

## Fine Filters Pvt. Ltd.











#### PRODUCT RANGE

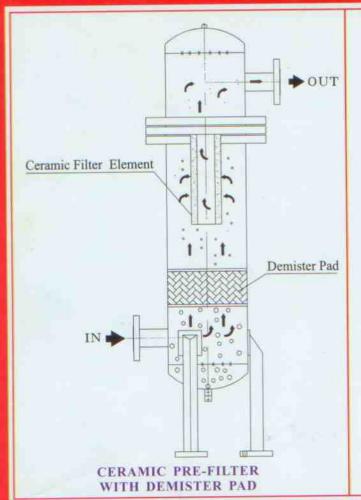
- Porous Ceramic Filters for Air, Gases & Liquids
- Activated Carbon Filters
- Fibre wound and pleated SS cartidges
- Parker | BALSTON RANGE OF FILTERS FOR
- Air, Gases & Liquids
- Compressed Natural Gas
- Speciality Gases
- Protection of Gas & Liquid Analysers
- Vacuum Pump Inlet & Exhaust
- Steam, Sterile Air & EtO

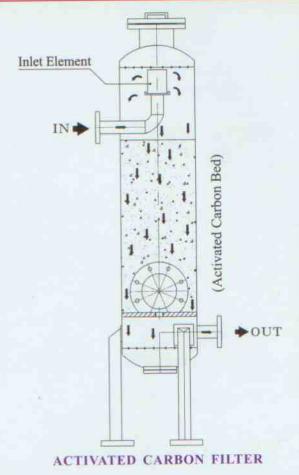
### Parker | = BALSTON

- Membrane Air Dryers & Nitrogen Generators
- Tyre Savers

#### **APPLICATIONS**

- Clean / dry air for pneumatic & instrumentation.
- Filtration of gases like CO2 / N2 / H2 / Freon.
- Pneumatic conveying of materials in cement and fertiliser plants.
- Filtration of Air / Oxygen in fermentation process.
- Air diffusers for effluent treatment/fluidized bed.
- > Prevent odour from exhaust lines.
- Removal of H2S from CO2 in aeration of bottled beverages.
- Spray-painting / powder coating & mirror making.
- In-house generation of N2 & bone dry air.
- Removal of suspended impurities from Industrial cooling / process water and other liquids.





"Fine Filters" Compressed Air/Gas Filters consist of a two-stage separation-cum-filtration process.

In the first stage, the air/gas passes through a carefully positioned Demister Pad placed above the inlet nozzle.

The Demister Pad is made of knitted St. Steel wire loops with symmetrical interlocks. Due to the high free volume and large impingement area, it has a very low pressure drop. As the air/gas passes through the pad, the liquid droplets contact the large wire surface area and due to the greater inertia, they are held back. As more and more droplets collect, they coalesce and grow in size and then fall back in the drain sump due to gravity.

The air/gas exiting out from the top of the Demister pad will contain traces of oil and moisture in mist form in the range of about 25-30 microns.

In the next stage, the air/gas enters the porous ceramic filter elements hanging above the Demister Pad.

As the air/gas passes through the elements, the entrained moisture and oil droplets as well as dust and other suspended particles are separated within the wall thickness due to combined action of capillary and inertial impaction.

The porous ceramic filter elements are made of high strength fused alumina bonded together and fired at high temperature. These elements can remove suspended particles down to 5 (five) microns (nominal) with 99.9% efficiency. Other nominal ratings of 20, 10, and 1 micron can also be supplied.

These elements can cleaned and reused and can withstand differential pressures upto 100 psid. Intitial pressure drop in clean condition is about 1.0 to 1.5 psid at maximum flow. When the pressure drop reaches about 8-10 psid, the elements must be cleaned. Standard assemblies are designed for 13 barg; however custom-built units can also be made for higher pressures upto 250 barg, in MS/CS or SS material

"Fine Filters" Activated Carbon Absorbers are best suited for adsorption of vapors of oils and other organic vapors/odour from compressed air/gases.

A typical compressed air line from a lubricated compressor may contain upto 30 ppm of oil of which about 10 ppm may be in vapor phase.

The bulk of the oil in the from form of fine liquid droplets is already removed in the ceramic pre-filter or a coalescer.

The adsorber is fitted with an inlet filter element which not only distributes the air uniformally over the bed, but also prevents any carbon particles from entering in the inlet line due to any sudden back-pressure.

