GANZAIR
Compressortechnics

ROTARY VANE COMPRESSORS FOR RAILWAYS











GANZAIR

GANZAIR COMPRESSORTECHNICS LLC.
H-6400 KISKUNHALAS, HUNGARY
SZÉNÁS U. 15/L

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Certified System certop ISO 9001 ISO 14001

AIR COMPRESSORS FOR PUBLIC TRANSPORT APPLICATIONS ON ROADS AND RAILWAYS

Why choose Ganzair rotary vane compressors?

- Long operating period
- Compact design
- Low vibration level
- Excellent volumetric efficiency
- Energy saving solutions / low energy cost
- Low noise level (70-75dB (A). Less than 60 dB (A) with insulation
- General maintenance after 40,000-60,000 hours of operation
- Low oil residue 1-3 ppm
- Simple maintenance
- Air flow from 210 l / min- 13500 l / min
- Power from 3 kW to 110 kW
- Operating pressure from 6 bar (g) to 13 bar (g)
- Minimum number of moving parts

The GANZ brand name has become one of the most important trademarks in the history of Hungary. Since its foundation in 1849, GANZ has been manufacturing compressors, pumps, turbines, locomotives, trams, trolleybuses. From bridges, cranes, ships, transformers, engines and a wide range of other equipment. Respecting historical traditions and at the same time facing new challenges, Ganzair Compressortechnics LLC was founded in 1990 with the aim of specializing in compressor technology. The company is owned by a private team. Ganzair offers both standard industrial compressor packages and specially designed compressors, as well as complete systems. We specialize not only in compressors, but in a whole range of purification and distribution products for air and industrial gases. Thousands of compressors delivered and maintained by us are in operation in Hungary and around the world.

We would like to draw your attention to our vehicle compressor department. Ganzair compressors for vehicles operate in many transport vehicles, in trolleybuses, train locomotives, mining locomotives, self-propelled trains, subway cars in Hungary and in several European countries. Due to the low vibration and noise levels and the long service life, many well known companies in the field of vehicle production and modernization choose our products. We can offer you customized individual solutions, based on tradition, experience and knowledge of the markets, executed with precision and dedication and, of course, durable and quality compressors. GanzAir offers you not only products, but also specialized technical assistance. Moreover, we provide service and spare parts throughout Romania within 48 hours. Our high-quality engineers will help you identify the best solutions for your turnkey compressor system.

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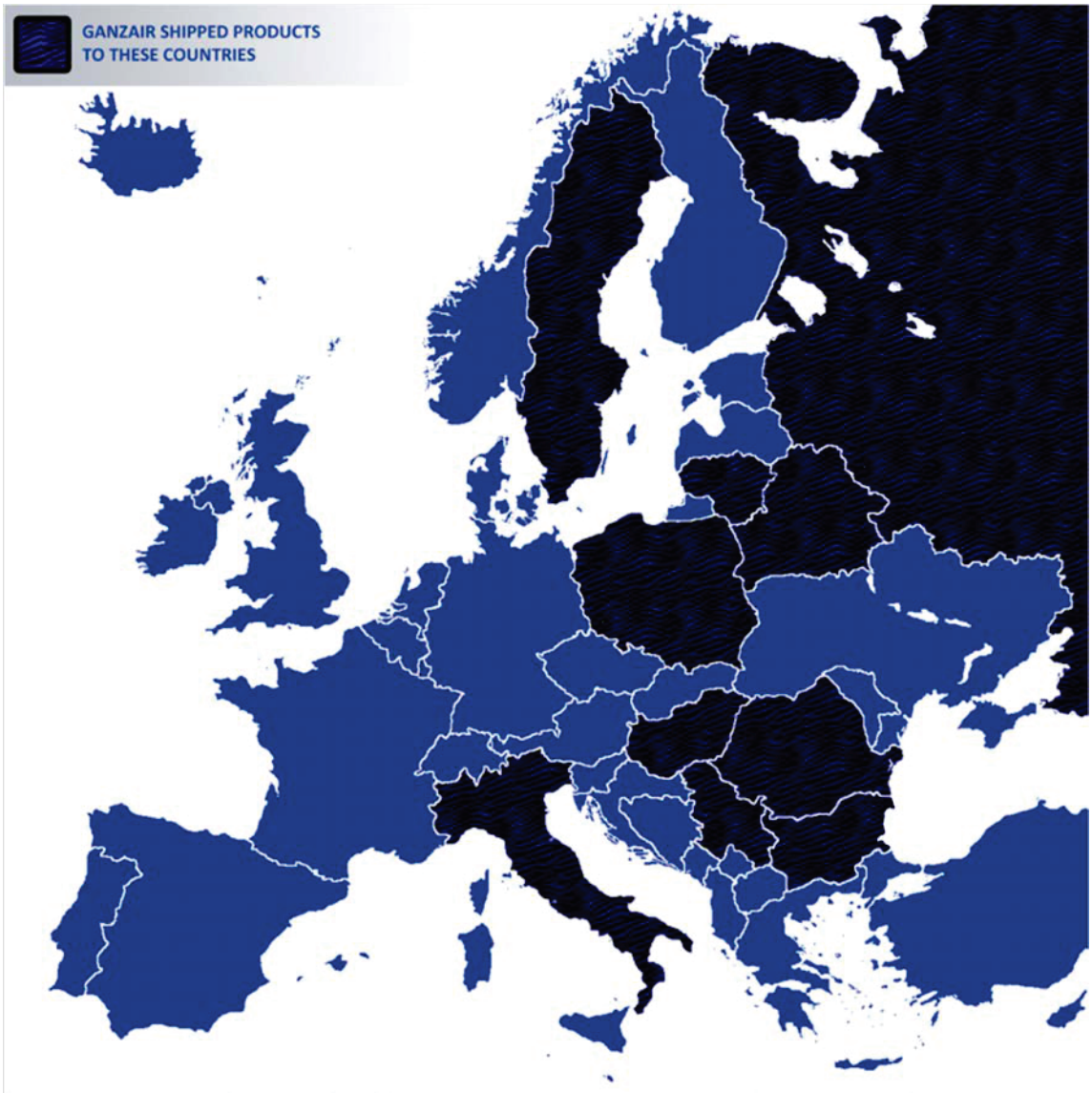
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Ganzair equals tailor-made solutions

The Ganzair vehicle compressors operate in many guided transport vehicles, trolleybuses, locomotives,mine locomotives, motor-trains, subway cars in Hungary and in various Europeancountries. Due to thelow noise and vibration levels, as well as the long lifetime, several well-known manufacturers and vehicle upgrading companies choose our products. If you need customized,reliable solutions when looking for rotary vane compressors, please choose our company - Ganzair Compressor Technologies LLC.

Many countries use our rotary vane compressors, which are indicated on the map below.



