



MODULATING DUAL FUEL BURNERS

▶ ENNE/EMME SERIES	▶ ENNE/EMME 1400	407/814 ÷ 1628 kW
	▶ ENNE/EMME 2000	581/1163 ÷ 2325 kW
	▶ ENNE/EMME 3000	872/1744 ÷ 3488 kW
	▶ ENNE/EMME 4500	1163/2325 ÷ 5000 kW

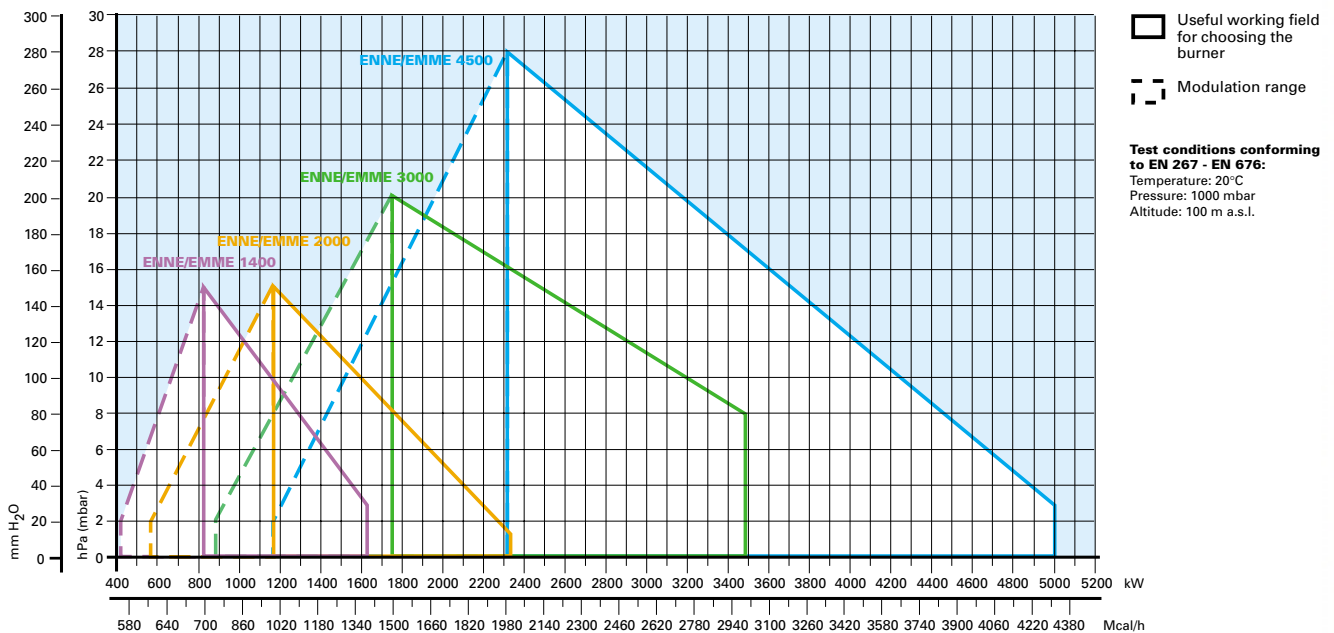


The ENNE/EMME 1400-4500 series of burners covers a firing range from 407 to 5000 kW. They have been designed for high output users and they are suitable for matching with every kind of boilers, with normal or pressurized combustion chamber.

Operation can be "two stage progressive" or, alternatively, "modulating" with the installation of a PID logic regulator and respective probes. Two fuel options are available: only gas and only heavy oil, thus settable by a manual switch. Heavy oil circuit is fitted with his own electric motor: this