The air/gas stream then passes though the packed bed of special grade Activated Carbon granules (or pellets in some cases) with high adsorption efficiency. The bed height of the carbon is so designed as to minimize the pressure drop and vapor entrainment at the outlet.

The residual oil content at the outlet (in vapor phase) is less than 1 ppm. The pressure drop across the Adsorber is expected to be about 1.5-2.0 psid and may increase over a period of time as the bed gets de-activated.

The life of the Activated Carbon is very much dependant on the quality of the incoming air/gas and it has to be replaced generally in about 6-8 months with a fresh charge.

The adsorber is also fitted with sufficient number of porous ceramic filter elements at the bottom of the carbon bed. This prevents any carry-over of the carbon particles alongwith the treated air/gas.

The adsorber can also be used to remove any odour form exhaust air/gas in paint, pesticide plants.



range of applications in pneumatic lines, modulating systems, air conveying etc. and a variety of gases. Commonly used grades of borosilcate glass fibre filters elements like DX / 6CU / 7CVP etc. have coalescing efficiencies ranging from 99.5 to 99.97% for 0.3 to 0.01 microns and max. oil carryover between 0.83 to 0.008 ppm. For dust removal, Grade 3 PU is a pleated cellulose element with very high dirt-holding capacity rated for 3 microns absolute. Large surface area of the 7CVP pleated element means higher tolerance for heavy liquid aerosol contamination. The liquid droplets slide down the fibre network and coalesce to form large droplets which collect at the bottom and are continously drained out. Hence the life of the element is independent of the liquid contamination. The dirt particles remain trapped and this ultimately leads to flow resistance. Capacities can vary from a few SCFM to +40000 SCFM and line size from 1/4" to 16" NB.



INSTRUMENT QUALITY AIR: | BALSTON | Very High efficiency coalescing filters grade BX or 4 CU can achieve efficiencies between 99.995% to 99.9999% for micron ratings down to 0.01 microns and max. oil carryover of 0.003 ppm. They can be designed for any capacity and are completely resistant to water and compressor oils and a host of other liquid and gases. Use of a CI | BALSTON | or AU | Parker grade activated carbon element also removes oil vapors with +99% efficiency. These filters are ideal as preand after-filters in dryers and for critical instrumentation applications.



STERILE AIR FILTERS: BALSTON Grade SA elements are rated for +99.9999% efficiency for 0.01 microns and comply with USFDA requirments for removal of bacteria. These elements can be steam sterilised and can tolerate temperatures upto 300° F. The housing is of St. Steel with heat resistant seals like viton. Suitable pre-filters using grade DX + BX or grade 4C elements should precede the SA filters in order to maximize the efficiency and increase life. Sometimes an AU or CI cartridge filter may also be necessary to remove hydrocarbons in case of a lubricated compressor. These filters can be used to provide clean, dry sterile air for fermentors etc. and also for BREATHING AIR systems like in asbestos removal operations, spray paint systems, sandblasting operations and while cleaning of storage tanks, ESPs, reactors etc. In addition, Eto filters are also available to deliver clean gas to sterlisers to improve performance and reduce maintenance.



FILTERS FOR CNG: PERLISTON filters are effective for both metering stations are well as on-vehicle applications to protect fuel system components and can be used both in low and high pressure ratings. Such filters help in maximising usage time, minimize maintenance costs and extend the life of the equipments/components. Housings can be of St. Steel or anodised aluminium. All aerosol contaminants in the 0.3 to 0.6 (CLS grade) and 0.01 (BQ grade) micron range will be removed. Oily water emulsion accumulates in the sump and can be drained off while solid dirt particles remain trapped on the surface of the fibres. Pressures can vary from 500 to 5000 psig.



LOW AND HIGH PRESSURE COMPRESSED GAS FILTERS & SPECIALITY GAS FILTERS:

BALSTON filters are used for filtraion of various types of gases including high purity gases, corrosive and cylinder gases. The system may consist of a pre-filter + final filter and finally an adsorbent cartidge filter to remove trace vapor components. Almost all hydrocarbons and common acidic gases (except HF) can be handled using the Jarker J-series or BALSTON range of filters. Pressure can be upto 5000 psig. The MOC of housing is either CS or alumimium or St. Steel (or even Monel/Teflon) with suitable seals.

BALSTON filter cartridges grade DX/DQ, BX/BQ are the most commonly used coalescing elements while grade CI (with either activated carbon or molecular sieve) is used as the adsorbent media for removal of almost all major hydrocarbons, aromatics, acidic gases etc. For removing solid contaminants prior to coalescing filters.

