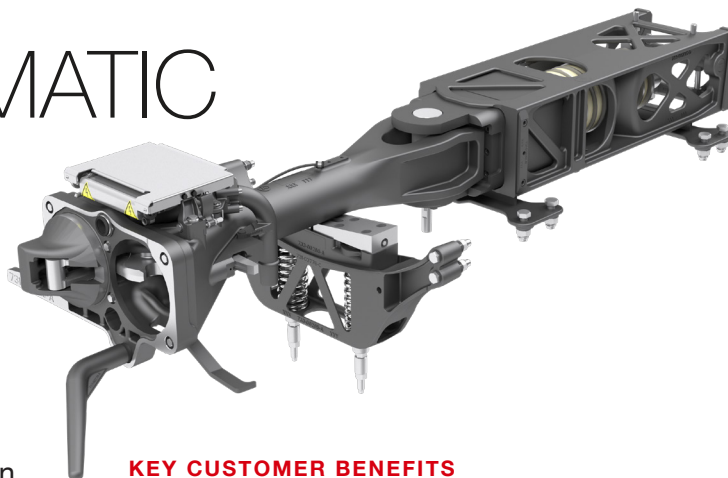




DIGITAL AUTOMATIC COUPLER

Key enabler for Full Digital Freight Trains Operations



Designed for seamless upgrade of the existing wagon fleet.

This advanced automatic coupler for European UIC freight operation is designed for new builds or upgrades. It has the ability to transmit loads of 2,000 kN in buff and 1 000 kN in draw directions (yield strength).

It features a best in class performing, light weight and easy-to-install draft gear system with proven elastomer pads, including a shear-off visual indicator, a rugged Type 10 technology coupler head with air flow optimized air valve and a light weight and compact supporting device.

Options also include a high-energy absorption module, crash module, main reservoir pipe, buffer position, and automatic greasing module.

REFERENCE

- REX from Type 10 couplers on Transit applications.
- Draft gear energy absorption system (elastomer pads) implemented on SBB/5L, VTG/BMVI demo trains and DAC4EU phase 1 tests.
- Elastomer pads on thousands of cushion bars equipping freight wagons.

NORMS/VALIDATION

Complies with EDDP/ERJU statu quo specifications.

KEY CUSTOMER BENEFITS

Top Performance

- Best performing elastomeric pads type draft gear as regard to running safety (vs. UIC524).
- Optimized pneumatic valve to guarantee air flow for safe braking performance.
- light and compact supporting device to minimize wagon rework during retrofit (e.g end cock relocation).

Adaptable, Upgradable and Modular

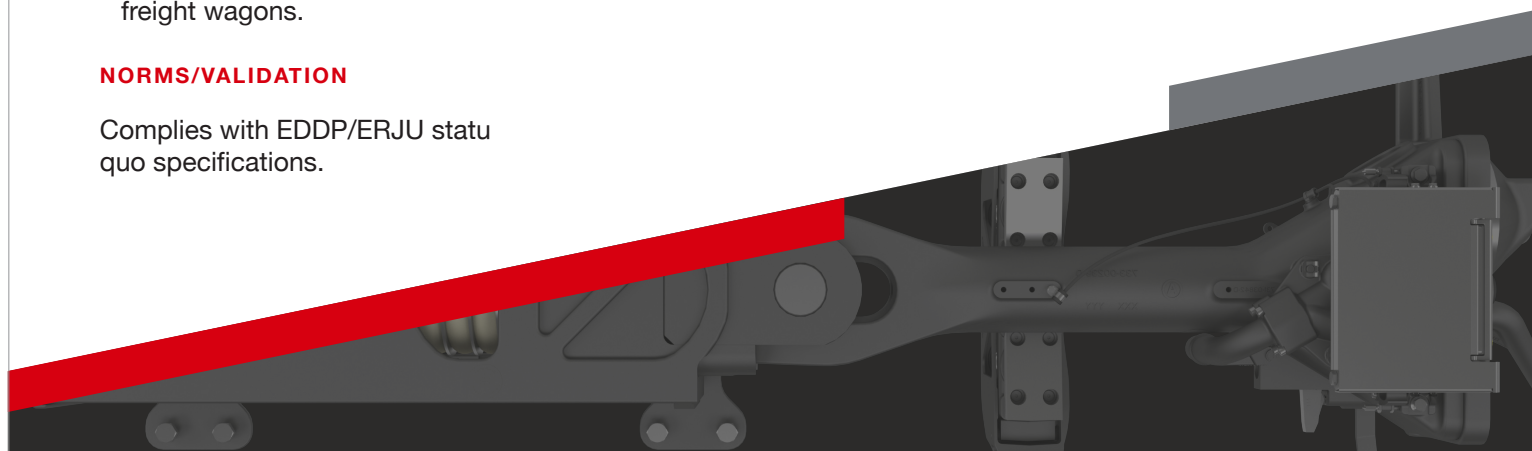
- For new builds and retrofits.
- Category A, C, L & AX energy absorption for all types of freight Rolling Stock.
- Second air pipe.

