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Textile Machinery Technology S.r.l

P.T.M.T S.r.l

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- ⇒ During 2008 ITMA - Munich fair, Panter Rapier **E6 Challenger** 190 cm Dobby loom model with **speed of 820 RPM** was shown. Also an **E6 Hercules** Model running a **Fabric with High Cover Factor of 40** in 360 cm width was shown (Sort as in table on page 3).
- ⇒ There are approximately **8500 Panter Rapier Looms working around the world** (since 1992). **Mr Nello Pezzoli** has over **50 years of experience in Airjet and Rapier loom Manufacturing** and is credited with the development of **Somet Rapiers AC2 & AC2S, Vamatex Rapiers C210, C401, P401, P1001 & Vamatex Airjets** - Ghibli and Typhoon. Panter has sold **TECHNOLOGICAL KNOWHOW** to various reputed Textile machinery manufacturers.
- ⇒ **Twin Clamping Negative Rapier** results in 20% lower strain on the weft yarns. This is available optionally at an additional price of 2000 euro per loom.
- ⇒ **Operational Cost Savings for a 190 cm Dobby loom ranges from 3 to 4 Paise per notional pick** compared to Rapier looms (with Clutch & Brake) working with speeds up to 350 rpm :-
1.00 to 1.50 Ps / Pick Labor Cost saving, 1.50 to 2.00 Ps / Pick Power Cost saving &
0.50 to 1.00 Ps / Pick Maintenance Cost saving
- ⇒ **15 to 40 % reduction in Power consumption** Vs majority of 2nd Hand Looms with Clutch & Brake system **due to “SERVO Motor” technology**. For example, our 190 cm size Dobby loom, working at **500 to 560 rpm speed**, will consume approximately **6 to 8.5 amps at 420 Volts Supply** (3.0 to 4.25 KWH) compared to other Rapier loom of **our competitors consuming 9 to 12 amp at just 400 to 450 rpm**. **DIRECT DRIVE Motor (Servo Type)** with variable speed is used, leading to **elimination of Pick Finding Motor, CLUTCH and BRAKE**. **Power saving during loom stoppage is possible as all motors are stopped**.
- ⇒ **Minimum WARP BREAKAGE RATE** as **Shed opening of the 1st healdframe is just 44 mm** for Negative rapiers & it's **52 mm** for a Positive rapier loom. The Warp Sheet opens just **25 mm to 30 mm** in the Reed Zone for Negative and Positive Rapier respectively.
- ⇒ **Training at your factory** for Fresh Jobbers/Technicians leads to reliable supply of Locally Trained staff
- ⇒ Only Rapier Drive that has different speeds during the 3 phases of weft yarn movement, i.e., Weft's "Pick-up, Transportation of weft and Transfer/Release. This results in **Lower WEFT BRAKES** compared to other Rapier Looms. The Rapier Belt Drive system consists of a **“SCREW – NUT system with multiple principles”**, which ensures reduced maintenance cost and minimum weft yarn tension peaks
- ⇒ **Suitable for both Light and Heavy Fabrics. Best Fabric Feel & hence Possible to match the Airjet/Projectile loom's Fabric's Feel & Weight even after reducing 2/ 3 PPI** in plain weave fabrics. **(5%. Lower weaving cost). Lower Fabric shrinkage during processing**.
- ⇒ **Working speeds for a 190 cm loom ranges from 500 rpm to 560 Rpm** (for upto 12 healdframe) depending on Yarn Hairiness, Yarn Strength, Sizing, Complexity of Weave etc. **NOTE: Loom Speed has to be reduced by 30 to 50 rpm, for looms working with 13 or more Healdframes**.
- ⇒ Warp/Weft yarn which can be used ranges from **Ne 0.6 to Ne 120 for Spun (natural fiber) yarns** and from **12 denier to 3600 denier for Synthetic Yarn**
- ⇒ **Range of Loom sizes : 160 / 190 / 210 / 230 / 240 / 260 / 280 / 300 / 320 / 340 / 360 / 380 cms**. Practical Weft insertion rates (WIR) in mills ranges from 1050 to 1400 Meters Per Minute, increasing gradually w.r.t loom size (mechanical WIR = max 1500 MPM)
- ⇒ **Automatic change-over of weft package/accumulator** in case yarn breaks “between Cone and Accumulator” or “if the Package-cone/cheese/spool gets exhausted”. Loom is not stopped during this process.
- ⇒ **Sparepart Godown** in Ahmedabad.
- ⇒ **Electronic Weft Selector** with options of **4 / 8 / 12 fingers. Possible to insert multiple wefts in each pick**.