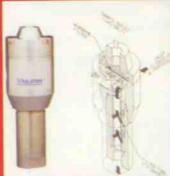


STEAM FILTERS: EBALSTON steam filters remove contaminants from steam in food processing and pharmaceutical applications. They comply with FDA regulations for food contact materials. The patented Grade SR filter element is rated for +98% efficiency for 0.1 microns. MOC is SS304 with capacities upto 2000lbs/hr and maximum pressure upto 125 psig. The filter cartridge is completely free of any impurities which could extract into the steam. These filters reduce condensate in steam and thereby odor and taste problems are minimized.



LOW AND HIGH PRESSURE GAS & LIQUID SAMPLE FILTERS TO PROTECT ANALYSERS: A wide range of BALSTON filters are available to protect analysers from sample impurities by removing solids and liquids from gases as well as for filtration of liquids. The elements are available in borosilicate glass microfibre (for gases) and in combination with PP (for liquids). Housings are available in a wide range of materials including SS316, Teflon, Monel, Pyrex bowls etc. for pressures upto 5000 psig and temperatures upto 200°C. Common applications are found in slipstream or bypass sampling, stack gas sampling and sampling liquid effluent streams, ambient air, high pressure condensate, water etc. for retention efficiencies upto 99.99% for 0.01 microns

also offers filters for protection of VEHICLE EMISSION ANALYSERS for removal of solid particles, condensed water and oils. They are available for both petrol and diesel engines and can withstand the higher temperatures in the latter. Filtration efficiency is 93% fo 0.1 micron particles.



MEMBRANE FILTERS: **BALSTON** Membrane filters are ideal for protection fo GCs, mass spectrometers, O2 and moisture analyzers. The series 98 Filters consist of an SS316 housing and a membrane filter supported by a sintered porous disk. The membrane allows molecules of gas to flow but traps even the smallest liquid particles. The membrane is extremely inert except to HF acid. It is hydrophobic and strong and durable. Max. operating pressure upto 1000 psig at 200°F and flow rates upto 10 LPM can be achieved. The A 98 Series combines a Coalescer pre-filter within the same membrane housing. Hence it protects the membrane without having a separate pre-filter. Coalesced droplets are continuously drained out while the

particulates are trapped within the element.



VACUUM PUMP INLET & EXHAUST FILTERS: BALSTON provides inlet filters to protect vacuum pumps from damage by solids and liquids, while at the same time preventing loss of valuable or hazardous materials. This is done using a Grade 30 cartridge (90% for 0.1 micron). To prevent oil back streaming, Grade 102 adsorbent cartridge is used (99.999% for oil removal and 99.999% for 0.1 micron for solids). Housings can be of St. Steel or CS or aluminium.

The Exhaust filters help to remove extremely fine oil in droplet or mist form below 2 microns. Hence the pumps can discharge into clean work areas or outside, without causing pollution. The collected oil can be continuously drained and recycled back to the pump. Thus the flow resistance is reduced. The element grade 371H is a two-stage structure which minimizes the oil carry over and is resistant to all lubricants and to most chemicals found in vacuum pump exhaust. It combines a retention efficiency of 99.9% at 0.1 micron with a low flow resistance of less than 2 psid back pressure when saturated with oil at maximum flow rate. Housings can be of St. Steel (Hazardous) or CS (Non-Hazardous)



MEMBRANE AIR DRYERS AND NITROGEN GENERATORS: PARTY | BALSTON range of driers use state-of-the-art membrane technology to generate bone dry air with constant pressure dew point of 0°C (or even -40°C) from any compressor. The output capacities can vary from 1 to 600 SCFM at pressure from 60 to 150 psig. Devoid of any refrigerent, it is eco-friendly and since there is no rotating part, power consumption is nil. The dryer can operate CONTINOUSLY 24 x 7 ..... the only maintenance time required is 5 minutes to change the cartridge in the pre-filter ..... ONCE A YEAR!!

The **BALSTON** Nitrogen Generator is a non-cryogenic membrane based system capable of delivering continuous on-site nitrogen gas .... again without the use of any electricity. Commercially sterile Nitrogen with purity levels upto 99.5% at dew points down to -50°C can be generated from a compressed air supply. It is ideal for a variety of applications like purging, blanketing, food processing and packaging, heat treatment processes etc.



FILTERS FOR ALL TYPES OF LIQUIDS: PALSTON range of filters for liquid filtration is so vast that it practically covers the entire gamut of general and highly specialised filtration solutions. The process filters can handle all types of acidic and alkaline liquids at varying operating and design parameters of flow/temperature/pressure etc. MOC of housing and cartridges are available in PP, PVDF, PTFE, acetates etc. to handle almost any liquid and so also the micron ratings ... both in the micronic and sub-micronic range.

# ISO Standards for quality of Compressed Air (ISO8573-1)

	So	olid	Water	0	il	Eg.
Class	Max. Particle Size (microns)	Max. Cond ppm (mg/n	Control of the Contro	220,000,000	Concn. mg/m3)	1 Solid 2 Water 1 Oil
1	0.1	0.08 (0.	1) -70	0.008	(0.01)	0.1um Max. Particle size
2	1	0.8 (1	-40	0.08	(0.1)	0.08 ppm Max. concentration
3	5	4.2 (5	5) -20	0.83	(1)	Water
4	15	6.7 (8	3) +3	4.2	(5)	-40°C Dewpoint
5	40	8.3 (10	0) +7	2.1	(25)	Oil
6			+10	-	-	0.008 ppm max. concentration

# Three Mechanisms of Coalescing Process

#### INERTIAL OR DIRECT IMPACTION (> 2um)

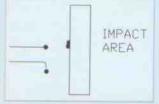
Contaminants larger than 2um have sufficient mass and momentum to leave the air stream and collide with the filter media.

#### DIRECT INTERCEPTION (0.2 to 2um)

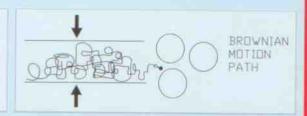
For contaminants 0.2 to 2um size, interception is the main coalescing mechanism.

#### DIFFUSION (0.001 to 0.2um)

Aerosols & solids in the range 0.001 to 0.2um are subject to rapid random Brownian motion causing to collide with exposed filter surface







Spe	cifications f	or the imported -parker	BALSTON	elements	
		Coalescing Efficiency	Max. Oil	Pressure Drop (p.	sid) @ Rated Flow
Grade	Micron Rating		Carryover ppm w/w	Media Dry	Media Wet 10-20 wt. oil
4	0.01	99.995%	0.003	1.25	3.0 - 4.0
6	0.01	99.97%	0.008	1.00	2.0 - 3.0
7CVP	0.3 to 0.6	99.5%	0.09	0.25	0.5 - 0.7
3P	3.0	Absolute	na	0.25	na
AU	na	+99% for oil vapor removal	na	1.00	na
SA	0.01	> 99.9999%	na	2.00	na
BX	0.01	99.9999%	0.003	2.00	3.0 - 4.0
DX	0.01	99.99%	0.008	2.00	2.0 - 3.0

## Conversion Factors for capacities at Different Working Pressures

psig	29	43	57	71	85	100	114	128	142	156	171	185	199	213	228
barg	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Conv. Factor	0.38	0.50	0.63	0.75	0.87	1.00	1.12	1.24	1.37	1.49	1.62	1.74	1.86	1.99	2.12

### Notes regarding Selection chart on next page

- 1. Flow rates in SCFM and (NM3/Hr) are given in first rows against each nozzle size.
- 2. Second row gives the model no. of each filter assembly
- Third row indicates the no. of elements and element grade. In the case of the Act. Carbon Filter (Bed type), it shows the weight of the carbon bed.
- 4. Housings can be of MS/CS or St. Steel
- 5. In/Out are as per BSP (F) upto 1" and flanged as per ANSI 150# SORF for 1 1/2" and above.
- 6. Standard MS units are designed for 13 barg and hydrostatically tested to 20 barg.

Gene	ral Selection	n Chart for v	General Selection Chart for various filters based		ow Rates @	on Flow Rates @ 100 psig and for different type of filter elements	for different	t type of filt	er elements
In/Out	Porous Ceramic	Activated Carbon	Coalescer Element	Coalescer Element	Coalescer Element	Coalescer Element	Coalescer Element	Activated Carbon	Interceptor Element
(mm NB)	Element	(bed type)	_		Gr. 4CU	Gr. DX	Gr. BX	Element Gr. AU	Gr. 3PU
	25 (43)	25 (43)		25 (43)	38 (65)	(101) 89	25 (43)	25 (43)	42 (71)
15	65/15-1 DPF	900		66/15-8CU-10-025	65/15-1-4CU-10-050	65/15-1-100-12-DX	65/15-1-100-12-8X	1 x 10 - 025	1 x 10 - 025
	1 x 50/20 x 135L	5 kgs. AC 4/8 mesh		1 x 19 - 025	1 X 10 - U50	25 (440)	70 (119)	80 (136)	133 (226)
00	45 (77)	45 (77)		80/30/14C) L15,060	80/26-1-47(1)-15-060	1.55	80/20-1-150-19-BX	4	80-20-1-3PU-15-060
22	4V EAPSE V SEAL	10Kne AC J/R mack	12 12		1 x 15 - 060	1 x 150 -19	1 x 150 - 19	1 x 15 - 060	in
	14 OUICO A COUL	Table no remon		100 (170)	76 (129)	380 (646)	(131)	100 (170)	166 (282)
25	1/25-1	250/25-30C	Contract of the last	8075-1-8CU - 15-060	80/25-1-4CU-15-060	80/25-1-150-19-DX	80/25-1-150-19-8X	80/25-1-AU-15-060	80/25-1-3PU-15-060
2	1 X 70/40 X 500L	30kgs. AC 4/8 mesh	124 20	1 x 15 - 060	1 x 15 - 060	44	1 x 150 - 19	1 x 15 - 060	1 x 15 - 050
	(187)	110 (187)		140 (238)	106 (180)	380 (646)	77 (131)	140 (238)	232 (394) ange 1 30FL 1E NOS
25	100/25-1 DPF	250/25:300		80/25-1-60U - 15-095	80/25-1-4CU-15-095	80/25-1-150-19-DX	80/25-1-150-19-8X	80/25-1-40-10-030	00/201-01-01-01-00 1-v-14-, 004
	1 X 70/40 X 500L	30kgs, AC 4/8 mesh		10	18.7	1 x 150-19	1 X 150 - 18	22.0 - USD	Ann Casa
	220 (374)	220 (374)	600 (1020)	350 (595)	260 (442)	6/0 (1139)	18	15	126/401:3PIJ-25-130
40	CALL	350/40-50C	125/40-1-7CVP-25-130	12840:1-600-22-130	125/40/14/00/25	1 COMPT CONTOUR OF A STATE OF A S	1 x 200 - 35	1 x 25 - 130	1 x 25 - 130
	무	50kgs, AC 4/8 mesh	1X 25-135	AEA (755)	1 K CO - 150 740 (K7R)	1100 (1870)	310 (527)	(450 (785)	750 (1275)
0	440 (748)	440 (/48)	400 (1010) 400 (1010)	12	19	1-20	100	125/50-1-AU-25-187	125/50-1-3PU - 25-187
200	200/504 DPF	0000 AC AN mank	1 54, 107	1 4 75,187	1x 25-187	1 x 200 - 80	1 x 200 · 80	1 x 25 - 187	423
	4 x 70/40 500L	CONGR. AC 40 Messi	1035 117801	825 (1063)	470 (799)	(1100 (1870)	620 (1024)	(1063)	1035: (1760)
C	ODD (SOD)	400 Kr. 000	1 2500	150	12550-14CU-25-235	125/50-1-200-80-DX	200/50-2-200-80-BX	125/50-1-40-25-235	125-50-1-3PU-25-235
200	E Y 70/40 SONI	GOLDS AC AIR medi	14.25-235	1 x 26 - 235	1 x 25 - 235	1 x 200 - 80	2 x 200 - 80	1 x 25 - 235	6
	660 (1122)	660 (1122)	1330 (2261)	(1360)	600 (1020)	(100 (1870)	620 (1054)	800 (1360)	1330 (2261)
55	250/65-8 DPF	450/65-110C	150/65-1-7CVP-35-280	150/65-1-600-35-280	150/65-1-400-35-280	125/65-1-200-80-DX	200/65-2-200-80-BX	150/65-1-AU-35-280	150/65-13PU-35-280
3	6 x 70/40 x 500L	110kgs. AC 4/8 mesh	1 x 35 -280	SIDE	12.2	1 x 200 - 80	8	1 x 35 - 280	1 35 - 250 1 2 35 - 250
	880 (1496)	880 (1496)	(580 (2822)	1000 (1700)	750 (1275)	2500 (4250)	930 (1581)	1000 (1700)	1007 (5075)
80	/80	500/80-150C	150/80-1-7CVP-35-280	150/80-1-60U-35-280	150/80-1-400-35-280	200/80-2-200-80-DX	250/80-3-200-80-BX	150/80-1-AU-35-280	100/00-1-37-0-30-200
3	8 x 70/40 x 500L	150 kgs. AC 4/8 mesh	1 x 35 - 280	f x 35 - 280	2.	2 x 200 - 80	3×200-80	1X 30 - 280	000 - 00 X
	1100 (1870)	1100 (1870)	2490 (4230)	1500 (2540)	1500 (2540)	2500 (4250)	1240 (2108)	1500 (2540)	243U (423U)
80	250/80-10 DPF	600/80-2000	200/80-1-7CVP-51-280	200/80-1-600-51-280	250/80-2-4CU-35-280	200/80-2-200-80-UX	250/80-4-200-80-BA	2000-1-40-2-200	1 * 51 . 280
	8	200kgs. AC 4/8 mesh	255	-1	2 x 35 - 260	ă.	4050 ID4691	10000 1000	3350 (5540)
	1760 (2992)	1760 (2992)	3320 (5640)	2000 (3390)	2250 (3825)	2100 (86/0)	6.3	1.4	1192
100	300/100-16 DPF	700/100-300C	300/100-1-7CVP-85-250	333700-1-6CU-83-230	34.35. 280	4x 200 · 80	6 x 200 - 80	1 x 85 - 250	1 x 85 - 250
	16 X 70/40 X 500L	SAUMES: NO WIGHTSON	2250 (EEAN)	0000 (3490)	2250 (3825)	\$100 (8670)	2480 (4216)	2000 (3390)	3320 (5640)
400	2200 (3/#0)	750/100,350.0	165	300/100-1-60U-85/250	300/100-3-4CU-35-280	300/100-4-200-80-DX	300/100-8-200-80-BX	300/100-1-AU-85-250	300/100-1-3PU-85-250
200	20 × 70/A0 × 5001	250 kes AC 4/8 mesh	1 x 85 - 250	1 x 85 - 250	3 x 35 - 280	0	8 x 200 - 80	86	82
	2880 (4882)	(288) (3862)	4980 (8480)	3000 (2080)	3000 (5100)	10300 (17510)	3100 (5270)	3000 (2080)	4980 (8460)
150	50%	800/150-410 C	300/150-1-7CVP 85-380	300150-1-60U-85-360	390/150-4-4CU-35-280	400/150-8-200-80-DX	450/150-10-200-80-BX	300/150-1-AU-85-360	300/150-1-3PU-85-380
3	26 x 70/40 x 500L	410kgs, AC 4/8 mesh	1 x 85 - 380	1 x 85 - 360	88	200	10 x 200 - 80	8	1 X 85 - 350
	4840 (8228)	4840 (8228)	4980 (8480)	4500 (8460)	5250 (8925)	10300 (17510)	4960 (8432)	4500 (8450)	4900 (0400)
150	500/150-44DPF	1000/150-7500	300/150-1-7CVP-85-360	5001150-3-6CU-51-280	400/150-7-4C/0-35-280	400/150-8-200-80-UX	42 VON 201-201-201-201-201-201-201-201-201-201-	3 v 51 . 290	1 x 85 - 380
	44 x 70/40 x 500L	4CC II	1 x 85 - 360	7	8	10 X COD 4 OO 4	200 (1450A)	ANNO (10190)	9960 (16920)
	6820 (11594)	6820 (11594)	(16920)	6000 (10190)	(500 (12/50))	SAGING ALTONOMA SAGINA	CONTOON 20,000,80,8X	4	14
200	600/200-62 DPF	1200/200-1050C	2000	000,100 +000,000	400/200-10-400-00-00-00-00-00-00-00-00-00-00-00-0	14 x 200 - 80	22 x 200 · 80	4 x 51 - 280	4×51-280
	62 x 70/40 x 500L	1050 kgs. AC 4/8 mesh	47.01 - 200	10507 (17830)	11957 (19195)	28000 (47600)	11160 (18972)	10500 (17830)	17430 (29610)
CLC	10550 (17852)	19200 11/2023	6000	6001-250-7-8CU-51-280	500/250-15-4CU-35-280	22.2	750/250-36-200-80-BX	800/250-7-AU-51-280	600/250-7-3PU-51-280
720	06 × 70/40 × 5001	1200kos AC 4/Rmach	7 2 51 - 280		15 x 35 - 280	22 x 200 - 80	36 x 200 - 80	7 x 51 - 280	7 x 51 - 280
		The state of the s							