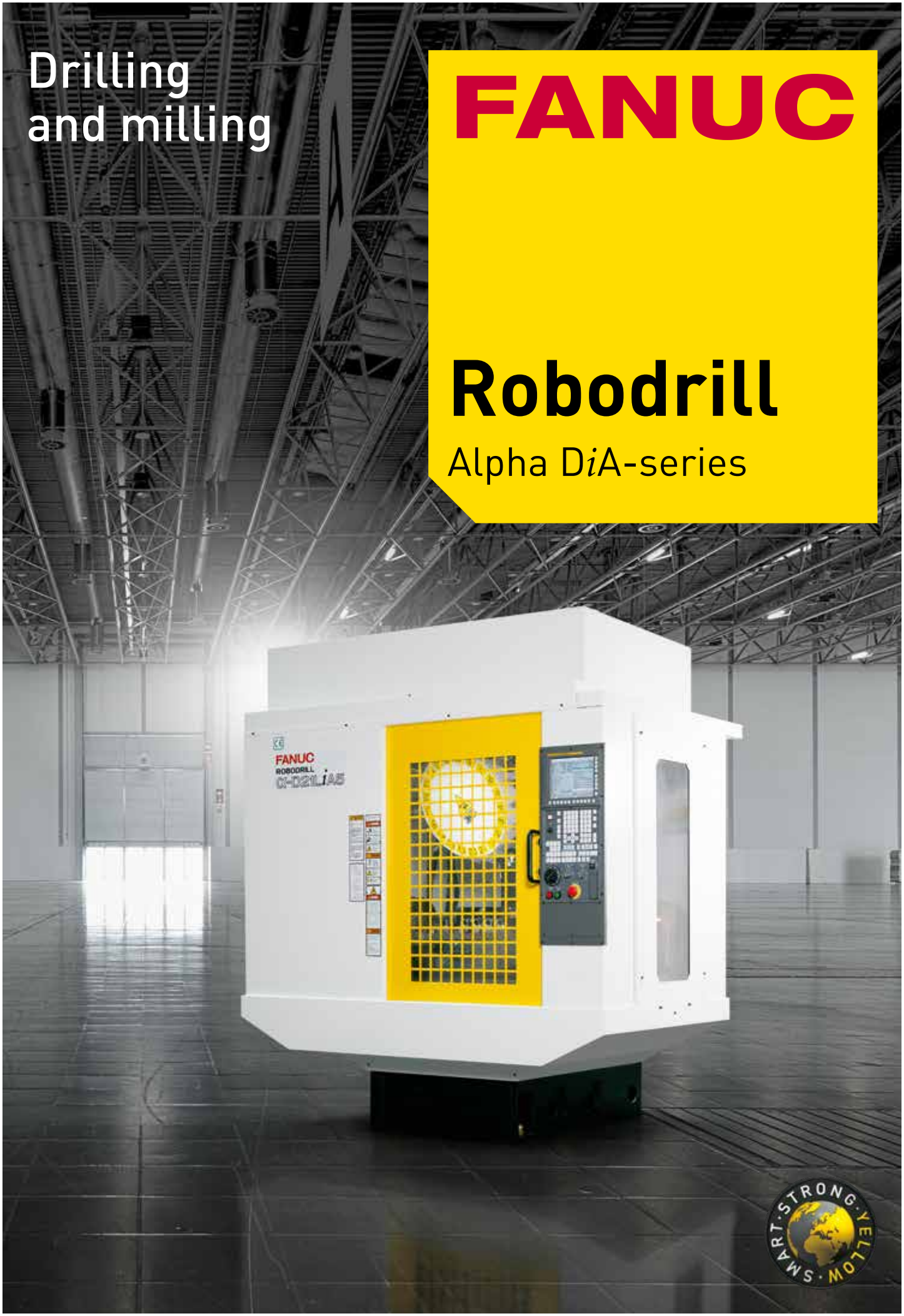
Drilling
and milling

FANUC

Robodrill

Alpha D*i*A-series



Flexible drilling and milling

The world's best quality does not have to be the most expensive: the FANUC Robodrill is a fully-fledged CNC machining center for unrivaled quality and precision at the most efficient machining hourly rate. Extremely robust and reliable, versatile in application from prototype construction to series production – and by far the fastest for most drilling and milling applications.
The best-selling machine in its class – flexible for every need.

