“Quality creates value” – the DORNIER rapier weaving machine has set the technological standard in the high quality wool textiles market for decades. Practically everything which can be wound on bobbins is efficiently converted into high quality woven fabric on this machine. Its success story is consistently continued with the DORNIER P1 rapier weaving machine.

READY FOR THE FUTURE
Immediate reaction to market requirements – in this respect the P1 rapier weaving machine opens up every possibility. Thanks to its ease of operation and reduced maintenance cost, it can be adapted even more quickly to any fabric. Its setting consistency provides for rapid production starts on new articles, enabling optimum fabric quality to be achieved in the shortest possible time – even when using complex yarns. Its unsurpassable processing reliability guarantees high productivity at the same time as maximum flexibility.

The DORNIER P1 – a universal talent
With up to 16 filling colors, the P1 is able to produce technical textiles, home textiles and clothing with flexibility and precision, whether in combination with a Jacquard machine with up to more than 30,000 lifting hooks, a 28-shaft dobby, cam motion or the DORNIER EasyLeno® unit.

Its unique, positively controlled center transfer plus a wealth of patented components, such as the DORNIER MotoLeno® or DORNIER AirGuide® for example, guarantee processing reliability.

The P1’s versatile application range runs from high quality silk fabrics for 16 filling color furniture upholstery fabrics, via highly imaginative ladies wear through to carbon, glass or coated geotextiles with the coarsest yarn counts in warp and weft and densities of 0.5 ends/cm or even lower.
The human hand as the model
With positive center transfer, the rapier motion is precisely controlled via complementary cam gear boxes. The open left-hand clamp of the left hand rapier grips the yarn presented by the filling selector needle before entering the shed. After controlled closure of this clamp, scissors cut off the filling at the fabric side. Filling transfer from left-hand to right-hand rapier is effected positively in the center under full control.
Following the pick transfer, the taker rapier brings the filling to the right-hand fabric edge. The shed remains open throughout the entire insertion phase. The filling is released by the controlled rapier clamp only when it is firmly secured by the catch selvedge.
Rapier motion and function during filling insertion are similar to baton changing between two athletes during a relay race.

The DORNIER specific filling insertion system
1. Yarn pick-up by the left-hand rapier before entry into the shed
2. Filling yarn transfer in the fabric center
3. Release of the inserted filling by the righthand rapier only after being secured by the catch selvedge

DORNIER rapier filling insertion: The superiority of the tried and reliable system

Filling insertion with positively controlled center transfer is the heart of the P1 rapier weaving machine. The filling is picked up and transferred precisely and reliably through the open shed and held securely until bound in.
Immediate machine start after product change
Reliable pick and pick yarn insertion of fine to coarse yarns and positively controlled yarn transfer from left-hand to right-hand rapier in every phase: Indispensable prerequisites for immediate machine start without readjustment after product change, or even on-the-fly pattern change with the machine in operation.

Safety though precision
Two synchronously operating high-precision gearboxes are located on both sides of the machine for filling insertion and reed beat-up. They ensure optimum rapier and reed motion with the proven, reliable center filling yarn transfer. Permanent circulating oil lubrication provides for increased performance, low maintenance and high longevity of the gearboxes’ working life.
Wide application range
Filling insertion controlled at every stage enables an extraordinary range of yarn types and counts to be processed. It runs from fine silk yarns and monofilaments via glass rovings through to the coarsest fancy yarns. Yarn count ranges between 7 den and 4500 tex.

Open shed filling insertion for minimal friction
Thanks to open shed filling insertion independent of shed closure, the friction of the filling against warp ends is markedly reduced. It provides for fewer yarn breaks, no yarn distortion and no spring-back picks in the case of elastic yarns, with clean selvedges on both right and left, constant insertion lengths and therefore top fabric quality.

Unsurpassed: DORNIER woven fabric quality
Minimal filling breakage figures, no tension distortion and spring-back picks – the DORNIER rapier system has decisive qualitative and economic advantages in day to day’s operation. Low tensile strength yarns can be processed without difficulty. In other respects, robust filling insertion component construction provides for the reliable processing also of heavy industrial yarns. Better quality brings more profitable orders – Quality creates value.
**Precision-controlled transfer**
Soft clamps with a hard metal insert and precision-controlled transfer – even coarse 2200 dtex filaments with 450 individual capillaries are securely clamped and inserted.

