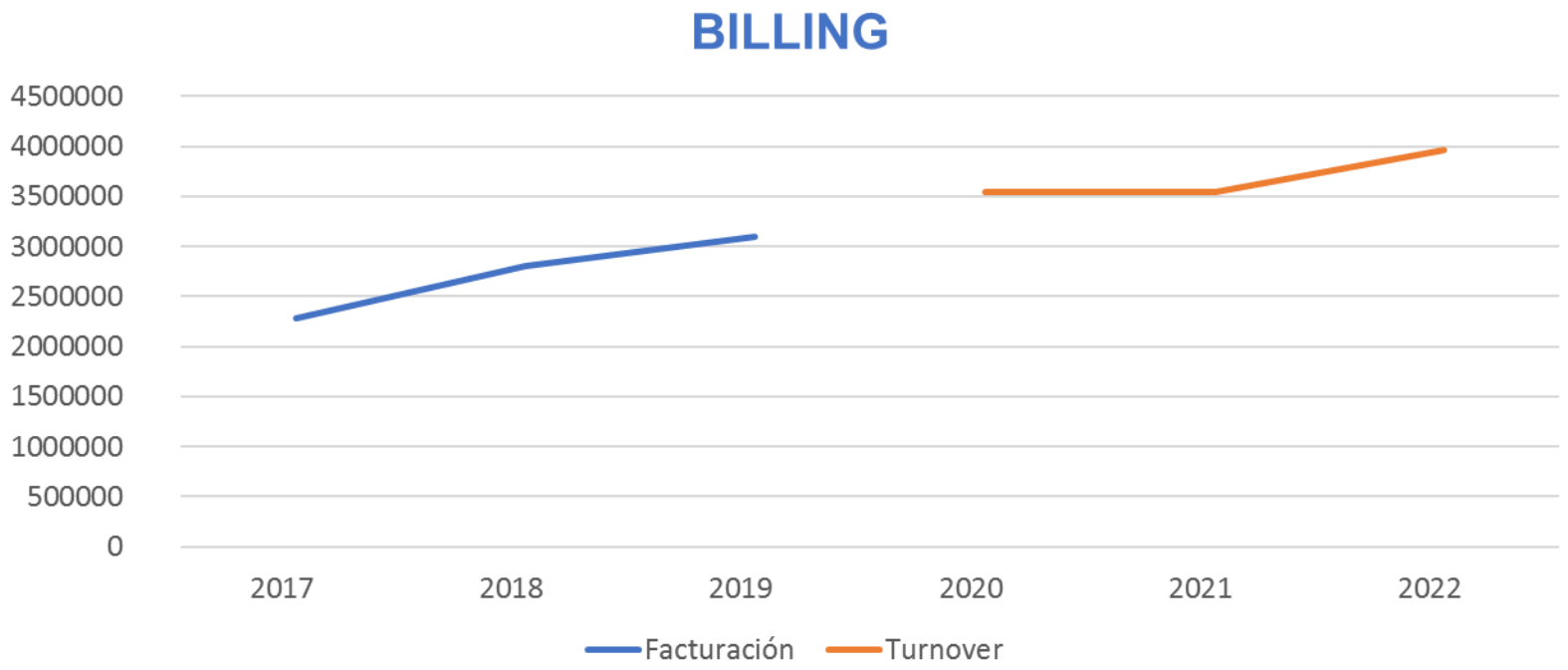
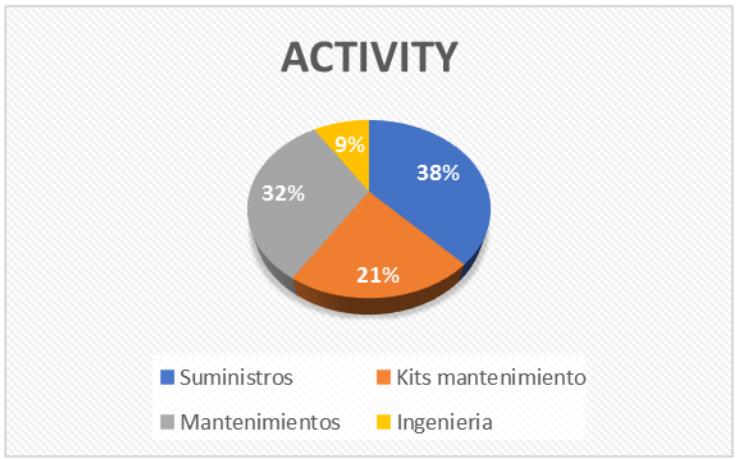
INGENIERIA Y ASESORIA TÉCNICA

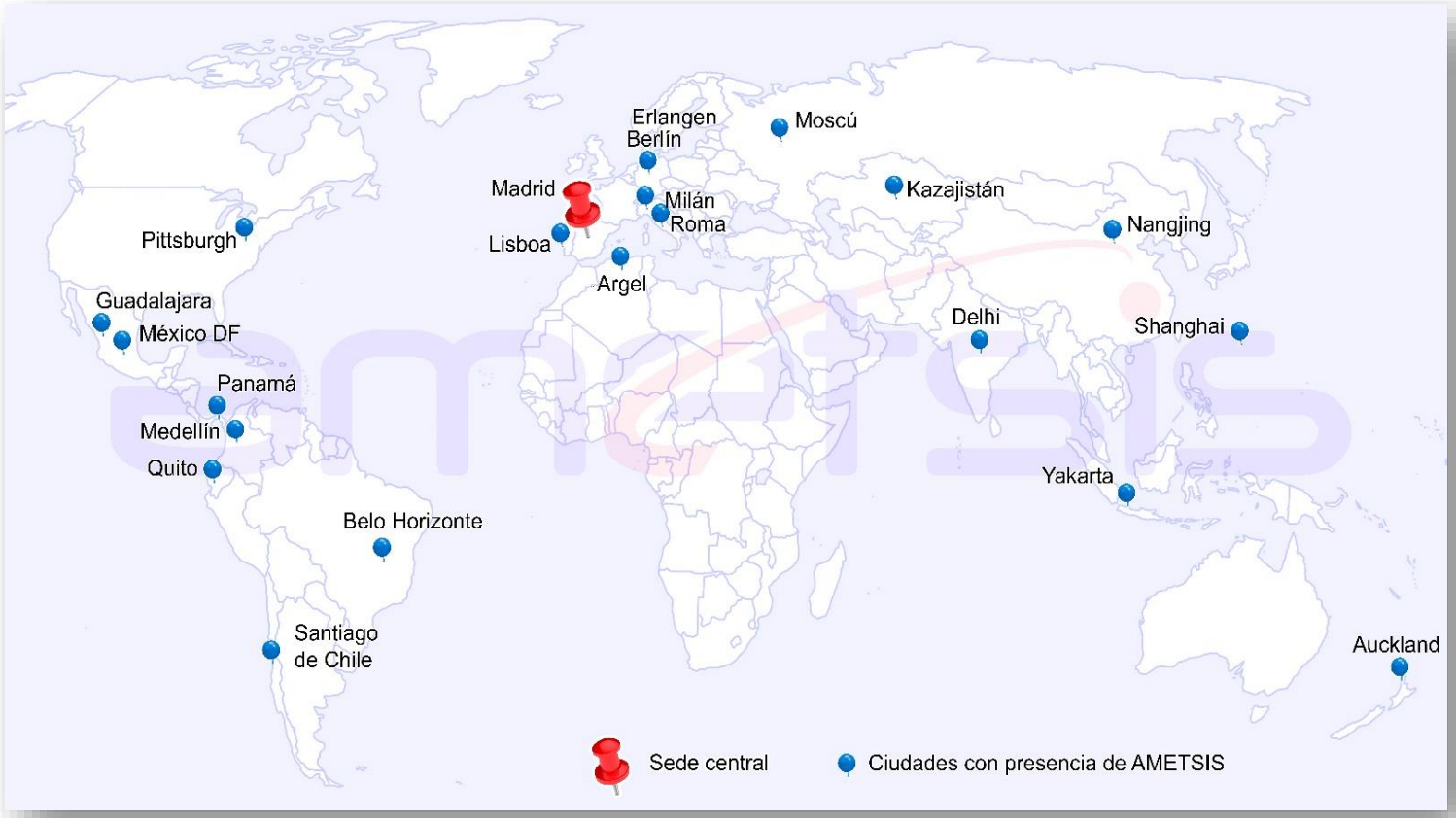
AMETSIS: OVER 15 YEARS OLD

- Company established in 2004
- **Leading company for railway constructors** and end-users worldwide.
- **Up-to-date** and welcoming facilities in Madrid (3.500 m²).
- More than 20.000 references available
- Flexible to adapt to the needs of customers and end-users.
- New railway products & equipment retrofit
- Technical Advice & Staff Training.


BILLING
4500000
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
2017
2018
2019
2020
2021
2022
Facturación
Turnover


ACTIVITY
9%
38%
32%
21%
Suministros
Kits mantenimiento
Mantenimientos
Ingenieria

GLOBAL PRESENCE



Highly qualified staff

More than 50 years experience

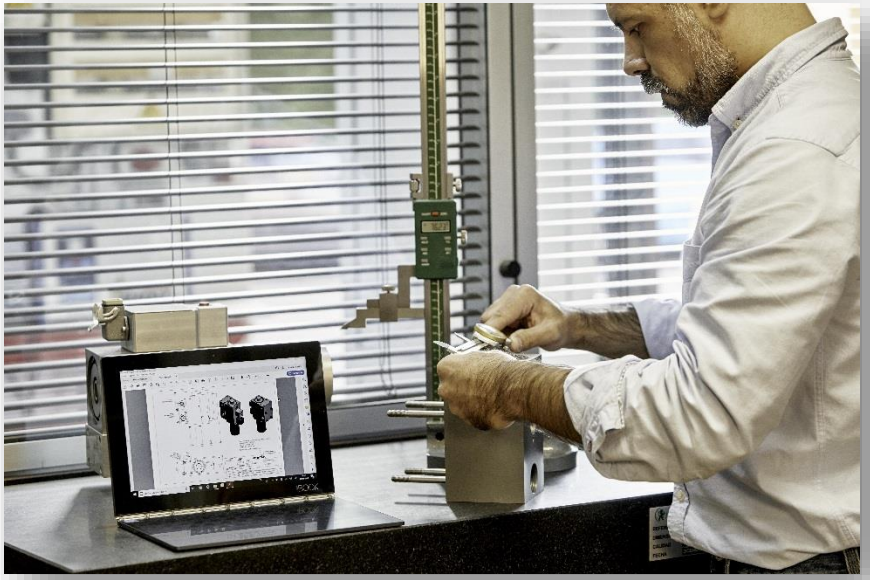
Leading company in railway sector

Technical advice for systems in service (retrofits)

Technical advice for new braking systems

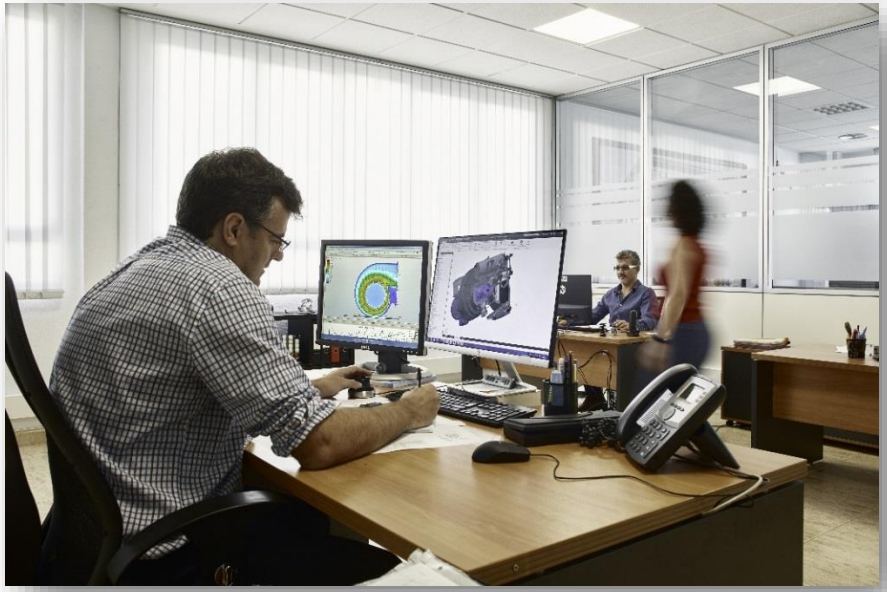
QUALITY ASSURANCE

- Conforming requirements and aplicable standards
- Conforming specific railway requirements
- Conforming UNE-EN-ISO 9001-2015 Standard .



We are currently under the process of obtaining **IRIS Certification** aimed at increasing quality and fiability in our materials and services, improving herein the chain of supply.