The original

One machine for everything: The FANUC Robodrill can always do exactly what you need – in a quality that you can rely on. This makes it the optimal all-rounder with many productive benefits for a wide range of drilling and milling tasks. **For applications requiring maximum precision, dynamics, and reliability.**

- **Directly driven axes** for quick acceleration of 1.5 G in all three axes with 54 m/min
- **Highly dynamic spindle** with 10,000 or 24,000 rpm
- **Optimal acceleration and deceleration control** for efficient machining and shorter cycle times
- **Large travel stroke** up to 700 x 400 x 330 mm
- **Over 40 % energy savings** thanks to low weight and less mass, less compressed air demand, and intelligent control technology with regenerative feedback of excess energy

Patented high-speed tool changer for up to 21 tools with the maximum reliability in its class

40 % higher rigidity against radial forces with the BIG-PLUS spindle BBT30 – ideal for efficient machining

Extremely short tool change time from cut to cut in only 1.6 s

Compact operator panel and 10.4" color LCD screen including memory card slot and USB interface for easy data input

Very easy maintenance through a practical maintenance monitor and direct access to all components

Flexible upgrade at any time with a wide range of components such as additional rotary and tilting tables – always exactly what you need

Most efficient actual footprint based on space-optimized design without far-reaching parts for work and maintenance – ideal for subsequent fitting into any factory layout and for easy automation

Rugged cast C-stand design with cross-sliding table for high rigidity and optimal design for precision-assuring reduction of thermal displacement

Quality from Japan

Since 1972 you will find in each FANUC Robodrill 60 years of FANUC CNC experience and continuous advances in quality. All components such as controllers, amplifiers and motors have been developed 100 % at our FANUC factory in Japan – based on the Japanese philosophy: "fewer assemblies, fewer parts." Everything is optimally matched and from one manufacturer. **The result: high technical availability, less maintenance, and the highest reliability in the industry.**