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- ⇒ **Electronic Staubli Dobby of Model 2668/2670 upto 20 Jacks, made in France/Europe** (does not need any Pick-finding Motor) or any **Electronic Jacquards** with/without “Gantry & Harness” from any manufacturer.
 - ⇒ **One year Warantee for all parts** except
 - ** Consumable **Metallic Parts** like Rapier belt’s Guide-Hooks, Weft Cutter Blades, etc
 - ** Consumable **Plastic / Rubber** parts like Rapier Tapes, Rapier Drive wheel, Gripper Openers, Moving parts of Leno, Timing Belts and
 - ** **Electronic Component failure due to power supply fluctuations** beyond reasonable limits (i.e., beyond +/- 5 % Voltage/Frequency), Power Surges, Single Phasing, Short Circuit, etc
 - ⇒ Extra options like “Positive Rapier Kit, “Extra Top/Ground Beam Let-off arrangement with 1.5 pair of warp beam of 800 mm flange diameter”, “a pair of Lateral Tucking-in units” will cost 4,400/- Euro for each option and each Central/Middle tucking-in unit can cost upto 3,200/- Euro.
 - ⇒ **Only loom in the world, which can change from Negative Rapier to Positive Rapier systems** (or Vice-versa) **in the same loom as per need of fabric sort** (within 40 minutes by Customer’s technicians). **Picking occurs automatically in a Negative Rapier (Gripping, Exchange and Release)**. Whereas in **Positive Rapiers, the picking occurs by controlled opening and closing of the Rapiers**. It is possible to insert upto 4 parellel weft yarns in a single insertion of Positive Rapier, whereas in a Negative Rapier mode only upto 2 or 3 yarns are possible to be inserted simultaneously.
 - ⇒ **Negative Rapier system** : Ideal for Simple and standard wefts at High Speeds, while **Positive Rapiers** are suitable for Weaving Complex wefts such as hairy yarns, boucle, Linen, Hemp, Technical Fibers such as Kevlar, Carbon, Glass fibers, Aluminum and Steel. This rapiers system can also weave Technical, Multifilament and High Weft Density fabrics, unlike other manufacturers who require Guideless Looms.
 - ⇒ **Range of Picks density from 13 to 508 Picks per Inch** in standard version and optionally we can supply a **LOW PICK RANGE from 5 to 250 Picks per Inch. Special ranges of PPI are also possible**
 - ⇒ **Electronic Take-up/Electronic Let-off with Cramming and Fringing** , and upto **8 different PPI and Warp Beam Tensions in a single fabric**. Options :- ON_LOOM take up arrangement (550/650 mm) or OFF_LOOM Batching motion (upto 1200 mm).
 - ⇒ **Standard Symmetric Loom width reduction** is upto **60 cm**. Lateral guides can be provided for a symmetrical width reductions upto **100 / 130 cms**. Note Assymetric reduction in width is also possible.
 - ⇒ Lubricant of single type is used in all oil bath’s and it has to be changed after 15000 hours (625 days) in Sley cam box (with conjugated cams) and Rapier Gear box (with Propellor/Screw)
 - ⇒ **Electronically Programmable Speed Control**, with upto **8 different speeds on a running loom** as per the needs of Yarn / Weave Any of the selvedge Mechanism can be supplied i.e., Leno / Tucked / Thermal or Fused / Ultrasonic Selvedge
 - ⇒ Standard Creel for a package diameter of 240 to 320 mm. Special version Creel can also be supplied.
 - ⇒ The **CAN BUS Electronic** System (a multi-axle and multi processor system) enables automatic fault diagnosis. True **DIGITAL** technology results in lower problems of print failure, as Digital Technology prints heat up less when compared to ANALOG technology prints used by other loom manufacturers. It’s equipped with USB / Serial communication and is supplied by a **STAUBLI** group company (**DEIMO spa**, Italy)
 - ⇒ Warp Beam options : Single / Twin / Multiple Ground beam and/or Top Beam with Flange diameters upto 1000 mm. “Warp Supply from Creel” is also possible for sorts with very low PPI or Coarse Warp Counts.
 - ⇒ **Weft wastage** on Left side of 15 - 25 mm, on Right Side around 35 to 50 mm per pick compensated by gains due to high-speeds (Total weft waste of 2 to 3” divided by 67” width = 3 - 4.5 % of weft yarn or Approx. 1.5 - 2.5% of fabric weight normally).
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- ⇒ **Negative Rapier Gripper are of 8 mm height, made from Pre-Formed High Impact-Resistant STEEL.** Rapier Tapes **runs inside Guides, with Dry Teflon Lubrication** (leaves no oil stain in the fabric). Tape is approximately 6 mm in width, 5 mm in thickness and with extremely low weight, leading to low consumption. The tapes are specially hardened in the front zone which holds the Gripper and has contact with guide hooks, warp sheet during the closing phase. Drive wheels also are specially made of Light weight, yet Stiff/Durable material leading to long working life of few years.
- ⇒ **Possibility to use any yarn in the loom** i.e., Polyester / Cotton / Viscose / Wool / Blends of PC, PV, PW / Silk / Lurex / Zari / Nylon / Polypropelene / Acrylic / Jute / Linen / Flax / Lycra / Paper / Fancy yarns (with effects like Slub, Tape, Feather, Porcupine, Boucle, Chenille, TableTennis, Centipede, Track, Dragonfly, Necklace, Ladder, Toothbrush, Pigtail, BigBelly, Rolling, Loop, Bulky, BeadsCurly, HollowBraid, DoublePly, Pinastree, Eyelet, etc). **Special Versions Looms for Aramide / Glass yarns usage or for Very Heavy Fabric Weaving**
- ⇒ Panter Rapier Loom was born to answer the below mentioned challenges faced by manufacturers :-
- **** Reduction in the Volumes per Article,**
 - **** Increase in number of Articles,**
 - **** Increase in number of Samplings,**
 - **** Significant reduction in “Time Available to Deliver Fabric to the Market”.**
- ⇒ Panter Rapier looms are available in both Negative Rapier and Positive Rapiers modes and the Practical working speeds for 190 cm Negative Rapier mode for various models is :-
- | | |
|-----------------------|---|
| E58 Model -- 550 rpm, | E6 Challenger Model -- 650 rpm |
| E6 Model -- 600 rpm, | E6 Hercules Model -- For Technical Textiles |

