# ZAX MASTER 9200i Terry

## AIR JET LOOM

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## *Opening new frontiers in terry weaving!*

*The ZAX9200i -Terry is the exclusive terry-weaving air jet loom for the next era. We provide the ZAX9200i -Terry with the "Weave Navigation® System-Ⅱ" to support terry weaving. The ZAX9200i -Terry combines the ultra high-speed of the ZAX9200i with the largest accumulation of terry-weaving know-how in the world. The "Versa-Terry System," which is state of the art technology for TSUDAKOMA's terry weaving, realizes the stable weaving of high quality towel. Air consumption was also reduced appreciably compared with our conventional model.*

### ■ Outstanding ultra high-speed and low vibration

High productivity is an essential factor for air jet looms. The ZAX9200*i*-Terry enjoys a synergy of weaving geometry optimized for a smooth warp shed, the world's best weft insertion system, and a newly designed robust structure. Consequently, the ZAX9200*i*-Terry is successful in three conflicting tasks: considerably increased speed compared with our conventional model, low vibration, and energy savings.

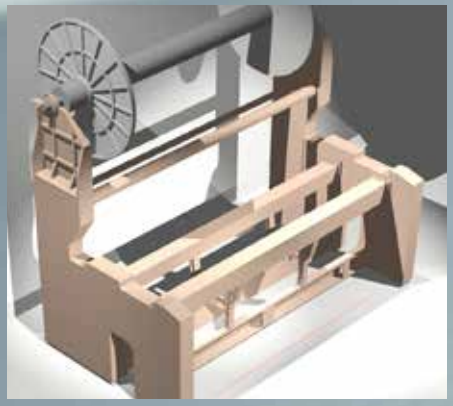
■ **New low-inertia ETS**

A newly designed low-inertia motor is employed. Thanks to its small internal inertia, higher speed is attained.

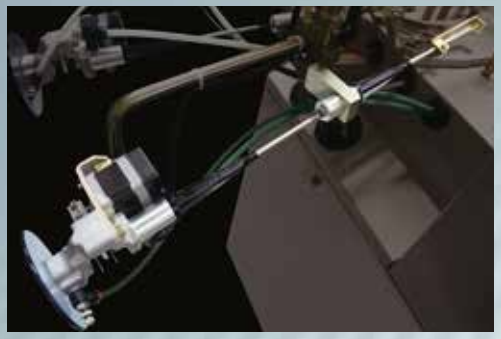
■ **Twin auxiliary main nozzles** Option

(Available for pile colors only)

Two auxiliary main nozzles are positioned tandem. As they support feeding a weft yarn at two positions, higher speed and lower air pressure are attained.



Robust frame structure

Twin auxiliary main nozzles

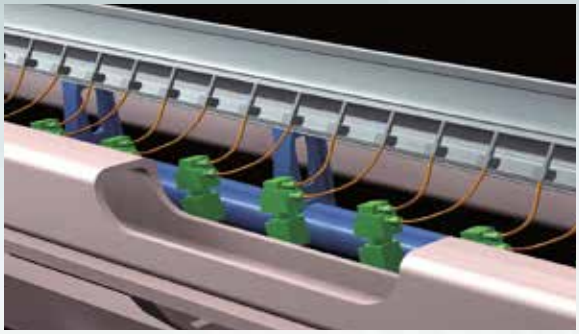
# Smart Ecology

*Ecology and Economy in Harmony*

With the newly designed air jet loom, anyone can easily weave high-quality fabric using Tsudakoma's expertise.
In pursuit of the ultimate user-friendly loom, the ZAX9200*i* Air Jet Loom was developed.
TSUDAKOMA's terry-weaving know-how is integrated into the basic capacity of the ZAX9200*i*.
The ZAX9200*i*-Terry is the exclusive terry-weaving air jet loom with upgraded electric components for enhanced fabric quality.

## ■ Ultimate weaving support! "Weave Navigation® System-Ⅱ"

The world's first weaving support system that Tsudakoma developed is upgraded to the "Weave Navigation® System-Ⅱ." TSUDAKOMA has embodied our accumulated wealth of terry-weaving expertise in this system. Simple operation on the "Navi-Board" reproduces professional weaving technology with ease. The original systems of TSUDAKOMA, a special manufacturer of textile machinery, guide the ZAX9200*i*-Terry to the best weaving condition even during operation.

Twin nozzle valve

## ■ New EPRC Electronic Pile Ratio Control

This function automatically adjusts the moving distance of the cloth so that the pile ratio is in the target range. Pile with a constant height is easily formed.

## ■ Energy savings

Careful attention has been paid to design the ZAX9200*i*-Terry to save energy. Weft insertion at low air pressure is tender toward weft yarns. Air consumption was also reduced remarkably by adopting efficient new valves (option). (Compared with our conventional model)

## ■ Excellent versatility

The FDP-A Ⅲ free drum pooling system is superior in responding to high-speed. As its advancing reel system separates wefts, the ZAX9200*i*-Terry can weave a much wider range. The number of pre-wind on the feeder is about 3 times that of our conventional measuring system. Minimizing damage on wefts during pick-at-will weft insertion stabilizes operation.