Three models for every requirement

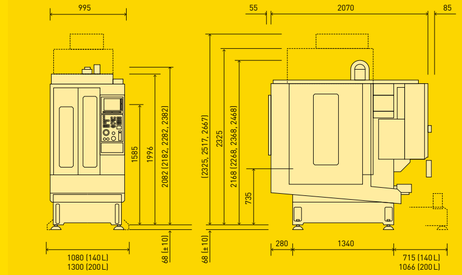
Alpha D21S*i*A5

Alpha D21M*i*A5

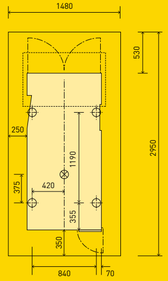
Alpha D21L*i*A5

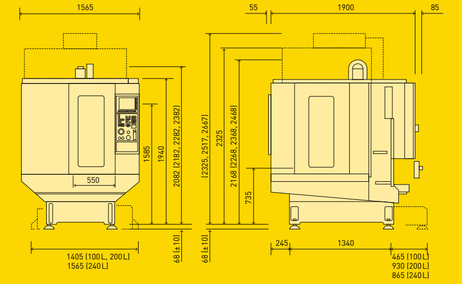
Technical data

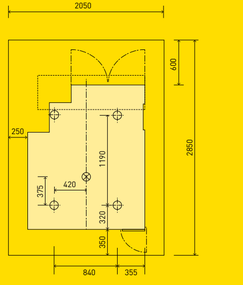
Dimensions

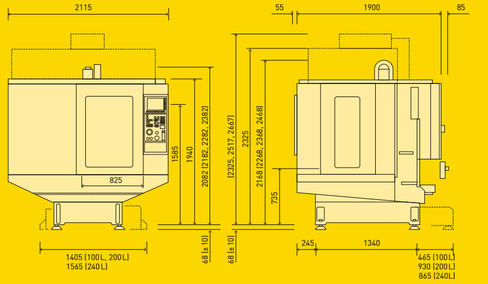


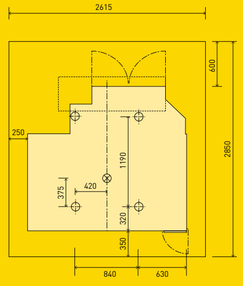
Floor plan









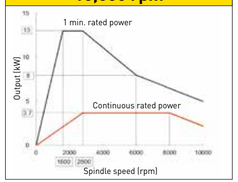


Robodrill Alpha D*i*A series		Alpha D21S*i*A5	Alpha D21M*i*A5	Alpha D21L*i*A5
Travel X/Y/Z	mm	300 x 300 x 330	500 x 400 x 330	700 x 400 x 330
Max. tool length (0–24,000 rpm)	mm	190	200	
Table size	mm	630 x 330	650 x 400	850 x 410
Max. table load	kg	200	300	
Max. tool weight (0–24,000 rpm)	kg	3		
Distance from spindle nose to table	mm	250–580 with HC100		
Controller		FANUC 31*i*-B5		
Spindle speed (rpm)		10000/24000		
Spindle load	10,000 rpm	78 Nm, 12.5 kW (1 min), 3.7 kW continuous operation		
	24,000 rpm	35 Nm, 26 kW (1 min), 4.5 kW continuous operation		
Rapid traverse in all axes		54 m/min		
Acceleration X/Y/Z		1.5 G		
Number of tools		21		
Tool change time	chip to chip	1.6 s (2 kg/tool)		
Thread cutting	10,000 rpm	6,000 rpm		
	24,000 rpm	8,000 rpm		
Programmable cutting feed		30,000 mm/min		
Spindle holder		BT30/SK30 DIN 69871A (optional BBT30)		
Positioning accuracy ISO 230-2		0.006 mm		
Repeatability ISO 230-2		+/- 0.002 mm		
Air pressure consumption		150 L/min 0.35–0.55 Mpa		

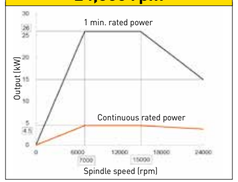
Standard equipment
Dual Check Safety (DCS)
Manual pulse generator
10.4" color LCD screen
Dynamical graphic display
Ethernet
Interface for USB, CF card, RS232C and RJ45
Alphanumerical operators panel
Variable spindle orientation M19
LED interior lighting
20 free M-codes
16 free digital inputs/outputs
Multiple language selection
Thermal displacement compensation (X-/Y-/Z-axis)
Background editing
Additional workpiece coordinate system 48 pairs (G54.1)
Program simulation
Quick Editor
Setup file
Maintenance screen
Production counter
Tool offset memory C
Rigid tapping
Sub program call (M98(M198)/M99)
AI contour control
Helical interpolation
Canned cycles for drilling
Coordinate system rotation
Custom PMC function
Manual Guide *i* programming

Optional equipment
Center through coolant
High-speed spindle with 24,000 rpm
Signal lamp
Automatic front door and/or side door
SK30-DIN-69871A tool holder
ATA Data Server with 2 GB
Conical/spiral interpolation
Expandable to 4 or 5 axes
4/5 axes machining compensation function (TWP/TCP/3DCC)
Nano smoothing
AI contour control II (200 blocks)
Look ahead blocks expansion (1000 blocks)
Different coolant systems with and without chip conveyer
Profibus interface
Tool/workpiece monitoring and measurement
Additional FANUC options on request

Spindle output 10,000 rpm



Spindle output 24,000 rpm



Maximum performance in small space

- Single part clamping
- Many spindles even in a limited space
- Ideal for small components or large series

The optimal all-round machine

- Multi part clamping
- Versatile and highly flexible
- Can be adapted optimally to any application

Maximum flexibility for various tasks

- Multi part clamping
- Ideal for larger components
- Wide range of clamping variations on one table

Versatile in application

The FANUC Robodrill increases your productivity in a wide variety of industries and application areas:


Tool and mold making


Automotive industry


Medical industry


Jewelry industry


Watch industry


Electronics


Aerospace

High-precision control

The core of every FANUC Robodrill is the world's most reliable CNC controller – very user friendly and easy to program.

20 free M-codes are available. You can easily configure to control additonal devices. There is also free user area on machine PMC for further development.

- **Fast Auto-Diagnostic**
- **Reliable Autocorrection**
- **Preventive maintenance**
- **Integrated 5-axis functions (option)**
- **Easy Manual Guide *i* dialog programming**

Very easy maintenance:
The intuitive visual user guidance of the maintenance screens of the integrated FANUC CNC controller 31*i*B5 ensures a quick recovery, e.g., when zero points are lost due to an incorrect operator input.

Reliable early detection:
The integrated early warning system detects problems before they arise and thus provides for the maximum possible quality assurance.

Perfect surface

The FANUC Robodrill provides the perfect combination of precise and fast machining and very exact position repeatability. Therefore the FANUC Robodrill is the ideal machine for high-production applications in mold and tool making, the jewelry and watch industry, medical technology, and other industries in which besides precision and high surface quality is important.