**Filling yarn tension level: Best by all standards**
The yarn tension level of the DORNIER P1 rapier weaving machine is lowest. Compared to all existing negative rapier weaving machines, the DORNIER positive rapier system remains superior in terms of basic tension level, making the best possible filling yarn breakage figures attainable.
The P1 solves filling insertion component guidance to perfection: The patented DORNIER AirGuide® guides the rapier with precision in the shed, consequently preventing capillary damage in the case of filament warps, and even enabling high warp densities to be woven problem-free.

The ECS electronic color selection system and the electronic yarn brake with integral filling stop motion EFC are based on modern stepping motor technology. Due to the modular construction, individual modules can be quickly and easily added. In this way, a single-color machine can be upgraded to a 16 color machine at reasonable cost.
**Precision, thanks to ECS**

With the new ECS color selector motor technology, yarn presentation is effected in micro step resolution with an automatic yarn needle motion monitoring and correcting function. The needle’s smoothly controlled movement allows gentle yarn presentation with reduced yarn tension peaks.

Low tensile strength yarns and also heavy yarns with high yarn tension, like 2400 tex glass for example, can be processed without difficulty. Different motion profiles can be conveniently selected on the DORNIER ErgoWeave®.

The color selector is programmable with respect to presentation (different presentation profiles) and the single steps of the motors are monitored. Step omissions are thus prevented and presentation errors excluded even for high weft tensions.

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**EFC highly dynamic yarn brake**

The optional electronic EFC yarn brake has an extremely high dynamic action, allowing filling brake tension to be kept incomparably low on yarn pick-up. The new FT control unit provides for automatic filling stop motion sensitivity adjustment with up to 16 colors including ANTI-2.
FT control system and DORNIER ErgoWeave®: Complex technology provides easy handling

Born out of practice, the new DORNIER ErgoWeave® operating concept enables for intuitive machine handling for the first time. The innovative FT control system newly developed for it forms the foundation stone for significant further improvements in the most diverse variety of sub-assemblies. It guarantees high reliability and efficiency in woven fabric production – with a technology which is open to future developments.

Fast-Ethernet-Technology control system: Innovative and fit for the future
DORNIER is again successfully producing a revolutionary innovation in the new weaving machine generation’s control technology. As with the introduction of the CAN-Bus in 1990, DORNIER remains true to its pioneering role, bringing, in the shape of the FT control system, a completely new type of system to the market which makes the reliable transfer of the largest quantities of data possible in real time.

The entire communication structure, with control, process and reference planes, is effected via Fast-Ethernet-Technology bus. This system is also co-responsible for safety on board of the new A380 Airbus. This shows impressively the high status DORNIER places on data transfer reliability. The new control system is a sustainable innovation carrier, also guaranteeing for forthcoming new developments in electronics and drive technology.

DoNet (Global Communication Network)
A standard integrated Ethernet interface permits to connect the weaving machine to all common production data acquisition systems or to a network. DoWeave, a PC program, is available for processing and managing machine, style and pattern data. When the machines are networked, style and pattern data can be exchanged bidirectionally between the DoWeave PC and DORNIER ErgoWeave®. Furthermore, software updates can be centrally provided and machine data secured (backups).

When an Internet connection is set up between DORNIER and your DoWeave PC, with prior authorization, remote diagnostics provide assistance for troubleshooting via Teleservice (DoTes).

DORNIER ErgoWeave®’s integrated browser permits to use own applications of your intranet. Via Internet it is possible to place speedily and comfortably orders by PC using our proven EPOS system.

Important innovations
- Data transfer is effected in real time
- Short response times guarantee faster reaction of all electronically controlled components at any time during the weaving process
- The defined time cycles are precisely and reliably observed and automatically corrected to the weaving machine’s operational condition
CONTROL SYSTEM

DORNIER ErgoWeave®: Intuitively operable touchscreen
The software is operated via a spacious, user-friendly designed 15 inch touchscreen. Graphic representations of function cycles plus universally comprehensible symbols facilitate understanding of the selection possibilities. Direct access to important settings significantly reduces analysis time.