## ■ Expanding the world of terry-weaving

The ETS Electronic Terry System (Optional) can widen the weavable range. Special designed towels with a nice touch and feel are covered by the ZAX9200*i*-Terry. Moreover, the pile height and the pile cycle can be changed with ease. Style change has been simpler.

## ■ Easy operation

Easy operation is an indispensable factor for high productivity. The ZAX9200*i*-Terry design supports customers by simplifying weaving. Based on TSUDAKOMA's years of experience, we have created a user-friendly loom with both software and hardware.

## ■ Harmony with the environment

In addition to low vibration and energy savings TSUDAKOMA aims to harmonize with the environment. We continue investigating noise and vibration reduction, and promote practical applications.

# ZAX MASTER 9200i Terry AIR JET LOOM

## Responding to diversified terry-weaving

*State of the art technology of TSUDAKOMA's terry-weaving,*

## *"Versa-Terry System"*

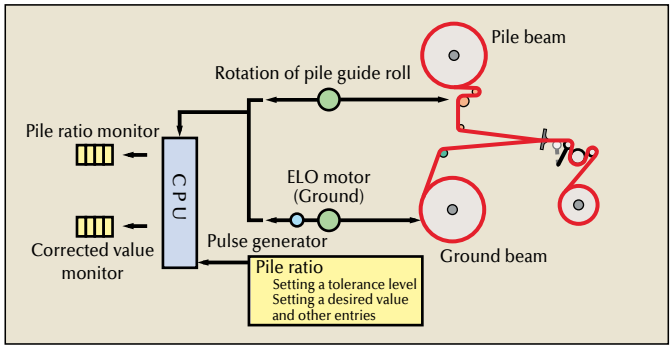
Each system that was developed for terry-weaving by TSUDAKOMA has been improved and new techniques which can weave various complicated towel designs are included in the "Versa-Terry System" . The "Versa-Terry System" inherited all of TSUDAKOMA' s greatest achievements for air jet loom terry-weaving and improved on them. High speed operation, excellent versatility, high quality, energy savings, and easy operation are combined with true user-friendliness.

### ■ Easy weight control for towel

The change of the pile height can be carried out easily. It simplifies the weight control for towel. With the new EPRC Electronic Pile Ratio Control, continuous production of constant-weight towel is possible.

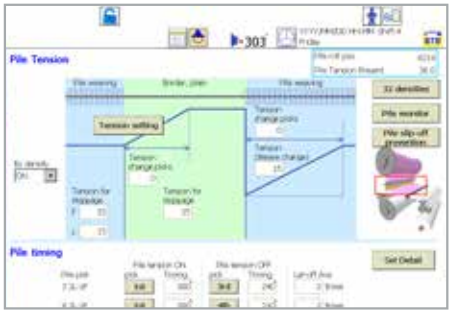
#### ■ PRM pile ratio measuring

The fed length of pile yarn is measured via the rotation of the guide roll and the pile ratio is displayed. It contributes to stable pile quality and labor-saving.




#### ■ New EPRC Electronic Pile Ratio Control

Controlling the present value of the pile ratio measured by the PRM pile ratio measuring in the target range makes it possible to weave even-weight towel. This automates weight control of the towel.



### ■ ETS Electronic Terry System

**• MPC Multiple Pile-Cycle terry**

For the ZAX9200*i*-Terry, 31 kinds of pile heights can be set, and specially designed towel, such as 2-height pile and wave pile, can be easily woven. In addition, the terry cycle is programmable. Not only three-pick terry but any-pick terry can be set. This MPC Multiple Pile-Cycle terry greatly increases the flexibility of towel designs.

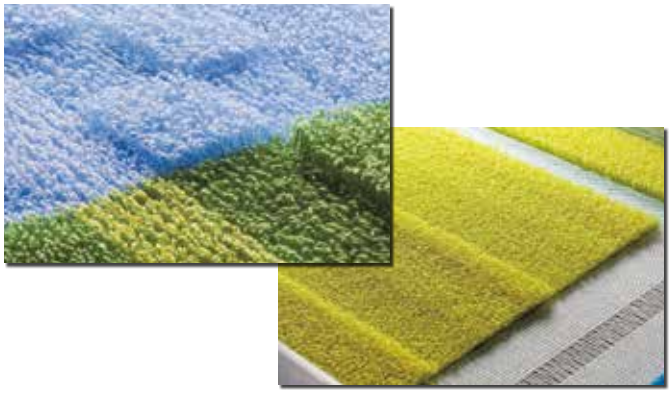
**• Improvement of quality, touch and feel**

Each operation of the loose pick and the fast pick can be set to easily improve the quality, touch and feel of the towels.

**• Easy style change**

The pile height and pile cycle can be changed easily on the Navi-board, and style changes become simpler.

