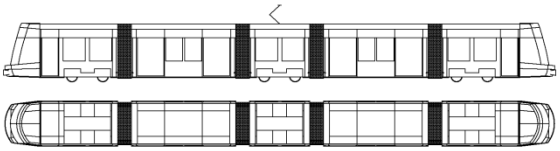
A T G Autotechnik GmbH	ARTIC-O-MAT TRAM ARTICULATION APPLICATION SHEET	ATG AUTOTECHNIK GMBH

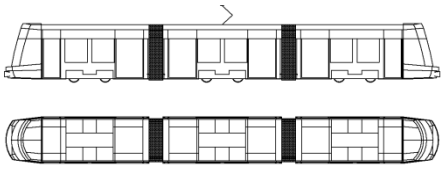
ATG Autotechnik GmbH

I. generell specifications

1. type of tram (see pictures below) 1□ 2□ 3□
2. weight of car bodies _____kg
3. type and quantity of articulations yaw pitch damper ___ ___ _____

1 2 3

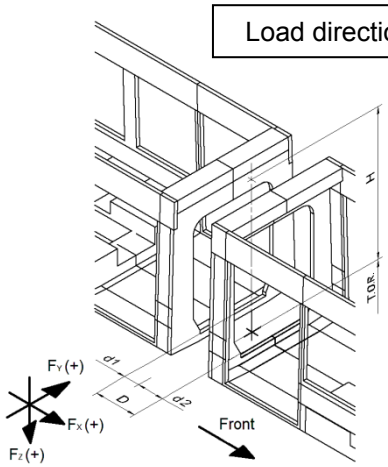




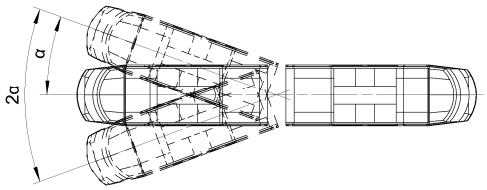
other

II. articulation specification

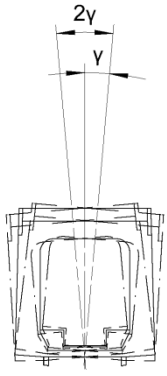
Load directions



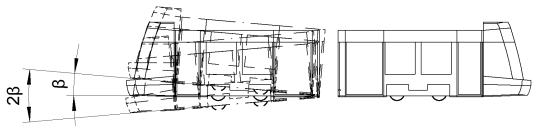
yaw



roll



pitch



A. horizontal rotation (yaw) only

1. geometric conditions:
   required turning angle under normal (operational) conditions (α) ±____°
   maximum turning angle ±____°

2. load conditions, bottom (lower) articulation:
   horizontal load, maximum working load (±Fx) ±____kN
   horizontal load, accident/derailment (±Fxa) ±____kN
   vertical load, maximum working load (±Fz) ±____kN
   vertical load, accident/derailment (±Fza) ±____kN
   lateral load, maximum working load (±Fy) ±____kN
   lateral load, accident/derailment (±Fya) ±____kN

3. load conditions, top (upper) articulation:
   horizontal load, maximum working load (±Fx) ±____kN
   horizontal load, accident/derailment (±Fxa) ±____kN
   lateral load, maximum working load (±Fy) ±____kN
   lateral load, accident/derailment (±Fya) ±____kN

B. horizontal and vertical rotation (yaw and pitch)

1. geometric conditions:
   required turning angle under normal (operational) conditions (α) ±____°
   maximum turning angle ±____°
   required vertical angle under normal (operational) conditions (β) ±____°
   maximum vertical angle ±____°
   required angle combination[1] under normal (operational) conditions yaw±____° + pitch±____°

2. load conditions, bottom (lower) articulation:
   horizontal load, maximum working load (±Fx) ±____kN
   horizontal load, accident/derailment (±Fxa) ±____kN
   vertical load, maximum working load (±Fz) ±____kN
   vertical load, accident/derailment (±Fza) ±____kN
   lateral load, maximum working load (±Fy) ±____kN
   lateral load, accident/derailment (±Fya) ±____kN

3. load conditions, top (upper) articulation:
   horizontal load[2], maximum working load (±Fx) ±____kN
   horizontal load, accident/derailment (±Fxa) ±____kN
   lateral load, maximum working load (±Fy) ±____kN
   lateral load, accident/derailment (±Fya) ±____kN

