for this order |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| **T – Tax**<br>**Tax data** | | | | | | |
| T00 | t_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| T01 | t_tax_id | C16 | PK | T | Tax reference number | |
| T02 | t_tax_val1 | N2.2 | X | T | Actual tax value in percent | |
| T03 | t_exp_date | S | X | T | Expiration date (timestamp) | Expiration date of #T02. If #T03 is empty, no limit is in use. |
| T04 | t_tax_val2 | N2.2 | X | T | New tax value in percent | |
| T05 | t_calc_id | N1 | | T | Calculation method | 0 = VAT on totals<br>1 = VAT on each item |
| **X – Text Modules**<br>**Static: Text modules used for print-out** | | | | | | |
| X00 | x_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| X01 | x_blk_id | N4 | PK | T | Text module ID | Each text module may exist in several languages, i.o.w., the combination of #X01 and #X02 shall be unique. |
| X02 | x_lang_id | C2 | PK | T | Language ID | Same definition as #O25 |
| X03 | x_text | U70 | X | T | Textstring | |
| **Y – Annotations**<br>**Arbitrary annotations to any of the above records** | | | | | | |
| Y00 | y_deleted | B | X | T | Cancelled-flag | If this Boolean is set to "1", this record shall be deleted from the list of records on the destination system. |
| Y01 | y_ann_obj | C2 | PK | T | Specifies type of referenced record | e.g. "A", "O", "P", ... |

Table 5 (*continued*)

| Index | Fieldname | Data Type | Required | DEST | Description | Detailed description |
|---|---|---|---|---|---|---|
| Y02 | y_obj_id | C16 | PK | T | Referenced object ID | e.g. content of o_ord_id if an O record is the referenced object |
| Y03 | y_ann_key | C30 | PK | T | Key | An annotation always consists of a key/value pair. This is the "key" part. |
| Y04 | y_ann_val | U30 | X | T | Value | An annotation always consists of a key/value pair. This is the "value" part. |
| PK: Primary Key: required, unique<br>U: required, unique<br>X: required | | | | | | |

# 10 Multi-Order Data (Subnode RC_FILE)

## 10.1 General

The node FTL,ORDER is only suitable for handling single orders and is limited to metering data. If more than one order and/or commercial data e.g. pricing needs to be exchanged the FTL node "RC_FILE" shall be used. It may contain:

multiple orders (batch processing);

pricing;

master data (e.g. products, customers, drivers, taxes, vehicles);

additional texts for the printout;

information for the drivers;

trip management;

data for invoicing with surcharge or discharge;

Data for delivery of packaged goods;

FTL Batch commands.

Adding or updating orders by the client shall be possible except orders already processed or in process.

## 10.2 Node RC_File

Setting orders and all related information by RC_FILE

| | |
|---|---|
| Variable | FTL,RC_FILE,Content=V |
| Kind | List, write only, optional |
| Set | Append a record (V) |

| | |
|---|---|
| Variable | FTL,RC_FILE |
| Kind | Value, write, optional |
| Clear | Erases all planned H-,O-,P-records and all related N-,S-,Y- and OR-records. |

| | |
|---|---|
| Variable | FTL,n_FILE (n = A, C, L, R, T or X) |
| Kind | Value, write, optional |
| Clear | Erases all records of the given type including all related N- and S-records.<br>Erasing L_FILE shall delete all location records and the related LR location restriction records. |

Return processed orders by RC_FILE,Result

| | |
|---|---|
| Variable | FTL,RC_FILE,Result |
| Kind | List, read only, optional |
| Enquiry | Retrieve processed order data depending on node "RC_FILE,ResultMode" |
| Clear | Delete processed order data depending on node "RC_FILE,ResultMode" |

Variable RC_FILE,ResultMode

| | |
|---|---|
| Variable | FTL,RC_FILE,ResultMode |
| Kind | Value, read/write, optional |
| Set | Set the filter type for node "RC_FILE,Result" |
| Value V | 0 Read last order.<br>1 Read all processed orders.<br>2 Read all processed and yet unread orders. |

## 10.3 Information concerning application

### 10.3.1 Simple trip plan, using FTL connection

Using an on-line connection, the following sequence of commands creates a new trip plan and updates any of the static database files with the records needed to process the orders in H, O and P data files.

The commands may be issued by the OBC, using order data received from the back office, or directly from the back office by an own client, using FTL channel 2. Examples are given in Table 6.