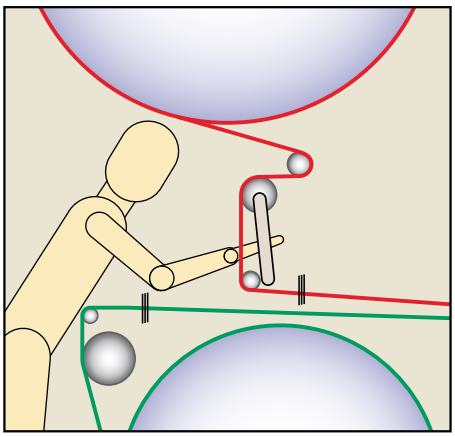
Multiple pile-cycle towel



Multiple pile-height towel

### ■ Higher operability

The pile yarn route is improved. The open space below the pile beam is wider. This makes operation in repairing warp breakage and in tying easier.

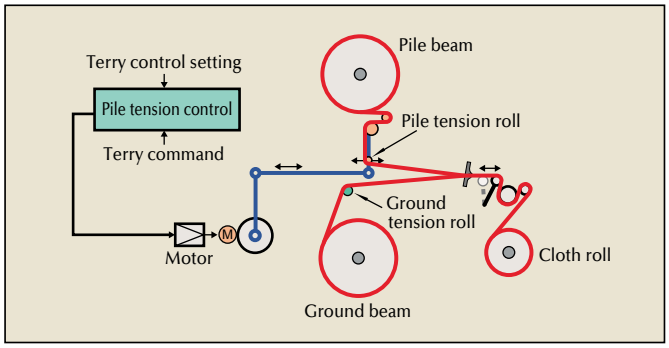


# Technology for better pile quality

## ■ TMC Terry Motion Control

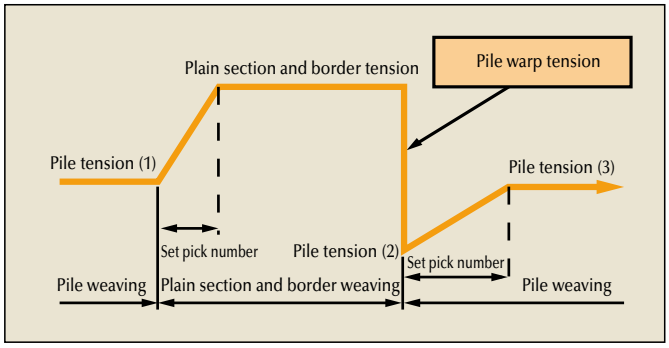
The TMC Terry Motion Control that received favorable reviews has been improved.

- **Ideal tension control**
  The new control system keeps the pile warp in the ideal tension to form high quality pile, a nice touch and feel. Stable operation results from preventing defective shedding of pile warp.
- **Stop mark prevention**
  When the loom is stopped due to warp, the pile tension is lowered to prevent middle blow-off.




## ■ MTC-P Multiple Tension Control-Pile Warp

In addition to tension control during plain section and border weaving and at loom stoppage, two kinds of pile tension can be set while the pile is being woven.




## ■ MTC-G Multiple Tension Control - Ground warp

Multiple ground warp tensions can be set on the Navi-board. Thus, the pick density at the border is well controlled.

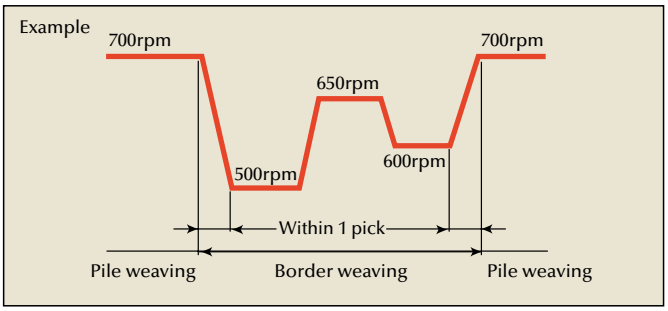
## ■ Slide top-mounted temple

The top-mounted temple makes tension adjustment of the temple easier and the depth adjustment of temple possible.

- **Slide guide bar**
  Because the guide bar supporting the cloth fell can move back and forward according to the terry motion, the woven cloth is not rubbed hard and the quality of pile rises. The guide bar close to the cloth fell easily weaves the towel with a special border and long pile.
- **Positive Slide Mechanism**
  By connecting the temple with the cloth guide that pulls the cloth, the cloth slippage on the temple is eliminated. Speeding up and quality progress are achieved.

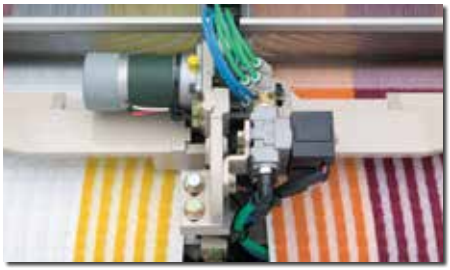
## ■ PSC Programmable Speed Control (Patented)

Up to 32 loom rpms can be independently set for a border and a pile weaving section respectively. Formerly, the loom rpm was restricted by the border weaving section. The PSC automatically increases the loom rpm for other than the border weaving section in order to improve productivity. It changes the rpm within 1 pick. Moreover, versatility is also widened by weaving special borders.




## ■ ZTN needle-less tuck-in device (Option)

For tuck selvage formation, wefts are tucked in the edge by air, instead of conventional tuck-in needles. No mechanical parts are consumed. Maintenance and adjustments become easier.