I+D+i: COMMITED TO INNOVATION



Research, technological development and innovation

RAILWAY SYSTEMS COMPREHENSIVE MAINTENANCE

AMETSIS performs maintenance works at our own facilities in Madrid

MARKET SPACE

All types of railway vehicles at the international level:

Customers

- Constructors: Talgo, CAF, Alstom, Voith, Siemens.
- Railway entities (End Users): RENFE, FEVE, Metro Madrid, Metro de Barcelona, Euskotren, Tren del Soller, Transfesa, Metro de Roma, Metro de Shanghai.

Vehicles

Metros, Commuter trains, Tamways, High-speed trains, Locomotives, Passenger Cars, Coaches, Auxiliary Materials**.**

INTERNATIONAL FAIRS

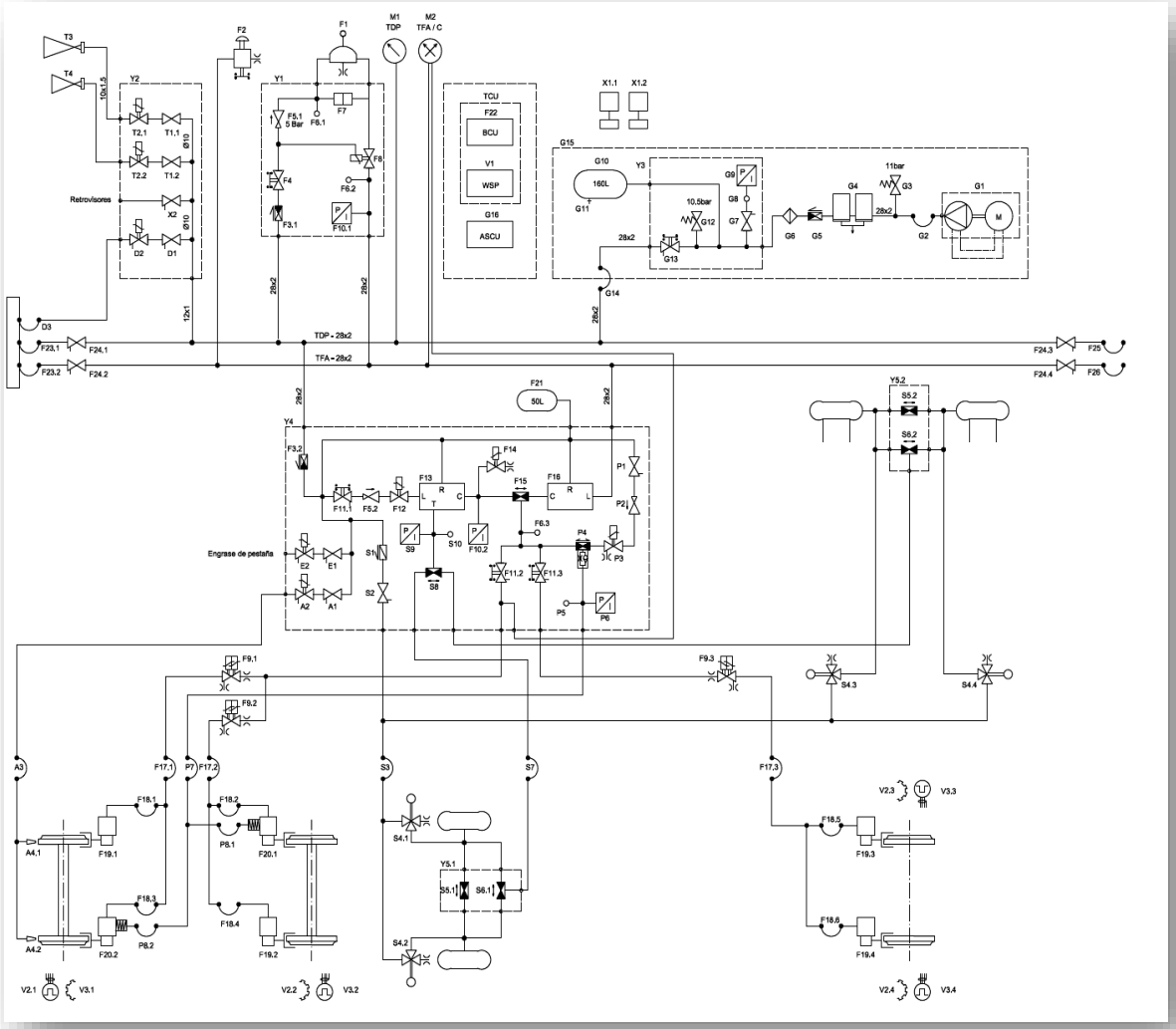
Expo Ferroviaria 2019

Innotrans 2010, 2011, 2012

Shanghai Fair 2006

Seoul Fair 2007

AMETSIS DESIGN: RAILWAY EQUIPMENT



I – AIR SUPPLY AND COMPRESSED AIR TREATMENT SYSTEMS

II – BRAKE CONTROL

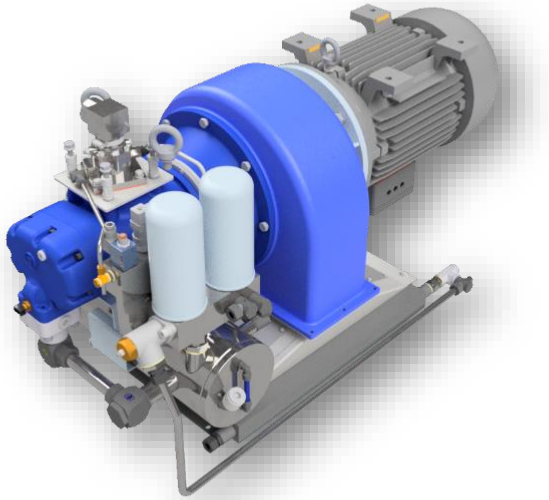
III – BOGIE EQUIPMENT

IV – AUXILIARY SUB-SYSTEMS

I – COMPRESSED AIR PRODUCTION AND TREATMENT SYSTEMS

CRC Railway Compressors

Range	Delivery Rate	Motor Power	Voltage	Speed of rotation	Weight	Operating Temperature
Modelos	Caudal	Potencia	Tensión	Velocidad de giro	Peso	Temperatura de operación
	(Nl/min)	(KW)	(VAC)	(rpm)	(Kg)	(ºC)
CRC-3000	3000	28	380	3000	220	- 30 / + 50
CRC-2200	2200	20	380	3000	215	- 30 / + 50
CRC-1500	1500	13.5	380	3000	215	- 30 / + 50
CRC-1200	1200	11	380	3000	210	- 30 / + 50
CRC-900	900	8.5	380	1500	200	- 30 / + 50
CRC-400	400	4.5	380	1500	125	- 30 / + 50



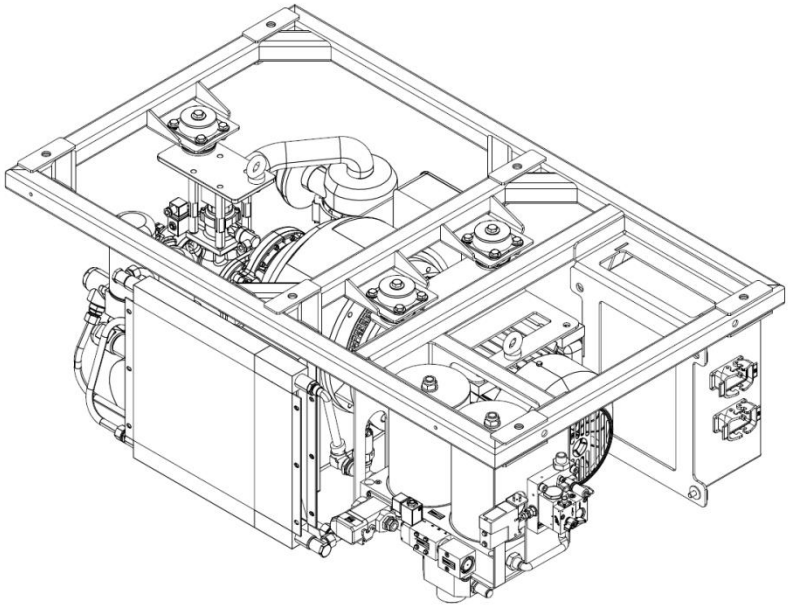
ASA Air Dryers
- Normal Gauge
- Low Gauge

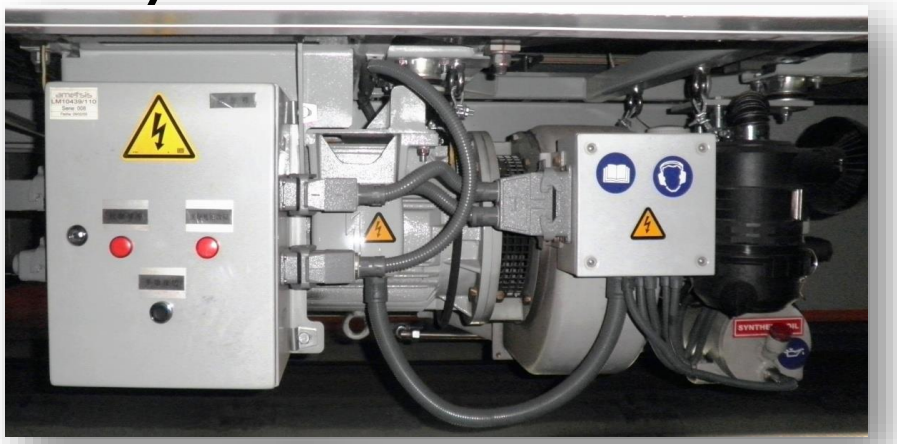
Range	Airflow rate	Operating pressure	Air Consumption	Operating Temperature	Dew Point*
Modelos	Caudal	Presión de trabajo	Consumo de aire	Temperatura de operación	Punto de rocio*
	(Nl/min)	(bar)	(%)	(ºC)	(ºC)
ASA-1	750 / 1,200	10	15	- 40 / + 80	-20
ASA-2	200 / 750	10	15	- 40 / + 80	-20
ASA-3	1,200 / 2,200	10	15	- 40 / + 80	-20
ASA-4	2,200 / 3,200	10	15	- 40 / + 80	-20

Note*: Referring to room temperature
Nota*: Respecto a la temperatura ambiente

I – COMPRESSED AIR PRODUCTION AND TREATMENT SYSTEMS

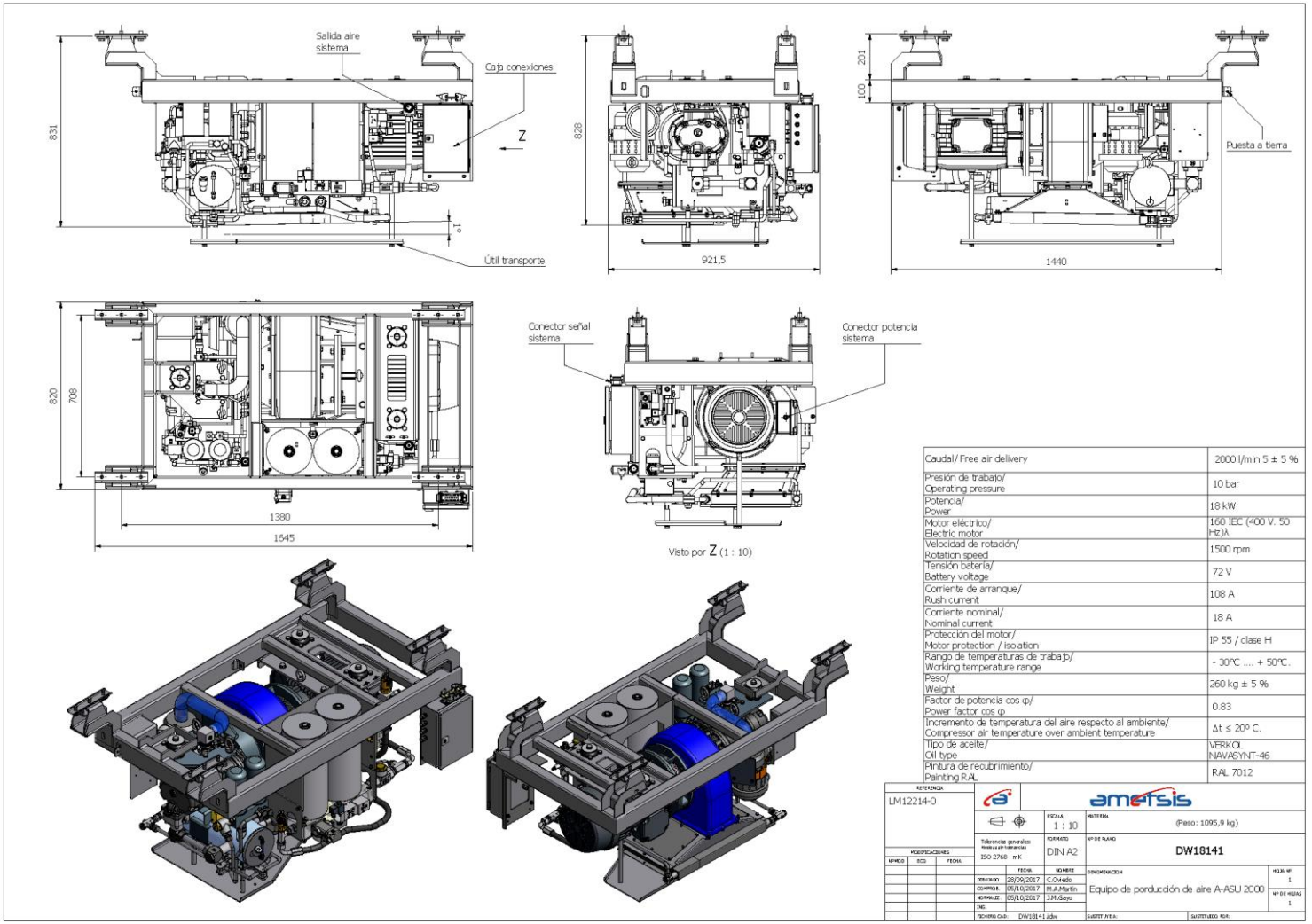
Air Supply Unit (CRC-900 Compressor)