Sorts woven on Panter Rapier Looms

Warp	Warp (denier)	EPI	Weft	Weft (Denier)	PPI	Weave	Width (cms)	Warp Cover	Weft Cover	Total Cover
								K1	K2	= $K1 + K2 - \frac{(K1 \times K2)}{28}$
PP Mono	208	274	PP Mono	1000	35	7/1 Sateen	330	54.2	15.2	40.0
PA12 Mono	208	274	PA12 Mono	208	86.36			54.2	17.1	38.2
PA12 Mono	288	124	PA12 Mono	1000	34.29	4/1 Sateen		28.9	14.9	28.4
PA12 Mono	288	124	PA12 Mono	526	48.26	4/1 Sateen		28.9	15.2	28.4
PA12 Mono	231	111	PA12 Mono	529	60.96	4/1 Sateen		23.1	19.2	26.5

ELECTRICAL CHARACTERISTICS

The machine E5X is supplied in all the voltages and networks with frequencies of 50 or 60 Hz.

ELECTRICAL POWER INSTALLED

The electrical powers installed are indicated hereafter and do not depend on the nominal width of the weaving machine:

main motor 7.0 kW

motor of aspirator 0.45 kW

motor of phase advancer for machines without Jacquard 0.55 kW

motor of phase advancere for machines complete of Jacquard 1.25 Kw

electrical board, with feeding of weft-feeder 0.9 kW

In total the electrical power is of 9,0 kW for weaving machines equipped of external machine or dobby, and 10,1 kW for weaving machines equipped with Jacquard with search of the pick.

ELECTRICAL POWER ABSORBED

The absorbed electrical power, and consequently the energy used by the weaving machine during its operation, is function of the following parameters:

- type of article;
- shedding machine;
- weaving width;
- speed of the weaving machine;

Approximately, the following values can be given:

for weaving machines H 1600-2600 from 3 to 7.5 kW

for weaving machines H 2800-3800 from 3 to 7.5 kW

PHASE-DIFFERENCE ANGLE

Cos F (cos ϕ) is variable in function of the load and the speed of the weaving machine.