# ZAX MASTER 9200i Terry AIR JET LOOM

## Energy Conservation

### Advanced energy-saving

The ZAX9200i-Terry is compatible with the conflicting tasks of ultra high-speed, low vibration, and energy saving.

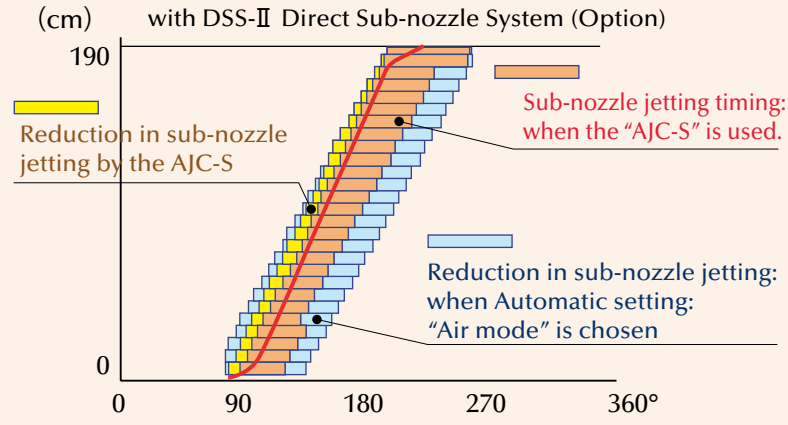
## *i*-Weave

The "***i***-Weave" optimizes the three basics of weft insertion for air jet looms: nozzle, valve, and control technology. High-speed performance is accompanied with energy saving. The "***i***-Weave" is standard on the ZAX9200***i*** -Terry. The "***i***-Weave" is the fruit of weft insertion technology backed by Tsudakoma's 40-year development and sales success on air jet looms.

### AJC-S Auto Jet Control

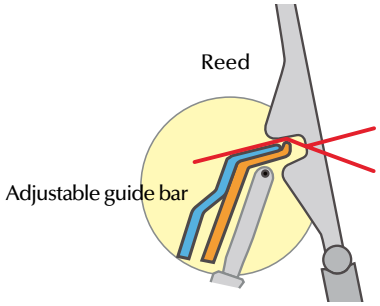
The ZAX9200***i***-Terry is equipped with the air mode (patent-pending) to reduce air consumption enabling easy setting for energy saving. By controlling nozzle jetting timing in response to actual weft insertion, air saving is combined with stable operation.

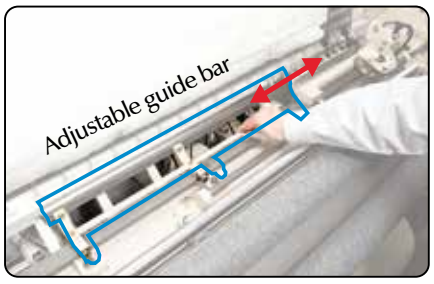
**Insertion curve**




### Adjustable guide bar (Option)

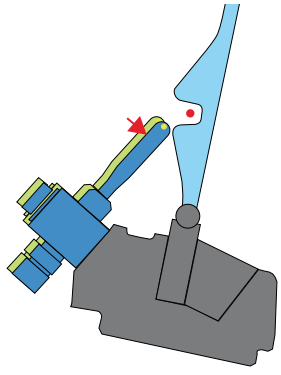
No need to cut the guide bar according to the reeding width. Provided with the mechanism which can adjust its length, the time required for style changes is greatly reduced. The adjustable guide bar is in the reed air guide and supports the cloth fell leading to stable operation. (Patent-pending)




### Switchable sub-nozzle block

By placing the sub-nozzles close to the weft, lower air pressure for weft insertion can be used so air consumption is reduced. The lower air pressure also reduces damage to the weft.

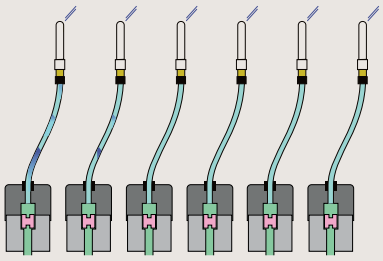


### DSS-Ⅱ (Option)

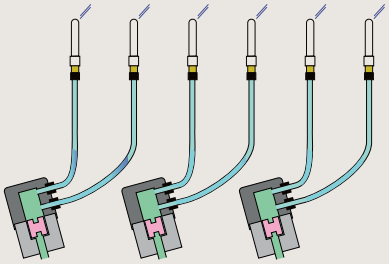
**Direct Sub-nozzle System**

An efficient new valve and optimized piping from the manifold sets low pressure while saving air.

