

Manual:
Reporting train composition by machine
to the Swedish Transport Administration, via Common Interface
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The Swedish Transport Administration

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1. Introduction.

This manual is designed for railway undertakings who report their train compositions to the Swedish Transport Administration by machine in accordance with the current Network Statement.

2. The Topas system

The Topas system processes TrainCompositionMessages (TCM) and PassengerTrainCompositionMessages (PTCM) submitted to the Swedish Transport Administration's Common Interface installation.

The message is processed by Topas and forwarded to the Swedish Transport Administration's other operations, monitoring, and aftermarket systems. Topas performs validations over and above those performed in Common Interface and sends response messages, see section 4.10

2.1. General: TAF/TAP

TAF and TAP are EU regulations that have been in place since 2006 and 2011, respectively. The aim of these regulations is to:

- Harmonise communication between rail sector operators.
- Stimulate free movement within the European Union.
- Increase sector efficiency.

The aim of TAF is to establish a transport process that is as economically sustainable as possible, which includes enabling effective, intermodal transport.

The aim of TAP is to provide information and issue tickets for passengers efficiently via publicly accessible technical solutions. This entails the management of connections between trains and other modes of transport.

TAF/TAP underline the focus on stimulating free movement and thereby making rail travel attractive. Standardised communication also promotes opportunities for Digitalisation and Process Automation.

The aim is to achieve the above objectives by means of standardised communication between all operators, e.g. with the help of communication procedures and interfaces. Areas affected include:

- joint planning by railway undertakings and their customers/partners
- capacity allocation
- traffic management
- train running information for passengers, railway undertakings, and the traffic organiser (non-RU applicant).

Monitoring and invoicing may also be affected in the longer term, e.g. as a consequence of clearer delimitation of responsibilities between the operators and better traceability in conjunction with replanning or newly received information.

TAF/TAP also requires communication via a common interface, which consequently necessitates an EU-wide format for B2B (business to business) communication. Communication in accordance with other standards, e.g. via a web interface, is still possible if the parties are in agreement regarding the procedure. Communication rules are normally set via the Network Statement, and associated annexes or designated websites.

For further information, please see the links on the Topas website – see section 2.2.

2.2. The Topas website

The Swedish Transport Administration website contains information about the Topas System (search for Topas). The latest version of this manual can be downloaded from the website, and other information, such as links, is also provided.

3. General: reporting via Common Interface

Contact <mailto:trafikstyra.jarnvag@trafikverket.se> for information about how to connect to Trafikverkets local instans of Common Interface.

4. National rules in Sweden

(Name as per TSI/TAF or TSI/TAP in parentheses.)

4.1. TrainCompositionMessage (TCM) and PassengerTrainCompositionMessage (PTCM)

The Swedish Transport Administration recommends that the same message is only sent once. A new message should only be sent if the train composition has changed since the most recently sent message. Any new message **replaces** previous messages for the same train **in its entirety**.

Both TCM and PTCM must include a traction unit.

The Swedish Transport Administration recommends sending a new message, if possible, in the event of uncoupling or coupling of wagons during the train's journey.

Contact with the Swedish Transport Administration is always recommended before developing new messages for the first time for information on which version of the message is in operation at any time. Send questions to support.jarnvag@trafikverket.se

4.2. Reporting windows

Send TrainCompositionMessages or PassengerTrainCompositionMessages **no earlier than nine days before departure and no later than immediately prior to the train's departure**. We recommend that messages are sent a maximum of 72 hours before departure and that they are only sent that early if no changes to the train composition are expected.

Production plans are confirmed twenty-four (24) hours before the actual production day. Reporting train composition before this point is only recommended if no changes to the operational train number are expected. **Passenger train composition messages or Train composition messages shall be submitted for train numbers as per production plans.**

The Swedish Transport Administration will accept messages up to one week after the train's departure if technical incidents meant it was not possible to send a message before the train departed.