Fast and Easy Installation

Complete wagon coupler assembly in less than 30 minutes with standard tools and lifting device.

KEY FUNCTIONS

Mechanical, electrical and data automatic coupling, and remote uncoupling of freight Rolling Stocks.



SPECIFICATIONS AND FEATURES

CHARACTERISTIC	DAC5	STANDARD REFERENCE / COMMENTS
Standard		
Weight	< 430 kg	
Length pivot point to contact surface	1000 mm	Equal to current screw coupler and buffers
Draw force	≥1000 kN (yield strength)	EN 12663 Cat F-I, UIC522
Draw force	≥1500 kN (+15 / -5%)	EN 12663 Cat F-I, UIC522
Buff force	≥2000 kN (yield strength)	EN 12663 Cat F-I, UIC522
Draw energy absorption	20 kJ @ 1000 kN	UIC 530, EN 15566
Stroke on draft	50 mm	
Buff energy absorption (reversible)	90 kJ @ 2000 kN	Cat. A, UIC 530, EN 15551
Stroke on buff	110 mm	
Vertical deflection angle	±6°	
Horizontal deflection angle	Max 17° (stroke dependent)	
Gathering range horizontal	+275 / -370 mm	
Gathering range vertical	± 140 mm	
Brake pipe minimum diameter	1 1/4" (32 mm)	UIC 540, EN 14198
Brake pipe interface	G 1 1/4"	
Coupler head	Adaptable latch Type 10	EN16019
Manual deflection & self-centering function	Yes	+/- 6°
Upgradability to DAC5	Yes	
Climate conditions	-40°C / +70°C	
Fire & smoke class	HL2	EN45545
Color	RAL 7016 (standard)	Adaptable to customer requirements
Other modules/features/options		
Remote control for DAC5	In development	
Higher energy absorption modules (reversible)	Similar Cat. C and L for buffers In development	EN 15551
Crash energy absorption module (irreversible)	Similar crash buffer (up to 800 kJ) In development	EN 15551, EN 15227
Second air pipe	1" (25 mm)	EDDP specification
Marshalling yard operation "buffer position"	In development	

CONTACT

Faiveley Transport

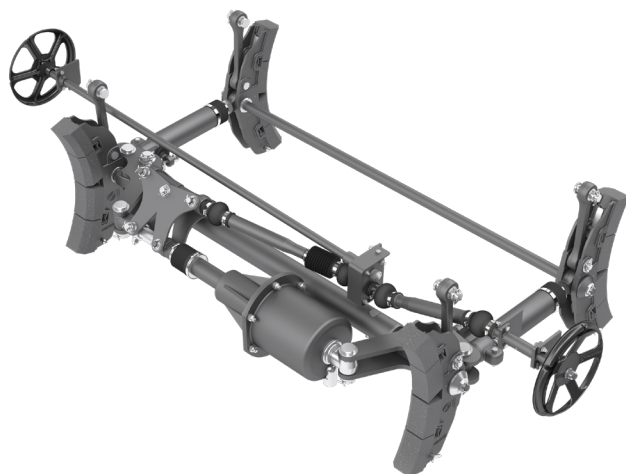
Wabtec Freight Europe
 3, rue du 19 Mars 1962 - 92230
 Gennevilliers CEDEX - France
 Email: freighteuropa@wabtec.com
 Fax: 412.825.1019

WABTECCORP.COM



COMPACT BRAKE FAMILY

The most versatile and lightest product range on the Market



SYSTEM PERIMETER AND TARGET APPLICATIONS

Offers an advantageous alternative to conventional brake systems that is not only easy and fast to install and maintain, but also adaptable to any bogie and freight wagon application.