**DSS-Ⅱ**
**Direct Sub-nozzle System**

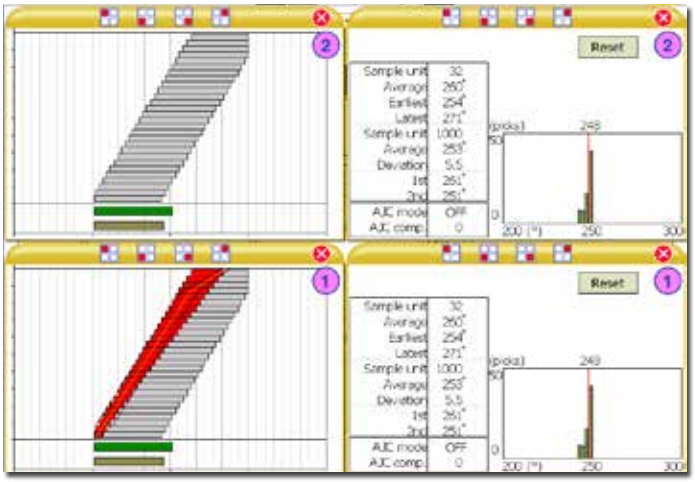


**Twin nozzle valve**



# Easy Operation & Maintenance

## Advanced New Electronic Components


### ■ New Navi-board

The high-resolution LCD monitor that reproduces 16 million colors provides a maintenance guide on video and allows adjustments based on visual cues. The 15-inch display reduces the hierarchy levels of the menu and the number of button operations is also reduced for userfriendliness.

### ■ Dual weft insertion control by color

Option

Weft insertion control when the RPM is changed is automated. Adjusting weft inserting conditions respectively for low and high speeds when weaving with the same weft is no longer required.

### ■ Video replay

Procedures for adjustments and maintenance can be checked through the video. The required works are easily comprehensible.

### ■ Automation

Adjustments for the 1st pick timing are no longer necessary. The timing of the main nozzle and the hook pin for the 1st pick is automatically controlled in response to the initial rise of the motor when the loom is started.

### ■ Wider versatility

The number of steps of the weaving pattern data is increased to 19,980,000 picks including the repeat function for the dobby loom. Therefore, various fabrics can be woven.

### ■ Reliable design

Long-lived parts are used for the control printed board. The layout of the electric components is optimized.

### ■ Use of USB thumb drive

Loom data can be saved and transported with a special USB thumb drive. The amount of data saved is drastically increased. Data management is easy.

### ■ Multi-windows

Simultaneously displaying the setting page and the monitoring page allow realtime adjustments. You can adjust the weft insertion timing while observing the weft insertion graph, and can set the warp tension while observing the tension changes.

### ■ Energy saving

Power consumption for control except for the driving motor is reduced by optimizing the composition of the control units.

### ■ Stand-alone display

Even when the LAN environment for the TLM is not provided, the manuals and the parts catalog can be displayed by the stand-alone loom.

### ■ ACI Air Consumption Indicator

By indicating air consumption per loom, abnormal settings can be easily found on the Navi-board.

# ZAX MASTER 9200i Terry AIR JET LOOM

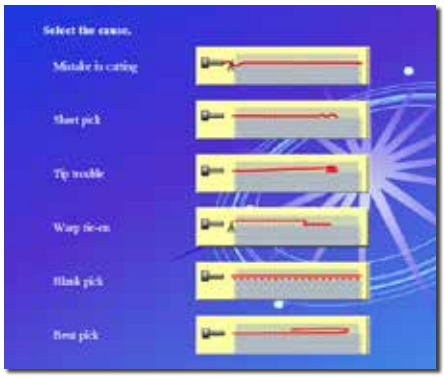
## Ultimate weaving support!

### Weave Navigation® System -Ⅱ

The weaving support system that Tsudakoma developed before the rest of the world is upgraded to the very user-friendly “Weave Navigation® System-Ⅱ .” The loom itself leads to the optimum weaving conditions for a wide variety of fabrics.


## Weave Navi®

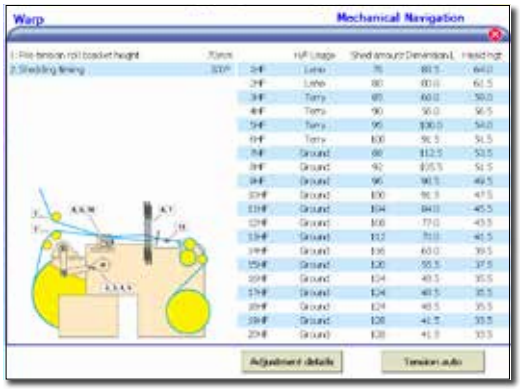
The Weave Navigation® monitors loom operation while the loom is in operation. It gives advice to improve the operation in various situations, navigating you to the best weaving possible.

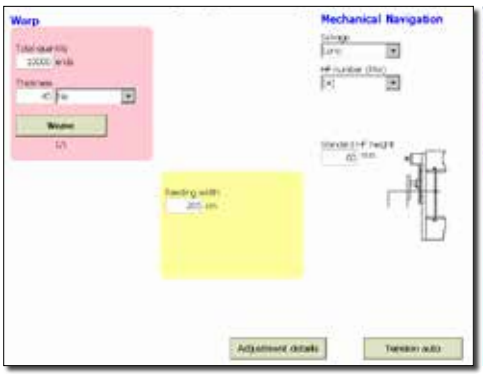


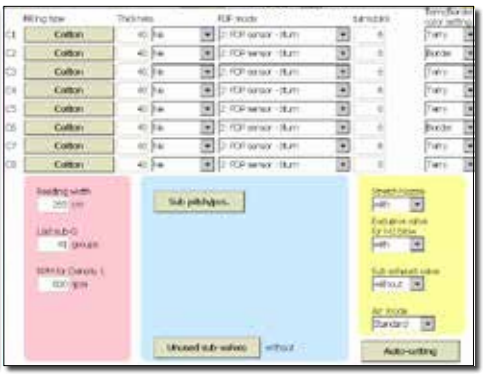


## Tune Navigation

The best setting values are automatically entered for your fabric and loom specifications. Optimum mechanical settings are recommended for the tension roll position, easing amount, and various pressure settings according to the fabrics to be woven.



## Weave Tips

We provide weaving expertise according to the fabric.

# Smart Ecology

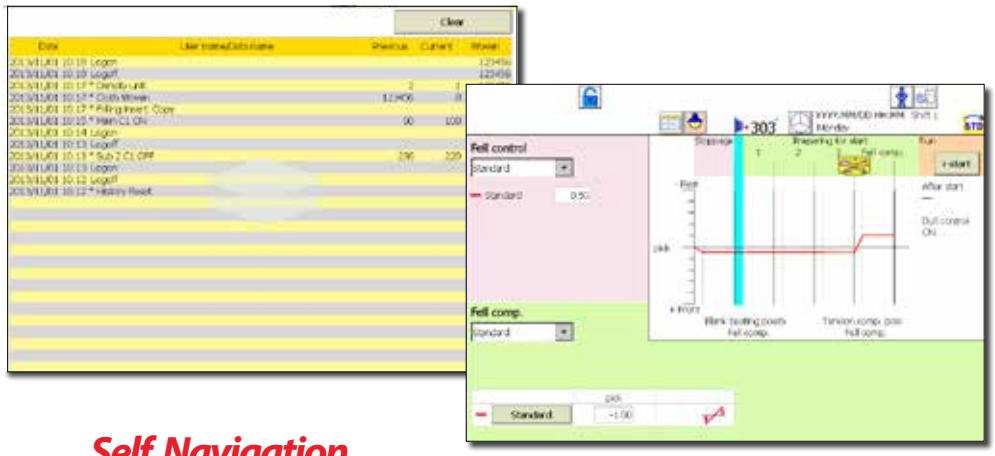
*Ecology and Economy in Harmony*

# Ultimate Weaving support

In addition to pursuing high speed and high quality,
Tsudakoma holds the concept of the "Weave Navigator" leading to higher user satisfaction by providing our accumulated wealth of weaving expertise.

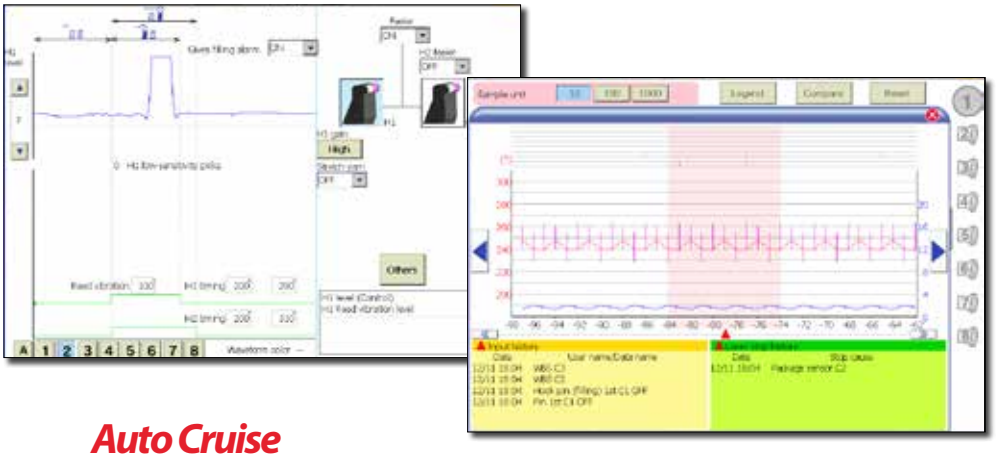
## Trace Navigation

When solving a problem like a stop mark, which needs to adjust multiple setting items, operators need only to adjust one setting to change all the related set values to the optimum based on Tsudakoma's accumulated weaving experience.



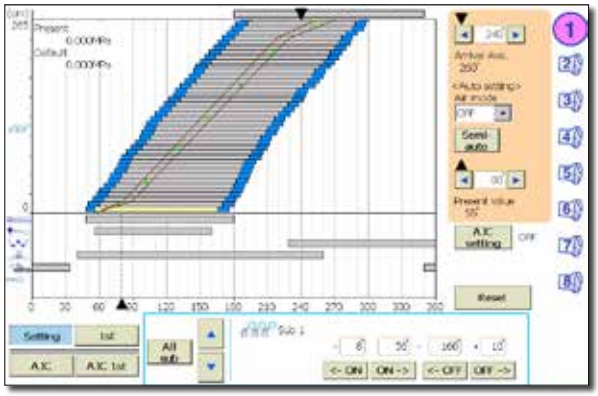
## Self Navigation

Excellent self-diagnosis and maintenance information help maintenance work. Weft insertion adjustment does not need measuring equipment.



## Auto Cruise

Automatic adjustments for the loom's setting according to the everchanging weft insertion status provide you with a comfortable auto cruise in weaving.