4.3. Message status

The "Message Status" element is used in all messages and has three possible values: 1=creation, 2=modification, 3=deletion. Use 1 creation for all TrainCompositionMessages and PassengerTrainCompositionMessages. If a previous message needs correction, send a new one that includes **the entire train**. Any new message **replaces** previous messages for the same train **in its entirety**. See also 4.8

4.4. Vehicle number

Report all vehicles using their EVN numbers (EuropeanVehicleNumber). In the TrainCompositionMessage, specify the EVN number for the traction unit in the (LocoNumber) field and the EVN number for wagons in the (WagonNumberFreight) field.

In PassengerTrainCompositionProcessMessages, specify the EVN number for traction units and wagons in the (EuropeanVehicleNumber) field.

4.5. Traction units

Traction unit type (TractionType) and mode (TractionMode) must always be reported.

Freight trains: if the configuration entails anything other than one (1) traction unit which is at the front, the traction unit's position in the train must also be reported (TractionPositionInTrain).

4.6. The train's departure date according to the Swedish timetable

The way in which trains' departure dates are handled in Sweden differs from the norm in TCM/PTCM.

Report the train's departure date according to the Swedish timetable in the (ScheduledTimeAtHandover) field. The time is given as 00:00:00, irrespective of the time of the train's departure.

This means that even if a journey section of a midnight-crossing train occurs solely after the day change, the date of departure from the initial station shall still be entered.

Example: A midnight-crossing train was originally planned for the journey section, A-G, where the journey section, C-G, takes place after the day changes. If the train is scheduled for the C-G journey section on 20201216 (16 Dec 2020), the departure date for the train shall be given as follows: 20201215 (15 Dec 2020), which is the departure date for the default train path.

4.7. Locations

Only report locations contained in the train's timetable.

4.8. Journey sections

1. The train can be reported in different ways, depending on whether the train has one or several journey sections where the train composition changes:
2. Train with several journey sections
 - a. All *Journeysections*, reported **in one (1)** message, i.e. A-M + M-Ö or A-M + M-S + S-Ö. Overlapping *Journeysections* (e.g. A-M and F-Ö) are not permitted.
 - b. One or more of several journey sections can be reported, but doing so still requires the next report to also contain journey sections that have already been reported, because a new report **replaces the old one in its**

entirety. If the first report contains A-M, the next report must include A-M **and** M-Ö and be sent before the train departs from M.

4.9. National mandatory fields.

4.9.1. Information to be provided for every train:

- the train's maximum permitted speed (TrainMaxSpeed)
- the number of axles (NumberOfAxles)
- the train's departure date according to the Swedish timetable (ScheduledTimeAtHandover).
- the train's weight (TrainWeight)
- the train's length (TrainLength).

4.9.2. Information to be provided for every traction unit and DVT included in the train:

- EVN identification (LocoNumber) for non-passenger trains (TCM)
- EVN identification (EuropeanVehicleNumber) for passenger trains (PTCM)
- traction unit type (TractionType)
- traction unit's traction mode (TractionMode)
- passenger train (PTCM): position in train (UnitPositionInTrain)
- freight train (TCM): if the configuration entails anything other than one (1) traction unit which is at the front, the traction unit's position in the train must also be reported (TractionPositionInTrain).

4.9.3. Information to be included for every wagon included in the train:

- the maximum permitted speed km/hr (WagonMaxSpeed)
- number of axles (WagonNumberOfAxles)
- for freight wagons, Load weight (TotalLoadWeight)
- wagon number (WagonNumberFreight) for freight wagons or EVN (EuropeanVehicleNumber) for passenger wagons
- position in train, (WagonTrainPosition) for freight wagons or (UnitPositionInTrain) for passenger wagons
- length over buffers in cm (LengthOverBuffers)
- wagon's weight when empty (WagonWeightEmpty).

4.9.4. Information to be provided for every freight wagon containing dangerous goods:

- UN number (UN number)

If there are multiple UN numbers for the same wagon, enter them sequentially.

4.10. Response messages

The Swedish Transport Administration uses two different response messages to respond to a train composition message:

- ReceiptConfirmationMessage
- ErrorMessage.

If no confirmation message has been received, please contact IT-support of the Swedish Transport Administration.

4.10.1. ReceiptConfirmationMessage

When a train composition message is received without problems, a ReceiptConfirmationMessage is sent as confirmation that the report has been received.

4.10.2. ErrorMessage

When something has gone wrong when receiving a train composition message, an ErrorMessage is sent. An ErrorMessage may contain one or more Errors. **To date, the Swedish Transport Administration only sends one Error per ErrorMessage.**

An Error can have different Severity levels. The following Severity levels are possible:

- Warning (not in use by the Swedish Transport Administration)
An abnormal value has been detected. The value is acceptable, but the appropriateness of the value size should be checked.
- Fatal
Something has gone wrong when receiving the report. See 4.10.3

An ErrorMessage shall be interpreted in accordance with the levels of the component Errors:

- All Errors have a Warning Severity level:
The message may be deemed to constitute confirmation that the train composition message has been received and accepted.
- At least one Error has a Fatal Severity level:
The train composition message has not been accepted and has been discarded. The train composition message shall be resubmitted and may, depending on the type of error, need to be adjusted first.

4.10.3. Fatal level error types

An Error has a TypeOfError property. The values used by the Swedish Transport Administration are:

- 1 Functional
The train composition message is in breach of a validation rule. The train composition message must be adjusted and resent. See 4.10.4
- 2 Technical
A system error has occurred. The train composition message can be resent without adjustment. If the error persists, submit a fault report to the Swedish Transport Administration's IT user support desk.

4.10.4. Error codes for validation errors

All validation errors are sent with a (Error.ErrorCode) *5040 Invalid or unknown Train Information* error code.

One of the following error codes are sent as free text (Error.FreeTextField), together with an explanatory text.

| Error code name | Number |
|--|---------------|
| OkantFel <i>(Preliminary translation of the Swedish code, for explanatory purpose only: UnknownError)</i> | 1001 |
| TågIdSaknasIProduktionsplan <i>(Preliminary translation of the Swedish code, for explanatory purpose only: OperationalTrainNumberMissingInProductionPlan)</i> | 1002 |
| TågIdHarFelaktigtFormat <i>(Preliminary translation of the Swedish code, for explanatory purpose only: OperationalTrainNumberHasIncorrectFormat)</i> | 1003 |
| JourneySectionsFelaktiga <i>(Preliminary translation of the Swedish code, for explanatory purpose only: InvalidJourneySections)</i> | 1004 |
| DrivfordonSaknas <i>(Preliminary translation of the Swedish code, for explanatory purpose only: TractionUnitMissing)</i> | 1005 |
| RapportörSaknarBehörighet <i>(Preliminary translation of the Swedish code, for explanatory purpose only: RapporteurWithoutAuthorisation)</i> | 1006 |
| RapportenÄrÄldreÄnTidigareMottagenRapport <i>(Preliminary translation of the Swedish code, for explanatory purpose only: MessageOlderThanPreviouslyReceivedMessage)</i> | 1007 |
| UtgångsdagSaknas | 1008 |