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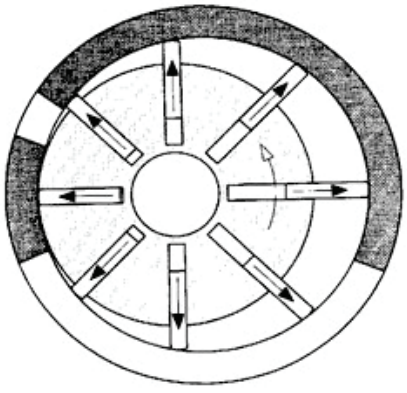
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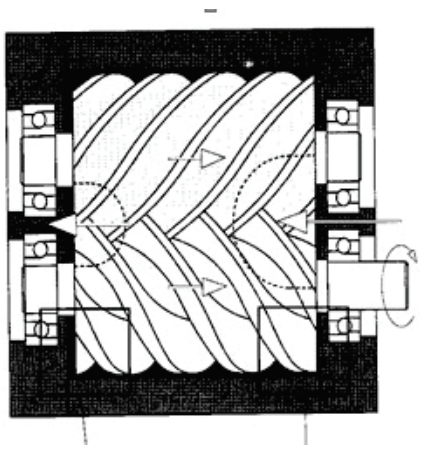
Why choose Ganzair manufacture rotary vane vehicle compressors?

- Long lifetime
- Main overhaul 70.000-80.000 hours run (at railway application 40.000-45.000 hours run)
- Good volumetric efficiency (approx. 90%)!
- Minimal efficiency loss
- Low noise level (70-75dB(A) without sound insulation. With sound insulation smaller than 50 dB(A)!
- Low vibration
- No axial force (friction bearing or white metal bearings)
- Compact design
- Low working temperature and pressured air temperature (70-80°C)
- Low oil carryover 1-3 ppm (parts per million by weight)
- Simple maintenance
- Energy-saving (low energy cost)
- Air delivery from 210 l/min- 13500 l/minPower from 3kW to 110 kW
- Operating pressure from 6bar(g) to 13 bar(g)

- simple rotor geometry
- two slide bearing
- oil film lubricating



- complicated rotor geometry
- four roller bearing
- geared design



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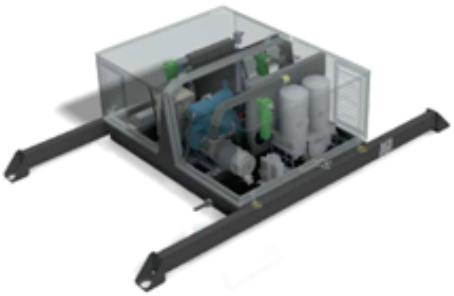
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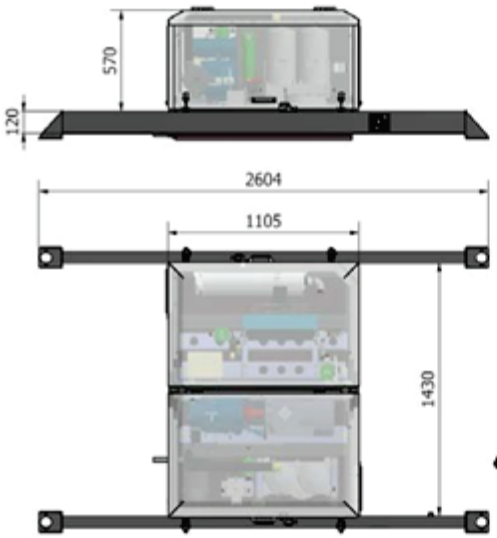
HUNGARIAN STATE RAILWAYS
BRL 7,5 / 10 / 3 ETF

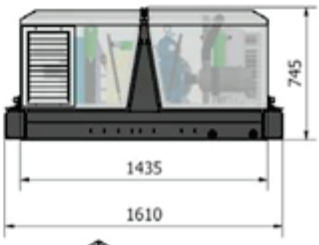
Aplicable to:
motor-trains



STADLER FLIRT MOTOR TRAIN









TECHNICAL SPECIFICATIONS

Air end type	**GR806 HH**	**Air delivery**	**850 litri/min**
Motor shaft power	**7,5 kW**	**Ambient temperature**	**-25^{0}C±40^{0}C**
Max pressure	**12,6 bar**	**Outlet air temperature**	**+30-45^{0}C**
Working pressure	**10 bar**	**Noise level**	**58 dB (A)**
Rotation speed	**1450 rot/min**	**Drive**	**asynchronous motor**

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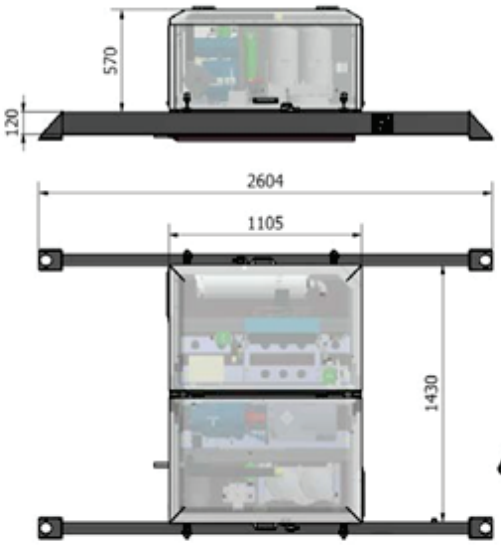
RAARBERBAHN AG.
BRL7,5 /10 /3 ETF

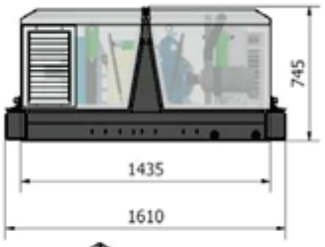


Aplicable to:
motor-trains

STADLER FLIRT MOTOR TRAIN









TECHNICAL SPECIFICATIONS

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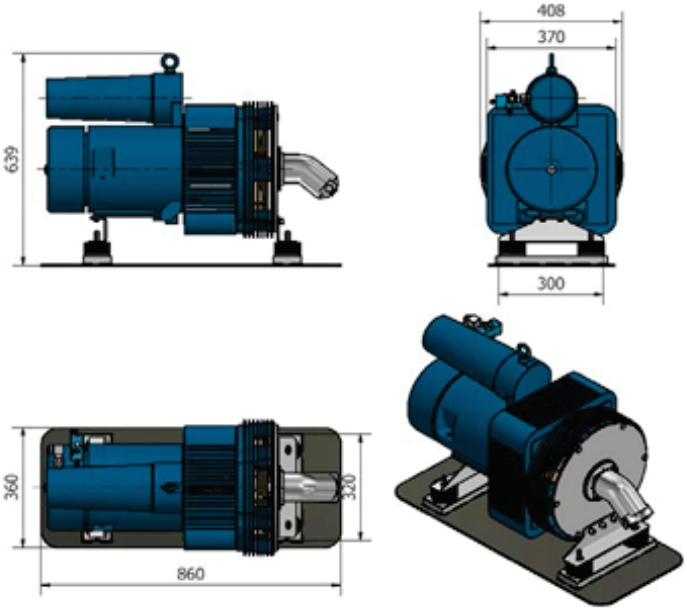
MÁV
BRQ11/8/1VHH

Aplicable to:
locomotives, special vehicles



M47 SHUNTING LOCOMOTIVE





TECHNICAL SPECIFICATIONS

Air end type	**GRC861**	**Air delivery**	**1450 litri/min**
Motor shaft power	**11 kW**	**Ambient temperature**	**-25°C±40°C**
Max pressure	**10,5 bar**	**Outlet air temperature**	**+70-80°C**
Working pressure	**8,0 bar**	**Noise level**	**82 dB (A)**
Rotation speed	**2200 rot/min**	**Drive**	**hydraulic drive**

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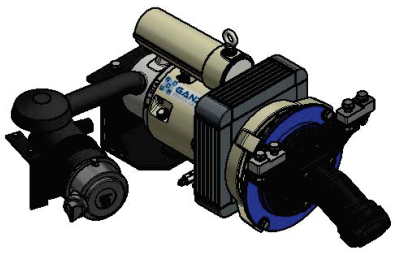
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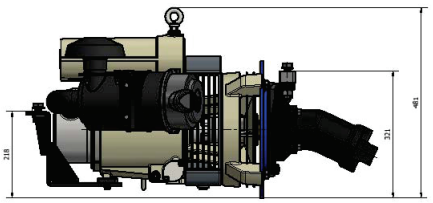
BRQ 7,5 / 10 / 1 H

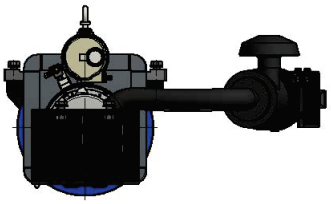
Aplicable to:
automotor

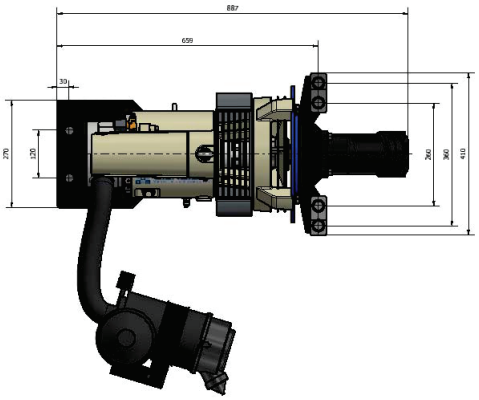


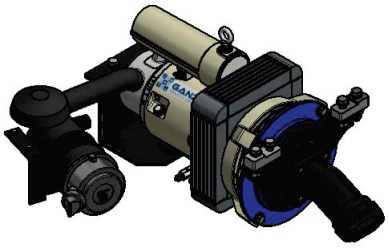
AUTOMOTOR











TECHNICAL SPECIFICATIONS

Air end type	**GRC804 HK**	**Air delivery**	**860 litri/min**
Motor shaft power	**7,3 kW**	**Ambient temperature**	**-30^{0}C±60^{0}C**
Max pressure	**10,5 bar**	**Outlet air temperature**	**+110^{0}C**
Working pressure	**11 bar**	**Noise level**	**80 dB (A)**
Rotation speed	**1940 rot/min**	**Drive**	**hydraulic drive**

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LE 5100kW,
LE 3400kWLOCOMOTIVE
BR 37/10/1 FVF

Aplicable to:
electric locomotive



ELECTRIC LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	**GR11193**	**Air delivery**	**4150-4600 litri/min**
Crank shaft power	**7 kW**	**Ambient temperature**	**-40^{0}C±70^{0}C**
Max pressure	**10,5 bar**	**Outlet air temperature**	**+60^{0}C**
Working pressure	**10 bar**	**Noise level**	**75 dB (A)**
Rotation speed	**1500-1700 rot/min**	**Drive**	**asynchronous engine**

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LDE 2100CP LOCOMOTIVE
BR 22 / 10 / 1 F



Aplicable to:
diesel electric locomotive

DIESEL ELECTRIC LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	GR1114	Air delivery	2650 litri/min
Crank shaft power	22 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10,5 bar	Outlet air temperature	+60^{0}C
Working pressure	10 bar	Noise level	78 dB (A)
Rotation speed	1500 rot/min	Drive	DC electrical

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LDE 2100CP LOCOMOTIVE
BR 22 / 10 / 1 FA

Aplicable to:
diesel electric locomotive



DIESEL ELECTRIC LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	GR867 H	Air delivery	2650 litri/min
Motor shaft power	19 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10,5 bar	Outlet air temperature	+60^{0}C
Working pressure	10 bar	Noise level	78 dB (A)
Rotation speed	1500 rot/min	Drive	DC electrical engine

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LDH1250CP LOCOMOTIVE
BR 19 / 10 / 1 FA



Aplicable to:
diesel electric locomotive

DIESEL ELECTRIC LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	GR869 H	Air delivery	1900-2250 litri/min
Motor shaft power	18,5 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10,5 bar	Outlet air temperature	+110^{0}C
Working pressure	10 bar	Noise level	78-82 dB (A)
Rotation speed	1460-1750 rot/min	Drive	AC electrical engine

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Compressortechnics

LDH1250CP LOCOMOTIVE
BRQ 19 / 10 / 1 F

Aplicable to:
DS diesel electric locomotive



DS DIESEL ELECTRIC LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	**GRI1141**	**Air delivery**	**2650 litri/min**
Motor shaft power	**18,5 kW**	**Ambient temperature**	**-40^{0}C±70^{0}C**
Max pressure	**10,5 bar**	**Outlet air temperature**	**+60^{0}C**
Working pressure	**10 bar**	**Noise level**	**78 dB (A)**
Rotation speed	**1500 rot/min**	**Drive**	**DC electrical engine**

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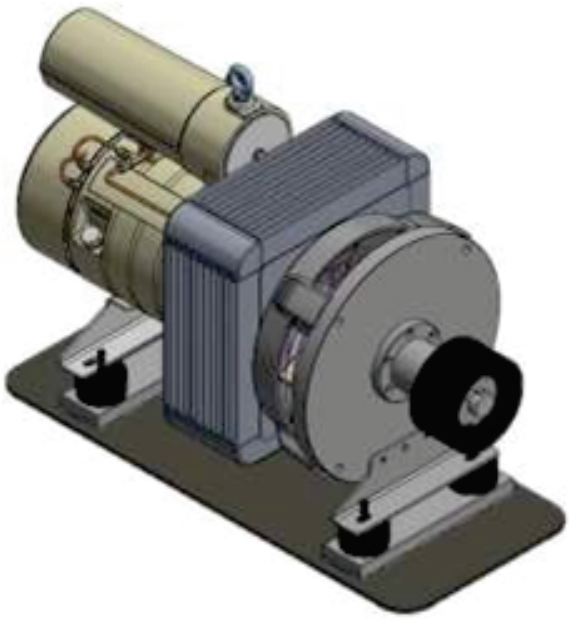
GANZAIR
Compressortechnics

LDH700CP LOCOMOTIVE
BRQ 4-7,5 / 10 / 1 FV



Aplicable to:
diesel locomotive

DIESEL LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	GRC802 H	Air delivery	400-800 litri/min
Motor shaft power	4-7 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10 bar	Outlet air temperature	+60^{0}C
Working pressure	11 bar	Noise level	78-82 dB (A)
Rotation speed	1100-2200 rot/min	Drive	with belt drive

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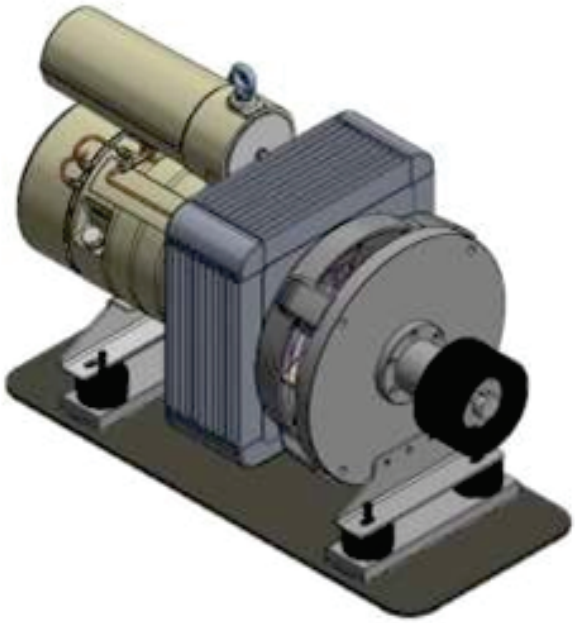
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LDH750 CPN ARROW GAUGE LOCOMOTIVE BRQ 4-7,5 / 10 / 2 FV

Aplicable to:
narrow gauge diesel locomotive



NARROW GAUGE DIESEL LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	**GRC802 H**	**Air delivery**	**800-1000 litri/min**
Motor shaft power	**4-7 kW**	**Ambient temperature**	**-40^{0}C±70^{0}C**
Max pressure	**10 bar**	**Outlet air temperature**	**+60^{0}C**
Working pressure	**11 bar**	**Noise level**	**78-82 dB (A)**
Rotation speed	**1100-2200 rot/min**	**Drive**	**with belt drive**

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LDH450CP LOCOMOTIVE
BRQ 4,5 - 7,5 / 10 / 1 FV



Aplicable to:
diesel locomotive

DIESEL LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	GRC802 H	Air delivery	400-800 litri/min
Motor shaft power	4-7 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10 bar	Outlet air temperature	+60^{0}C
Working pressure	11 bar	Noise level	78-82 dB (A)
Rotation speed	1100-2200 rot/min	Drive	with belt drive

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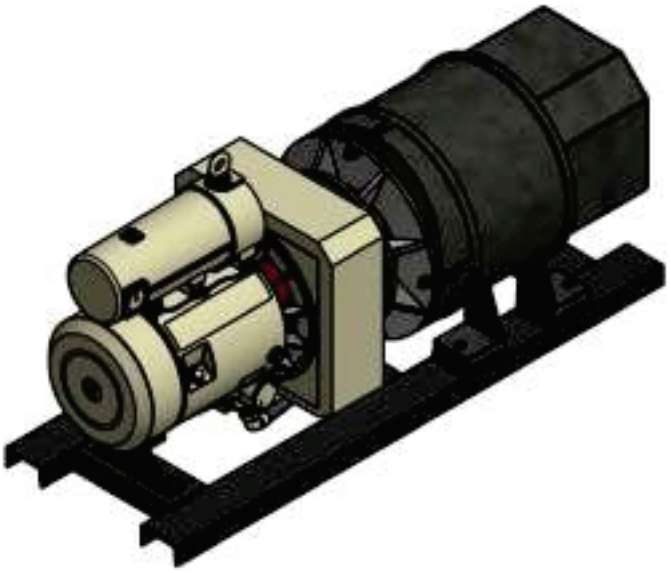
LUDMILA LOCOMOTIVE
BRQ 21 / 10 / 1 FO



Aplicable to:
diesel locomotive

DIESEL LOCOMOTIVE





TECHNICAL SPECIFICATIONS

Air end type	GR1118 H	Air delivery	2600 litri/min
Motor shaft power	21 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10 bar	Outlet air temperature	+60^{0}C
Working pressure	11 bar	Noise level	74-78 dB (A)
Rotation speed	950-1000 rot/min	Drive	DC electrical engine

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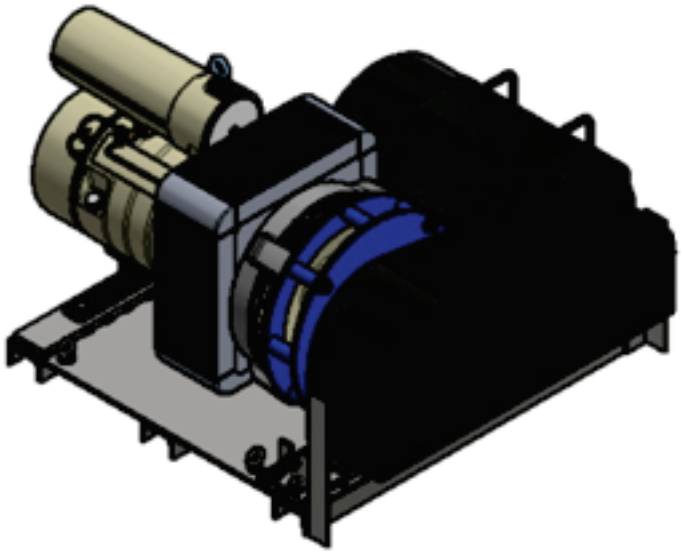
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BULGARIA LOCOMOTIVE
BRQ 17 / 10 / 1 FOV



Aplicable to:
Skoda electric locomotive

SKODA ELECTRIC LOCOMOTIVE



TECHNICAL SPECIFICATIONS

Air end type	GRC869 H	Air delivery	2150 litri/min
Motor shaft power	16,5 kW	Ambient temperature	-30°C±60°C
Max pressure	11 bar	Outlet air temperature	+110°C
Working pressure	10 bar	Noise level	78-84 dB (A)
Rotation speed	1700 rot/min	Drive	periodical or continuous

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SELF-PROPELLED TRAIN
7,5 / 10 / 1 E



Aplicable to:
automotor

AUTOMOTOR



TECHNICAL SPECIFICATIONS			
Air end type	GRC803 H	Air delivery	770 litri/min
Motor shaft power	8,6 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10 bar	Outlet air temperature	+60^{0}C
Working pressure	11 bar	Noise level	72-82 dB (A)
Rotation speed	2000 rot/min	Drive	DC electrical engine

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SELF-PROPELLED TRAIN
BR 2,5-10 / 10 / 1 FV



Aplicable to:
automotor

AUTOMOTOR



TECHNICAL SPECIFICATIONS

Air end type	GRC803 H	Air delivery	410-1100 litri/min
Motor shaft power	2,6-10,7 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10 bar	Outlet air temperature	+110^{0}C
Working pressure	11 bar	Noise level	78-82 dB (A)
Rotation speed	1000-3000 rot/min	Drive	with belt drive

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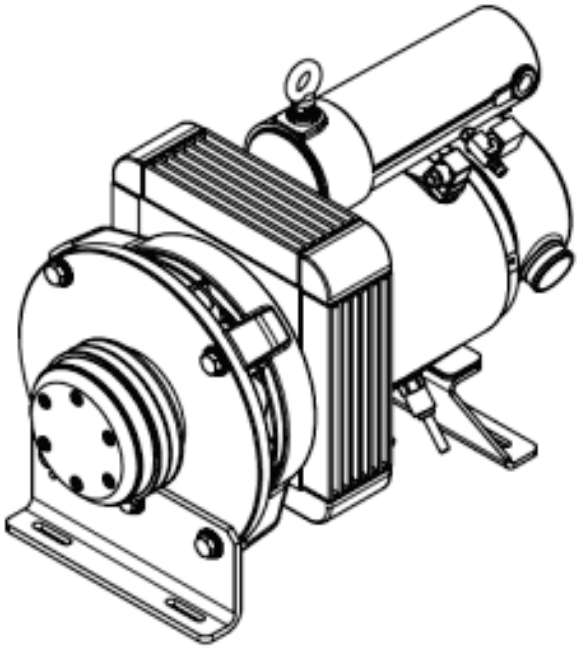
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SELF-PROPELLED TRAIN
BRQ 4-7,5 / 10 / 3 FV



Aplicable to:
automotor

AUTOMOTOR



TECHNICAL SPECIFICATIONS

Air end type	GRC803 H	Air delivery	410-1150 litri/min
Motor shaft power	3-12,2 kW	Ambient temperature	-40^{0}C±70^{0}C
Max pressure	10 bar	Outlet air temperature	+110^{0}C
Working pressure	11 bar	Noise level	74-86 dB (A)
Rotation speed	100-3150 rot/min	Drive	with belt drive

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GANZAIR
Compressortechnics

GAZX 5.55 HH





Aplicable to:
trams/trolleybuses

TRAMS/TROLLEYBUSES



TECHNICAL SPECIFICATIONS			
Air end type	GAZX5	Air delivery	560 litri/min
Motor shaft power	5,5 kW	Ambient temperature	-40°C±70°C
Max pressure	12 bar	Outlet air temperature	+60°C
Working pressure	12,5 bar	Noise level	78-82 dB (A)
Rotation speed	1500rot/min	Drive	AC electrical engine

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AIR DRYERFOR COMPRESSORS
X150 - X200 - X300





TECHNICAL SPECIFICATIONS

Type	with 2 and 4 cylinders	Voltage frequency	230V
Intake flow	117/150/200m^3/h	Noise level	80 dB (A)
Discharge flow	83/118/158m^3/h	Filter (suction)	superfine particle filter
Operating pressure	4-10 bar	Filter (discharge)	µm1567/1345x370/440/ 440x148/198/19
Operating temperature	1,5^0/60^{0}C	Dimension	8mm 70/170/182kg

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INVERTOR
GC-ADV4450-IL-1/3-4



TECHNICAL SPECIFICATIONS

Type	**GC-ADV4450-IL-1-3-4**	**Mass**	**110kg**
Rated input voltage	**1x380Vca**		
Input voltage frequency	**50Hz**		
Output voltage	**3x0 ...400Vca**		
Output freqvency	**1...500Hz**		

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SERVICE FOR COMPRESSORS

spare parts and service provided within 48 hours



1. PMA Compressor Service SRL, Cluj-Napoca
email:office@pmacompressor.ro, tel. +40 755 341 485, Mr. Marius Papuc

2. Reparații Compresoare, loc. Conau jud. Bihor
Email: office@reparatii-compresor.ro, tel. +40 742 998636, Mr. Attila Szilaghi

3. EXPLORAIL SRL, Brasov
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4. Conti Compreso SRL, Soimus-Deva
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5. Injector SRL, Jimbolia-Timisoara
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6. TRS Company SRL, Drobeta Turnu Severin
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7. Locmotive Mentenance SRL, Optasani-OLT
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8. Rental Trade SRL, Ploiesti
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ROMANIA

MINISTRY OF TRANSPORT AND INFRASTRUCTURE
ROMANIAN RAILWAY AUTHORITY - AFER

RAILWAY TECHNICAL APPROVAL

Series AT No. 15/2022

Based on the report no. R 15 of 05.01.2022 of the evaluation commission it is hereby certified that the critical railway products:

INSTALLATIONS FOR THE PRODUCTION AND PREPARATION OF COMPRESSED AIR FOR MOTOR VEHICLES,

provided by the legal entity GANZAIR COMPRESSOR TEHNIC S.R.L., with headquarters in TautiiMagheraus, street 28, no. 34, Maramures County, registered at the National Office of the Trade Register under no. J24/1349/2017.

MEET THE CONDITIONS FOR USE IN THE FIELD OF RAILWAY TRANSPORT.

The description of the critical railway products, the main performance and technical characteristics, the conditions and the field of use are specified in the annex to this technical approval.

The risk class of the critical railway products is 1A.

This technical approval is valid until 04.01.2024, provided that the conditions stipulated in the technical reference document and in the Order of the Minister of Transportation no. 290/2000 are complied with.

Date of issue: **05.01.2022.**

GENERAL DIRECTOR
Iordan VINTILA
Seal and illegible signature

The validity of this technical approval is extended until _____,
under the following conditions: _____
Date of issue: _____

GENERAL DIRECTOR

ANNEX TO
Railway Technical Approval
Series AT no. 15/2022

1. The critical railway products "Installations for the production and preparation of compressed air for locomotives" are made by the legal entity GANZAIR KompresszortechnikaKft, located at H-6400 KiskunhalasSzénás u. 15/L, Hungary, registered in the Trade Register under No. 03-09-100084.

2. The description of the critical railway products, the main performance and technical characteristics, the conditions and the field of use are specified in the technical reference document. - Technical specification code IPP-AC 01/2021 "Installations for the production and preparation of compressed air", issued by GANZAIR COMPRESSOR TEHNIC S.R.L., approved by DB CARGO ROMANIA S.R.L, CARGO TRANS VAGON S.A. and AFER.

3. The validity of this technical approval is 2 years with the possibility of extension.

GENERAL DIRECTOR
Iordan VINTILA
Seal and illegible signature

GANZAIR
Compressortechnics

CLIENT PORTFOLIO

Attached are the types of compressors launched in Romania that have been installed at private operators and state capital companies for freight and passenger transport:

-BRQ 4-7.5/10/1FV compressor mounted on narrow-gauge locomotive LDH 750 Narrow-gauge railway transferred to Unicom Transit

-BR 2.6-10.7/10/1FV prototype compressor for Marb-Brașov self-propelled locomotives

-BR 37/10/1F compressed air production installation, in addition to the compressor, it also has an inverter for starting and increasing the speed from 1500 to 1750 rpm + air dryer, mounted at CFR-Călători, Cargo Trans Vagon Bucharest

-BR 22/10/1FA compressor with asynchronous motor for LDE 2100HP locomotive

-BR 22/10/1F compressor with direct current motor at 170V D.C. mounted on LDE 2100HP locomotives, at Constantin Grup, CFR-Călători, West Trans Rail Ploiești, PSG Cargo Romania Cluj-Napoca, CFR Călători

-BR 22/10/1FVF 22kw compressor 2 pieces, perspective project with classic system starting system, with capacitors for LE 5100kW

-BRQ 7.5/10/1E compressor for self-propelled locomotives, for this project the 110V D.C. The D.C. motor was provided by ARRIVA Bucharest

-BRQ 4- 7.5/10/3FV compressor for self-propelled locomotives, Transferoviar Călători Bucharest

-BRQ 4- 7.5/10/2FV narrow-gauge locomotive compressor, S.C.Cale Ferată Îngustă

-GAZX 5.5 H compressor for trolleybuses and trams installed at the Local Transport Company-Brașov

-BRQ 19/10/1FA compressor for LDH 1250HP locomotive with asynchronous motor, mounted at Liberty Steel-Galați Plant

-BRQ 19/10/1FO compressor for LDH 1250HP locomotive with engine refurbished by UME-Bucharest, provided by the beneficiary, installed at the Liberty Steel Plant -Galați

-BRQ 19/10/1F compressor for LDH 1250HP locomotive with direct current motor at 110V D.C., which was mounted at the Liberty Steel Plant - Galati

We would like to inform you that Ganzair can repair and recondition rolling stock compressors and design compressors for any application.