**Table 6 — Trip plan data (FTL connection)**

| Client request (server response omitted) | Comment |
|---|---|
| CLR,FTL,RC_FILE | Delete any previous orders (only H, O and P files and all related N-, S-, Y- and OR-records), will not effect static data like articles, locations,... |
| SET,FTL,RC_FILE,CONTENT=A,0,A00001,1,heating oil,....<br>SET,FTL,RC_FILE,CONTENT=A,0,A00179,7,odourless heating oil,... | If article numbers A00001, respectively A00179 exist, the existing records will be superseded, otherwise the database will be amended. |
| SET,FTL,RC_FILE,CONTENT=L,0,,AD0782,Mayer,,, ... | Create/supersede Address record AD0782 (needed for customer entry CU0782). |
| SET,FTL,RC_FILE,CONTENT=C,0,CU0782,AD0782,May,,, ... | Create/supersede customer record CU0782 (needed for subsequent order T11O1). |

**Table 6 (*continued)***

| Client request (server response omitted) | Comment |
|---|---|
| SET,FTL,RC_FILE,CONTENT=C,1,CU0103,… | Erase customer record CU0103 (for whatever reason). |
| SET,FTL,RC_FILE,CONTENT=... | Any additional database records which may be needed for the subsequent orders (text, locations,…). |
| SET,FTL,RC_FILE,CONTENT=H,0,11,TRIP11,Morning trip,... | First trip |
| SET,FTL,RC_FILE,CONTENT=O,0,11,1,2,0,0,T11O1,CU0782,... | First order of first trip |
| SET,FTL,RC_FILE,CONTENT=P,0,11,1,1,T11O1P1,A00001,7000, .... | First ordered product in first order |
| SET,FTL,RC_FILE,CONTENT=P,0,11,1,2,T11O1P2,A03793,1,... | 2nd order, e.g. additive can |
| SET,FTL,RC_FILE,CONTENT=O,0,11,2,1,0,0,T11O2,CU0911,... | Second order in first trip, one article |
| SET,FTL,RC_FILE,CONTENT=P,0,11,2,1,T11O2P1,A00179,3000, .... | Article ordered in second order |
| SET,FTL,RC_FILE,CONTENT=H,0,12,TRIP12,Afternoon,... | Second trip |
| SET,FTL,RC_FILE,CONTENT=O,0,12,1,1,0,0,T12O1,CU1328,... | First order in second trip |
| SET,FTL,RC_FILE,CONTENT=P,0,12,1,1,T12O1P1,A00179,2000, .... | Only one article ordered |
| <EOT> | Will trigger processing of this RC_file |

Assuming that only trip 11 and order 1 of this trip has been processed, and one additional unplanned order has been delivered during the first trip, return data may appear as shown in Table 7.

**Table 7 — Trip return data (FTL connection)**

| Server response to client requests "REQ,RC_FILE,RESULT" | Comment |
|---|---|
| REP,FTL,RC_FILE,RESULT=H,0,11,1,TRIP11,,7,107,... | Driver 7, truck 107 did trip 11 |
| REP,FTL,RC_FILE,RESULT=O,0,11,1,2,0,0,T11O1,CU0782,... | Customer Mayer, as planned |
| REP,FTL,RC_FILE,RESULT=P,0,11,1,1,T11O1P1,A00001,7000, ... | Heating oil order, as planned |
| REP,FTL,RC_FILE,RESULT=P,0,11,1,2,,A03792,,,,,,,,2,... | Two smaller can have been delivered instead of A03793. Marked as unplanned. |
| REP,FTL,RC_FILE,RESULT=O,0,11,2,1,0,0,,CU0083,... | Unplanned order to customer contained in customer database |
| REP,FTL,RC_FILE,RESULT=P,0,11,2,1,,A00179,,... | Unplanned delivery of odourless heating oil to this customer |

### 10.3.2 Simple Trip Plan, Using FTP and RC_FILE

When no online connection is available, order data may also be transferred from the back office to the OBC using an FTP connection.

In regular intervals, or triggered by a driver command, or by an FTL command received, the OBC may establish an FTP connection and:

scan the in folder of its home directory for order data;

transfer return data (of the trips already done) to the out folder of the home directory.

If a file named RC_CCYYMMDDhhmmss .FTL is found on the in directory, the same trip plan as above may be contained in Table 8.

To reduce data transfer times, data files may be compressed. For this compression the ZIP-format shall be used and the file name shall be RC_CCYYMMDDhhmmss .ZIP.