- Maximum precision without external inspection: the position is controlled directly via the FANUC pulse encoders of the Alpha-*i* motors. 16,000,000 times per motor revolution – for maximum exactness without an external inspection element. High reliabillity and less energy consumption.
- Additional functions for quality: nano interpolation is integrated in the controller as a standard feature, additional functions such as nano smoothing, AICC, and data server can be added optionally.
- Fast and highly precise 3-D machining: Due to intelligent options such as look-ahead data sets, NURBS interpolation, and nano smoothing, top-quality electrodes and precision parts can be produced.
- AI contour control: for the shortest machining times with maximum precision using up to 1000 blocks look-ahead expansion.

Integrated 5-axis functions in the controller

The standard FANUC CNC control 31-*i*b5 enables any Robodrill to be expanded to a 5-axis machine whenever you need it. Only the hardware must be added for this – all controller-related requirements such as simultaneous acceleration and indexing machining are already integrated. Fast, easy, economical. And in terms of hardware, we cooperate with all leading rotary table manufacturers.

Easy monitoring and measuring

For exact measurement of workpieces and tools and for contact-free monitoring of tool breakage, we use state-of-the-art measuring devices from leading manufacturers and can integrate all kinds of common types of monitoring and measurement. At the same time, the standard high-speed skip function guarantees maximum measuring accuracy.

Extremely fast:
FANUC DDR direct drive rotary table (4th axis)
FANUC has developed especially for the Robodrill the torque rotary table which indexes 180° in only 0.2 seconds. It requires no gearbox as a direct drive and therefore it is: highly-precise, low-maintenance and wear-free. Additionally the price is unbeatable.

No limitation of table stroke
Depending on the application, we equip your Robodrill with a DDR as a single or with a DDR-T as a bridge solution. In doing so, the practical design of DDR-T ensures that the existing X-axis travel remains the same as on the 3-axis design.
100% clever – 100% FANUC.

Automation made easy

All models of the FANUC Robodrill are ideally suited for efficient automation without loss of space, because of their compact form and easy accessibility from all sides.

With many system partners all over the world, FANUC has an unique network of specialists that will develop optimal automation solutions and fully automated production cells with FANUC robots for your specific task.

Your benefit: all FANUC products have a common controller platform and speak the same language – that makes training and operation very easy.

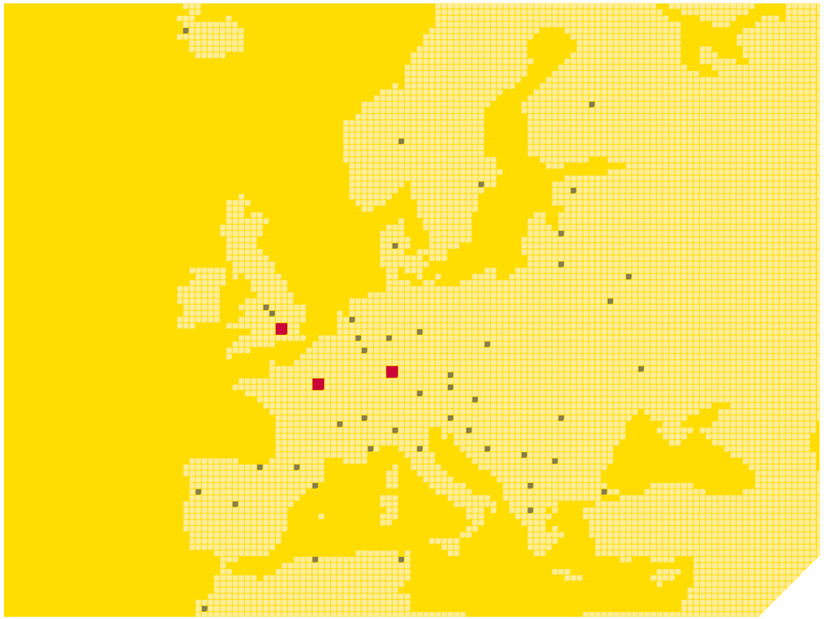
- **Good robot accessibility**
- **Tremendous flexibility due to access from all sides**
- **Free removal of parts in all directions**
- **Versatile communication possibilities: I/O link, FL-Net, FOCAS, Profibus**

Adapt your Robodrill!

Expansion options and optional add-ons such as chip conveyors, special signal lamps, automatic side doors, and many other additional components allow the Robodrill to be optimized for every specific application. Without significant expense – and with absolute investment protection. Always exactly the machine that you need!

Make it work!