Air Supply Unit ASU-300

I – COMPRESSED AIR PRODUCTION AND TREATMENT SYSTEMS

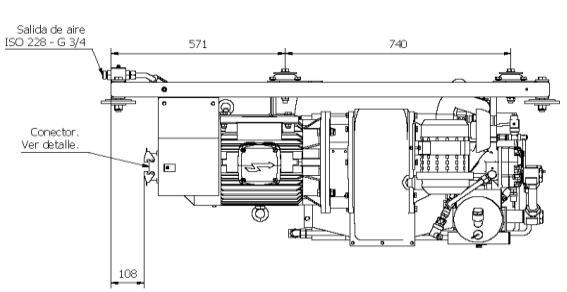


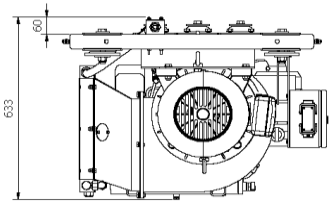
Caudal/ Free air delivery	2000 l/min 5 ± 5 %
Presión de trabajo/ Operating pressure	10 bar
Potencia/ Power	18 kW
Motor eléctrico/ Electric motor	160 IEC (400 V. 50 Hz)A
Velocidad de rotación/ Rotation speed	1500 rpm
Tensión batería/ Battery voltage	72 V
Corriente de arranque/ Rush current	108 A
Corriente nominal/ Nominal current	18 A
Protección del motor/ Motor protection / isolation	IP 55 / clase H
Rango de temperaturas de trabajo/ Working temperature range	- 30ºC .... + 50ºC.
Peso/ Weight	260 kg ± 5 %
Factor de potencia cos φ/ Power factor cos φ	0.83
Incremento de temperatura del aire respecto al ambiente/ Compressor air temperature over ambient temperature	Δt ≤ 20º C.
Tipo de aceite/ Oil type	VERKOL NAVASYNT-46
Pintura de recubrimiento/ Painting RAL	RAL 7012

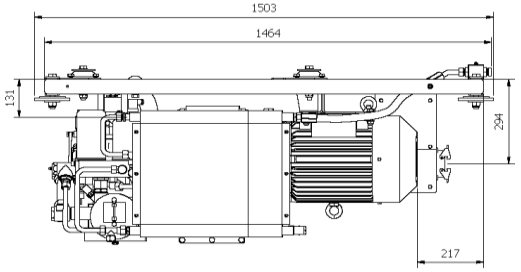
REFERENCIA	LM12214-0
ESCALA	1 : 10
MATERIAL	(Peso: 1095,9 kg)
FORMATO	DIN A2
Nº DE PLANO	DW18141
DIBUJADO	28/09/2017 C.Oviedo
COMPROB.	05/10/2017 M.A.Martín
NORMALIZ.	05/10/2017 J.M.Goyo
DENOMINACION	Equipo de porducción de aire A-ASU 2000

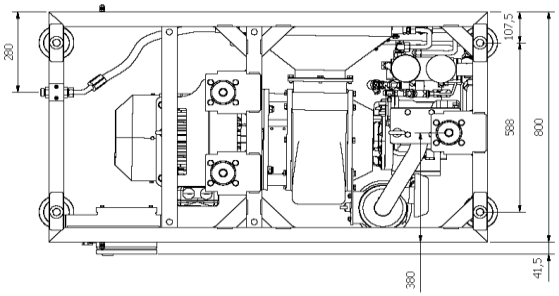
Air Production A-ASU 2000 for CAF 120 series (LM12214-0)

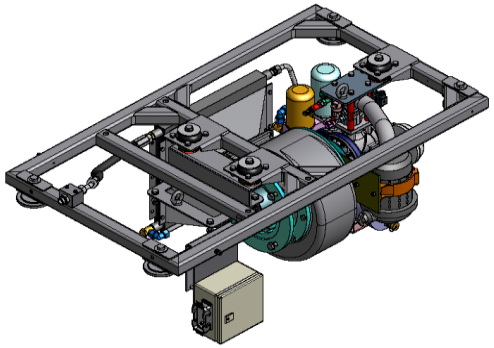
I – COMPRESSED AIR PRODUCTION AND TREATMENT SYSTEMS











NOTA: Ver plano eléctrico EE10109

1.- POTENCIA U1
POWER U1
2.- POTENCIA W1
POWER W1
3.- POTENCIA V1
POWER V1
4.- RESERVA POTENCIA
POWER RESERVE
5.- NEGATIVO ALIMENTACIÓN EV. DESCARGA
NEGATIVE SUPPLY SOLENOID V. DISCHARGE
6.- PRESOSTATO MÍNIMA PRESIÓN
PRESSURE SWITCH MIN. PRESSURE
7.- PRESOSTATO MÍNIMA PRESION
PRESSURE SWITCH MIN. PRESSURE
8.- SEÑAL ALTA TEMPERATURA (N.O.)
HIGH TEMPERATURE SIGNAL (N.O.)
9.- SEÑAL ALTA TEMPERATURA (COMÚN)
HIGH TEMPERATURE SIGNAL (COM.)
10.- SEÑAL ALTA TEMPERATURA (N.C.)
HIGH TEMPERATURE SIGNAL (N.C.)
11.- +72V dc ALIMENTACIÓN EV. DESCARGA
+72V dc SUPPLY SOLENOID DISCHARGE VALVE
12.- SEÑAL TEMPERATURA CORRECTA (N.O.)
RIGHT TEMPERATURE SIGNAL (N.O.)

Detalle del conector

Macho

02

Ejemplo de pedido LM10467 / ---

0: con válvula de drenaje en depósito de aceite.
1: con calentador en depósito de aceite.
Tensión (V)
Ejemplo 024

Ejemplo: LM10467 / 072 0 -> Tensión a 72 V y con válvula de drenaje en depósito.

Caudal/ Free air delivery	900 l/min ± 5 %
Presión de trabajo/ Operating pressure	10 bar
Potencia/ Power	8.5 kW
Motor eléctrico/ Electric motor	160 M (400 Vac. 50 Hz)λ Δ
Velocidad de rotación/ Rotation speed	1450 rpm
Batería/ Battery	72 V
Corriente de arranque/ Rush current	108 A
Corriente nominal/ Nominal current	18 A
Protección del motor/ Motor protection / isolation	IP 55 / clase H
Rango de temperaturas de trabajo/ Working temperature range	- 30ºC .... + 50ºC.
Peso/ Weight	260 kg ± 5 %
Factor de potencia cos φ/ Power factor cos φ	0.83
Incremento de temperatura del aire respecto al ambiente/ Compressor air temperature over ambient temperature	Δt ≤ 20º C.
Tipo de aceite/ Oil type	Betico rotosint.
Pintura de recubrimiento/ Painting RAL	RAL 7038

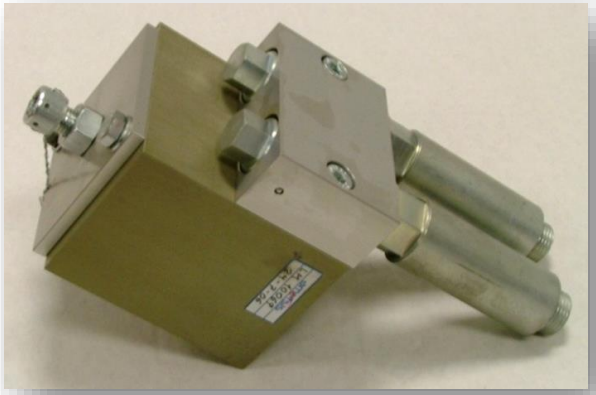
APLICACIONES: LM10467/...
ESCALA: 1:10
FORMATO: DIN A2
REFERENCIA: DW11399
Tolerancias generales: Mecanizado: Tolerancias ISO 2768 - mK
MODIFICACIONES: APARTADO | ECO | FECHA
DIBUJADO 04/09/2014 J. de Rojas
COMPROB. 05/09/2014 M.A.Martín
NORMALIZ. 05/09/2014 J. M. Gayo
02 4744 06/02/2015 ING.
01 4653 03/12/2014 FICHERO CAD: DW11399.idw
DENOMINACION: Equipo de producción de aire A-ASU900 CIVIA-RENFE
HOJA Nº 1
Nº DE HOJAS 1
SUSTITUYE A: | SUSTITUIDO POR:

Air Production A-ASU 900 for CIVIA-RENFE (LM10467)

I – COMPRESSED AIR PRODUCTION AND TREATMENT SYSTEMS

- **RENFE** Compressors – CRC-900
- **METRO DE MADRID** Compressors - CRC-900
- **SHANGHAI METRO** Air Supply Unit - ASU-900
- **CSR: China South Locomotive & Rolling Stock Corporation Limited** Air Supply Unit - ASU-1200
- **SOLLER TRAMWAYS** Air Supply Units - ASU-400
- **TALGO HIGH SPEED** Air Supply Unit - ASU-1200
- **MAJORCA RAILWAYS** Air Supply Unit
- **RENFE FEVE** Compressor + Air Dryer ASA-1
- **ALSTOM** Air Dryer - ASA-3
- **COMSA RAIL** Air Dryer - ASA-4

II – BODY INSTALLED BRAKE CONTROL EQUIPMENT



Equalizer Valve

Emergency Valve

Electronics for instrument control

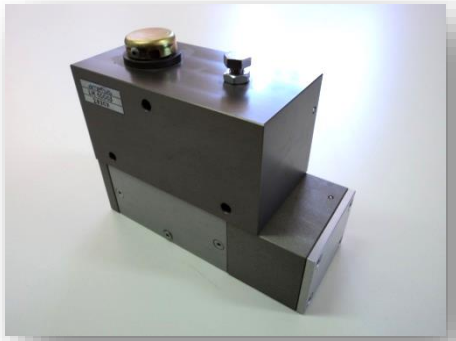
Tachogenerator / Speed sensor

A-EA-R1/2 Anti-Skid Valve

II – BODY INSTALLED BRAKE CONTROL EQUIPMENT

Electrovalves

Check valves
(for pipes or paneling)