Fits to new and retrofited assets.

KEY FUNCTIONS

Compact brake main function is to produce brake force application simultaneously on all wheels and to ensure automatic gap adjustment between wheels and brake blocks when the brake is released.

The unique adaptable gauge BFCB feature keeps the best of the well known and proven BFCB technology while providing easy and quick gauge adaptation.

KEY CUSTOMER BENEFITS

50% fewer wheel defects vs. traditional brake rigging, optimizing wagon availability

Lighter product permits higher payload up to 1 ton/wagon

Constant performance (0,95% efficiency)

Optimized maintenance with no preventive maintenance between overhauls. Reduced block and wheel wear. Easy access to each individual component for repair and overhaul (LRU). Included in VPI module 07.

Easy and quick to install and disassemble

WAGON KEEPERS

CAR BUILDERS



NORMS/VALIDATION

- TSI WAG certified (NoBo SB + SD modules)
- Designed and validated according UIC 541-1
- Shock and Vibration tested to IEC 61373 category 2

SPECIFICATIONS AND FEATURES

CHARACTERISTICS	IBB10	BFCB PUSH	NORMATIVE REFERENCE / REMARKS
-----------------	-------	-----------	-------------------------------



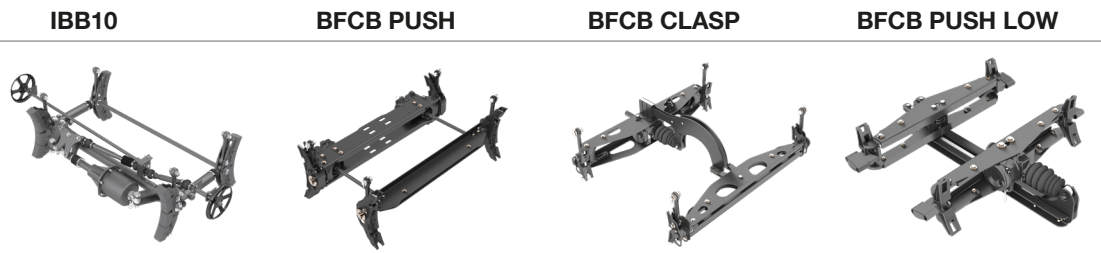
Standard

Weight service brake	180 kg	208 kg	
Weight hand brake	218 kg	255 kg	
Maximum block force (@ 3,8 bar)	38 kN	50kN	
Installation	< 0,5 h	< 0,5 h	
Market introduction	2015	1999	
Fleet	> 15 000 units in EU	> 15 000 units around the globe	
Maintenance	VPI Module 07 – Appendix 20	VPI Module 07 – Appendix 18	
Overhaul and repair	<ul style="list-style-type: none"> • BC and SA removable for overhaul in workshops • Beams and shoe holder can remain on bogie • Essential parts BC and SA accessible on tracks (LRU) 	<ul style="list-style-type: none"> • BFC removable for overhaul in workshops • Beams and shoe holder can remain on bogie • Essential parts (BFC) accessible on tracks (LRU) 	
Parking Brake option	V	V	
Climatic conditions	-40°C / + 70°C	-40°C / + 70°C	
Color	RAL 9005 (standard)	RAL 9005 (standard)	

Gauge Compatibility

Narrow Gauge		●	1000 mm
Standard Gauge	●	●	1435 mm
Finnish Gauge	●	●	1520 mm
Ukranian Gauge	●	●	1524 mm
Irish Gauge	●	●	1600 mm
Iberica Gauge	●	●	1668 mm
Indian Gauge		●	1676 mm