C. horizontal, vertical and twisting rotation (yaw, pitch and roll)

1. geometric conditions:
   required turning angle under normal (operational) conditions (α) ±____°
   maximum turning angle ±____°
   required vertical angle under normal (operational) conditions (β) ±____°
   maximum vertical angle ±____°
   required lateral angle under normal (operational) conditions (γ) ±____°

1 Regard car body edges and bellow compressions there
2 Only if possible – depending on geometrical conditions

maximum vertical angle ±____°
required angle combination[3] under normal (operational) conditions yaw±____° + pitch±____° + roll±____°

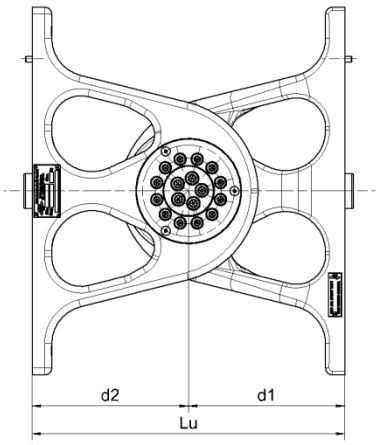
2. load conditions, bottom (lower) articulation:
   horizontal load, maximum working load (±Fx) ±____kN
   horizontal load, accident/derailment (±Fxa) ±____kN
   vertical load, maximum working load (±Fz) ±____kN
   vertical load, accident/derailment (±Fza) ±____kN
   lateral load, maximum working load (±Fy) ±____kN
   lateral load, accident/derailment (±Fya) ±____kN

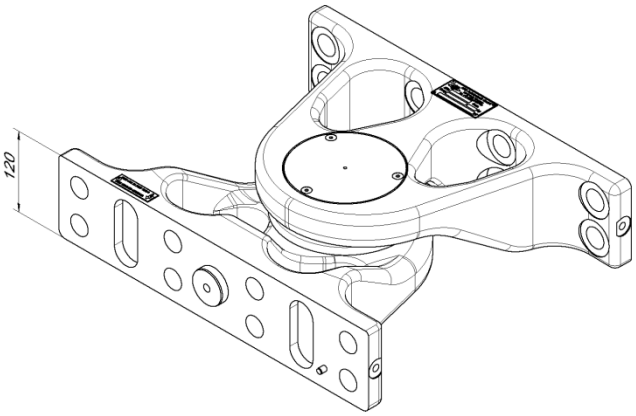
3. load conditions, top (upper) articulation:
   horizontal load[4], maximum working load (±Fx) ±____kN
   horizontal load, accident/derailment (±Fxa) ±____kN
   lateral load[5], maximum working load (±Fy) ±____kN
   lateral load, accident/derailment (±Fya) ±____kN

III. articulation dimensions

A. **bottom articulation:**
   total length (Lu) D=_____mm
   distance from car body end to centre of rotation[6] d1=_____mm, d2=_____mm
   witdth (space available) Wu=_____mm
   total hight, from top of platform to bottom of articulation[7,8] P=_____mm
   distance from top of rail (T.O.R.) to bottom of articulation[7,8] B=_____mm

The pictures shown are for demonstration only!





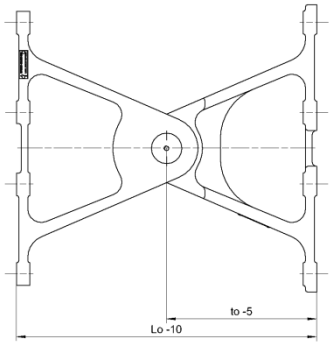
3 Regard car body edges and bellow compressions there
4 Only if possible – depending on geometrical conditions
5 Only if possible – depending on geometrical conditions
6 If articulation ist o be asymetrical
7 Without bellows
8 See also picture “pitch of turntable”

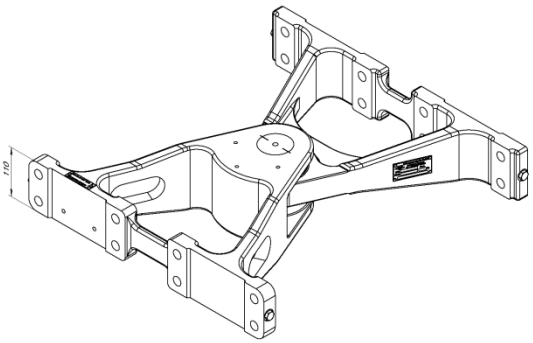
B. **top articulation:**

total length	Lo=_____mm
distance from car body end to centre of rotation[6]	to=_____mm
witdth (space available)	Wo=_____mm
distance from top of platform to bottom of articulation	ho=_____mm

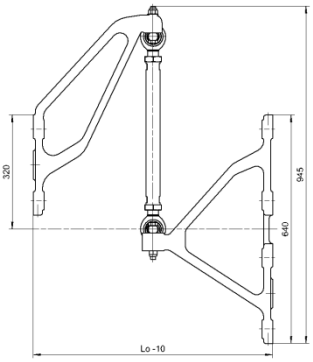
The pictures shown are for demonstration only!