Brake valve, according load

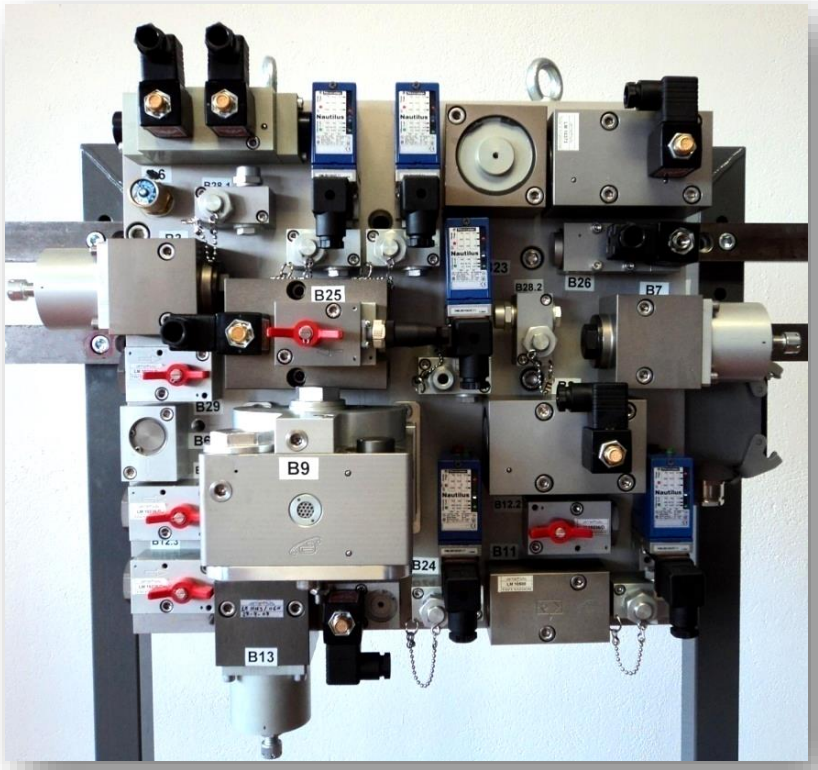
Anti-block filter

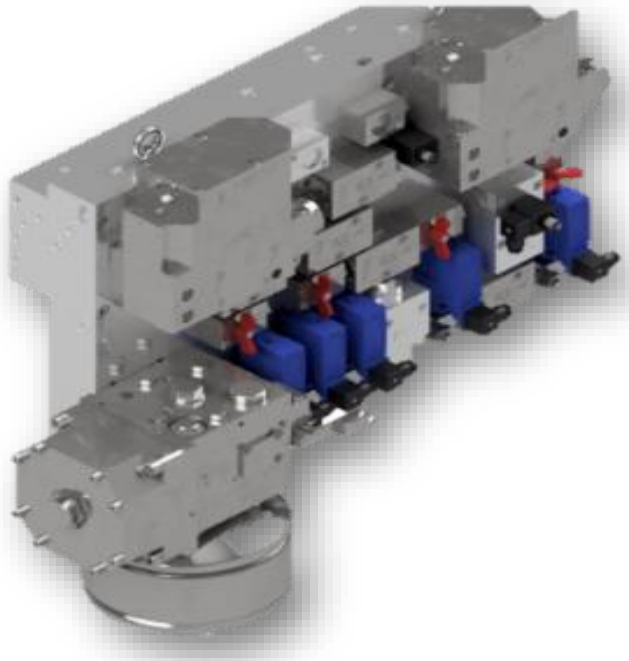
Reducing valve

Exhausting and Non Exhausting Cock valves

II – BODY INSTALLED BRAKE CONTROL EQUIPMENT

Brake Panels for Locomotives and Cars





II – BODY INSTALLED BRAKE CONTROL EQUIPMENT

- RENFE - FEVE:
  - Pneumatic brake control manifold for Passengers Coaches
  - Electro-pneumatic brake control manifold for shunting locomotives
  - Electro-pneumatic brake control
  - COMSA: Electro-pneumatic brake control manifold for locomotives
- FUNDACIÓ FERROCAIB: Electro-pneumatic brake control for locomotives

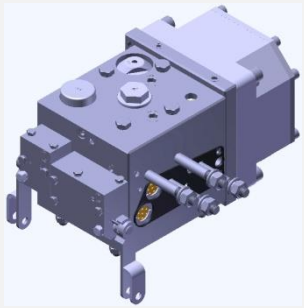
II – BODY INSTALLED BRAKE CONTROL EQUIPMENT

UNIVERSAL BRAKE DISTRIBUTOR – DFA-VQ

- **Distributor for automatic brake according to the UIC 541-03**
- **Equalizer function included**
- **Temperature: -50 / 75ºC**
- **Light and compact design**
- **Weight 10Kg (simple configuration)**
- **Control chamber of 1l volume**

Universal Brake Distributor DFA-VQ

Simple Distributor & manual release



Distributor w relay valve & manual release

Distributor w BFL valve & manual release

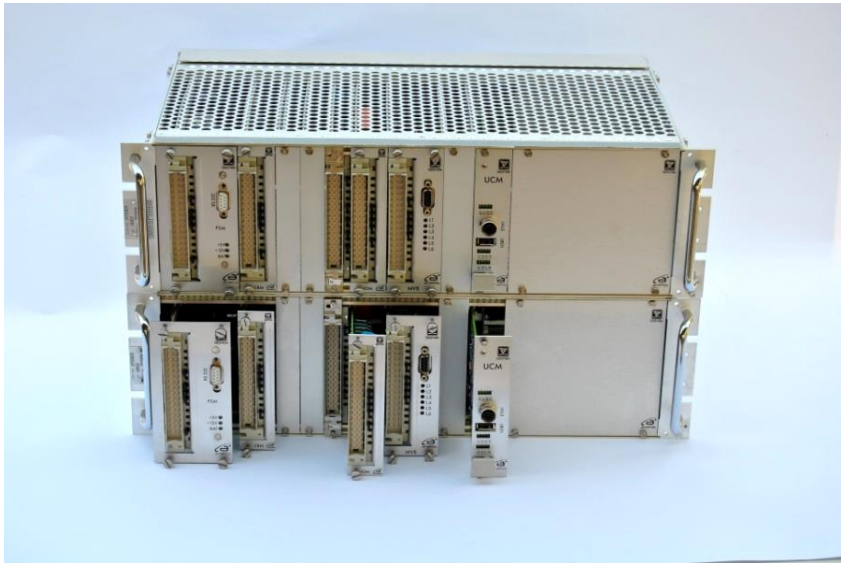
Simple Distributor w control chamber & automatic release

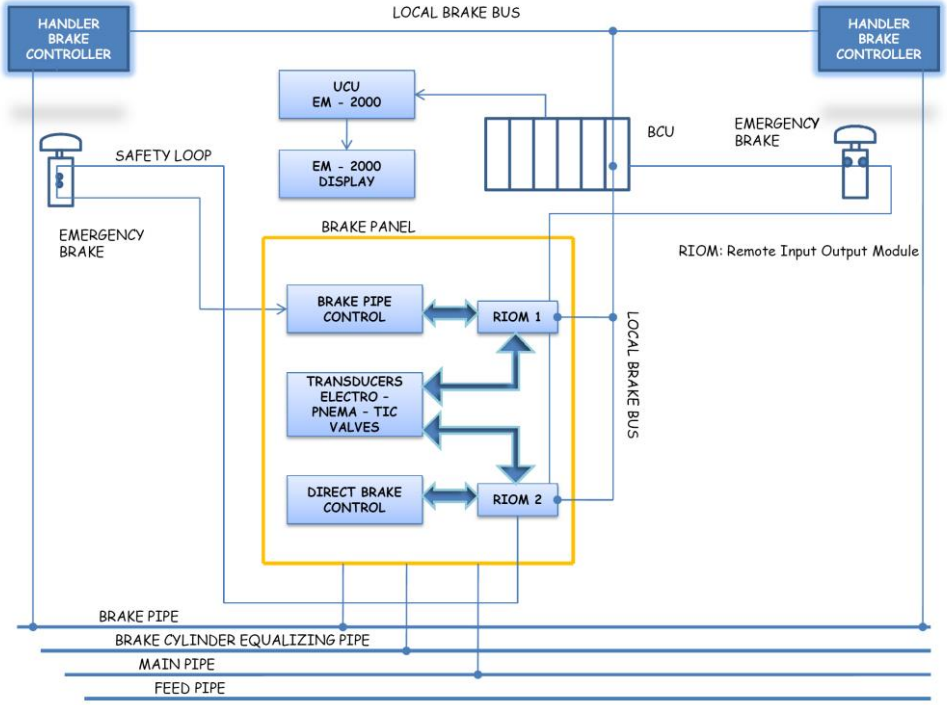
Distributor w relay valve, control chamber & aut. release

Distributor w BFL valve, control chamber & aut. release

II – BODY INSTALLED BRAKE CONTROL EQUIPMENT

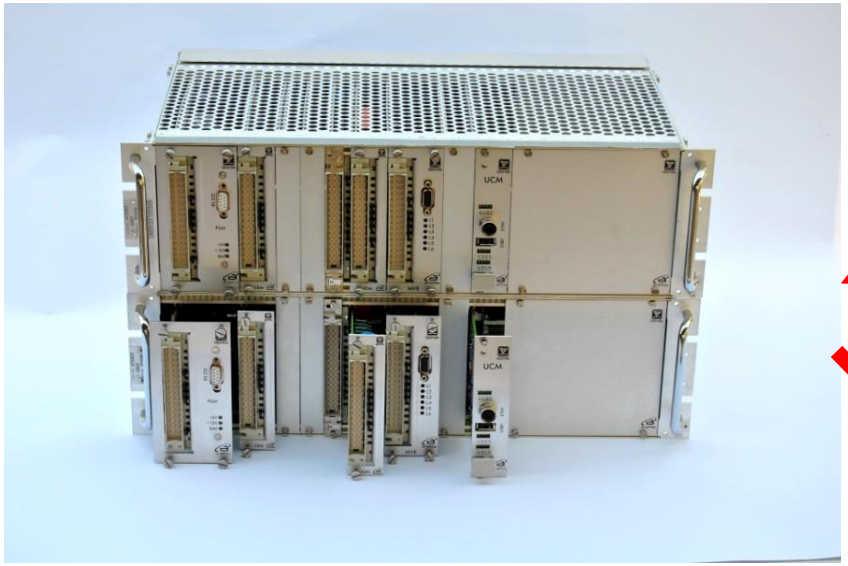
Brake Control Electronics





II – BODY INSTALLED BRAKE CONTROL EQUIPMENT

Brake Control Electronics

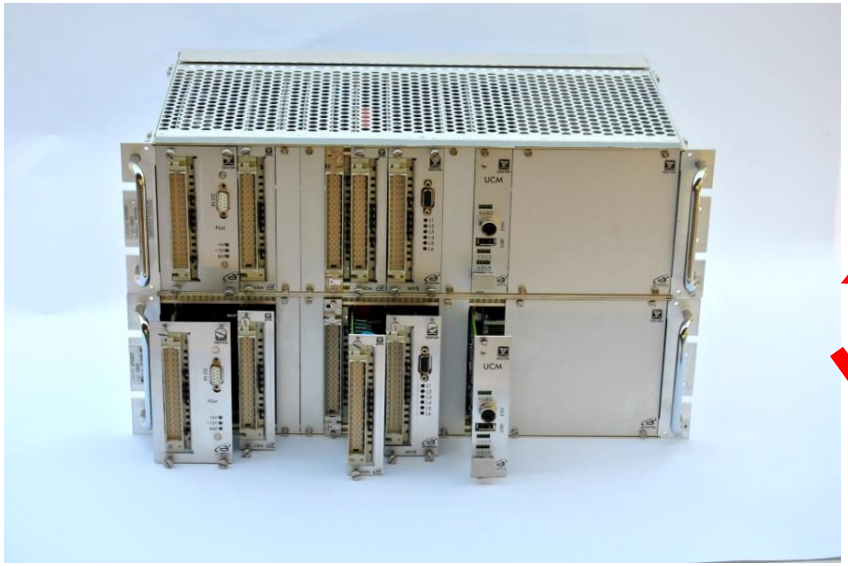


Tachogenerator / Speed sensor

Anti-Skid Valve

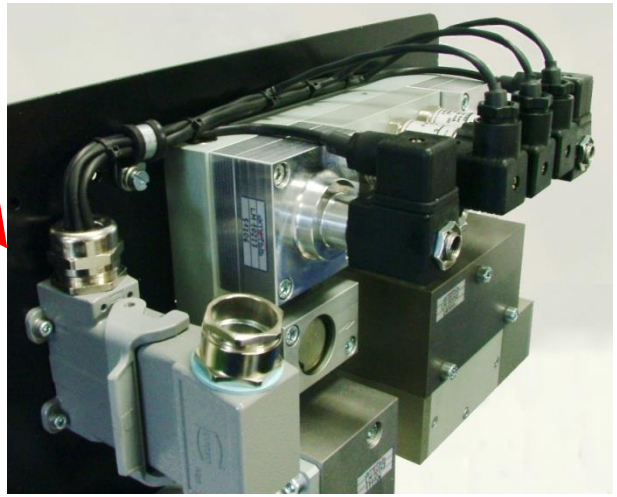
II – BODY INSTALLED BRAKE CONTROL EQUIPMENT

Brake Control Electronics



Tachogenerator / Speed sensor

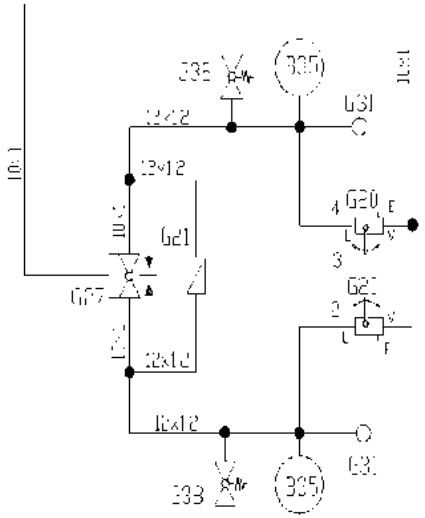
Overdrive Brake Panel



III – BOGIE EQUIPMENT

SUSPENSION CONTROL

Diagrama del circuito neumático de suspensión



B35: Secondary Suspensions.