VERSATILITY



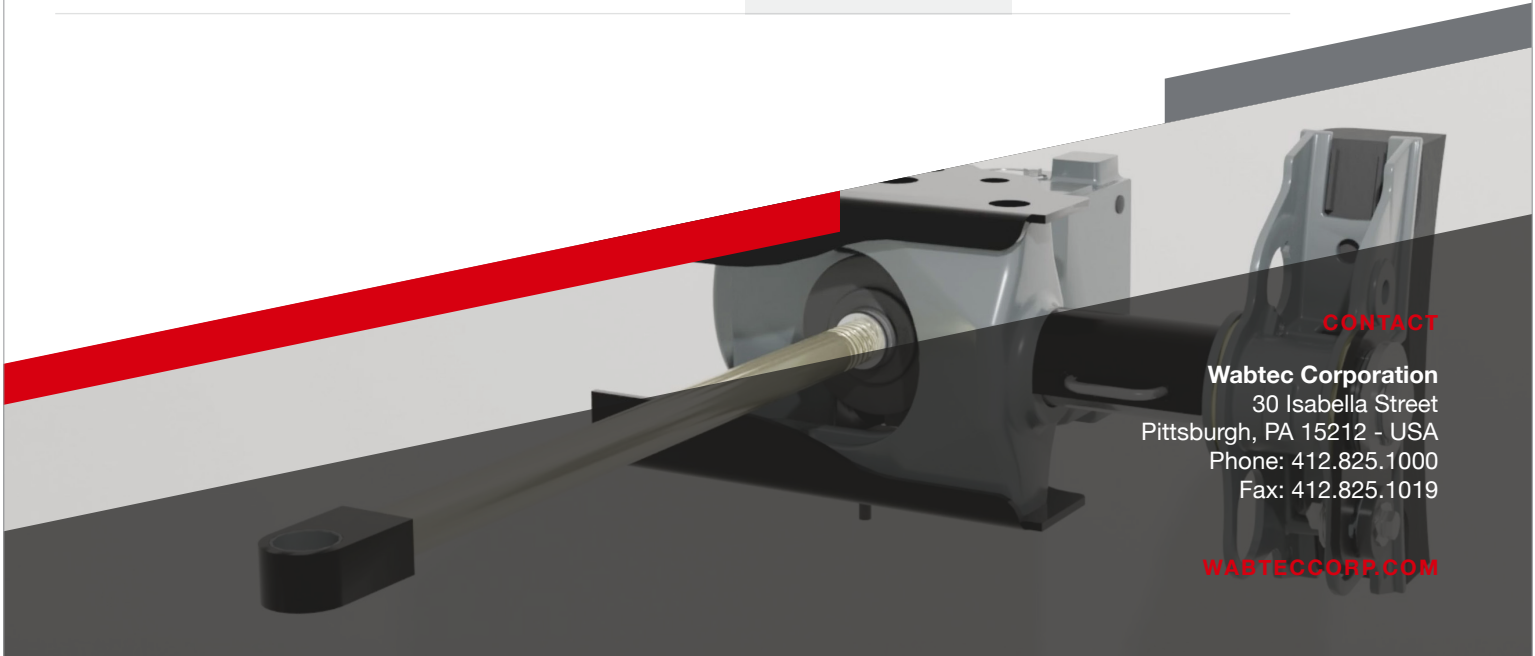
	IBB10	BFCB PUSH	BFCB CLASP	BFCB PUSH LOW
Y25/27 bogie series	V	V	V	
Y33 bogie series	V	V	V	
TF20/TF25 bogie series		V		
AMIII		V	V	
AAR Barber bogie series		V		
Casnub bogie series		V		
K17/19		V		V
Single axle wagon platforms			V	

VARIABLE GAUGE, A NEW AND UNIQUE FEATURE

The unique adaptable gauge BFCB feature keeps the best of the well known and proven BFCB technology while providing easy and quick gauge adaptation to increase assets utilization allowing seamless multi-gauge freight wagon operation

KEY CUSTOMER BENEFITS

	WAGON KEEPERS	CAR BUILDERS
Increased assets' utilization	●	
Lower installation costs		●
Ease logistics, reducing wagon delivery costs		●



CONTACT

Wabtec Corporation
 30 Isabella Street
 Pittsburgh, PA 15212 - USA
 Phone: 412.825.1000
 Fax: 412.825.1019

WABTECCORP.COM



COUPLING BAR FAMILY

A complete portfolio for all type of multi-platforms wagons

SYSTEM PERIMETER AND TARGET APPLICATIONS

Our latest generation of Wabtec Coupling Bars benefits from the excellent Return Of Experience of service proven products introduced on the Rail Freight Market back in 1998.

The products are designed to equip all type of multi-platforms Freight wagons (bogie or axle) and replace the traditional diagonal buffer system.

It is available for new builds wagon platforms and feature a unique interface for proven running safety with lowest installation costs.