## Easy maintenance

On the Navi-board, the ZAX9200*i*-Terry with the "Weave Navigation® System-Ⅱ" displays information about maintenance, such as the position and parts for periodic replacement.

## TLM

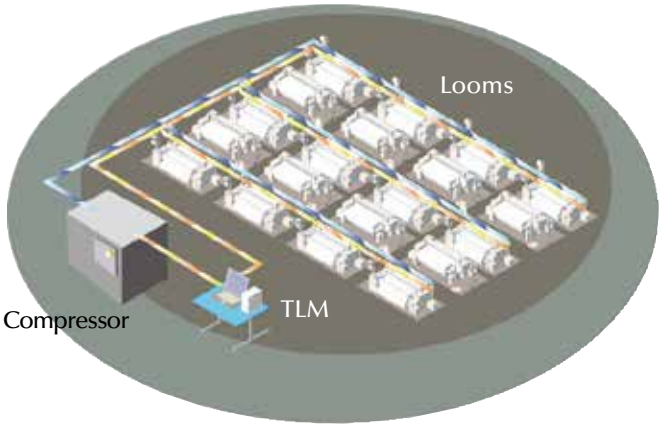
**Tsudakoma Loom Monitoring system**

As well as monitoring operation of the looms, bi-directional communication supports loom-to-loom setting data transfer and dobby pattern data transfer. You can accurately accumulate your own weaving know-how because the loom adjustment data and mechanical settings are controlled by the host computer according to the fabric.

## Smart Air Grid

Option

Information about air pressure and air consumption is sent to the compressor through the TLM. The new Smart Air Grid function combined with an air compressor can reduce the energy costs for an entire weaving mill. The Smart Air Grid is a new concept designed by Tsudakoma to reduce air consumption.