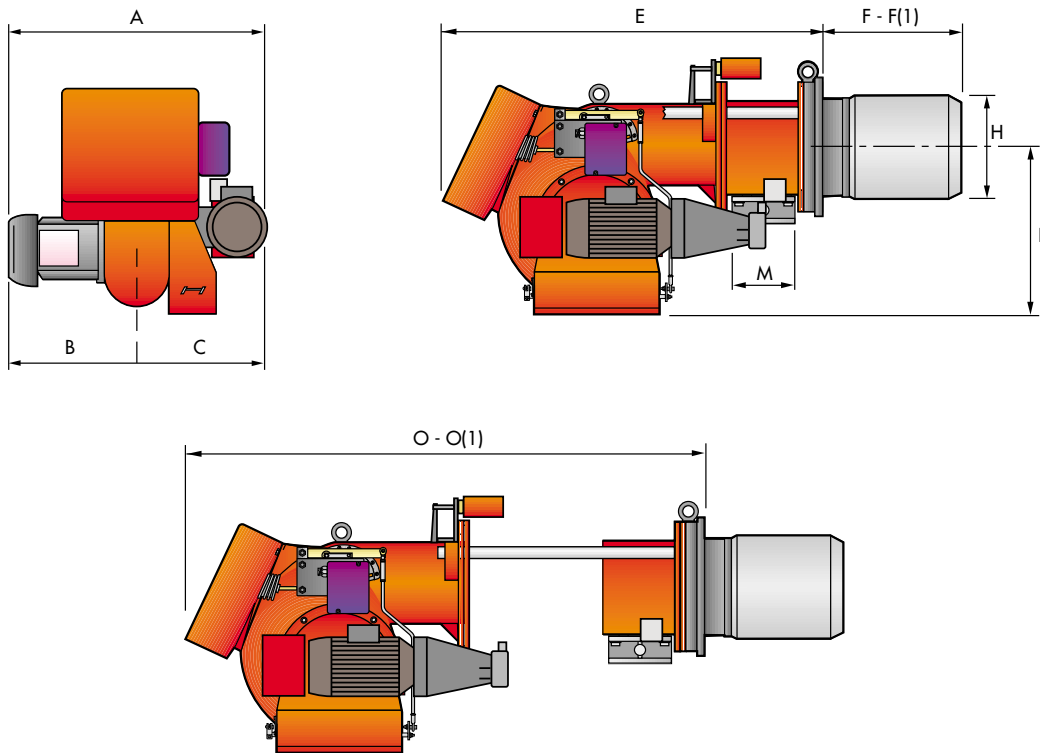
permits pump stop during gas operation preventing danger of pumping seizure and avoiding oil circulation. A wide range of accessories and gas trains suitable to the burners guarantee an elevated working flexibility.

FIRING RATES



ENNE/EMME series - OVERALL DIMENSIONS (mm)

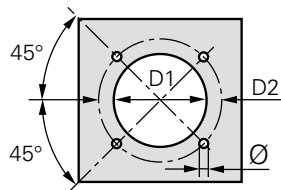
BURNER



Model	A	B	C	E	F - F(1)	H	I	M	O - O(1)
▶ ENNE/EMME 1400	892	376	516	1090	385 - 495	250	467	2"	1475 - 1585
▶ ENNE/EMME 2000	912	396	516	1090	385 - 495	260	467	DN80	1475 - 1585
▶ ENNE/EMME 3000	1000	447	553	1320	476 - 606	336	525	DN80	1796 - 1926
▶ ENNE/EMME 4500	1061	508	553	1320	476 - 606	336	525	DN80	1796 - 1926

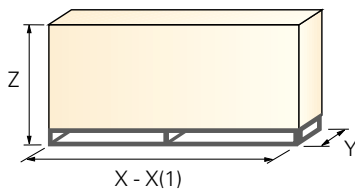
(1) Length with extended combustion head

BURNER - BOILER MOUNTING FLANGE



Model	D1	D2	Ø
▶ ENNE/EMME 1400	255	368	M16
▶ ENNE/EMME 2000	265	368	M16
▶ ENNE/EMME 3000	340	438	M20
▶ ENNE/EMME 4500	340	438	M20