G31: Pressure Tap

G38: Safety valve

G21: Overflow valve

G27: Medium Pressure

G20: Levelling Valve

Overflow valve

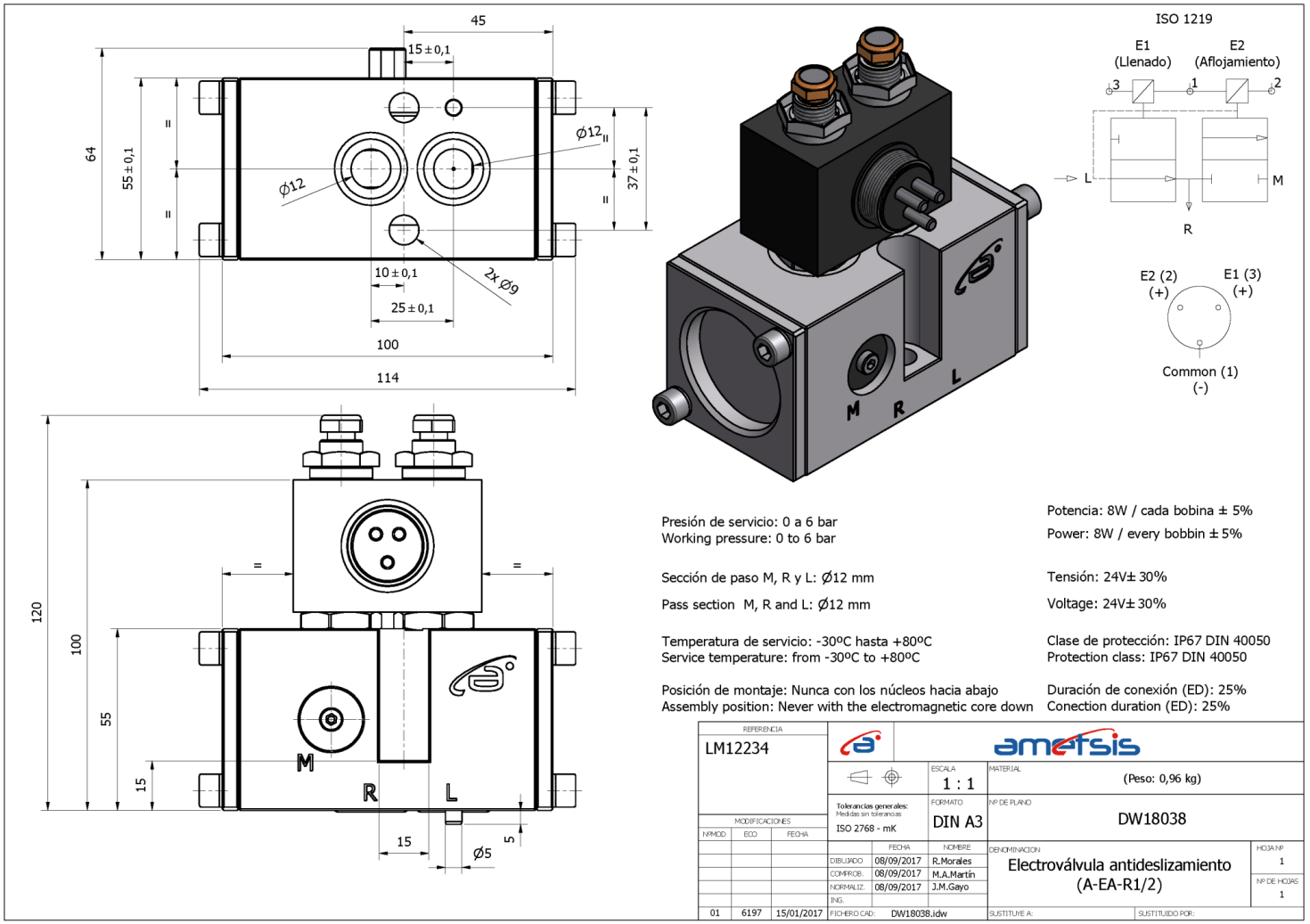
A-VNL-1 Levelling Valve

Medium Pressure Valve

Pneumatic Suspension Panel

III – BOGIE EQUIPMENT

A-EA-R1/2 Anti-Skid Electrovalve



Presión de servicio: 0 a 6 bar
Working pressure: 0 to 6 bar

Sección de paso M, R y L: Ø12 mm

Pass section M, R and L: Ø12 mm

Temperatura de servicio: -30ºC hasta +80ºC
Service temperature: from -30ºC to +80ºC

Posición de montaje: Nunca con los núcleos hacia abajo
Assembly position: Never with the electromagnetic core down

Potencia: 8W / cada bobina ± 5%
Power: 8W / every bobbin ± 5%

Tensión: 24V± 30%
Voltage: 24V± 30%

Clase de protección: IP67 DIN 40050
Protection class: IP67 DIN 40050

Duración de conexión (ED): 25%
Conection duration (ED): 25%

REFERENCIA: LM12234			ESCALA: 1 : 1	MATERIAL: (Peso: 0,96 kg)	
			Tolerancias generales: Medidas sin tolerancias ISO 2768 - mK	FORMATO: DIN A3	Nº DE PLANO: DW18038
MODIFICACIONES					
NºMOD	ECO	FECHA		FECHA	NOMBRE
			DIBUJADO	08/09/2017	R.Morales
			COMPROB.	08/09/2017	M.A.Martín
			NORMALIZ.	08/09/2017	J.M.Gayo
			ING.		
01	6197	15/01/2017	FICHERO CAD: DW18038.idw		

DENOMINACION: Electroválvula antideslizamiento (A-EA-R1/2)

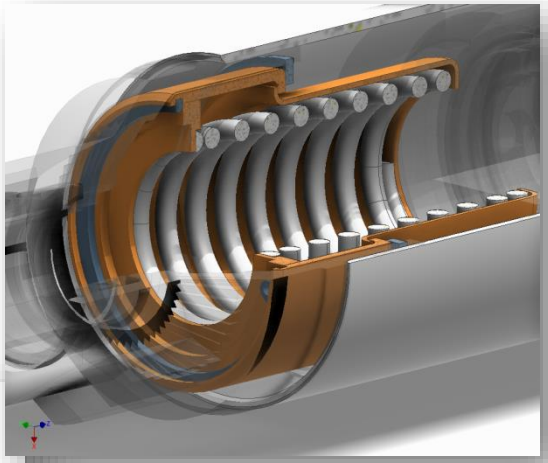
HOJA Nº: 1

Nº DE HOJAS: 1

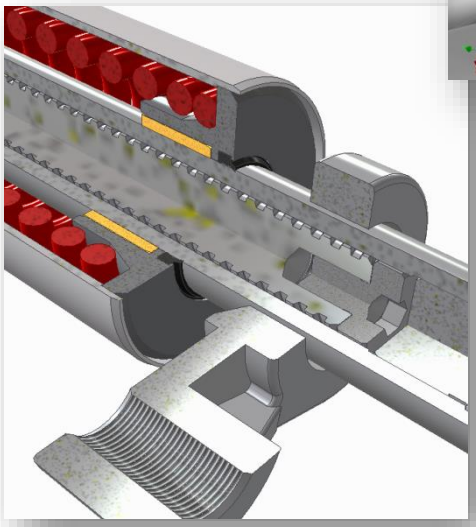
SUSTITUYE A: SUSTITUIDO POR:

III – BOGIE EQUIPMENT

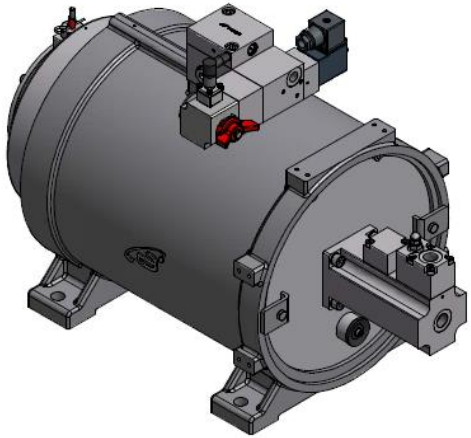
Brake Cylinders, Hydro-Pneumatic Brake Converters and Slack Adjusters



Brake Cylinders (simple/with parking brake)



Slack Adjusters - ARHF



CNHT – Hydro-Pneumatic Brake Converters

III – BOGIE EQUIPMENT

Tread Brake Unit

Name	Affective Area	Amplification	Operating Pressure	Maximum Force
Modelo	Sección Cilindro	Multiplicación	Presión de Servicio	Fuerza Máxima
	(Cm^2)		(Bar)	(KN)
ABF	200	3.9	5.5	43
ABRP	200	3.9	5.5	43

Adjustable Distance	Automatic Adjustment	Parking Brake Part	Operating Temperature
Carrera Ajustable	Carrera de Ajuste Automática	Freno de Estacionamiento	Temperatura de operación
(mm)	(mm)		(ºC)
from 4 to 15	90	No	- 40 / + 80
from 4 to 15	90	YES	- 40 / + 80

III – BOGIE EQUIPMENT

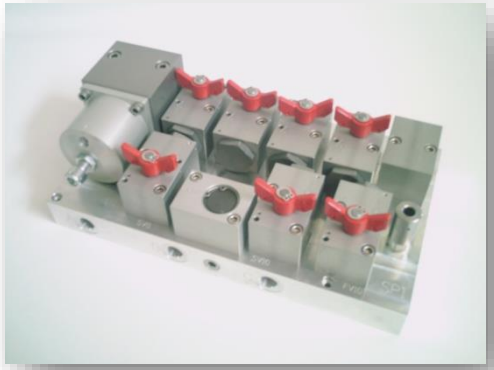
- **TALGO**
  - Secondary Suspension System for High Speed Train AVRIL
  - Hydro-pneumatic brake converters / Brake cylinders
  - Electro-pneumatic Suspension Control
  - Compensation Valves for Pneumatic Suspension

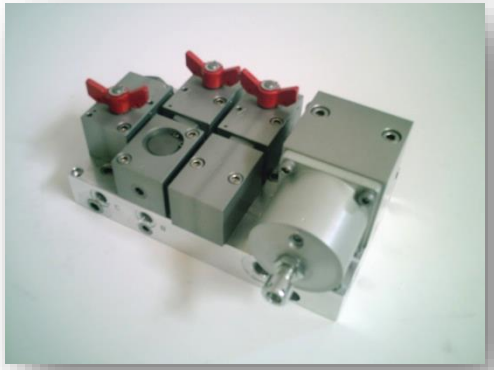
- **RENFE-FEVE**
  - Brake Cylinders for Shunting Locomotives
  - Brake Cylinders for Steam Locomotives

- **ARCELOR MITTAL**
  - Tread Brake Units for locomotives

IV – AUXILIARY SUBSYSTEMS

Auxiliary Panels

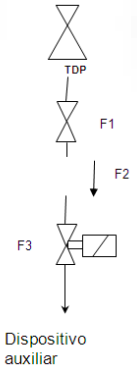




Sand Ejectors

High / Low Frequency Horses (UIC 644)

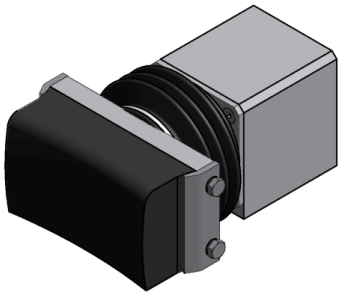
Alarm Devices for Passengers

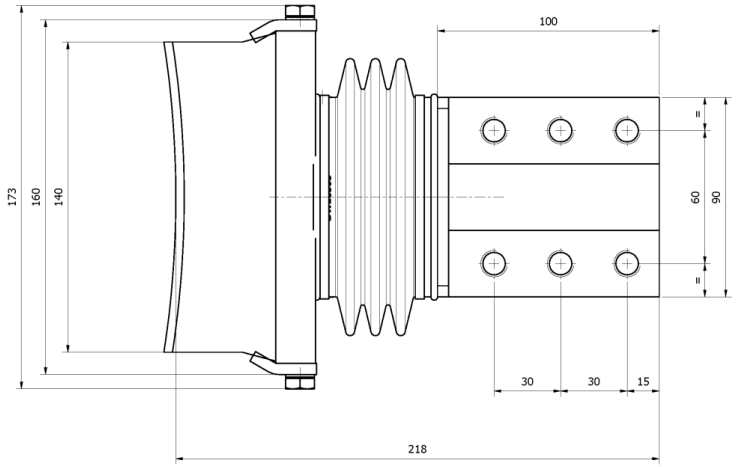


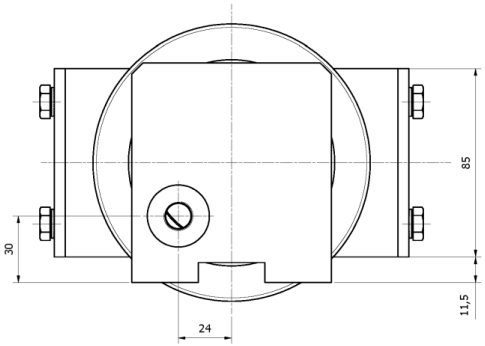
F1: Stopcock valve
F2: Reducing valve
F3: Electrovalve