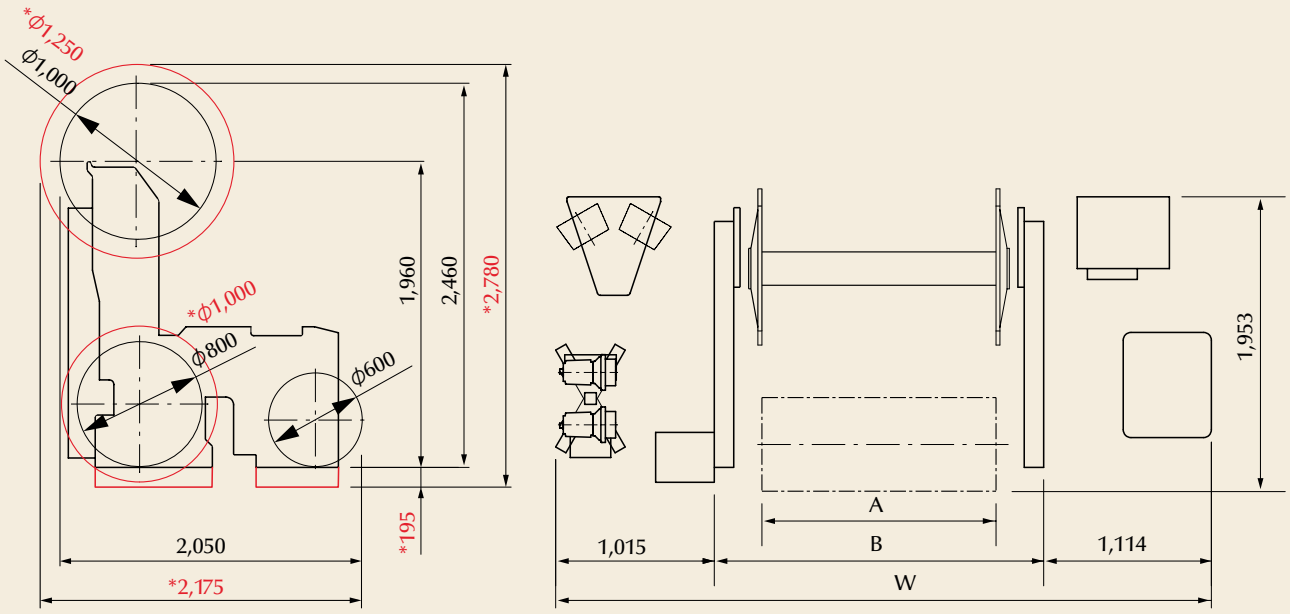
## Specifications

| Item | | Specification | Option |
|---|---|---|---|
| Reed space | Nominal (cm) | 190, 210, 230, 260, 280, 340, 360 | |
| | Useful reeding width | Same as nominal width.<br>Maximum reduction: 60 cm (for 250 cm or narrower loom)<br>80 cm (for 280 cm or wider loom) | Maximum reduction: 80 cm<br>(for 190 ~ 250 cm) |
| Weft selection | | 4 colors, 6 colors | 8 colors |
| Driving | | Direct start of rush-start motor drive | |
| | | Push-button operation with both hands, Slow inching with an inverter (Forward, reverse) | |
| | | PSC Programable Speed Control | |
| | Motor capacity | Rush-start motor: 3.7kW (for a loom provided with Electronic dobby)<br>Rush-start motor: 5.5kw (for a loom provided with Electronic acquard) | |
| Weft insertion | | Main and sub-nozzles combined system | |
| | | Stretch nozzle, Auxiliary main nozzle | Twin auxiliary main nozzle (2 colors) |
| | Weft insertion control | Twin nozzle valve with built-in manifolds | DSS-Ⅱ Direct Sub-nozzle System |
| | | Independent sub-nozzle timing control by color, Sub-nozzle boosting system | Dual weft insertion control by color |
| | | AJC-S Auto Jet Control, First pick control | |
| | | WBS Weft Brake System (WBS-S) | *i*-WBS Weft Brake System (2 colors) (WBS-C) |
| | Measuring & storage | FDP-AⅢ Free Drum Pooling (with advancing reel system) | Balloon breaker |
| Shedding | | Electronic dobby shedding (Positive/Floor-mounted): Up to 20 heald frames, Electronic Jacquard shedding | |
| Let-off | | ELO Electronic Let-Off, Double beam, With kickback function | |
| | | TMC Terry Motion Control, MTC-G Multiple Tension Control-Ground warp, New EPRC Electronic Pile Ratio Control, MTC-P Multiple Tension Control-Pile Warp, PRM pile ratio measuring | |
| | Flange diameter | Pile: 1000mm, 1250mm | |
| | | Ground: 800mm, 914mm, 1000mm | |
| | | One touch lift-up for ground guide roll | |
| Take-up | | ETU Electronic Take-up | |
| | Pick density | 9.8-118.1 picks/cm (25-300 picks/inch) | |
| | | 32 different density settings (32-densities independent settings) | |
| | | Take-up stop device, blank pick function | |
| | Woven length counter | Towel piece counter, Doffing counter (displayed on Navi-Board) | |
| | Maximum on-loom take-up diameter | 600mm | Off-loom take-up device (Maximum diameter 1500mm) |
| | Temple | Slide top-mounted type, 14 mm guide bar | Adjustable guide bar |
| Terry motion | | Terry motion with cloth fell shifting system, Slide guide bar | |
| | | ETS Electronic Terry System | |
| | | Shifting amount: 3-28mm | |
| Beating | | Crank type beating, multi-sley sword system | |
| | | Rocking shaft with intermediate supporter | |
| Selvage formation | | Leno | ZTN Needle-less Tuck-in device |
| Cutter | | Electrical waste-selvage cutter | |
| Lubrication | | Oil bath system for main driving parts, Centralized lubrication (Manual grease) | Centralized lubrication (Automatic grease) |
| Stop motion | Weft yarn | Reflective weft feeler | 3-eyed feeler |
| | | Two-head system | Package sensor |
| | Warp yarn | Electric contact bar system, 2 rows each in 2 boxes | 4-row dropper for ground warp (for gauze backing) |
| | Others | Stop motion for selvage and catch cord yarn | SGS Safety Guard Sensor |
| | Stop cause indication | Indication by message on Navi-Board | |
| | | 5-color multi-function indication lamp | |
| Weave Navigation® System-Ⅱ | Navi-board | Automatic data setting, recommended setting indication, optimum weaving condition information | |
| | | Automatic control, troubleshooting, self-diagnosis function | |
| | | Operating data display, maintenance data display | |
| | | Weaving advice, operation manual & parts catalog browse | |
| | Network application | TLM TSUDAKOMA Loom Monitoring system | |

Note 1: For special design, please contact our sales staff or your nearest TSUDAKOMA dealer.
Note 2: Photographs, drawings, and data in this brochure are subject to change for improvement without notice.

## Dimensions

Unit: mm




| Reed space cm (inch) | | 190 (75) | 210 (83) | 230 (91) | 260 (102) | 280 (110) | 340 (134) | 360 (142) |
|---|---|---|---|---|---|---|---|---|
| W | Dobby shedding | 4,639 | 4,839 | 5,039 | 5,339 | 5,539 | 6,139 | 6,339 |
| A | | 1,900 | 2,100 | 2,300 | 2,600 | 2,800 | 3,400 | 3,600 |
| B | | 2,510 | 2,710 | 2,910 | 3,210 | 3,410 | 4,010 | 4,210 |

Note 1: The diagram above is applicable for a ZAX9200*i*-Terry air jet loom of 4-color at-will motion, with the diameter of the warp beams provided being 800 mm for ground and 1,000 mm for pile, and with Stäubli 3222 Dobby.
Note 2: The dimensions with the asterisk above are applicable when the flange diameter of the ground warp beam is 1,000 mm and the pile beam is 1,250 mm.

## Spun preparatory machines provide strong support for jet loom operations.

T-Tech Japan Corp.'s preparatory machines, including the sizing machines, are top-level performers and the best-quality. They are ready for the fast-changing market demands in preparatory machines. They also help improve the quality and operations of the weaving process.
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High quality warp yarns can be prepared in combination with the creel provided with the reliable non-contact type yarn breakage detection, which is kind to yarns, and the warper that can steplessly set the yarn speed up to the maximum 1,300 m/min.

**TTS20S** SPUN SIZING MACHINE

**TW10S** WARPER

**TCR-V** CREEL

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