Useful new functions
DORNIER ErgoWeave® provides extensive functions for a quick and perfect fabric quality result to the weaver. Start-mark correction can be limited to one setting, or ideally adjusted whenever necessary. One of the DORNIER ErgoWeave®’s special strengths is the simple production of the statistical evaluations of all weaving functions plus the recording and correction of stoppage causes by means of a system diagnosis tool. With standard articles, automatic settings and high product setting reproducibility reduces personnel workload. The DORNIER ErgoWeave®’s pattern storage volume records up to one million pick repeats – and can be further extended.

Online documentation
The Online Help provides directly a description of the menu pages, parameters and messages, relevant for the current context, and saves the user from having to search in the software manual.

In addition to online help, the entire content of the printed user instructions is displayed on the dialog panel. This online user instructions provide information required for daily work on your weaving machine:
Overviews, function and component descriptions, information for your safety, setting work, operating instructions, cleaning, lubricating, maintaining, troubleshooting and repairing.

An intelligent link between the online help and the online user instructions makes it very comfortable to swap between the two. Interactive tables of contents and indices further facilitate locating information.
The P1 stands for reliance in all respects. Thanks to the connection of the machine side frames with a robust profile traverse, its sturdy basic framework guarantees low vibration operation – even at high speeds, making it unnecessary to bolt or cement the machine to the floor.
All systems necessary for filling insertion are bilaterally displaceable, making time-saving as well as symmetrical and asymmetrical width adjustment possible. The machine’s new main drive is effected without belts via the maintenance-friendly CompactDrive, forming the ideal combination in conjunction with the new FT control unit.
“Quality creates value” – when it comes down to safety and precision, the DORNIER rapier weaving machine is unequalled. With technical woven fabrics produced from glass, carbon and aramid and also in the airbag field, it has served as a reliable tool for pioneers and market leaders for 40 years.
A quality seal: The DORNIER selvedge formation device

The selvedge sells the fabric. The patented selvedge formation devices are one of DORNIER’S strengths. They offer decisive advantages, also as regards further fabric processing: The freely programmable 2-end DORNIER MotoLeno® full-turn leno and the mechanical DORNIER QuickSet Tuck-in® selvedge tucking device produce unique narrow and clean fabric selvedges. The uniform mounting of the two units makes it possible to change from tuck-in to leno selvedge in the shortest possible time.

Perfect selvedges, thanks to intensive binding: DORNIER MotoLeno®, DORNIER MotoEco® (option)
Previously unattainable performance potentials can be reliably achieved with the DORNIER selvedge-forming units. The 2-end full-turn DORNIER MotoLeno® is suitable, pattern controlled, for any filling density variant and fabric construction. The firm and solid selvedge securely withstands robust finishing, while warp end breaks in the selvedge zone are markedly reduced.
Based on the DORNIER MotoLeno®, the modularly designed, patented DORNIER MotoEco® double-disk leno is available as an alternative. It consists of two full-turn lenos with system-related rotation reversal, which operate side by side for fabric selvedge and catch selvedge. No additional shafts and catch selvedge bobbins are required for the leno. The double-disk leno provides for intensive binding with very short yarn ends and also operates from standard king bobbins. Waste-saving and material recycling are thus optimized with the DORNIER MotoEco®.

Economic tuck-in selvedges thanks to the DORNIER QuickSet Tuck-in® (option)
The DORNIER QuickSet Tuck-in® allows the economical production of label selvedges. Settings of scissors and draw hook are firmly implemented on a setting gauge outside the machine. This unit is subsequently built on to the bearing plate located in the machine. Only through this development is it possible to guarantee the required selvedge quality with tuck-in depths down to 8 mm. Due to its narrow width the selvedge can be easily tailored.
Changing from leno to tuck-in selvedge and vice-versa is possible within the shortest time. The tuck-in selvedge unit is also available as a center tuck-in device for multiple fabric weaving.
The P1 has a completely new drive concept which, together with the FT control system, forms an ideal combination. Function and handling have been significantly simplified and the components reduced to the essentials by dispensing with the belt drive and inching motion. With this and the integrated speed control maintenance cost and set-up times are decisively minimized.

**The right drive for you**

**CompactDrive: An all-rounder**

- Overall construction is orientated to the most extreme maintenance-friendliness of the clutch-brake unit, significantly reducing maintenance cost and time.
- The fly-wheel mass which is integrated in the drive motor, facilitates the reliable weaving of the heaviest products with maximum number of heald frames or lifting hooks.
- The air-cooled motor is easily accessible, installed on a mounting platform so that it can be easily shifted without lifting gear.
- Stable running speed is ensured even with heavy pattern changes at dobbi or Jacquard machines with high numbers of heald frames or lifting hooks.

**The DirectDrive: Economy at its max**

- The DirectDrive represents a reliable and low-maintenance drive concept – without clutch-brake unit for rapier weaving machines as of nominal width 280 cm.
- Through reduced set-up times the DirectDrive lowers the personnel workload in the weaving mill.
- A highly dynamic synchronous motor serves as main drive, providing unsurpassed precision for start mark prevention and thus guarantees a perfect fabric quality level.
- DORNIER SyncroDrive® optional as separate drive for Jacquard and for Jacquard-dobby versions.
The whole is greater than the sum of all components: The matched interplay of the P1's unique mechanical construction with its new, forward-looking electronics results in an individually configurable machine which operates with reliability, efficiency and reproducibility.

Electronic fabric take-up and warp let-off
With its electronic fabric take-up and warp let-off, DORNIER is following up the concept of not only controlling and reacting, but also acting with regard to the future. Patented absolute sensors measure the warp tension – independently of the position of back-rest roller and mechanical element motion – keeping it constant, even when weaving with splitted warp beams. The accuracy of warp beam settings on the display amounts to 1 cN/end with a filling density resolution of 0.01 picks/cm. Exactly reproducible values for filling density, machine speed, warp tension and contraction support start-mark prevention. Warp tension control is effected via absolute or S-sensor (optional). S-sensor positioning is independent of drawn-in width and dispenses with bothersome fastening components in the warp area.

Automatic Start mark Prevention
ASP and knot-free weaving APMkn
The simple functionality of ASP automatic start-mark prevention with absolutely reproducible functions stands for quality reliability in the event of machine stoppage and restarting. Starting behaviour can be set with dynamic reed beat-up and the starting process is individually programmable.

Electronic control units replace conventional mechanics and consequently mechanical adjustment operations, in the case of yarn brakes, color selectors, selvedge units and scissors.

The automatic knot-free package switching APMkn and the knot-free weaving function increase fabric quality and ensure higher productivity.
Versatile options: From warp to weft

With its numerous options and extras, the DORNIER P1 offers you solutions for the widest variety of requirements. Suggestions from the constant dialogue with customers form a valuable input for our product development. The result: Waste reduction, handling simplification, high productivity and of course perfect fabric quality.

DORNIER DynamicWarpGuide DWG: Ideal tension balance
The highly dynamic warp yarn guide unit, DynamicWarpGuide (DWG), enables to weave with the lowest possible warp tension level leading to a significant warp end break reduction. Through its synchronous movement with the shed motion, this patented, roller-free unit guarantees an ideal tension balance between open and closed shed motion even at maximum machine speed!

Reduced selvedge waste through DuoColor
Resource-savings through the optional DuoColor unit: The selvedge unit for two freely selectable fillings to be inserted makes it possible to reduce selvedge waste by over 50% depending on yarn type.

Automatic shaft coupling
PSL pneumatic shaft coupling automates shaft engagement and release independently of the shed position, thus decisively reducing setting-up times.
Flexible warp beam support
Warp beam support is flexible and individually adaptable to customer requirements. In addition to the tried and proven universal warp beam mounting system, DORNIER offers the EuroFix mounting for ground, top and split warp beams with flange diameters from 800 to 1,250 mm. The warp beam gear wheel stays in the machine during warp changes.