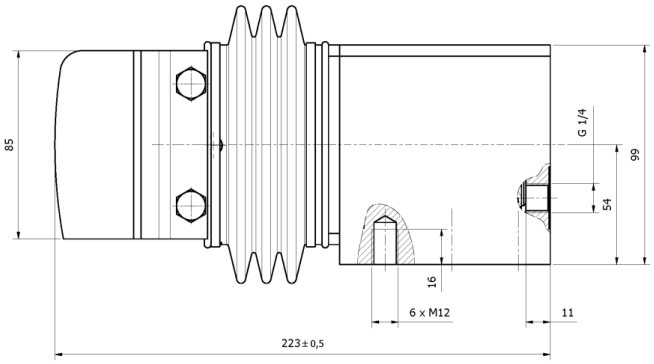
Silbato

IV – AUXILIARY SUBSYSTEMS





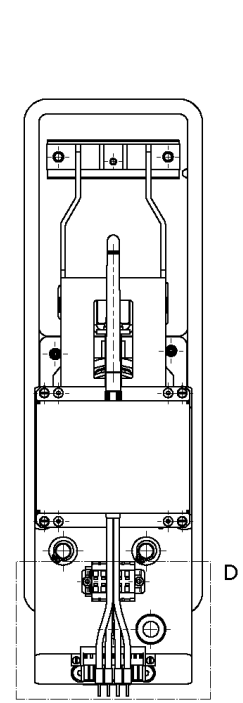


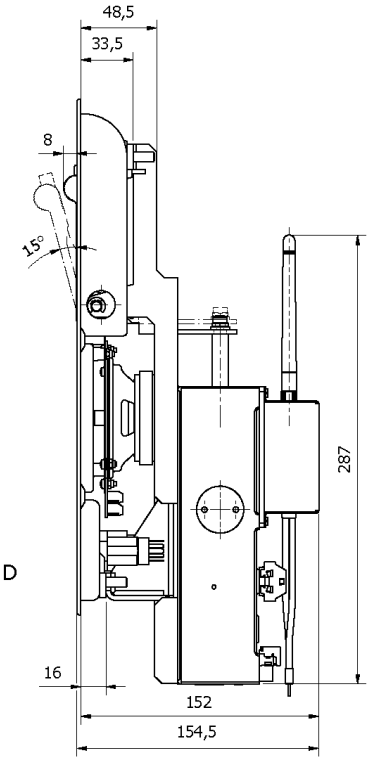


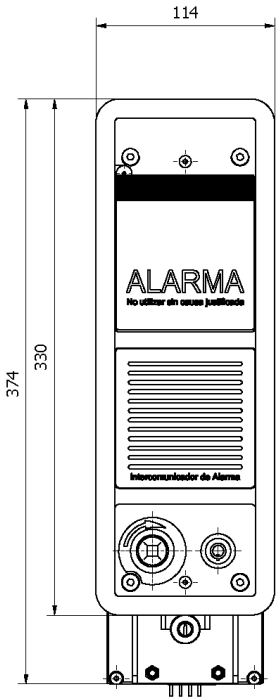
Especificaciones técnicas	
Diámetro del émbolo	80 mm
Superficie de empuje	50 cm²
Carrera efectiva	40 mm
Carrera libre	50 mm
Presión máxima de servicio	8 bar
Temperatura de servicio límite	-40 ... 85 ºC
Desgaste máximo de zapata	38 mm
Fuerza del muelle de recuperación	300 N

REFERENCIA: LM10590				ESCALA: 1:1	MATERIAL: (Peso: 4,5 kg)
				FORMATO: DIN A2	Nº DE PLANO: DW11884
Tolerancias generales: Medidas sin tolerancias ISO 2768 - mK					DENOMINACIÓN: Cilindro de Limpieza de Rueda CLR80
MODIFICACIONES			FECHA	NOMBRE	HOJA Nº: 1
Nº MOD	ECO	FECHA	DIBUJADO	13/01/2009 J.A.Arenes	Nº DE HOJAS: 1
05	5960	26/07/2017	COMPROB.	13/01/2009 M.A.Martín	
04	5129	02/12/2015	NORMALIZ.	14/01/2009 M.Matei	
03	4542	13/10/2014	ING.		
02	4207	11/03/2014	FICHERO CAD:	DW11884.idw	
01	3124	17/01/2013	SUSTITUYE A:	SUSTITUIDO POR:	

IV – AUXILIARY SUBSYSTEMS



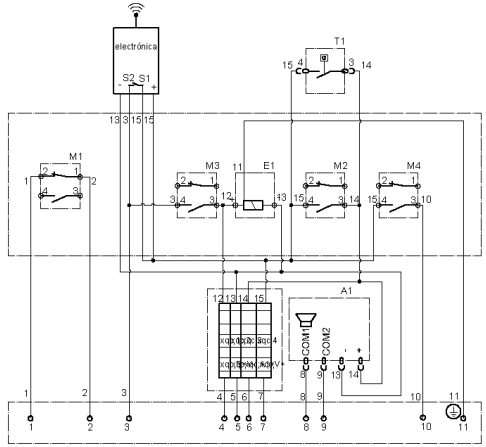




Características técnicas	
Temperatura de servicio	-40 ... +60 ºC
Tensión de servicio	72 Vdc ± 30%
Par de rearme	0,6 ... 1 Nm
Características de los microrruptores	
Tensión máxima	110 Vdc / 230 Vac
Corriente máxima DC	1,5 A
Corriente máxima AC	5 A
Caract. módulo de transmisión inalámbrica	
Tensión de entrada	24 ... 110 Vdc
Potencia de salida	150 W
Potencia de transmisión	10 mW (*)
Banda de frecuencia	2,4 GHz
Temperatura de servicio	-40 ... +85 ºC
Alcance	750 m
Consumo en espera	< 10 µA
Protocolo de transmisión	Zigbee
Tecnología de red	Mesh

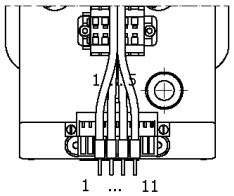
(*) No interfiere con otros dispositivos

ESQUEMA ELÉCTRICO REARME REMOTO INALÁMBRICO SIRPAD-W

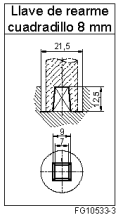


FG10542-1

D (1 : 2)
Identificación de bornas

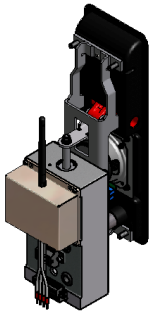


Llave de rearme cuadradillo 8 mm



FG10533-3

Ejemplo de pedido LM11493 / ...



450 - Serie 450 de Renfe
451 - Serie 451 de Renfe

Nota:
El tiempo de conexión del relé de rearme no deberá superar los 60s.

REFERENCIA					
LM11493/...					
MODIFICACIONES					
Nº MOD	ECO	FECHA			
				FECHA	NOMBRE
			DIBUJADO	20/06/2016	J.M.Gayo
			COMPROB.	22/06/2016	M.A.Martín
			NORMALIZ.	22/06/2016	R.Morales
02	6170	28/12/2017	ING.		
01	6130	04/12/2017	FICHERO CAD:	DW15686.idw	

Tolerancias generales: Medidas sin tolerancias ISO 2768 - mK

ESCALA 2 : 5

MATERIAL (Masa: 3,20 kg)

FORMATO DIN A3

Nº DE PLANO PDW15686

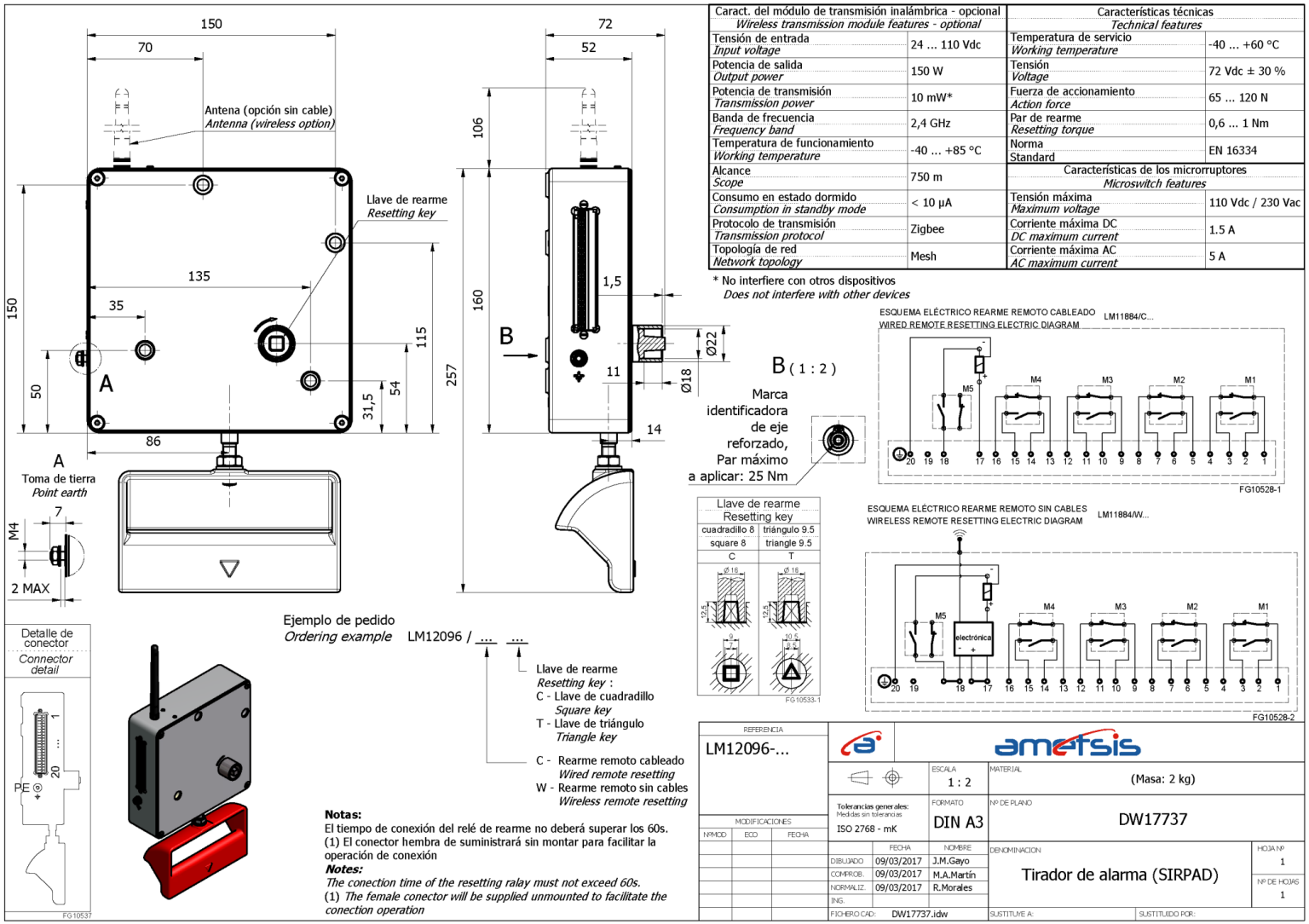
DENOMINACION: Tirador de alarma con rearme remoto inalámbrico SIRPAD-W

HOJA Nº 1

Nº DE HOJAS 1

SUSTITUYE A: SUSTITUIDO POR:

IV – AUXILIARY SUBSYSTEMS



Caract. del módulo de transmisión inalámbrica - opcional *Wireless transmission module features - optional*	
Tensión de entrada *Input voltage*	24 ... 110 Vdc
Potencia de salida *Output power*	150 W
Potencia de transmisión *Transmission power*	10 mW*
Banda de frecuencia *Frequency band*	2,4 GHz
Temperatura de funcionamiento *Working temperature*	-40 ... +85 °C
Alcance *Scope*	750 m
Consumo en estado dormido *Consumption in standby mode*	< 10 µA
Protocolo de transmisión *Transmission protocol*	Zigbee
Topología de red *Network topology*	Mesh

Características técnicas *Technical features*	
Temperatura de servicio *Working temperature*	-40 ... +60 °C
Tensión *Voltage*	72 Vdc ± 30 %
Fuerza de accionamiento *Action force*	65 ... 120 N
Par de rearme *Resetting torque*	0,6 ... 1 Nm
Norma Standard	EN 16334
Características de los microrruptores *Microswitch features*	
Tensión máxima *Maximum voltage*	110 Vdc / 230 Vac
Corriente máxima DC *DC maximum current*	1.5 A
Corriente máxima AC *AC maximum current*	5 A

* No interfiere con otros dispositivos
Does not interfere with other devices

Notas:
El tiempo de conexión del relé de rearme no deberá superar los 60s.
(1) El conector hembra de suministrará sin montar para facilitar la operación de conexión

Notes:
The conection time of the resetting ralay must not exceed 60s.
(1) *The female conector will be supplied unmounted to facilitate the conection operation*

REFERENCIA	ESCALA	MATERIAL
LM12096-...	1 : 2	(Masa: 2 kg)
	FORMATO: DIN A3	Nº DE PLANO: DW17737
	Tolerancias generales: Medidas sin tolerancias ISO 2768 - mK	