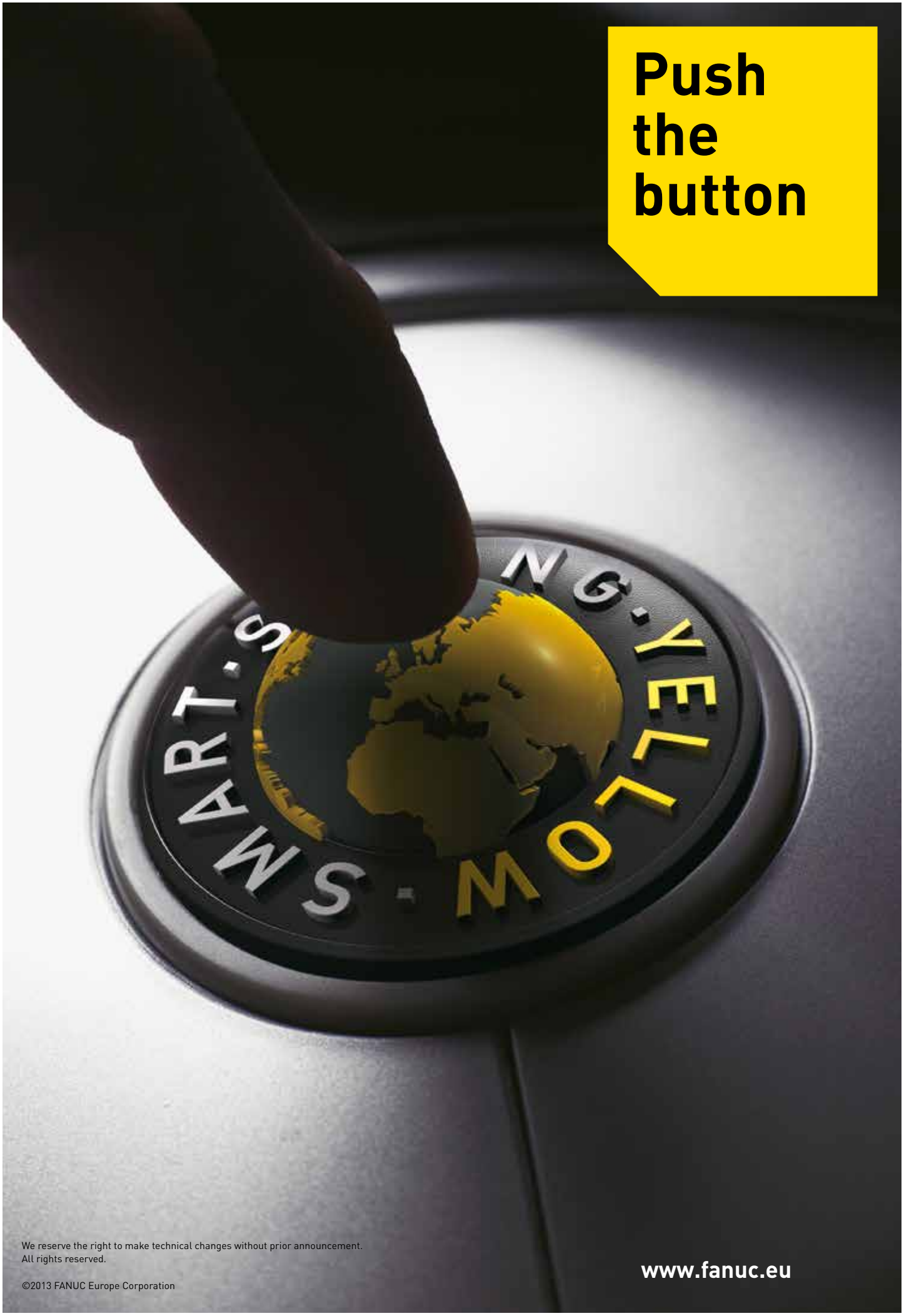
To help you get started as quickly as possible with the most productive and economical use of your machine, we offer compact intensive training courses for all FANUC machines. Always up-to-date and hands-on and conducted by our application technicians, these training courses provide efficient learning in small groups.
All phases ranging from commissioning and setup to troubleshooting are didactically well-prepared and customized.
Contact us! We share our knowledge with you.



Wherever you need us, we are there for you

Thanks to our global network of branch offices in Europe, America, Asia, Africa and Australia we are always there to meet your requirements quickly and effectively.

Throughout the whole of Europe, our extensive FANUC network provides support in the areas of sales, technical support, logistics, and service. So you´ll always have a contact person who speaks your language.



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