We advise, above all for the calculation of the short circuit current, to consider the cos F values rather low:

for weaving machines H 1600-2600 $\cos F = 0,5-0,9$

for weaving machines H 2800-3800 $\cos F = 0,5-0,9$

STARTING POINT CURRENT

By the start up of the machine, the peak of the absorbed current (lasts few fractions of seconds) can be of 60-70 Ampere.

We advise therefore, in order to avoid the continuous assistance operation of the protections on the feeding network, to protect it with systems delayed.

STATIC AND DYNAMIC CHARGE

By running, the weaving machines transmit to the ground remarkable dynamic loads, besides static, because of the elevated speed of alternate movement of the masses.

In the next table are presented maximum indicative values of static load (weight weaving machine "P") and of the dynamic loads acting in vertical direction ("Pv") and horizontal in the sense of the batten ("Po").

To these values are properly added up static loads of the beam of warp and of fabric ("Pa"), and the vertical dynamic loads generated by the movement of the healds frames (PI).

In particular:

"Pa": it is calculated reminding the type of thread, of fabric, of weights of the beam of warp and the small beam of the fabric.

"PI": it depends on the type of frames, their weight complete of heddles and on the race they execute in function of the regulations and the type of weaving machine used. For an approximate calculation we suppose loads of 500 N every frame in movement; reminding that two frames moving in the same time cancel the load.

Width H	Static load		Maximums Dynamic Loads			The Maximum Frequency	
	P [N]	Pa [N]	Po [N]	Pv [N]	PI[N]	RPM	Hz
1600	32400		8800	1500		560	9,3
1900	33400		10400	1800		560	9,3
2100	34100		10300	1800		530	8,8
2300	34800		10100	1700		500	8,3
2400	35100		10500	1800		500	8,3
2600	35800		9800	1700		465	7,8
2800	36500		10600	1800		465	7,8
3000	37200		10200	1800		440	7,3
3200	37900		8100	1400		380	6,3
3400	38500		8600	1500		380	6,3
3600	39200		9100	1600		380	6,3
3800	39900		7900	1400		345	5,8

DIRECT MOTOR

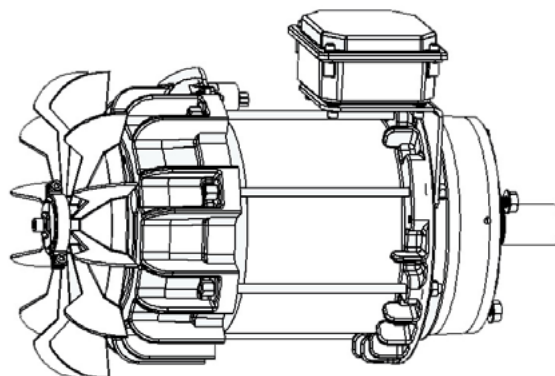
Motor type: Three phase 380 Vac

Nominal Power: 7 KW for Dobby Looms and 13KW for Jacquard Looms

Nominal Speed: 1800 rpm

Nominal Torque: 70 Nm

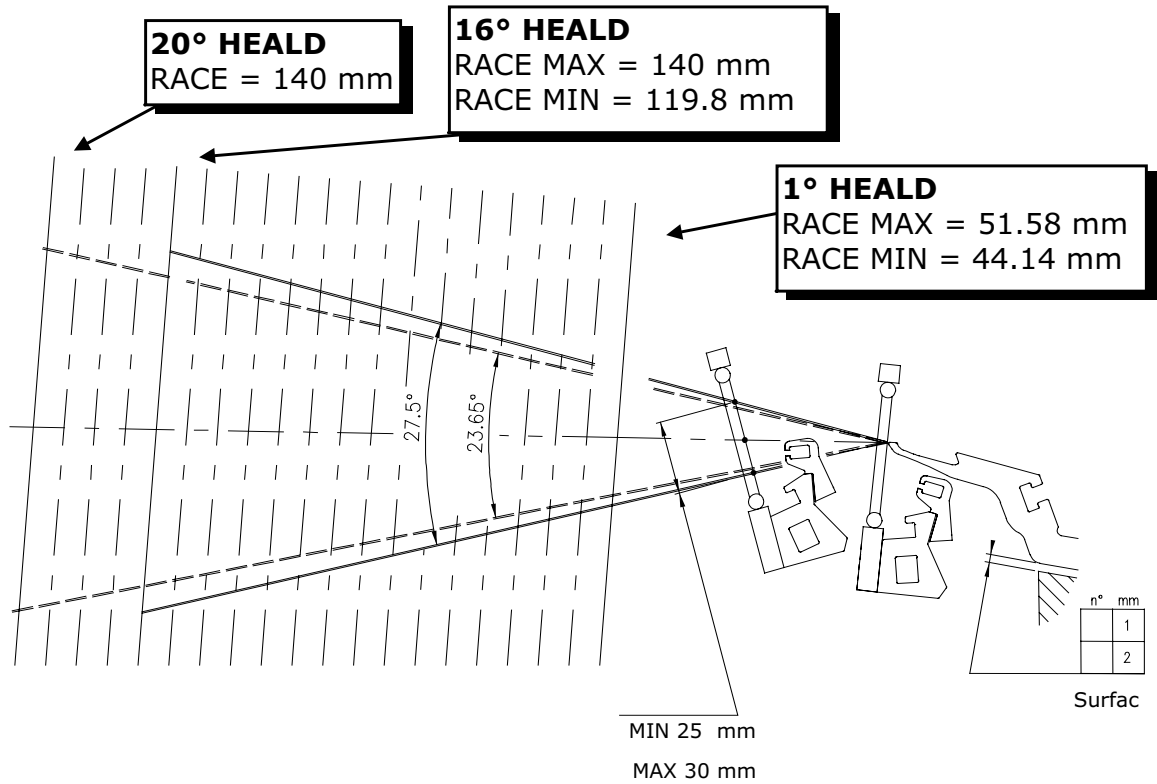
Efficiency: 88%



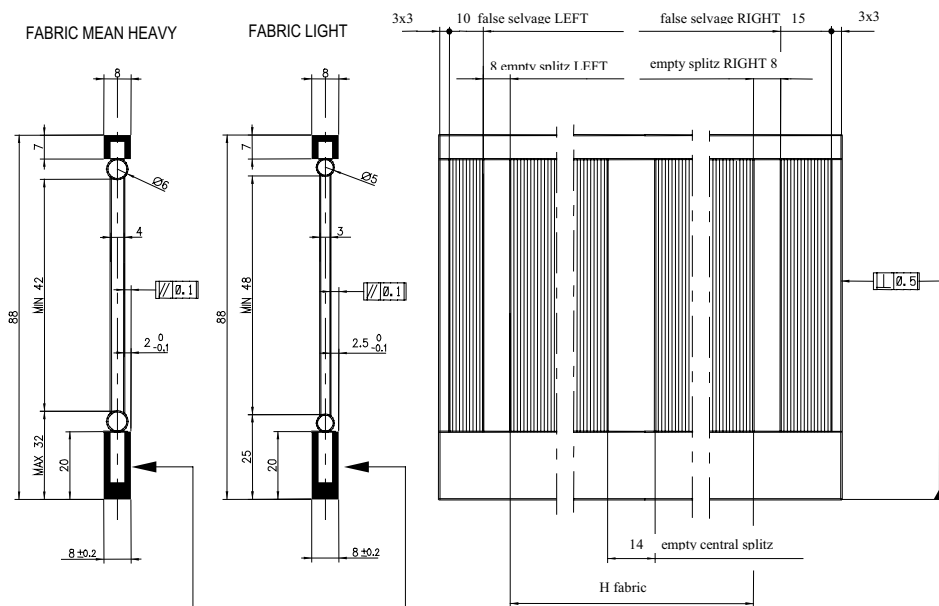
Indicative picture

With this motor you can vary the velocity from 0 rpm to 600 rpm in 400msec.