MODIFICACIONES		
NºMOD	ECO	FECHA

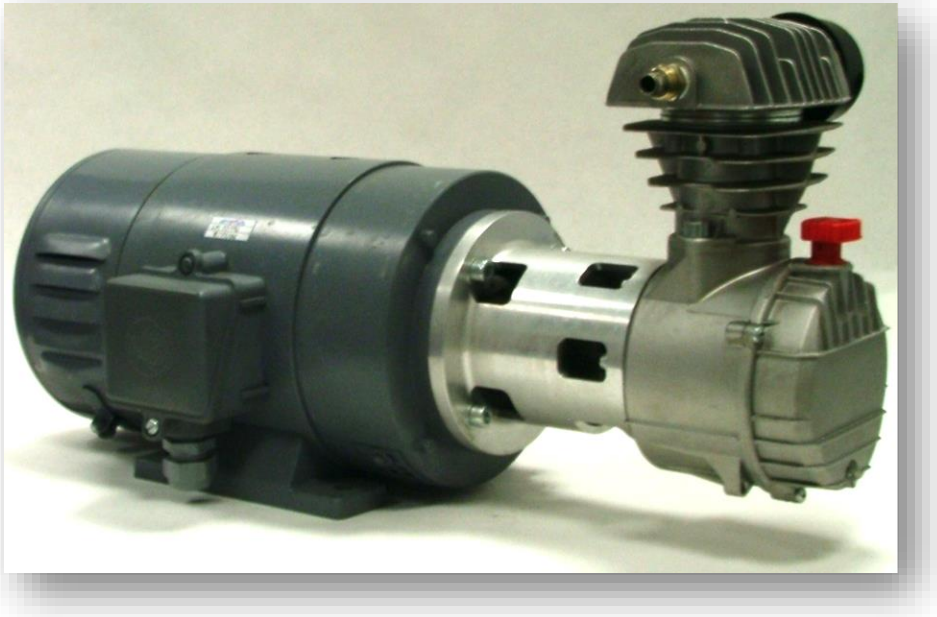
	FECHA	NOMBRE
DIBUJADO	09/03/2017	J.M.Gayo
COMPROB.	09/03/2017	M.A.Martín
NORMALIZ.	09/03/2017	R.Morales
ING.		
FICHERO CAD:	DW17737.idw	

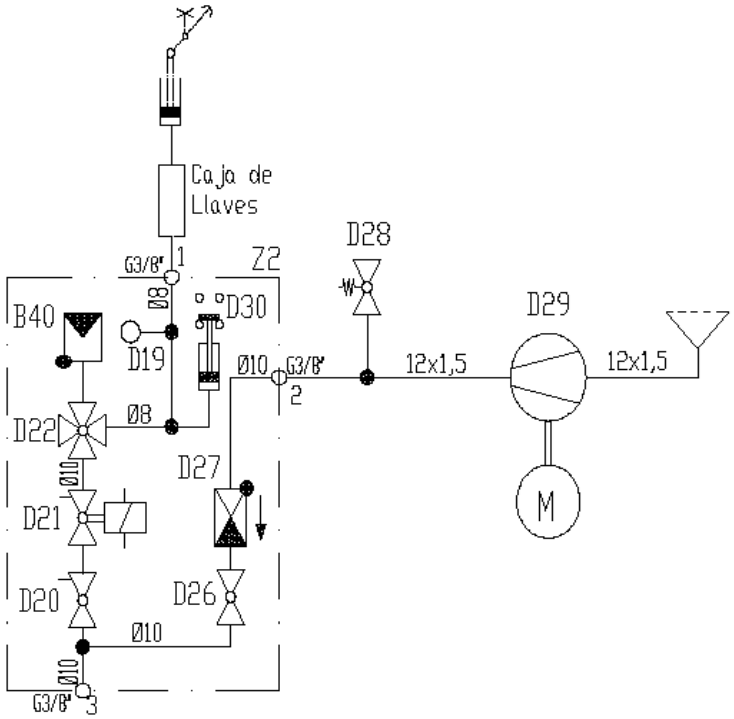
DENOMINACION: Tirador de alarma (SIRPAD)
HOJA Nº: 1
Nº DE HOJAS: 1
SUSTITUYE A:
SUSTITUIDO POR:

IV – AUXILIARY SUBSYSTEMS

Pantograph Lifter Equipment

A-CA Auxiliar Motocompressor equipment





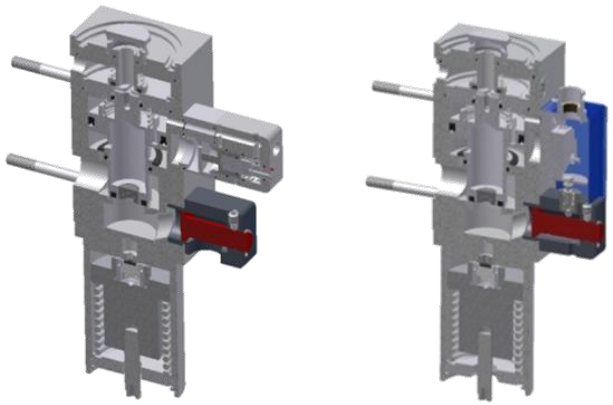
D29: Auxiliary motocompressor equipment
D28: Safety valve
D27: Checking Valve
D26, D20: Stopcocks
D21: Electrovalve
D30: Pressure Switch
D22: Special stopcock

IV – AUXILIARY SUBSYSTEMS

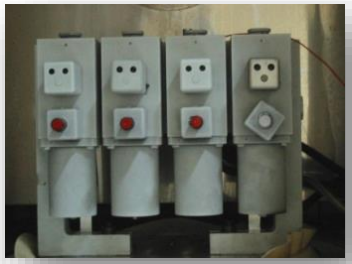
- **TALGO**
  - Electro-pneumatic manifolds for compressed air distribution
  - Emergency pullers for passenger
  - Electro-pneumatic control system for pantograph lifting
  - Sanders / Sand Ejectors
- **ALSTOM**
  - Electro-pneumatic manifolds for doors control
  - High and low frequency horns
- **CAF**
  - Electro-pneumatic manifolds for cleaning cylinders
  - High and low frequency horns
- **METRO DE MADRID**
  - Wheel cleaner cylinders
- **SUNSUNDEGUI - FEVE**
  - High and low frequency horns

SICODE® Derailment Detector

- Patented system.
- Brake application on all the composition except on the derailed axle.
- There is an EP version for those vehicles with direct brake. The emergency wire will be opened.
- Visual indication to identify the activated device