Mobile, multifunctional axis control
The new mobile warp change key pad significantly facilitates the warp changing process. It can even be carried out by one person on double width weaving machines. The operator can control warp and fabric take-up with it from any point around the weaving machine.

Production-increase thanks to double filling insertion
Unique torsion-free double filling insertion offers a notable production increase without additional energy consumption. The process is most economical particularly in the production of screen fabrics and panama or rep weave. Filling insertion of up to 5 fillings in one pick is possible with the DORNIER rapier.
The P1 is trimmed from A to Z efficiency

The P1 combines intelligent solutions which – in their totality – ensure optimized resource usage, making extremely flexible machine operation possible. Diverse main assemblies and their functions obtain decisive feature changes – beginning with the drive, via filling insertion and statistical evaluations, through to quick and reliable product reproducibility. Weaving personnel workload is relieved by short setting-up times and increased maintenance friendliness, through which productivity can be increased.

**Reduced setting-up time**
- Faster width changes
- Integrated speed control
- High processing reliability thanks to the DORNIER AirGuide®
- Intelligent self-regulation and monitoring

**Reduced maintenance needs**
- Markedly reduced maintenance needs thanks to the CompactDrive as a guarantor for shedding subassembly reliability
- DirectDrive for large machines
- Color selector ECS with step monitoring

**Flexibility in filling insertion**
- Open-shed filling insertion with positive center transfer
- Problem-free pick-and-pick coarse/fine filling change
- Multiple filling insertion and optional torsion-free double filling insertion
- Free filling feeder positioning
- Gentle yarn presentation by micro step resolution
- Problem-free processing of low tensile strength yarns
- Optional with waste-saving device DuoColor
“Quality creates value” – from “cool wool” via silk and finest linen to coarse bouclé à la Coco Chanel. The DORNIER rapier weaving machine has decisively influenced many of the most important fashion trends of past decades. The P1 remains the best guarantor of highly valued products and a perceptible and sustainable quality touch.
Lindauer DORNIER GmbH has been producing weaving machines for over half a century. Since the beginning of our technical developments in weaving, our central focus and our unbroken enthusiasm are aimed at perfected technologies for the production of high quality woven fabrics. “Quality creates value” is our creed and we are doing our utmost to continue setting quality standards.

The DORNIER system family: Air-jet and rapier weaving machines
The unique DORNIER system family consists of air-jet and rapier weaving machines based on an identical, robust machine frame and equipped with uniform electronics. The operative and maintenance personnel are therefore working on identically designed machines – despite different filling insertion systems. Accessory exchangeability and largely identical spare parts reduce inventory and save money.

A technology leader with two supporting pillars
With both its company divisions – weaving machines and specialty machines – DORNIER belongs to the technology leaders the world over today. In specialty machine construction, DORNIER is market leader for the engineering and production of drying and film stretching plants. In addition to the packaging industry, these films find ever increasing use in high-tech products like semi-conductors, condensers and film displays for mobile telephones and flat screens.

With you in dialogue
A meaningful dialogue with you, the users of our technologies, is pivotal for the success of DORNIER. For us it is matter of concern to provide prompt and competent support throughout the world at any time. You profit simultaneously through the constant exchange of experience with our skilled technicians. Therefore we maintain our own technical textile laboratories including trial machines for weaving trials in Lindau (GER), Charlotte (USA) and Shanghai (PRC). Sales teams with technicians are available for you in Mumbai (IND) and Istanbul (TR) too.
Machine type code
DORNIER High Performance Rapier Weaving Machine P1 PTS 12/J 190 C

Number of filling colors
S: Dobby
E: Positive cam motion
J: Jacquard machine

Nominal width cm
C: CompactDrive
D: DirectDrive
G: Separate drives DORNIER SyncroDrive®

Dimensions

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<th>Max. reeded width</th>
<th>Min. reeded width with DORNIER MotoLeno®</th>
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Other widths and specially customized solutions on request

Overall depth
with 800 mm warp beam ø 2,118 mm
with 1,000 mm warp beam ø 2,184 mm

* With more than 4 colors there is a variation in machine width

For precise measurements of each type of machine outlined, please contact DORNIER

Subject to change