ADJUSTMENT OF THE RACE OF THE HEALDS FRAMES



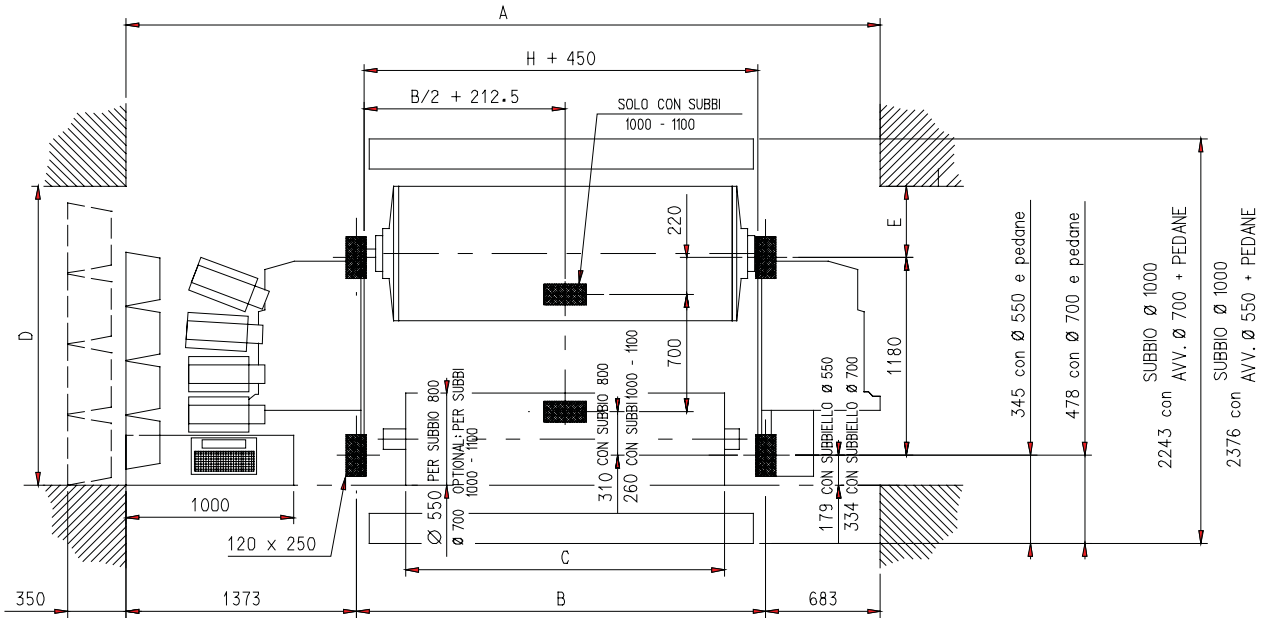
REED TYPE STANDARD



The plane must be LEVELLED so to guarantee a tolerance of parallelism with teeth, and not mote than one tenth of conicy along the whole height

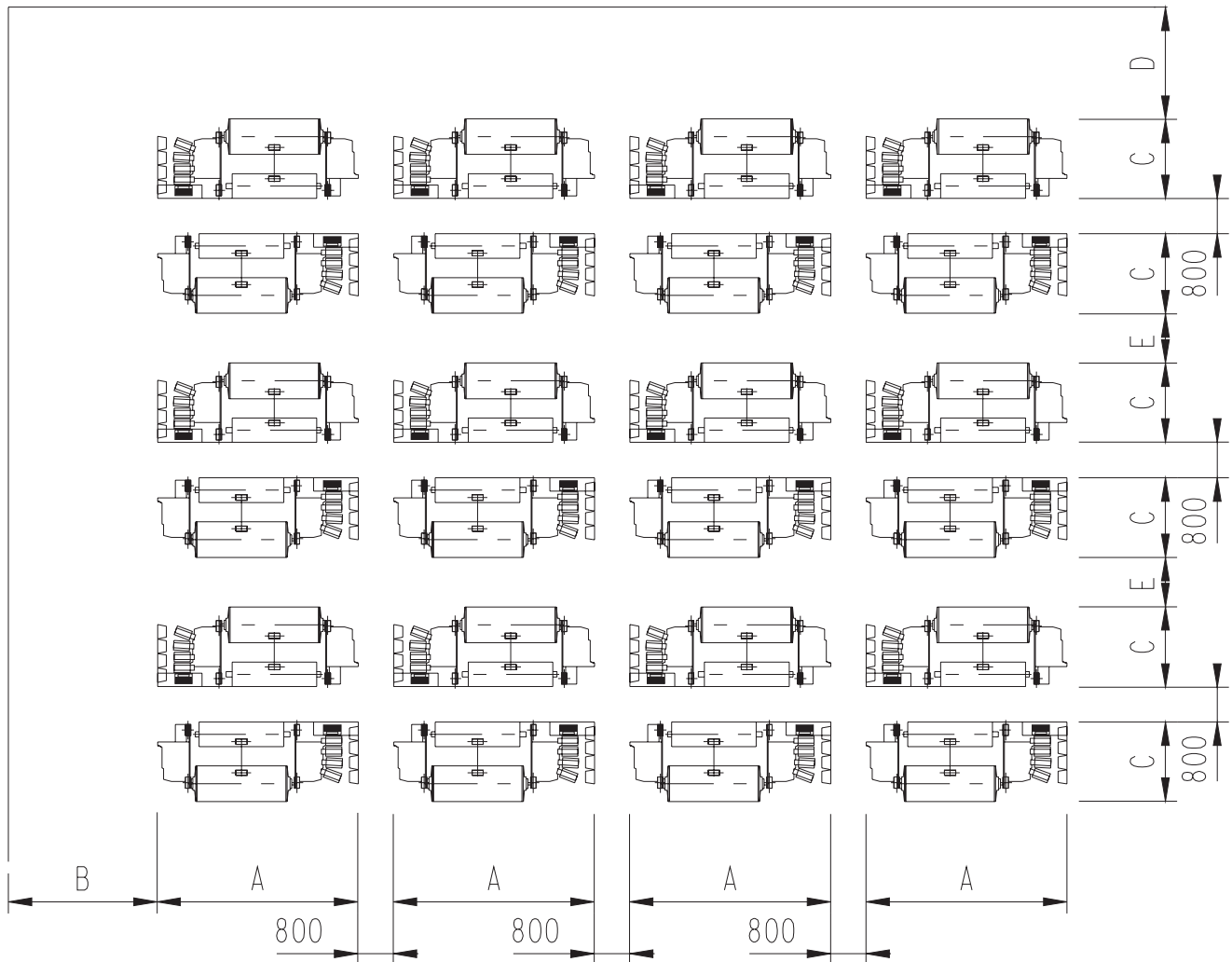
Attention: for heavy fabrics the double spiral in the zone of anchorage of the reed is advised.