Sectional view of the SICODE UIC541-08



Mix test: temperature and vibrations as UIC541-08

SICODE® Derailment Detector

SICODE assembled in RENFE

Freight Wagons

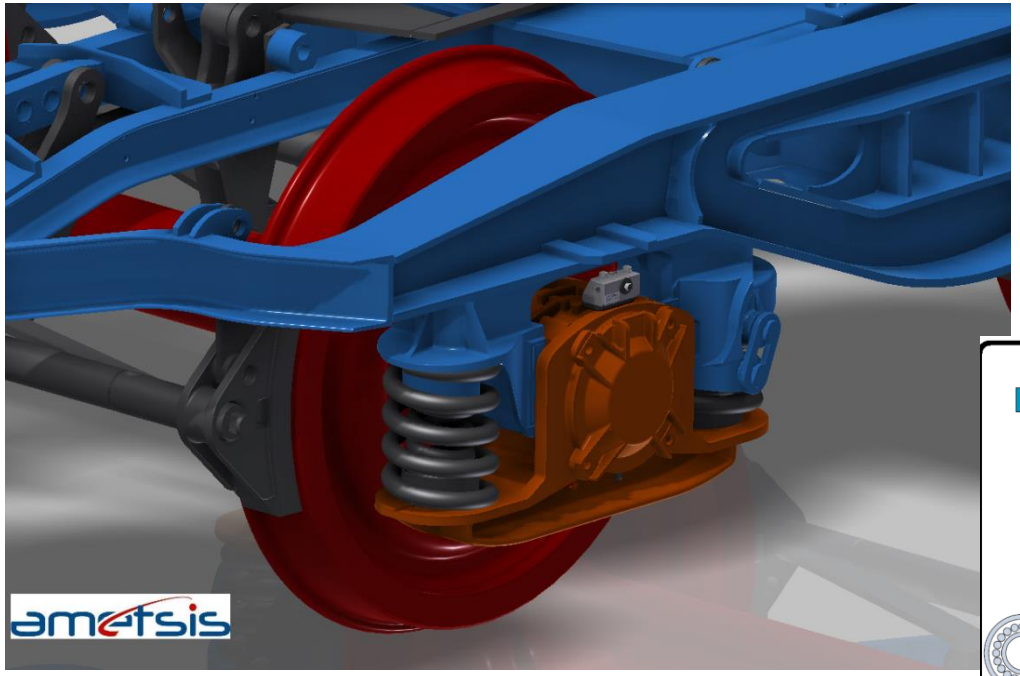
ametsis

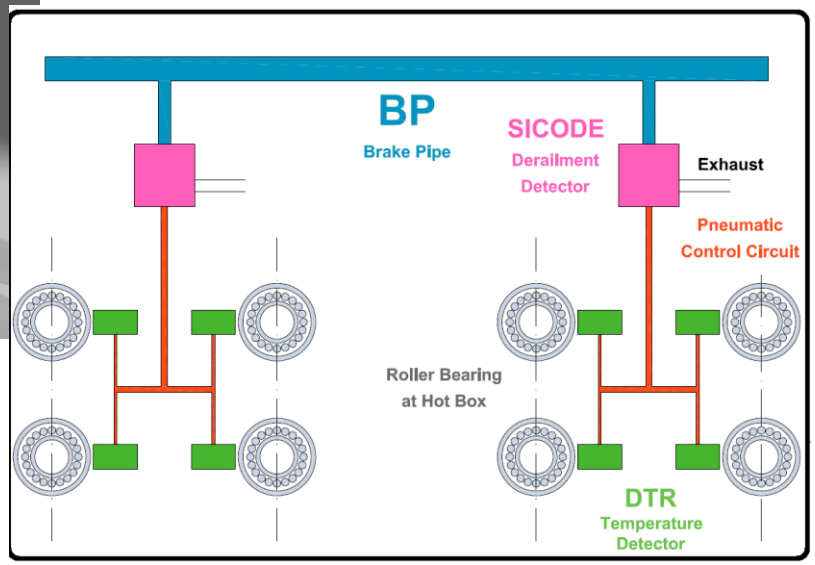
INGENIERIA Y ASESORIA TÉCNICA

Cerne ISO 9001 EC:40007/2019

ON BOARD RAIL BEARING OVER-TEMPERATURE DETECTOR

Freight Wagons, Coaches, Special Applications or Rail Operations

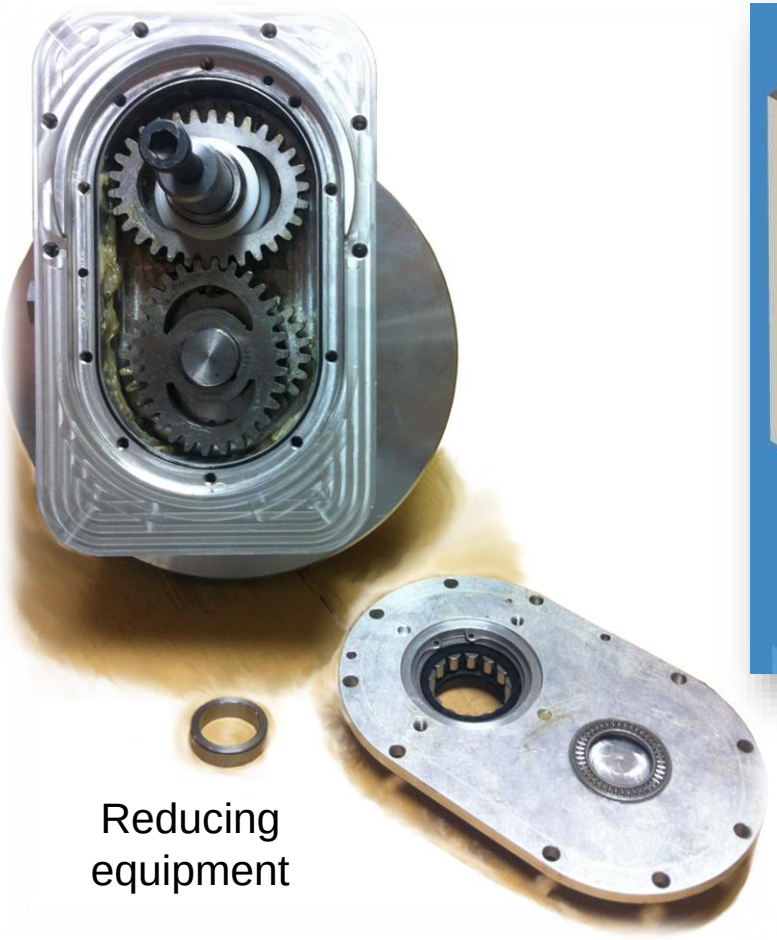




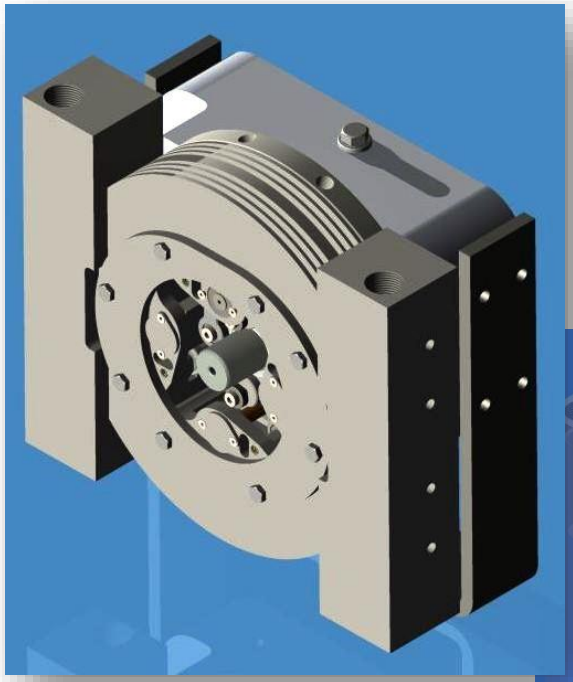
INGENIERIA Y ASESORIA TÉCNICA

CROF: ROTARY COMPRESSOR WITHOUT OIL

DEVELOPED AND MANUFACTURED BY AMETSIS



Reducing equipment



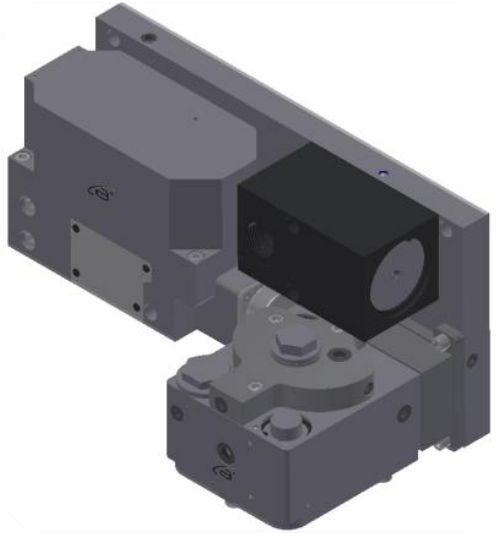
Compressor Header

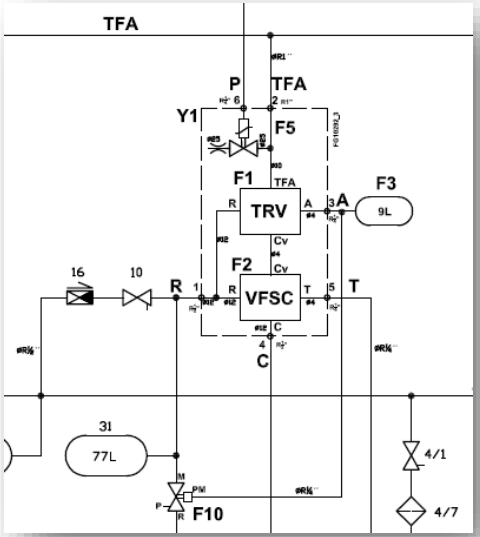
RAILWAY BRAKE SYSTEMS COMPREHENSIVE MAINTENANCE

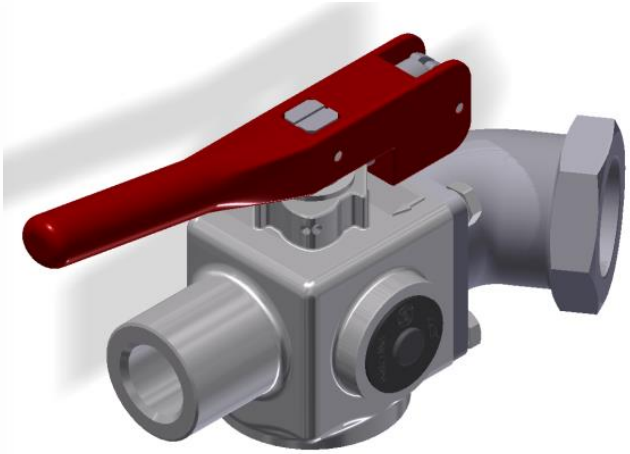
- Brake Systems Refurbishment
- Brake Systems Preventive / Corrective Maintenance
- Test Benches
- Kits and Maintenance Spare Parts
- AMETSIS performs maintenance works at our own facilities in Madrid

RAILWAY BRAKE SYSTEMS COMPREHENSIVE MAINTENANCE

UT 211 FGC for FEVE – Ecuador Brake System Restructuring







INGENIERIA Y ASESORIA TÉCNICA

RAILWAY BRAKE SYSTEMS COMPREHENSIVE MAINTENANCE

Manufacturers: AMETSIS, Knorr-Bremse, Faiveley, Sab Wabco, etc

Metro de Roma

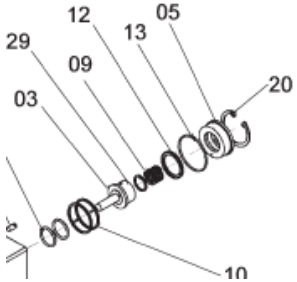
S449 RENFE

ANALYSIS FOR MAINTENANCE TECHNICAL SPECIFICATIONS OF BRAKES AND SYSTEMS

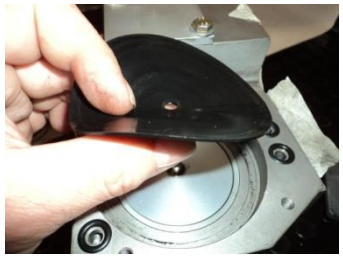
TEST BENCHES DEVELOPMENT, ADAPTED TESTING PROTOCOLS & SPECIAL TOOLS

EQUIPMENT RECEPTION

EXTERNAL CLEANING



EQUIPMENT DISASSEMBLY



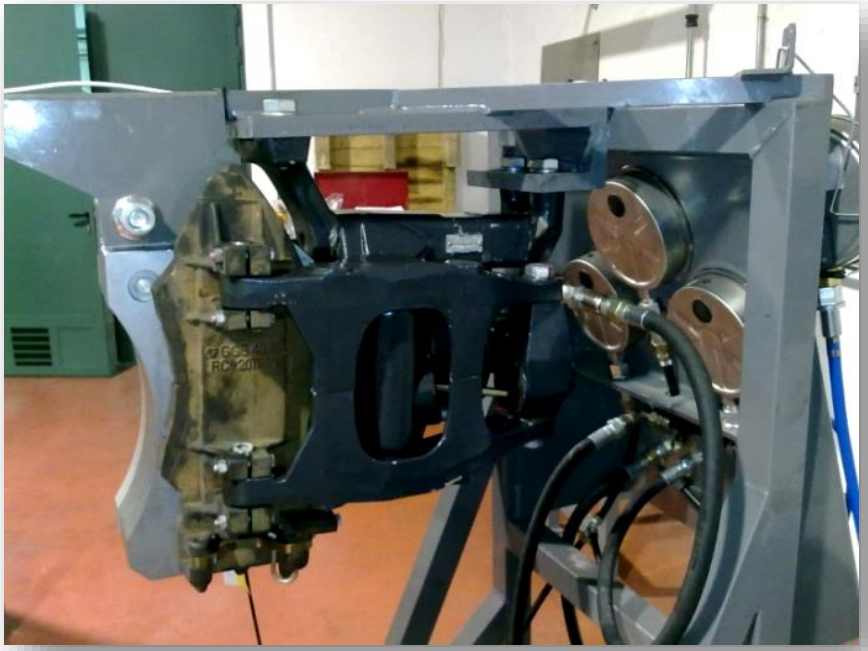
SYSTEMATIC REPLACEMENT MAINTENANCE KITS

TEST BENCH VALIDATION

RAILWAY BRAKE SYSTEMS COMPREHENSIVE MAINTENANCE

Test Benches for Brake Components
Manufacturers: AMETSIS, Knorr-Bremse, Faiveley, Sab Wabco, etc

Test Bench for Braking Manifolds
with electronic control



Test Bench for Brake Callipers

RAILWAY BRAKE SYSTEMS COMPREHENSIVE MAINTENANCE

Test benches for pneumatic & brake components, devices and systems

•RENFE
•Mega test bench for all the braking components of trains series 102,103,104,112,114 & 253.
•Portable test benches for the braking system of trains series 446 & 447.
•Test benches for braking components of the train series 449.

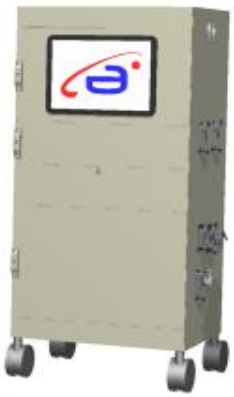
•CAF
•Mexico Metro: Compressors, Main Brake Manifold, Auxiliary Manifolds y Brake Callipers.
•Rome Metro: Hand Controller, Emergency Valves (SIFA & Emergency Mushroom), Compressors & Air dryers, Brake Manifolds, Auxiliary Manifolds, Brake Callipers, Pneumatic Suspension Components & Other Valves.
•Alger Metro: Compressors, Safety Valves, Brake Manifolds & Brake Callipers.
•New Delhi Metro: Brake Callipers, Brake Manifolds, Auxiliary Manifolds & Other Valves on the Train Body.

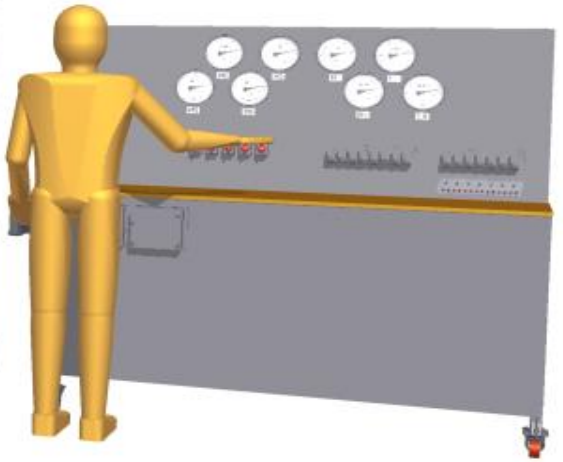
•ACTREN – CAF - RENFE
•Main Brake Manifolds, Manifold for the BP Generation, Compressor, Air Dryers & Other Valves on the Train Body.

•OTHERS
•Test Bench for Auto-continuous Braking System of Freight Wagons.
•Portable Test Bench for the Braking System of Freight Wagons.
•Test Benches for Brake Distributors KE & C3W.

RAILWAY BRAKE SYSTEMS COMPREHENSIVE MAINTENANCE

Test benches for pneumatic & brake components





Test bench for all the braking components and braking systems of RENFE high-speed trains series 102,103,104,112,114 & 253.

RAILWAY BRAKE SYSTEMS COMPREHENSIVE MAINTENANCE

Maintenance Kits and Spare Parts – All the brake brands

ametsis INGENIERÍA Y ASESORÍA TÉCNICA	Referencia: **KIT DE REPARACIÓN Q5001**
	Denominación: **Kit compresor** [redacted]

Página: 1 de 2	Revisión: 05	ECO: 0695	Fecha: 08/01/2009

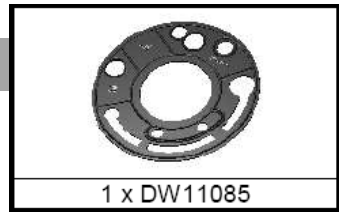
Notas:

- Recocer las juntas de Cobre antes de su montaje.
- Almacenar en zona oscura y a temperatura no superior a 30°C.
- Las posiciones incluidas corresponden con el plano [redacted].

 Pos.57	 Pos.59	 Pos.58
8 x 200286 (⌀25 x 1,2)	8 x 200390 (engrase ⌀80)	8 x 200391 (rascador ⌀80)
 Pos.128 (Ver nota)	 Pos.66	 Pos.86
8 x DW10956	2 x 200054 (⌀80 x 2,5)	2 x 200317 (⌀6int x 2)
 Pos.39	 Pos.72	 Pos.36
4 x 200393 (⌀6)	4 x 200394 (⌀6)	1 x 200395 (⌀40x1,75)
 Pos.69	 Pos.67	 Pos.84 (Caucho)
1 x 200400 (30 x 40 x 7)	1 x 200396 (50 x 62 x 7)	1 x DW10952
Válvula compresión Pos.137	Válvula aspiración Pos.134	 Pos.18
1 x 200398	1 x 200399	22 x 200397 (⌀10)


1 x DW10030/38


1 x DW11080


1 x DW11085

INGENIERIA Y ASESORIA TÉCNICA

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comercial@ametsis.com
+34 917 109 730