**Table 8 — Trip plan data (FTP connection)**

| File content | Comment |
|---|---|
| A,0,A00001,1,Heating Oil,...<br>A,0,A00179,7,NoSmell Heating Oil,... | If article numbers A00001, respectively A00179 exist, the existing records will be superseded, otherwise the database will be amended. |
| L,0,AD0782,Mayer,,, ... | Create/supersede address record AD0782 (needed for customer entry CU0782). |
| C,0,CU0782, AD0782,May,,, ... | Create/supersede customer record CU0782 (needed for subsequent order T11O1). |
| C,1,CU0103,… | Erase customer record CU0103 (for whatever reason). |
| ... | Any additional database records which may be needed for the subsequent orders (text, locations,…). |
| | |
| H,0,11,TRIP11,Morning trip,... | First trip |
| O,0,11,1,2,0,0,T11O1,CU0782,... | First order of first trip |
| P,0,11,1,1,T11O1P1,A00001,7000,… | First ordered product in first order |
| P,0,11,1,2,T11O1P2,A03793,1,... | 2nd order, e.g. additive can |
| O,0,11,2,1,0,0,T11O2,CU0911,... | Second order in first trip, one article |
| P,0,11,2,1,T11O2P1,A00179,3000,… | Article ordered in second order |
| H,0,12,TRIP12,Afternoon,... | Second trip |
| O,0,12,1,1,0,0,T12O1,CU1328,... | First order in second trip |
| P,0,12,1,1,T12O1P1,A00179,2000,... | Only one article ordered |
| <EOT> | Will trigger processing of this RC_file |

Upon the next FTP connection, the following result file will be transferred to a file named RC_CCYYMMDDhhmmss .FTL in the out folder, assuming the same trip events as in the example above. Examples are given in Table 9.

**Table 9 — Trip return data (FTP connection)**

| File content | Comment |
|---|---|
| H,0,11,TRIP11,,7,107,... | Driver 7, truck 107 did trip 11 |
| O,0,11,1,2,0,0,T11O1,CU0782,... | Customer Mayer, as planned |
| P,0,11,1,1,T11O1P1,A00001,7000,… | Heating oil order, as planned |
| P,0,11,1,2,,A03792,,,,,,,,2,... | Two smaller can have been delivered instead of A03793. Marked as unplanned. |
| O,0,11,2,1,0,0,,CU0083,... | Unplanned order to customer contained in customer database |
| P,0,11,2,1,,A00179,... | Unplanned delivery of odourless heating oil to this customer |

H,O,P records for return data shall be in logical sequence, e.g. H,O,P,P,O,P,P,P,O,H,O,P,O,P,O,P,P or H,H,H,O,O,O,P,P,P,P

### 10.3.3 Managing static data, using FTL connection

Keeping the static data (articles, addresses, customers,...) up to date is a challenge.

When a mirror image of the TVE data structures is kept in the back office, it may be possible to maintain the data on the TVE, using the update and delete functions given in the examples above.

However, when a TVE shall be initialised, it may be necessary to perform a complete update of a database file.

Using an FTL connection, setting up an entirely new article and customer database, for example, may be done by the FTL commands shown in Table 10.

**Table 10 — Static data management (FTL connection)**

| Client request (server response omitted) | Comment |
|---|---|
| CLR,FTL,A_FILE | Erase all article records. |
| CLR,FTL,C_FILE | Erase all customer records. |
| SET,FTL,RC_FILE,CONTENT=A,0,A00001,...<br>SET,FTL,RC_FILE,CONTENT=A,0,A00002,...<br>.... | Start filling the article database. |
| SET,FTL,RC_FILE,CONTENT=C,0,CU0001,AD0001,Smith,....<br>SET,FTL,RC_FILE,CONTENT=C,0,CU0002,AD0002,Myers,.....<br>.... | Start filling the customer database. |

### 10.3.4 Managing static data under FTP

When the same method is to be used through an FTP connection, FTL Batch commands as specified in 9.3.3 of EN 15969-1:2011 may be embedded in the RC_FILE, using the reserved prefix ”FB” to mark these commands shown in Table 11.

**Table 11 — Static data management (FTP connection)**

| File content | Comment |
|---|---|
| FB,ECLR,FTL,A_FILE | FTL Batch command: clear address database file |
| FB,ECLR,FTL,C_FILE | FTL Batch command: clear customer database file |
| A,0,A00001,1,Heating Oil,....<br>A,0,A00002,2,Diesel,...<br>.... | Start filling the article database. |
| C,0,CU0001,AD0001,Smith,....<br>C,0,CU0002,AD0002,Myers,.....<br>.... | Start filling the customer database. |
| ... | Other updating may be performed. |
| H,0,11,TRIP11,Morning trip,,,...<br>O,0, .... | Data of first trip |

The success of the operation may be checked using the result file RC_CCYYMMDDhhmmss .FTL, in which the result data shall be embedded as given in Table 12.

**Table 12 — Static data management (confirmation file)**

| File content | Comment |
|---|---|
| FB,ECLR,FTL,A_FILE<br>FB,a | FTL Batch command: echo the original command<br>and acknowledgement of this command |
| FB,ECLR,FTL,C_FILE<br>FB,a | Echo the command to clear customer database file<br>and the acknowledge message. |
| H,0,11,TRIP11, ... | Following are the data of the first trip... |

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