PACKAGING

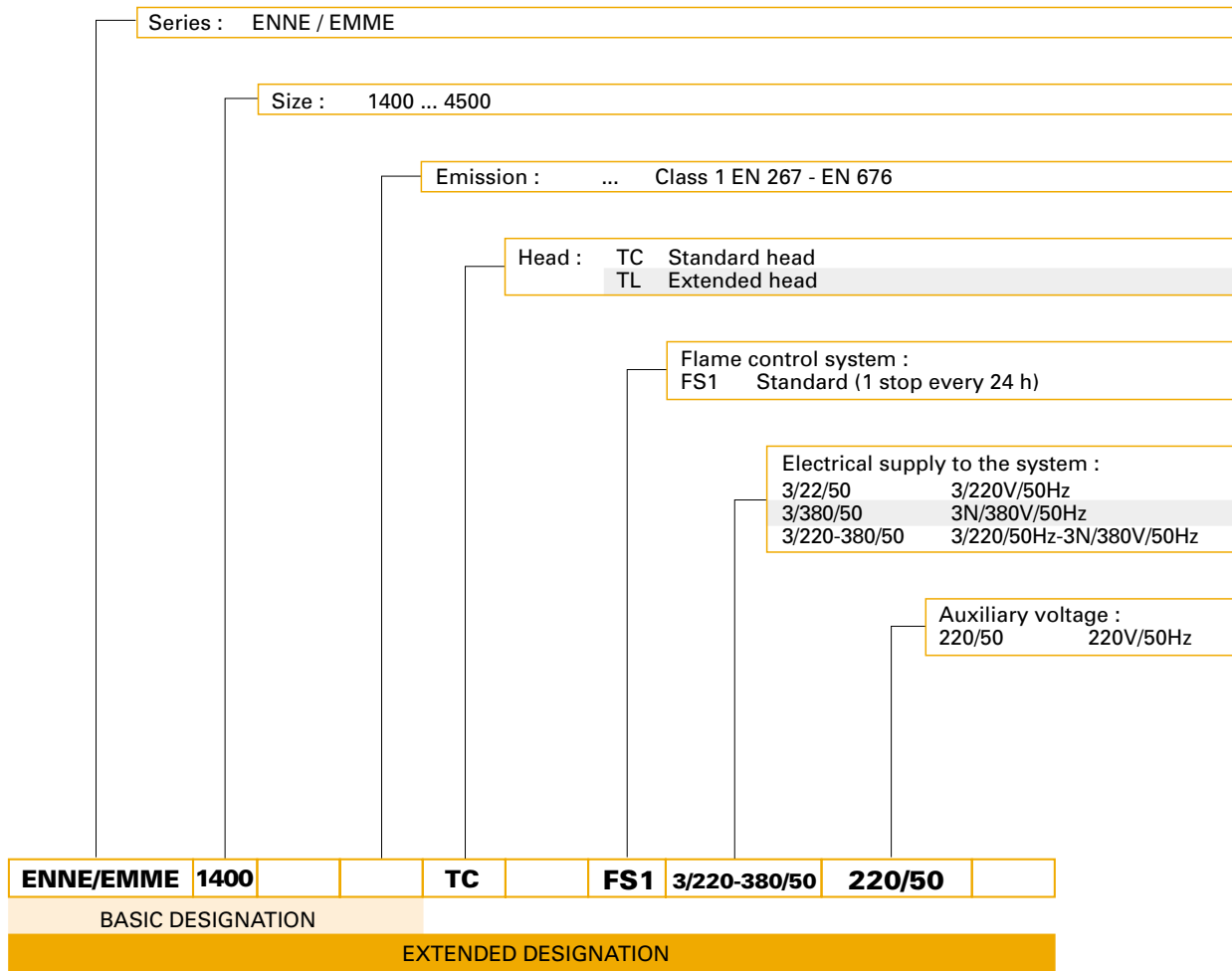


Model	X - X(1)	Y	Z	Kg
▶ ENNE/EMME 1400	1670 - 1670	1010	780	265
▶ ENNE/EMME 2000	1670 - 1670	1010	780	265
▶ ENNE/EMME 3000	2000 - 2000	1160	870	280
▶ ENNE/EMME 4500	2000 - 2000	1160	870	290

(1) Length with extended combustion head

ENNE/EMME series - SPECIFICATION

DESIGNATION OF SERIES



ENNE/EMME series - STATE OF SUPPLY

Monoblock forced draught dual fuel burner, two stage progressive or modulating operation with a kit, made up of:

- Air suction circuit
- Fan with forward curved blades
- Air damper for setting and butterfly valve for regulating fuel output controlled by a servomotor
- Combustion head, that can be set on the basis of required output
- Maximum gas pressure switch
- Minimum air pressure switch
- Fan electrical motor
- Pump electrical motor
- Gears pump for high pressure fuel supply, fitted with:
 - filter
 - pressure regulator
 - connections for installing a pressure gauge and a a vacuumeter
 - internal by-pass for single pipe installation
- Preheater unit
- Valve unit with a double oil safety valve on the output circuit and safety valve on the return circuit
- UV photocell for flame detection
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP 40 protection level.