OUTLINE DIMENSIONS



NOMINAL WIDTH			WIDTH IN REED		BEAM Ø800		BEAM Ø1000			BEAM Ø1100		
	A	B	C PRINCIPALE	D MINIM	D	E	D Winding cloth Ø550 Ø700		E	D Winding cloth Ø550 Ø700		E
1600	4200	2144	1600	1000	1784	425	1969	2124	610	2023	2178	664
1900	4500	2444	1900	1300	1784	425	1969	2124	610	2023	2178	664
2100	4700	2644	2100	1500	1784	425	1969	2124	610	2023	2178	664
2300	4900	2844	2300	1700	1784	425	1969	2124	610	2023	2178	664
2400	5000	2944	2400	1800	1784	425	1969	2124	610	2023	2178	664
2600	5200	3144	2600	2000	1784	425	1969	2124	610	2023	2178	664
2800	5400	3344	2800	2200	1784	425	1969	2124	610	2023	2178	664
3000	5600	3544	3000	2400	1784	425	1969	2124	610	2023	2178	664
3200	5800	3744	3200	2600	1784	425	1969	2124	610	2023	2178	664
3400	6000	3944	3400	2800	1784	425	1969	2124	610	2023	2178	664
3600	6200	4144	3600	3000	1784	425	1969	2124	610	2023	2178	664
3800	6400	4344	3800	3200	1784	425	1969	2124	610	2023	2178	664

DISPOSITION OF PANTER WEAVING MACHINES – LAYOUT



NOMINAL WIDTH	BEAM Ø800					BEAM Ø1000						
	A	B	C	D	E	C Winding cloth Ø550 Ø700		D	E			
1600	4200	2100	1784	1400	1300	1969	2124	1500	1400			
1900	4500	2400	1784	1400	1300	1969	2124	1500	1400			
2100	4700	2600	1784	1400	1300	1969	2124	1500	1400			
2300	4900	2800	1784	1400	1300	1969	2124	1500	1400			
2400	5000	2900	1784	1400	1300	1969	2124	1500	1400			
2600	5200	3100	1784	1400	1300	1969	2124	1500	1400			
2800	5400	3300	1784	1400	1300	1969	2124	1500	1400			
3000	5600	3500	1784	1400	1300	1969	2124	1500	1400			
3200	5800	3700	1784	1400	1300	1969	2124	1500	1400			
3400	6000	3900	1784	1400	1300	1969	2124	1500	1400			
3600	6200	4100	1784	1400	1300	1969	2124	1500	1400			
3800	6400	4300	1784	1400	1300	1969	2124	1500	1400			