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| <i>(Preliminary translation of the Swedish code, for explanatory purpose only: DepartureDateMissing)</i> | |
| VagnarnasSorteringsordningÄrInteSekventiell <i>(Preliminary translation of the Swedish code, for explanatory purpose only: SortingOrderOfWagons/CoachesOutOfSequence)</i> | 1009 |
| SorteringsordningPåDrivfordonenIGruppenÄrInteSekventiell <i>(Preliminary translation of the Swedish code, for explanatory purpose only: SortingOrderOfTractionUnitsInGroupIsOutOfSequence)</i> | 1010 |
| EttDrivfordonSaknarSorteringsordningMenÄrInteEnsamISinGrupp <i>(Preliminary translation of the Swedish code, for explanatory purpose only: OneTractionUnitOutOfSortingOrderButIsNotAloneInItsGroup)</i> | 1011 |
| DrivfordonsplaceringPekarPåObefintligVagn <i>(Preliminary translation of the Swedish code, for explanatory purpose only: PositionOfTractionUnitIndicatingNonExistingWagon/Coach)</i> | 1012 |
| SthSaknasPåTåget <i>(Preliminary translation of the Swedish code, for explanatory purpose only: TrainMaximumPermittedSpeedMissing)</i> | 1013 |
| SthSaknasPåVagn <i>(Preliminary translation of the Swedish code, for explanatory purpose only: Wagon/CoachMaximumPermittedSpeedMissing)</i> | 1014 |
| SthFörEnVagnÄrLägreÄnTågets <i>(Preliminary translation of the Swedish code, for explanatory purpose only: MaximumPermittedSpeedForOneWagon/CoachIsLowerThanTheTrain's)</i> | 1015 |
| VagnarnasLängdÄrStörreEllerLikaMedTågetsLängd <i>(Preliminary translation of the Swedish code, for explanatory purpose only: SumOfLengthOfWagons/CoachesExceedingOrEqualToTrainLength)</i> | 1016 |
| VagnarnasViktÄrStörreEllerLikaMedTågetsVikt <i>(Preliminary translation of the Swedish code, for explanatory purpose only: SumOfWeightOfWagons/CoachesExceedingOrEqualToTrainWeight)</i> | 1017 |
| ViktenPåFarligtGodsÖverstigerGodsvikten <i>(Preliminary translation of the Swedish code, for explanatory purpose only: WeightOfDangerousGoodsExceedingTotalWeightOfGoodsCarried)</i> | 1018 |
| FelaktigtEvn <i>(Preliminary translation of the Swedish code, for explanatory purpose only: IncorrectEuropeanVehicleNumber)</i> | 1019 |

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| VagnarnasAntalAxlarÄrStörreEllerLikaMedTågetsAntalAxlar (Preliminary translation of the Swedish code, for explanatory purpose only: SumOfNumberOfAxlesOfWagons/CoachesExceedingOrEqualToTrain NumberOfAxles) | 1020 |
| NationelltObligatoriskaUppgifterSaknasPåVagn (Preliminary translation of the Swedish code, for explanatory purpose only: InformationNationallyMandatoryInSwedenMissingOnWagon/Coach) | 1022 |
| UtgångsdagHarAngivitsMedKlockslag (Preliminary translation of the Swedish code, for explanatory purpose only: DepartureDateHasATime). See 4.6. | 1023 |

5. Version log

| Adopted version | Document date | Revision | Name |
|-----------------|-------------------------|---|--|
| Version 1.0 | 2 Nov 2020 | New document | Jörgen Larsson, TRvetsj, Löv Sara, IKTjts; Niklas Johansson, IKTjpl |
| Version 1.1 | 24 March 2021 | Section 4.1 on which version of the message is supported by the Swedish Transport Administration | Jörgen Larsson, TRvetsj |
| Version 1.2 | 26 April 2021 | Section 4.10.4 new error code 1022. PTCM concept as per 2.5.0.0 is used throughout the document. | Jörgen Larsson, TRvetsj |
| Version 1.3 | 3 May 2021 | Tips in 3.1. 4.9.1 number of axles is mandatory in Sweden for wagons in all trains | Jörgen Larsson, TRvetsj |
| Version 1.4 | 9 June 2022 | Page 6. Instance numbers changed. Page 13. New ErrorCoce 1023. | Jörgen Larsson, TRvetsj |
| Version 1.5 | 10 October June 2022 | Section 3 replaced. | Jörgen Larsson, TRvetsj |

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| Version 1.6 | 05 May 2026 | Section 4.10 Text adjustments | Emma Delisle, Trodjfs, Ellina Fagerström Trodjf |
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