Standard equipment:

- 1 gas train gasket
- 12 screws for fixing the burner flange to the boiler
- 1 insulating screen
- 2 flexible hoses for connection to the oil supply circuit
- 2 nipples for connection to the pump
- 4 wiring looms fittings for electrical connections
- 2 pin extensions
- 8 washers
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

ENNE/EMME series - AVAILABLE BURNER MODELS

Code	Model	Heat output			Total electrical power (kW)	Certification	Note	Price
		(kW)	Heavy Oil (kg/h)	Natural Gas (Nm ³ /h)				
3486701	ENNE/EMME 1400 TC FS1 3/220-380/50 220/50	407/814-1628	35/70-140	41/81-163	3 + 1,1	-		
3486702	ENNE/EMME 1400 TL FS1 3/220-380/50 220/50	407/814-1628	35/70-140	41/81-163	3 + 1,1	-		
3487801	ENNE/EMME 2000 TC FS1 3/220-380/50 220/50	581/1163-2325	50/100-200	58/116-233	4 + 1,1	-		
3487802	ENNE/EMME 2000 TL FS1 3/220-380/50 220/50	581/1163-2325	50/100-200	58/116-233	4 + 1,1	-		
3488801	ENNE/EMME 3000 TC FS1 3/220-380/50 220/50	872/1744-3488	75/150-300	87/174-349	9 + 2,2	-		
3488802	ENNE/EMME 3000 TL FS1 3/220-380/50 220/50	872/1744-3488	75/150-300	87/174-349	9 + 2,2	-		
3489201	ENNE/EMME 4500 TC FS1 3/220/50 220/50	1163/2325-5000	100/200-430	116/233-500	12 + 2,2	-	(1)	
3489202	ENNE/EMME 4500 TL FS1 3/220/50 220/50	1163/2325-5000	100/200-430	116/233-500	12 + 2,2	-	(1)	
3489203	ENNE/EMME 4500 TC FS1 3/380/50 220/50	1163/2325-5000	100/200-430	116/233-500	12 + 2,2	-	(1)	
3489204	ENNE/EMME 4500 TL FS1 3/380/50 220/50	1163/2325-5000	100/200-430	116/233-500	12 + 2,2	-	(1)	

(1) Star delta starter.

Net calorific value heavy oil: 11,16 kWh/kg; 9600 kcal/kg - Max viscosity at 50°C: 50 mm²/s (cSt)(7°E).

Net calorific value G20 gas: 10 kWh/Nm³; 8600 kcal/Nm³ - G20 gas density: 0,71 kg/Nm³.

The burners of ENNE/EMME series are in according to 90/396 - 89/336 - 73/23 ECC Directive and EN 676-267 Norm.

ENNE/EMME series - AVAILABLE GAS TRAIN MODELS

	Gas train code*	Gas train model	Natural gas		LPG		Note	Gas train price
			Burner (type)	Adapter** (code)	Burner (type)	Adapter** (code)		
MULTIBLOC	3970181	MBD 420	ENNE/EMME 1400 ENNE/EMME 2000	- 3010128	ENNE/EMME 1400 ENNE/EMME 2000	- 3010128	(1)	
	3970182	MBD 420 CT	ENNE/EMME 1400 ENNE/EMME 2000	- 3010128	ENNE/EMME 1400 ENNE/EMME 2000	- 3010128	(2)	
COMPOSED	3970146	CBF 50/1	ENNE/EMME 1400 ENNE/EMME 2000	- 3010128	ENNE/EMME 1400 ENNE/EMME 2000	- 3010128	(1)	
	3970160	CBF 50/1 CT	ENNE/EMME 1400 ENNE/EMME 2000	- 3010128	ENNE/EMME 1400 ENNE/EMME 2000	- 3010128	(2)	
	3970147	CBF 65/1	ENNE/EMME 1400 ENNE/EMME 2000 ENNE/EMME 3000 ENNE/EMME 4500	3000825 3000831 3000831 3000831	ENNE/EMME 2000 ENNE/EMME 3000 ENNE/EMME 4500	3000831 3000831 3000831	(1)	
	3970161	CBF 65/1 CT	ENNE/EMME 1400 ENNE/EMME 2000 ENNE/EMME 3000 ENNE/EMME 4500	3000825 3000831 3000831 3000831	ENNE/EMME 2000 ENNE/EMME 3000 ENNE/EMME 4500	3000831 3000831 3000831	(2)	
	3970148	CBF 80/1	ENNE/EMME 1400 ENNE/EMME 2000 ENNE/EMME 3000 ENNE/EMME 4500	3000826 3000832 3000832 3000832			(1)	
	3970162	CBF 80/1 CT	ENNE/EMME 1400 ENNE/EMME 2000 ENNE/EMME 3000 ENNE/EMME 4500	3000826 3000832 3000832 3000832			(2)	
	3970149	CBF 100/1	ENNE/EMME 2000 ENNE/EMME 3000 ENNE/EMME 4500	3010127 3010127 3010127			(1)	
	3970163	CBF 100/1 CT	ENNE/EMME 2000 ENNE/EMME 3000 ENNE/EMME 4500	3010127 3010127 3010127			(2)	