The products are available in a semi permanent version with a split collar assembly allowing to easily separate the Freight cars platforms if and when needed

REFERENCES

More than 5 000 bars installed base

NORMS/VALIDATION

- TSI WAG certified (NoBo SB + SD modules)



KEY CUSTOMER BENEFITS

WAGON KEEPERS

Light Weight

The bars are lighter than the traditional diagonal buffer arrangement allowing to save up to 250 kg per freight wagon platform. Which means 500 kg increased payload for a double platform consist.

No Regular Maintenance

No regular greasing compared to a diagonal buffer traditional system, optimizing overall wagon LCC

Top Performance

optimize the distance between the platforms of the consist and limit impacts (wear) due to push/pull movements. The service proven performance of the previous generation is further enhanced by implementing UV resistant pads ('black pads')

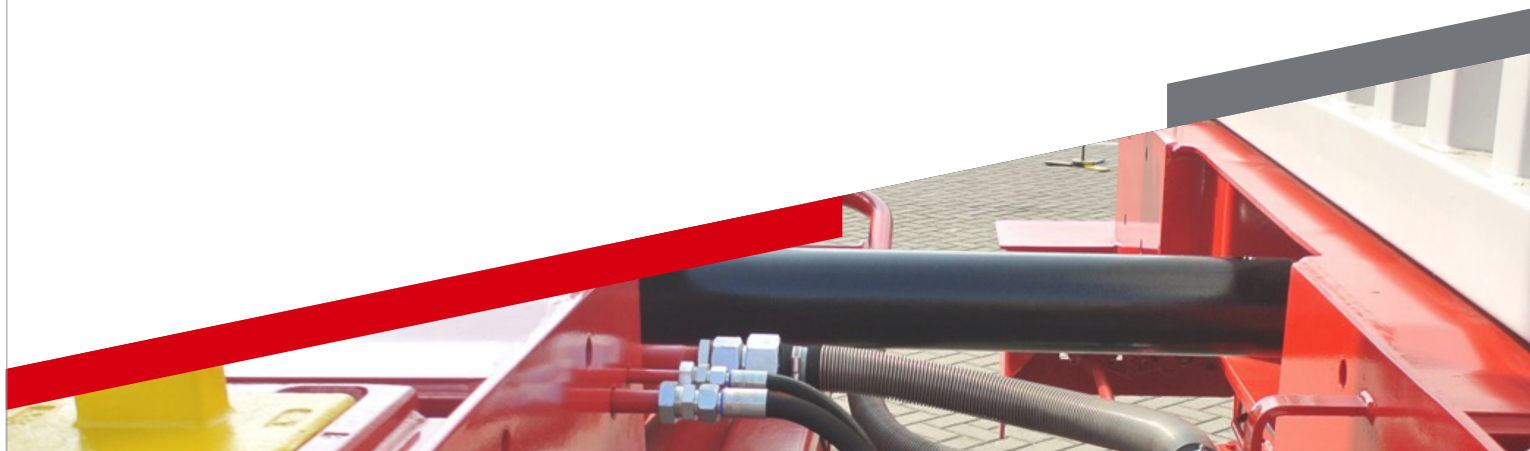
CAR BUILDERS

Easy and quick installation





Eight screws simple interface. No special tools.

KEY FUNCTIONS

Mechanically permanently or semi-permanently connect multi-platforms freight wagon together



SPECIFICATIONS AND FEATURES

CHARACTERISTICS	CUSHION BAR	CONNECTING BAR	NORMATIVE REFERENCE / REMARKS
Standard			
			
Application	Bogie multi-platforms	Axle multi-platforms	
Draw Force	1500 kN	1500 kN	EN 12663 Cat F-I, UIC522
Buff Force	2000 kN	2000 kN	EN 12663 Cat F-I, UIC522
Weight	252 kg	309 kg	Depends on Length
Total Length	2406 mm	2424 mm	Adaptable to application
Length between pivots	1800 mm	1800 mm	Adaptable to application
Energy Absorption Buff	2x40 kJ	2 x 40 kJ	UIC 530, EN 15566
Energy Absorption Draw	2 x 27 kJ	2 x 27 kJ	Cat. A, UIC 530, EN 15551
Stroke	+/- 96 mm	± 96 mm	
Endurance validation			EN 15566:2009+A1:2010
Running safety validation	UIC 530-2	EN 15839	
Interface hole pattern	192/64 x 259.5 mm	192/64 x 259.5 mm	
Interface hole diameter	Ø26 mm	Ø26 mm	
Climatic conditions	-40°C / + 70°C	-40°C / + 70°C	
Color	RAL 9005 (standard)	RAL 9005 (standard)	Adaptable to customer requirements
Other modules/features/options			
Semi permanent version			