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GANZAIR
Compressortechnics

Rotary vane type vehicle compressor reference list

Project name	Location of the project	Compressor drive	Quantity	Year deployed	Air delivery
IKARUSBUS-IRISBUS-ASTRABUS consortium: Trolley project	Romania/Bucaresti	Inventer +AC motor	201	1997-2002	530 l/min
IKARUSBUS: Trolley p.	Lithuania/Tallin	Inventer +AC motor	5	1999	530 l/min
IKARUSBUS: Trolley p.	Russia/Moscow	DC drive	1	2001	530 l/min
OBUS Ltd. Trolley p.	Hungary/Budapest	Inventer +AC motor	15	2002-	530 l/min
Budapest Public Transport Company Trolleybus Division project	Hungary/Budapest	Inventer +AC motor	72	1998-	530 l/min
Budapest Public Transport Company Metro Division project	Hungary/Budapest	DC drive	58	1998-	530 l/min
Budapest Public Transport Company Suburban Railways Division p.	Hungary/Budapest	DC drive	46	1996-	1000 l/min
Budapest Public Transport Company Cogwheel Division projrct	Hungary/Budapest	DC drive	8	2001-2002	530 l/min
Neoplan Polska Z. o. o. Trolley project	Poland/Gdansk	Inventer +AC motor	1	2000	530 l/min
Trobus Ltd. Trolley project	Polska/Gdans	Inventer +AC motor	3	2001-2002	530 l/min
Hungarian State Railways project M43-47	Budapest	Hidro drive	18	2002-2004	1300 l/min
Transelektro-Solarisbus consortium Trolley Riga p.	Latvia/Riga	Inventer drive	5	2002	530 l/min
Transelektro-Solarisbus consortium Trolley Tallin p.	Lithuania/Tallin	Inventer drive	15	2002	530 l/min
Transelektro-Solarisbus consortium Trolley Roma p.	Italia/Roma	Inventer drive 50/40 Hz	30	2003-	530 l/min
Transelektro-Solarisbus consortium Trolley Landskrona p.	Sweden/Landskrona	Inventer drive 50/40 Hz	3	2003	530 l/min
Solarisbus Z. o. o. Trolley Tallin p.	Lithuania/Tallin	Inventer +AC motor	5	2002-	530 l/min
Transelektro-Solarisbus consortium Trolley Riga p.	Latvia/Riga	Inventer drive	100	2004-	530 l/min
Hungarian State Railways project	Budapest	Inventer +AC motor	5	2003-	1500 l/min
ASTRA BUS SRL.	Roumania/Arad	Inventer +AC motor	13	2003-2004	500 l/min 13 bar
ASTRA BUS SRL.	Roumania/Arad	Inventer +AC motor	14	2004	500 l/min 13 bar
Budapest Public Transport Company Trolleybus Division project	Budapest	DC drive	19	2004	530 l/min 10 bar
Budapest Public Transport Company Metro Division project	Budapest	DC drive	15	2004	530 l/min 10 bar
Transelektro-Solarisbus consortium Trolley MAZ	Belarus/Minsk	Inventer +AC motor	1	2004	530 l/min 10 bar
Transelektro-Solarisbus consortium Trolley	Italia/Napoly	Inventer +AC motor	10	2004	530 l/min 10 bar
Hungarian State Railways project M43-47	Budapest	Hydraulic drive	9	2004	1300 l/min
Transelektro-Solarisbus consortium Trolley	Hungary/Debrecen	Inventer +AC motor	20	2004-2005	530 l/min
Szeged Public Transport Company - Volvo	Hungary/Szeged	Inventer +AC motor	1	2004	530 l/min
JP Elektroprivreda Srbije	Srbije/Kolubara	DC drive	3	2004-2005	530 l/min
Lithunaia State Railways project	Lithuania	Hydraulic drive	20	2004-2005	5300 l/min
Budapest Public Transport Company Trolleybus Division project	Budapest	DC drive	45	2004-2007	530 l/min
Hungarian State Railways project M43-47	Budapest	Hydraulic drive	4	2005	1300 l/min
Lithunaia State Railways project	Lithuania	Hydraulic drive	20	2005-2006	5300 l/min 10 bar
Szeged Public Transport Company - Mercedes Citato	Hungary/Szeged	Inventer +AC motor	6	2005-2006	530 l/min 10 bar
Transelektro Trolley	Austria/Salzburg	Inventer +AC motor	1	2006	530 l/min 10 bar
Hungarian State Railways project M43-47	Budapest	Hydraulic drive	8	2006	1300 l/min 10 bar
OBUS Ltd. Dunaferr shunting locomotive	Hungary/Dunaújváros	Inverter+AC motor	2	2005	740 l/min 8bar
Stadler AG. MÁV FLIRT electric train set	Switzerland/Hungary	Inverter+AC motor+drye	60	2006-2007	840 l/min 10bar
Latvia State Railways project	Latvia/Riga	Hydraulic drive	2	2006	5300 l/min 10 bar
Lithunaia State Railways project	Lithuania	Hydraulic drive	10	2007	5300 l/min 10 bar
ASTRA BUS SRL. /RATB project Bucarest/	Roumania/Arad	Inventer +AC motor	102	2006-207	490 l/min 13 bar
Ganz-Skoda Trolley	Latvia/Riga	Inventer +AC motor	10	2007	530 l/min 10 bar
Ganz-Skoda Trolley	Hungary/Budapest	Inventer +AC motor	11	2007	530 l/min 10 bar
Lithunaia State Railways project	Latvia/Riga	Hydraulic drive	10	2007	5300 l/min 10 bar
Hungarian State Railways project M43-47	Budapest	Hydraulic drive	2	2007	1300 l/min
Stadler AG. MÁV FLIRT electric train set	Switzerland/Hungary	Inverter+AC motor+drye	60	2008-2009	840 l/min 10bar
Latvia State Railways project	Latvia/Riga	Hydraulic drive	8	2008	5300 l/min 10 bar
Szeged Public Transport Company - Mercedes Citato	Hungary/Szeged	Inventer +AC motor	1	2008	530 l/min
Hungarian State Railways project Bvh	Budapest	Inventer +AC motor	2	2008	1500 l/min
JP Elektroprivreda Srbije	Srbije/Kolubara	Inventer +AC motor	8	2008	1000 l/min
ZTP Srbije	Serbije/Beograd	Inverter+AC motor	2	2008	1000 l/min
Ganz-Skoda Trolley	Latvia/Riga	Inverter+AC motor	2	2008	530 l/min
Inter-Tanker Rt.	Hungary/Budapest	Inverter+AC motor	5	2008	530 l/min
Szeged Public Transport Company - Mercedes Citato	Hungary/Szeged	Inventer +AC motor	1	2009	530 l/min
Belkommunmash	Belarus/Minsk	Inventer +AC motor	1	2009	530 l/min
Riga Public Transport Company MAZ Trolleybus	Latvia/Riga	Inverter + AC motor	1	2009	530 l/min
Belarus State Railways - 10 section motor-train	Belarus/Minsk	AC-Motor 220V D	1	2010	590 l/min
Hungarian State Railways project M43-47	Budapest	Hydraulic drive	5	2010	1300 l/min
Szeged Public Transport Company - ARC	Szeged	Inventer +AC motor	1	2010	530 l/min
ASTRA BUS SRL. /trolleybus project/	Kolozsvár	Inventer +AC motor	9	2010-2011	530 l/min
Bonciani A.S. (trolibusz)	ATAC Roma	Inventer +AC motor	3	2010	530 l/min
Ganz-Skoda Trolley	Riga	Inventer +AC motor	1	2010	530 l/min
Hungarian State Railways project BdV motor-train	Szolnok	Inverter + AC motor	2	2010-2011	1500 l/min
JP Elektroprivreda Srbije	Srbije/Kolubara	Inventer +AC motor	3	2011	1000 l/min
Skoda-ARC Trolleybus	Szeged	Inventer +AC motor	14	2013	490 l/min 13 bar
Szeged Public Transport Company Trolleybus	Szeged	AC motor	1	2013	400 l/min
Stadler AG. GYESEV FLIRT electric train set	Sopron	AC motor	8	2013	840 //min
Stadler Pusztaszabolcs. MAV- GYESEV FLIRT electric train set	Pusztaszabolcs	AC motor	2	2013	840 l/min
Stadler AG. MAV- GYESEV FLIRT electric train set	Budapest-Sopron	AC motor	96	2013-2015	840 //min
ShAAZ locomotive moderniastion	Russia- Shadrinsk	AC motor	2	2013	5300 l/min
Lithunaia State Railways project	Vilnius	AC motor	1	2014	5500 l/min
ShAAZ locomotive moderniastion	Russia - Shadrinsk	AC motor	8	2014	5300 l/min

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ShAAZ locomotive moderniastion	Russia- Shadrinsk	AC motor	6	2014	3300 l/min
Evopro E-bus	Hungary	AC motor	2	2014	370 l/min
Stadler AG. MAV FLIRT electric train set	Budapest	AC motor	12	2013-2015	840 //min
ShAAZ locomotive moderniastion	Russia - Shadrinsk	AC motor	9	2015	5300 l/min
ShAAZ locomotive moderniastion	Russia- Shadrinsk	AC motor	3	2015	3300 l/min
Hungarortain - Landskrona Trolleybus	Landskrona - Swiden	AC motor	1	2015	530 l/min
Stadler AG. MAV FLIRT electric train set	Budapest	AC motor	30	2015-2016	840 //min
ShAAZ locomotive moderniastion	Russia - Shadrinsk	AC motor	7	2016	5300 l/min
ShAAZ locomotive moderniastion	Russia- Shadrinsk	AC motor	1	2016	3300 l/min
JP Elektropriveda Kolubara	Srbije/Kolubara	Inverter + AC Motor	2	2016	1000 l/min
ISD Ltd. Dunaferr shunting locomotive	Hungary/Dunaújváros	Inverter + AC Motor	2	2017	740 l/min 8bar
Szeged Public Transport Company - Trolleybus	Hungary/Szeged	Inverter + AC Motor	2	2017	530 l/min 10bar
ShAAZ locomotive moderniastion	Russia- Shadrinsk	AC motor	2	2017	3300 l/min
SCRL Calatori + Marfa - locomotive modernisation	Romania - Brasso,Constanta	Inverter + AC Motor	2	2018	4650 l/min 10bar
JP Elektroprivreda Srbije - locomotive modernisation	Srbije/Kolubara	Inventer +AC motor	2	2018	1000 l/min
ShAAZ locomotive moderniastion	Russia- Shadrinsk	AC motor	1	2018	3300 l/min 9bar
SC LOC SERV REP - locomotive modernisation	Romania - Caransebes	Old DC motor	4	2018	2140 l/min 10bar
Budapest Public Transport Company Cogwheel Division project	Hungary/Budapest	DC drive	8	2018-2019	530 l/min
SCRL Calatori + Marfa - locomotive modernisation	Romania - Brasso,Constanta	DC drive	2	2018	2650 l/min 10bar
SCRL Calatori + Marfa - locomotive modernisation	Romania - Brasso,Constanta	Inverter + AC Motor	1	2019	4650 l/min 10bar
CONSTANTIN GROUP - locomotive modernisation	Romania - Brasso,Constanta	DC drive	4	2019	2650 l/min 10bar
JP Elektroprivreda Srbije - locomotive modernisation	Srbije/Kolubara	Inventer +AC motor	2	2019	1000 l/min
SC NEW SH SRL - Tram modernisation	Romania - Iasi	AC motor	4	2019	560 l/min 13bar
ISD Ltd. Dunaferr shunting locomotive	Hungary/Dunaújváros	Inverter + AC Motor	1	2019	740 l/min 8bar
Budapest Public Transport Company Metro Division project	Hungary/Budapest	AC motor	4	2019	530 l/min 12bar
Budapest Public Transport Company Historical Division project	Hungary/Budapest	Hydraulic drive	4	2019-2020	1140 l/min 9bar
UAB Vejo projektai - new e-bus manufacturing	Lithuania/Klaipeda	Inverter + AC Motor	4	2019	210 l/min 12bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	Old DC motor	2	2019	2140 l/min 10bar
EUROEST SRL - locomotive moderniastion	Romania - Galati	Old DC motor	1	2019	2140 l/min 10bar
EUROEST SRL - locomotive moderniastion	Romania - Galati	AC motor	1	2019	2140 l/min 10bar
ARRIVA SRL - motortrain modernisation	Romania - Bucurest	Old DC motor	1	2019	1000 l/min 10bar
DB CARGO - BR232 (LUDMILLA) locomotive modernisation	Romania - Turceni	Old DC motor	1	2019	2500 l/min 10bar
KELET ÚT LLc. - shunting locomotive modernisation	Hungary	AC motor	2	2019-2020	530 l/min 10bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	V-Belt driven	1	2019	1000-2000 l/min
SINVOZ d.o.o & ZELVOZ d.o.o - 412/416 motortrain modernisation	Serbia - Zrenjanin/Smederev	AC motor	10	2019-2020	1100 l/min 9bar
MÁV VAGON LLc. - Bombardier TALENT modernisation	Hungary - Székesfehérvár	AC motor	10	2019-2021	2x840 l/min 10bar
SC NEW SH SRL - Tram modernisation	Romania - Iasi	AC motor	2	2020	560 l/min 13bar
ISD Ltd. Dunaferr - shunting locomotive modernisation	Hungary/Dunaújváros	Inverter + AC Motor	1	2020	740 l/min 8bar
GSP d.o.o - Tram modernisation	Serbia - Beograd	Old DC motor	2	2020	410 l/min 8bar
SINVOZ d.o.o & ZELVOZ d.o.o - 412/416 motortrain modernisation	Serbia - Zrenjanin/Smederev	AC motor	10	2020-2021	1100 l/min 9bar
SC NEW SH SRL - Tram modernisation	Romania - Iasi	AC motor	2	2020	560 l/min 13bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	V-Belt driven	1	2020	400-800 l/min 10bar
Szeged Public Transport Company - Trolleybus	Hungary/Szeged	Inverter + AC Motor	1	2020	530 l/min 13bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	Old DC motor	1	2020	2140 l/min 10bar
EUROEST SRL - locomotive moderniastion	Romania - Galati	Old DC motor	1	2020	2140 l/min 10bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	V-Belt driven	1	2020	400-800 l/min 10bar
EUROEST SRL - locomotive moderniastion	Romania - Galati	AC motor	1	2020	2250 l/min 10bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	V-Belt driven	1	2020	850-1700 l/min 10bar
SC FERATA SRL - locomotive modernisation	Romania - Criscior	V-Belt driven	1	2020	400-800 l/min 10bar
MIN-LOKOMOTIVA - locomotive modernisation	Serbia - Nis	AC motor	1	2020	4050 l/min 10bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	Old DC motor	1	2020	2620 l/min 10bar
SC MARUB SRL - shunting locomotive modernisation	Romania - Brassov	V-Belt driven	1	2020	410-1100 l/min 10bar
CONSTANTIN GROUP - locomotive modernisation	Romania - Brasso,Constanta	DC drive	2	2020	2650 l/min 10bar
DB CARGO - BR232 (LUDMILLA) locomotive modernisation	Romania - Turceni	Old DC motor	1	2020	2500 l/min 10bar
Hungarian State Railway - MÁV-HÉV - suburban railway modernisation pr	Hungary - Budapest	Old DC motor	14	2021	880 l/min 10bar
EUROEST SRL - locomotive moderniastion	Romania - Galati	Old DC motor	1	2021	2620 l/min 10bar
CARGO Trans Vagon SA - locomotive modernisation	Romania - Bukarest	AC motor	2	2021	3600 l/min 10bar
ZELVOZ d.o.o 412/416 motortrain moderniastion for the Montenegro Rail	Serbia - Smederevo	AC motor	2	2021	1100 l/min 9bar
Hungarian State Railway - MÁV-HÉV - shunting locomotive modernisation	Hungary - Budapest	AC motor	1	2021	530 l/min 10bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	V-Belt driven	1	2021	400-800 l/min 10bar
DB CARGO - CLASS 92 locomotive modernisation	Romania - Turceni	AC motor	2	2021	1150 l/min 10bar
Bulgarian State Railway - BDZ 44 locomotive modernisation	Bulgaria - Sofia	Old DC motor	2	2021	1900 l/min 10bar
LIBERTY STEEL - shunting locomotive modernisation	Romania - Galati	AC and DC motor	3	2021	1900 -1950 l/min 10bar
SC NEW SH SRL - Tram modernisation	Romania - Iasi	AC motor	1	2021	560 l/min 13bar
VEST TRANS SRL - locomotive modernisation	Romania - Ploiesti	DC motor	1	2021	2650 l/min 10bar
ARRIVA SRL - motortrain modernisation	Romania - Bucurest	Old DC motor	1	2021	1000 l/min 10bar
SC SCRL SA BRASOV SRL - motortrain modernisation	Romania - Bucurest	Old DC motor	1	2021	1000 l/min 10bar
DB CARGO - BR232 (LUDMILLA) locomotive modernisation	Romania - Turceni	Old DC motor	1	2021	2500 l/min 10bar
RUDOS s.r.o - motortrain modernisation	Slovakia - Ruzomberok	Old DC motor	2	2021	1000 l/min 10bar
TRANSFEROVIAR CALATORI SRL. - motortrain modernisation	Romania - Cluj Napoca	V-Belt driven	2	2021	1050 l/min 10bar
S.C. M.M.V. RAIL ROMÂNIA S.A. - locomotive modernisation	Romania - Cluj Napoca	DC motor	1	2021	2650 l/min 10bar
DB CARGO - BR232 (LUDMILLA) locomotive modernisation	Romania - Turceni	Old DC motor	2	2021	2500 l/min 10bar
CONSTANTIN GROUP - locomotive modernisation	Romania - Brasso,Constanta	DC motor	2	2021	2650 l/min 10bar
Hungarian State Railway - MÁV-HÉV - suburban railway modernisation pr	Hungary - Budapest	Old DC motor	5	2022	880 l/min 10bar

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Certified System certop ISO 9001 ISO 14001

Transelektro-Solarisbus consortium Trolley Landskrona p.	Sweden/Landskrona	AC motor	1	2022	530 l/min 10bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	V-Belt driven	2	2022	400-800 l/min 10bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	V-Belt driven	1	2022	850-1700 l/min 10bar
SC LOC SERV REP - locomotive moderniastion	Romania - Caransebes	Old DC motor	2	2022	2620 l/min 10bar
LIBERTY STEEL - shunting locomotive modernisation	Romania - Galati	DC motor	5	2022	1900 -2150 l/min 10bar
MIN-LOKOMOTIVA - locomotive modernisation	Serbia - Nis	V-Belt driven	1	2022	750 - 1750 l/min 10bar
SC FERATA SRL - locomotive modernisation	Romania - Criscior	V-Belt driven	2	2022	400-800 l/min 10bar
TRANSFEROVIAR CALATORI SRL. - motortrain modernisation	Romania - Cluj Napoca	V-Belt driven	2	2022	1050 l/min 10bar
DB CARGO - BR232 (LUDMILLA) locomotive modernisation	Romania - Turceni	Old DC motor	6	2022	2500 l/min 10bar
ARRIVA SRL - motortrain modernisation	Romania - Bucurest	Old DC motor	3	2022	1000 l/min 10bar
CONSTANTIN GROUP - locomotive modernisation	Romania - Brasso,Constanta	DC motor	1	2022	1950 l/min 10bar
CONSTANTIN GROUP - locomotive modernisation	Romania - Brasso,Constanta	DC motor	2	2022	2650 l/min 10bar
WEST TRANS SRL - locomotive modernisation	Romania - Bucurest	DC motor	1	2022	2650 l/min 10bar
BKV METRO M4 Hungary - metrotrain modernisation	Hungary - Budapest	AC motor	2	2022	840 l/min 10bar
TRANSFEROVIAR CALATORI SRL. - motortrain modernisation	Romania - Cluj Napoca	Hydraulic drive	1	2022	1050 l/min 10bar
GYSEV CARGO - BR232 (LUDMILLA) - locomotive modernisation	Hungary - Sopron	Old DC motor	2	2022-2023	2500 l/min 10bar
V-HÍD - BR232 (LUDMILLA) - locomotive modernisation	Hungary - Budapest	Old DC motor	2	2022-2023	2500 l/min 10bar
Kiskunhalas, 01 December, 2022					

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