* Gas train are 230V/50Hz - 220V/60Hz electrical supply.

** The adapter price is available in the "Gas train accessories" section.

(1) Seal control accessory.

(2) Seal control incorporated.

The following table shows the frequently matching between ENNE/EMME burners and the gas train, referred to different inlet gas pressure.

Burner	Reference combustion chamber pressure (mbar)	Natural gas G20 (20 mbar)		Natural gas G20 (300 mbar)		LPG (35 mbar)		LPG (150 mbar)	
		Gas train	Reference output (kW)	Gas train	Reference output (kW)	Gas train	Reference output (kW)	Gas train	Reference output (kW)
N/M 1400	8	-	-	MBD 420 CB 50/1	1300	-	-	MBD 420 CB 50/1	1300
N/M 2000	6	-	-	MBD 420 CB 50/1	1940	-	-	MBD 420 CB 50/1	1940
N/M 3000	12	-	-	CB 65/1	2900	-	-	CB 65/1	2900
N/M 4500	13	-	-	CB 65/1	3880	-	-	CB 65/1	3880

ENNE/EMME series - BURNER ACCESSORIES

Nozzles type B3-AA 45°

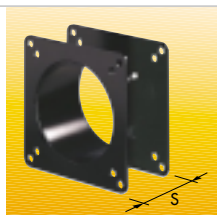


The nozzles must be ordered separately. The following table shows the features and codes on the basis of the maximum required fuel output.

NOTE: each burner needs N° 1 nozzle.

Burner	Rated delivery (kg/h)	Nozzle code	Price
ENNE/EMME 1400	70	3009613	
ENNE/EMME 1400	80	3009615	
ENNE/EMME 1400	90	3009617	
ENNE/EMME 1400 - 2000	100	3009620	
ENNE/EMME 1400 - 2000	125	3009623	
ENNE/EMME 1400 - 2000 - 3000	150	3009626	
ENNE/EMME 2000 - 3000	175	3009629	
ENNE/EMME 2000 - 3000 - 4500	200	3009632	
ENNE/EMME 3000 - 4500	225	3009635	
ENNE/EMME 3000 - 4500	250	3009638	
ENNE/EMME 3000 - 4500	275	3009641	
ENNE/EMME 3000 - 4500	300	3009644	
ENNE/EMME 4500	325	3009647	
ENNE/EMME 4500	350	3009650	
ENNE/EMME 4500	375	3009653	
ENNE/EMME 4500	400	3009656	
ENNE/EMME 4500	425	3009659	
ENNE/EMME 4500	450	3009661	

Spacer kit



If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following list:

Burner	Spacer thickness S (mm)	Kit code	Price
ENNE/EMME 1400 - 2000	110	3000722	
ENNE/EMME 3000 - 4500	130	3000751	

Sound proofing box



If noise emission needs reducing even further, sound-proofing boxes are available.

Burner	Box type	Box code	Price
ENNE/EMME 1400 - 2000	C7	3010048	
ENNE/EMME 3000 - 4500	C8	3010049	

Accessories for modulating operation



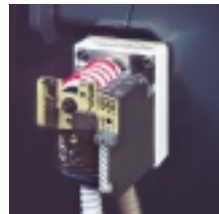
To obtain modulating operation, the ENNE/EMME series of burners requires a regulator.

Burner	Regulator type	Regulator code	Price
ENNE/EMME 1400 - 2000 - 3000 - 4500	RWF 40	3010211	



The relative temperature or pressure probes fitted to the regulator, must be chosen on the basis of the application.

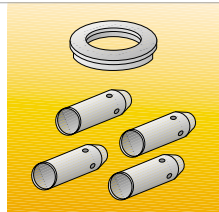
Probe type	Range (°C) (bar)	Code	Price
Temperature PT 100	-100 ÷ 500°C	3010110	
Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213	
Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214	



Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.

Burner	Potentiometer kit code	Price
ENNE/EMME 1400 - 2000 - 3000 - 4500	3010021	

LPG kit



For burning LPG gas, a special kit is available to be fitted to the combustion head on the burner, as given in the following table.

Burner	Kit code for standard head	Kit code for extended head	Price
ENNE/EMME 1400 - 2000	3010063	3010063	
ENNE/EMME 3000	in progress	in progress	
ENNE/EMME 4500	3090937	3090937	

Selfcleaning filter



For cleaning heavy oil from dirty particles and impurities, it is equipped with a thermostatic heater for oil with 65°E viscosity at 50°C.

Filter type	Filtering degree (µm)	Filter code	Price
Ø = 1" 1/2 (65°E at 50°C)	300	3010022	

Heater/thermostat type	Heater/thermostat code	Price
Thermostatic heater with LED	3010060	
Heater	3010061	
Thermostat (two-stage / regulable)	3010062	

Degasing unit

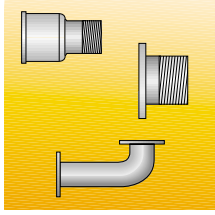


In modulating burner, gas separator bottle connects the burner circuit to the main ring circuit. It allows to recover heat in excess by discharge of the gas from the return circuit.

Burner	Degasing unit code	Price
ENNE/EMME 1400 - 2000	3000748	
ENNE/EMME 3000 - 4500	3010012	

ENNE/EMME series - GAS TRAIN ACCESSORIES

Adapters



When the diameter of the gas train is different from the set diameter of the burners, an adapter must be fitted between the gas train and the burner.

Burner	Gas train	Dimensions	Adapter code	Price
ENNE/EMME 1400	CBF 65	DN 65 2" 1/2	1" 1/2 2"	3000825
	CBF 80	DN 80 2" 1/2	2"	3000826
ENNE/EMME 2000	MBD 420 CB 50/1	DN 80 DN 65 2" 1/2 2"		3010128
	CBF 65	DN 65 DN 80		3000831
	CBF 80	DN 80 DN 80		3000832
ENNE/EMME 3000	CBF 100	DN 100 DN 80		3010127
	CBF 65	DN 65 DN 80		3000831
	CBF 80	DN 80 DN 80		3000832
ENNE/EMME 4500	CBF 100	DN 100 DN 80		3010127
	CBF 65	DN 65 DN 80		3000831
	CBF 80	DN 80 DN 80		3000832
CBF 100	DN 100 DN 80		3010127	

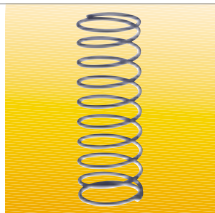
Seal control kit



To test the valve seals on the gas train, a special "seal control kit" is available.

Burner	Gas train	Kit code	Price
ENNE/EMME 1400	MBD 420		
	CB 50/1	3010125	
	CBF 65/1 - 80/1		
ENNE/EMME 2000	MBD 420		
	CB 50/1 CBF 65/1 - 80/1 - 100/1	3010125	
ENNE/EMME 3000 ENNE/EMME 4500	CBF 65/1 - 80/1	3010125	

Stabiliser spring



Accessory springs are available to vary the pressure range of the gas train stabilisers.

Gas train	Spring	Code	Price
CBF 65/1 - CBF 80/1	Red da 25 a 55 mbar	3010133	
CBF 100/1	Red da 25 a 55 mbar	3010134	
CBF 65/1 - CBF 80/1	Black da 60 a 110 mbar	3010135	
CBF 100/1	Black da 60 a 110 mbar	3010136	
CBF 65/1 - CBF 80/1	Pink da 100 a 150 mbar	3090456	
CBF 100/1	Pink da 100 a 150 mbar	3090489	