CONTACT

Wabtec Corporation
 3, rue du 19 Mars 1962
 92230 Gennevilliers CEDEX - France
 Email: freighteuropa@wabtec.com

WABTECCORP.COM

SLACK ADJUSTER **DRV10**

Exclusive sealing arrangement



The Slack Adjuster is used for automatic adjustment of the slack between brake blocks and wheels.

Webtec Faiveley SAB invented the well-known DRV2 in 1955. It was improved and renamed DRV2A in 1966. Both versions were licensed to several brake suppliers in Europe.

The DRV10 is the latest generation of Slack Adjuster with optimized performances compared to oldest generations.

REFERENCES

Installed base of more than 100,000 units

DRV10 required by Nordic Countries freight customers for extreme climate operations

NORMS/VALIDATION

Compliant to UIC 542 and EN 16241

TSI WAG certified

KEY CUSTOMER BENEFITS

Improve spindle sealing. Better protection against water ingress (major advantage on tank wagons where DRV is mounted right under the tank).

Light weight with 26% less weight compared to older generations.

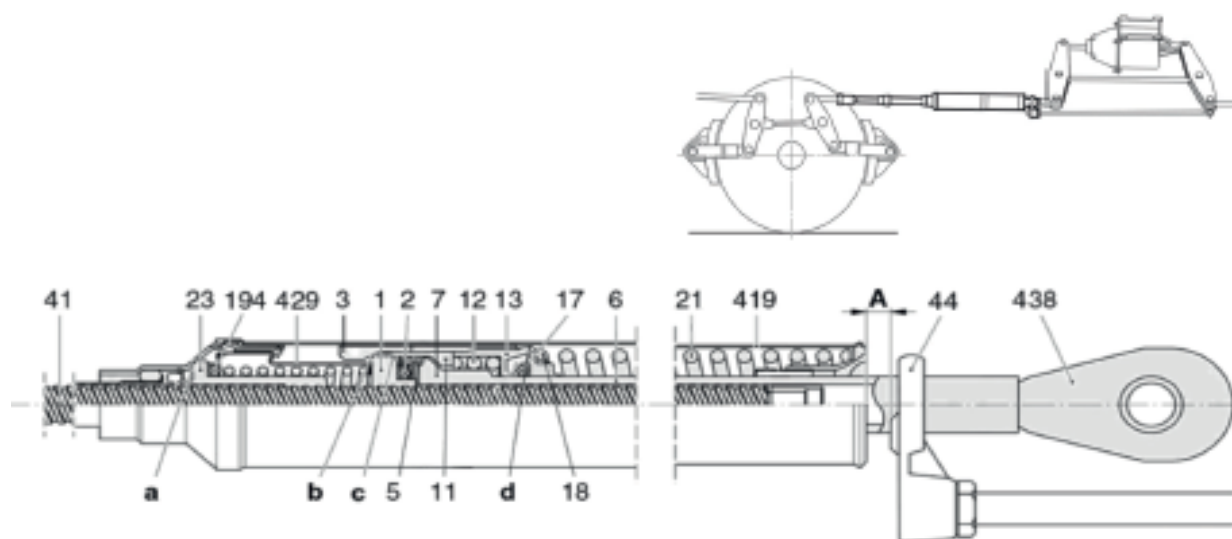
Safer locking in released position.

Improved design, less wear, better LCC

Extended lifetime

PRODUCT SPECIFICATIONS

DESCRIPTION	PARAMETERS
Adjustment capacity	200, 250, 300, 350, 400, 450, 500, 550, 600
Adjustment capacity short units	200, 250, 300
Adjuster ear	Over 50 combinations: P from 20 to 40 mm & D from 25,5 to 50,5 mm
Weight (DRV10 600 mm)	32kg
Maximum load	120kN
T° range	-40°C to +70°C
H1 & H2 spindle coupling	Optional (max load: 120kN for thread > M33, 85 kN for thread < M33)
Stainless steel spindle	Optional



23 Leader nut	2 Ball bearing	11 Actuating sleeve	21 Barrel spring
41 Adjuster spindle	3 Traction sleeve	12 Clutch spring	419 Barrel with barrel head
194 Ball bearing	5 Take up spring	13 Clutch sleeve	44 Control rod head
429 Pay-out spring unit	6 Adjuster tube	17 Ball bearing	438 Adjuster ear
1 Adjuster nut	7 Adjuster tube socket	18 Clutch ring	

CONTACT

Faiveley Transport

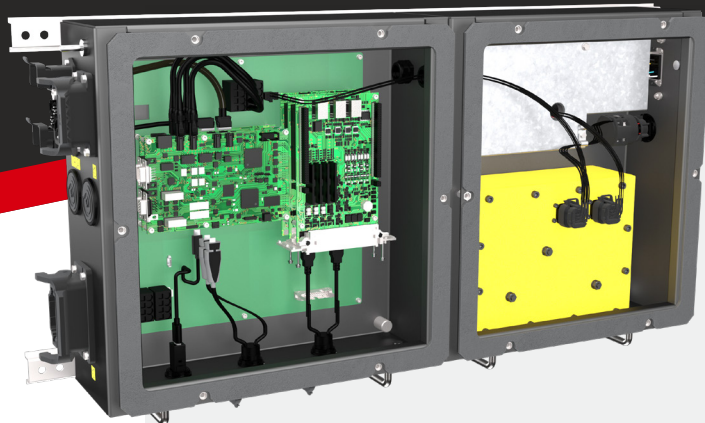
Wabtec Freight Europe
 3, rue du 19 Mars 1962 - 92230
 Gennevilliers CEDEX - France
 Email: freighteuropa@wabtec.com
 Fax: 412.825.1019

WABTECCORP.COM



WAGON CENTRAL CONTROL UNIT

Designed for best train availability & upgradeability



SYSTEM PERIMETER AND TARGET APPLICATIONS

Wagon Central Control Unit for European UIC freight operation (freight cars), for new builds and existing assets upgrade.

Able to transmit @10Mb/s on the Freight – Ethernet Train Backbone allowing interoperable trainwide communication and compliance to train functions.

Hosts a 400V AC/DC power converter, battery management system and battery pack.

Scalable Hardware and SW platform to reach up to SIL4 functions.

Carries embedded wireless connectivity for Condition Based Maintenance and Over The Air updates.

Compatible with all wagons* independantly of existing brake system.

KEY FUNCTIONS

Tain composition, Automatic brake test, Decoupling from locomotive, Decoupling from push button, Train integrity, train length, Wireless connectivity, embedded battery charging. Many functions are realised in conjunction with other sub-systems (coupler, brake monitoring).

KEY CUSTOMER BENEFITS

Top Performance

State of the art link aggregation on redundant ETB lines and redundant 400VAC supply.

Easy Maintenance

Local and remote access.

Upgradable

Future train functions.

Guaranteed interoperability

For new builds and retrofit of existing assets.

SPECIFICATIONS & FEATURES

Description	Parameters
Weight	21 kg without battery, 27 kg with battery
Width	413 mm
Length	832 mm
Height	170 mm
Train communication hardware	Single Pair Ethernet, 10 Mb/s up to 1000 m
Train communication inauguration	Train Topology Discovery Protocol
Train communication protocol	Train Real time Data Protocol
Train communication redundancy	Link aggregation
Power input rating	40W @ 400VAC
Power input redundancy	2
Wireless connectivity	4G/5G, cat M1/NB2
Connector types	Harting
Extendability	Fast ethernet port, 100Mb/s up to 100m
Battery pack	lithium-ion cells, Integrated battery management system
Battery pack life	up to 12 years
Explosion protection	Atex grade
Vibration conditions	cat 2
IP conditions	IP65
Climatic conditions	-40°C to +55°C
Battery pack climatic conditions	-25°C to +55°C
Color	RAL 7011

CONTACT

Wabtec Corporation
 3 Rue du 19 MARS 1962
 92230 – Gennevilliers
 CEDEX – France
 Email: freighteuropa@wabtec.com

WABTECCORP.COM