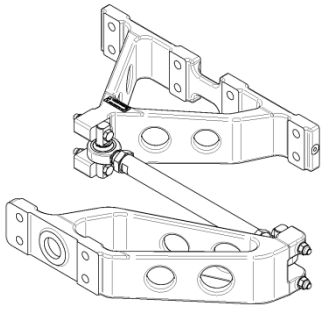
joint for upper horizontal rotation only





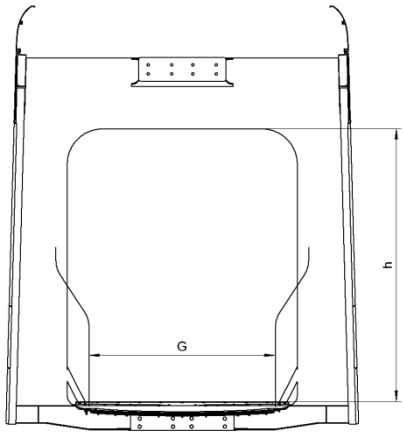
joint for upper horizontal and vertical rotation

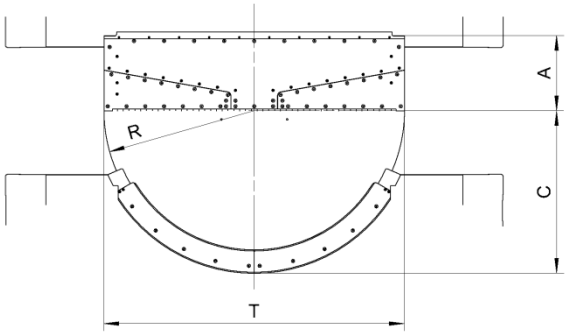




IV. description and dimensions of required platforms:

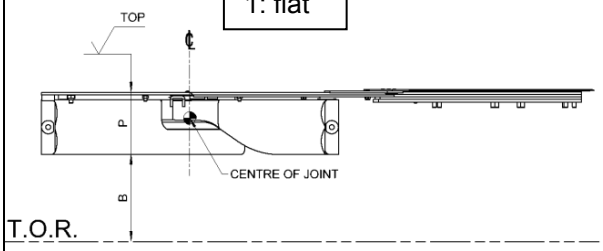
hight of gangway	h=_____mm
width of gangway	G=_____mm
distance from centre of articulation to car body floor conection	A=_____mm
distance from centre of articulation to car body circuit conection[9]	C=_____mm
width of turntable	T (2xR)=_____mm
pitch of turntable	1□ 2□ 3□
distance from top of rail (T.O.R.) to top of turntable	F=_____mm
hight distance between car body floors (if not flat)	K=_____mm



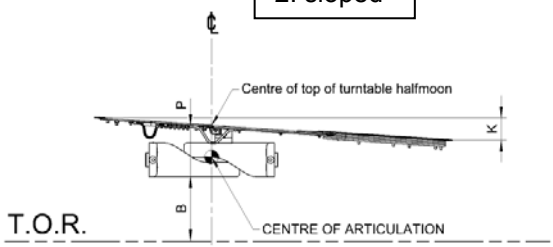


pitch of turntables:

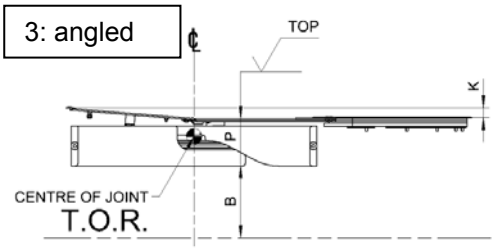
1: flat



2: sloped



3: angled



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9 Must be larger than 1/2xT

V. environmental conditions:

temperature range min ____°C max ____°C
humidity _____%
service life _____ km/year
expected vehicle life _____ years
special reqirements _____

VI. technical drawings:

please supply drawings or a 3D-CAD model of the complete tram with technical details and cross section details at each articulation.
all relevant dimensions should be detailed or the drawing printed in accurate scale.

VII. customer comments: