Sumitomo Drive Technologies

Sumitomo Drive Technologies
Always on the Move

FINE CYCLO CATALOGUE

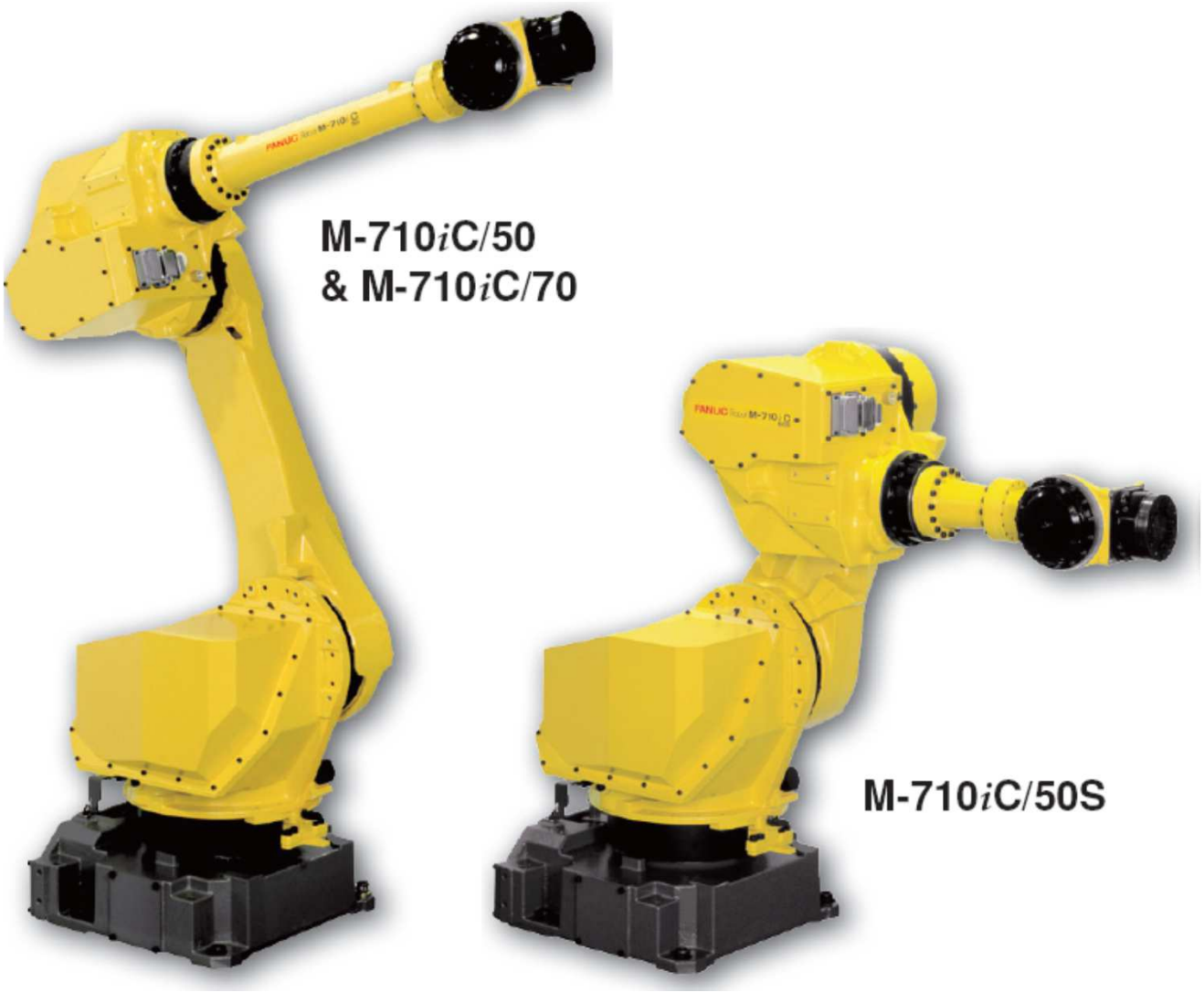
F2C-C CATALOGUE

F4C-D CATALOGUE

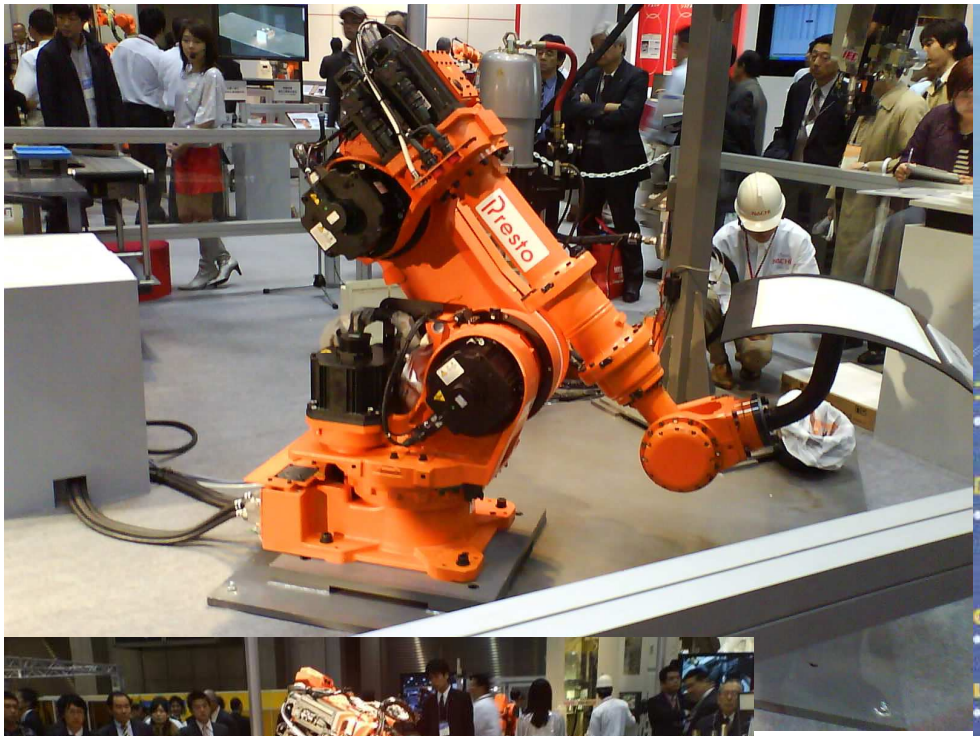
FINE CYCLO APPLICATIONS

ROBOTICS

IREX – Fanuc – M710iC robot with F4C-D

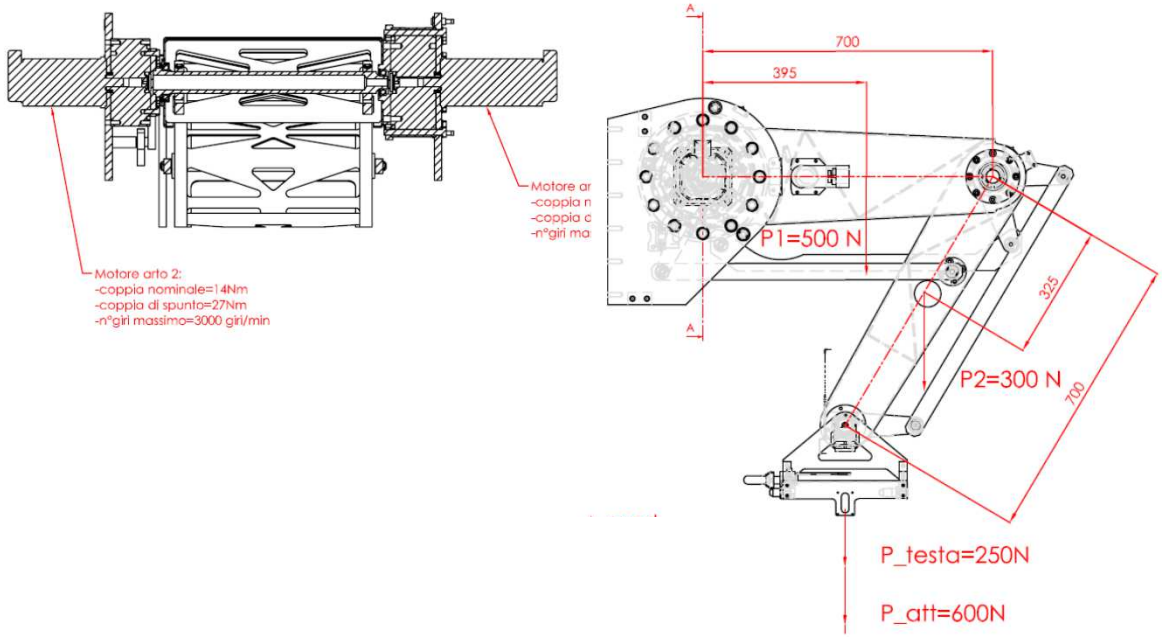


IREX – Nachi – robot with special F2C-A and F4C-D



IREX – Motoman – 10th gen LCD substrate handling robot with F2C-C

Packaging robot



Simple 2 axis robot with 1st axis directly driven by the gearbox and 2nd axis moved with a rod

F2C-A45 and F2C-A35 used in the application.

FINE CYCLO APPLICATIONS

MACHINE TOOLS

FINE CYCLO in Machine Tool Applications

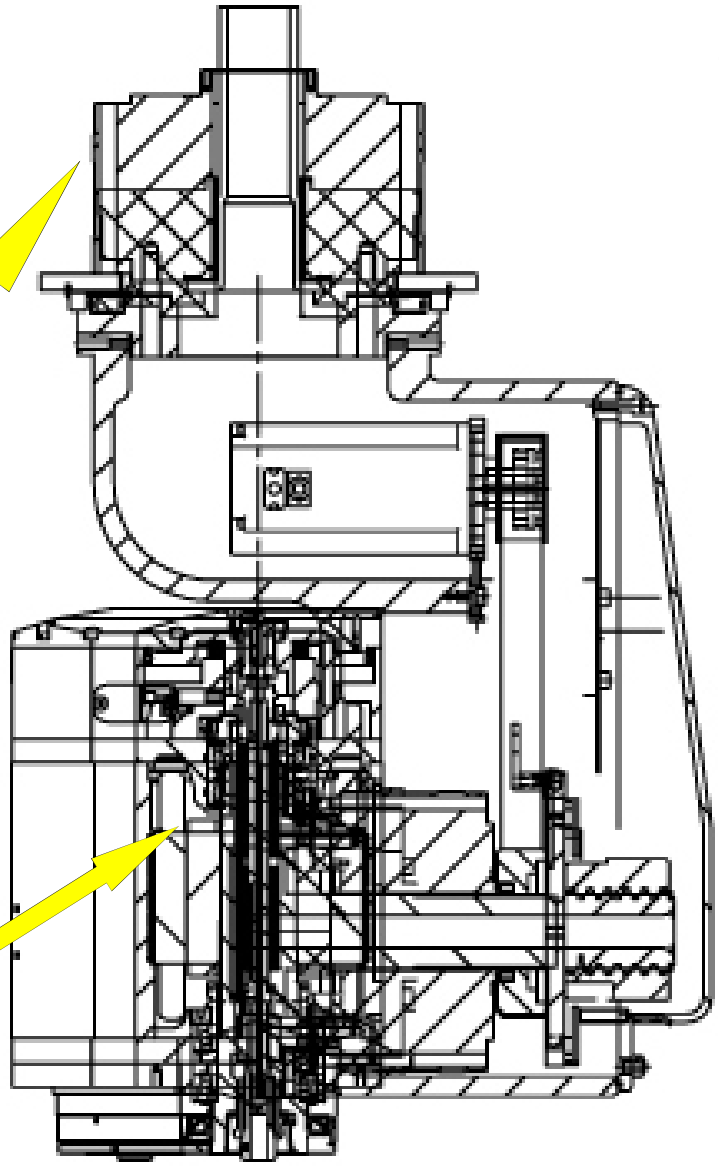
Universal requirements on moving systems in machine tools

Requirements

- High stiffness
- High dynamic
- High positioning accuracy and repeatability

Implementation

- Adoption of zero or low backlash components
- High stiffness of all components
- Low moving masses and Inertias
- Low friction in moving parts
- Low deviation between static- and dynamic friction
- Stable characteristics also at variable Ambience- and auxiliary conditions

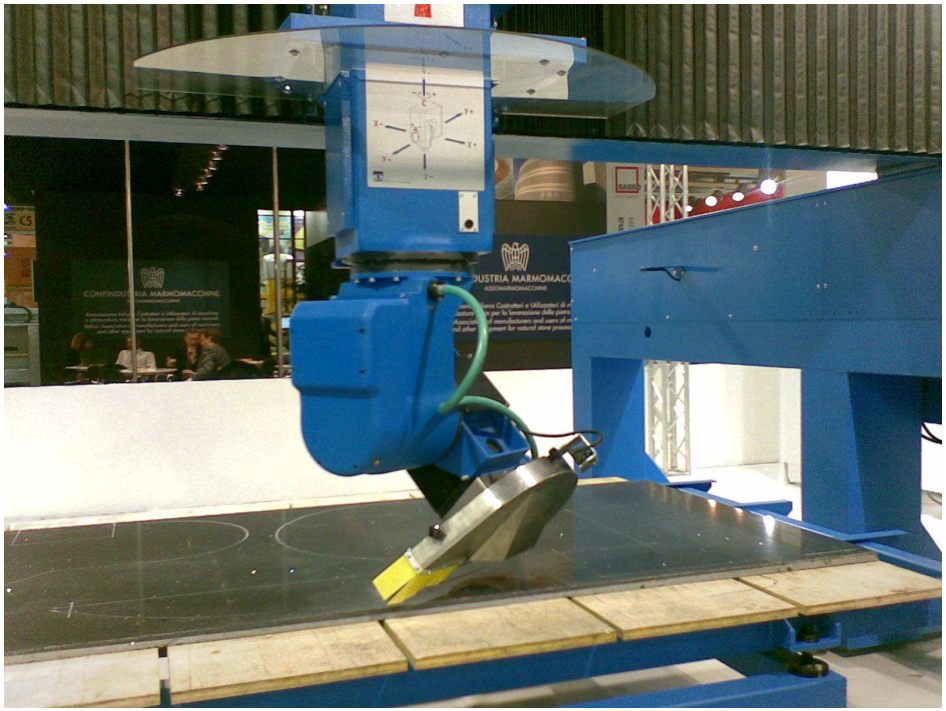


Axis C
F2CF–C45–59

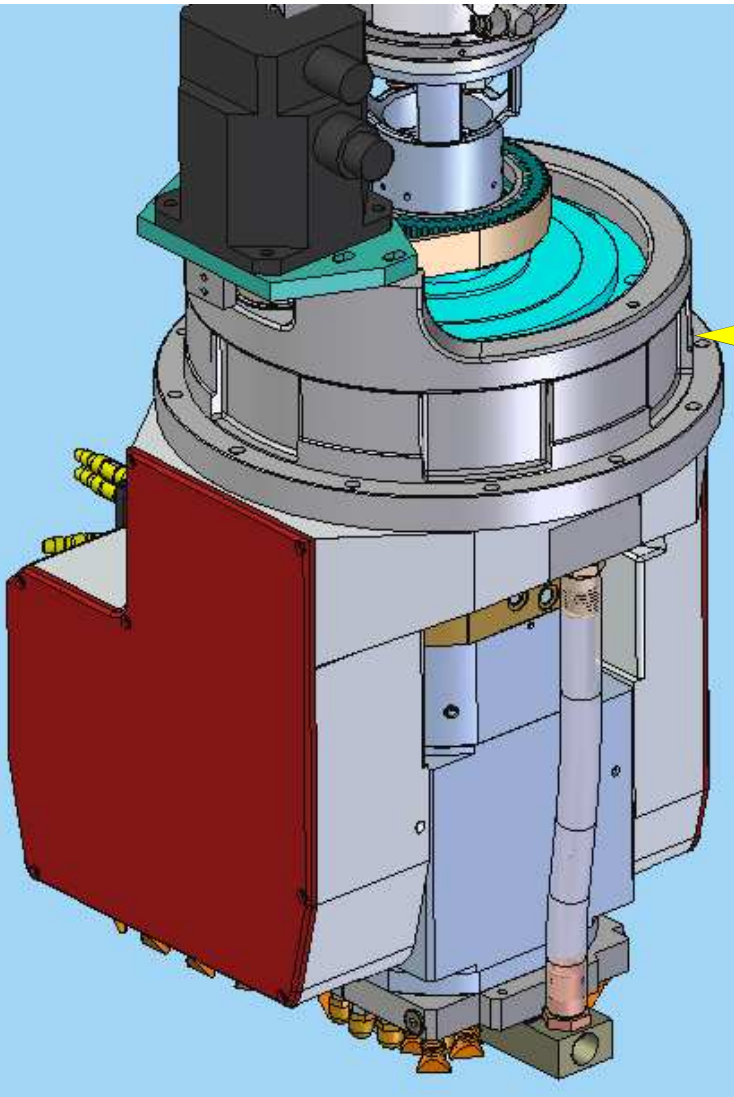
Axis A
F2CF–C35–59

Torsional stiffness about 20% higher than competitor models

Cutting Head applications



gearbox models	applications
F2CFS-C45-59	Axis C
F2CFS-C35-59	Axis A



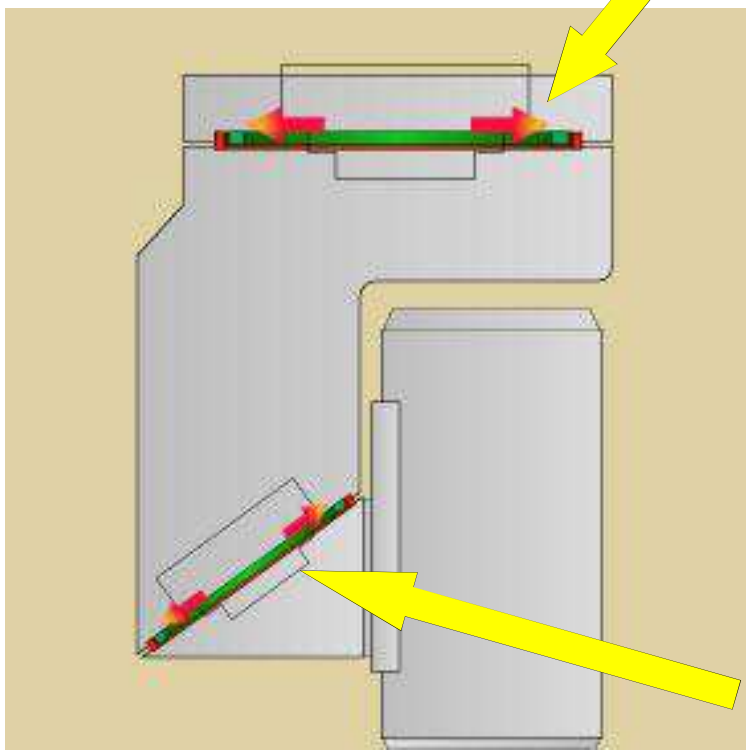
Axis C
F2CF-C45-59

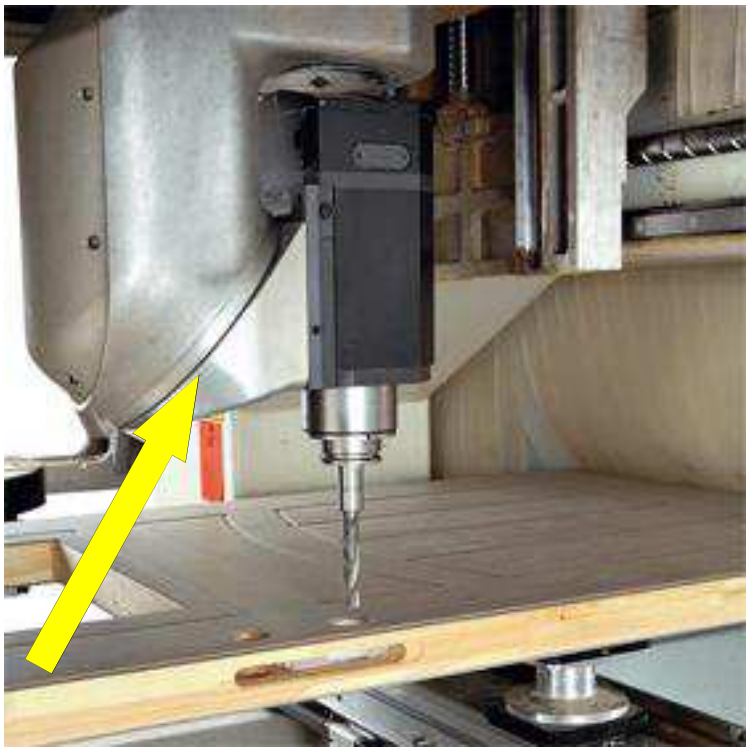
Torsional stiffness

- Reasonable price level

gearbox models	applications
F2CFS-C45-59	Axis C

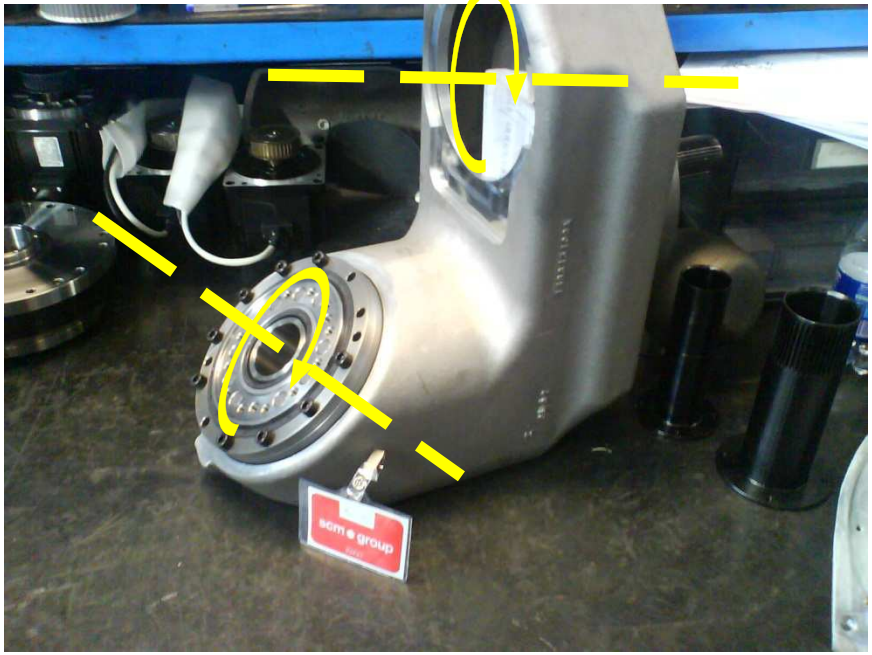
Axis C
F2CF–C35–89

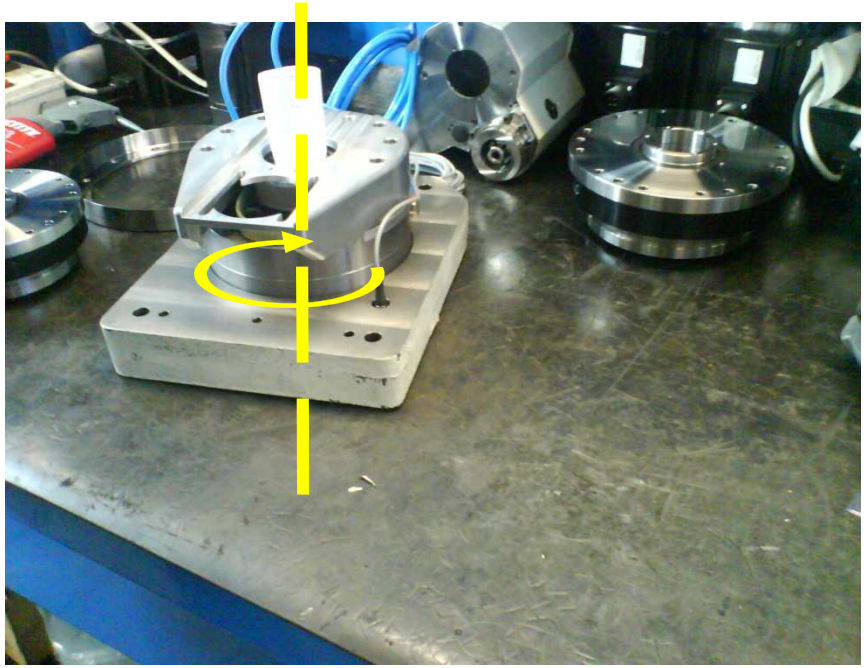




Axis A
F2C–C25–89

machine tool head for wood





Machine tool head for wood machining

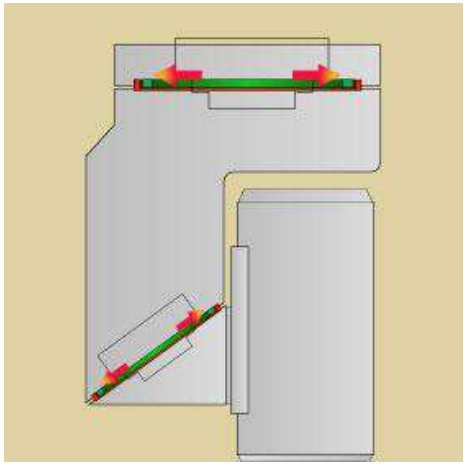
The application requires accurate positioning, torsional stiffness, tilt moment capacity and moment stiffness; hollow bore is essential

F2C-C is the available solution

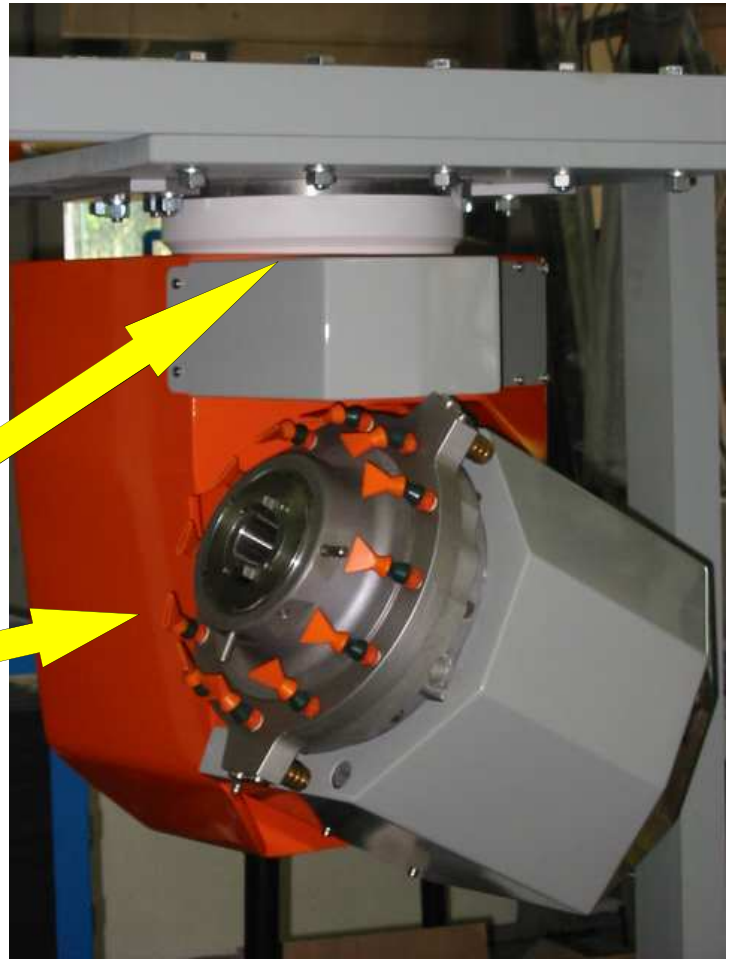
Units supplied:

F2C-C25-89 on both axis

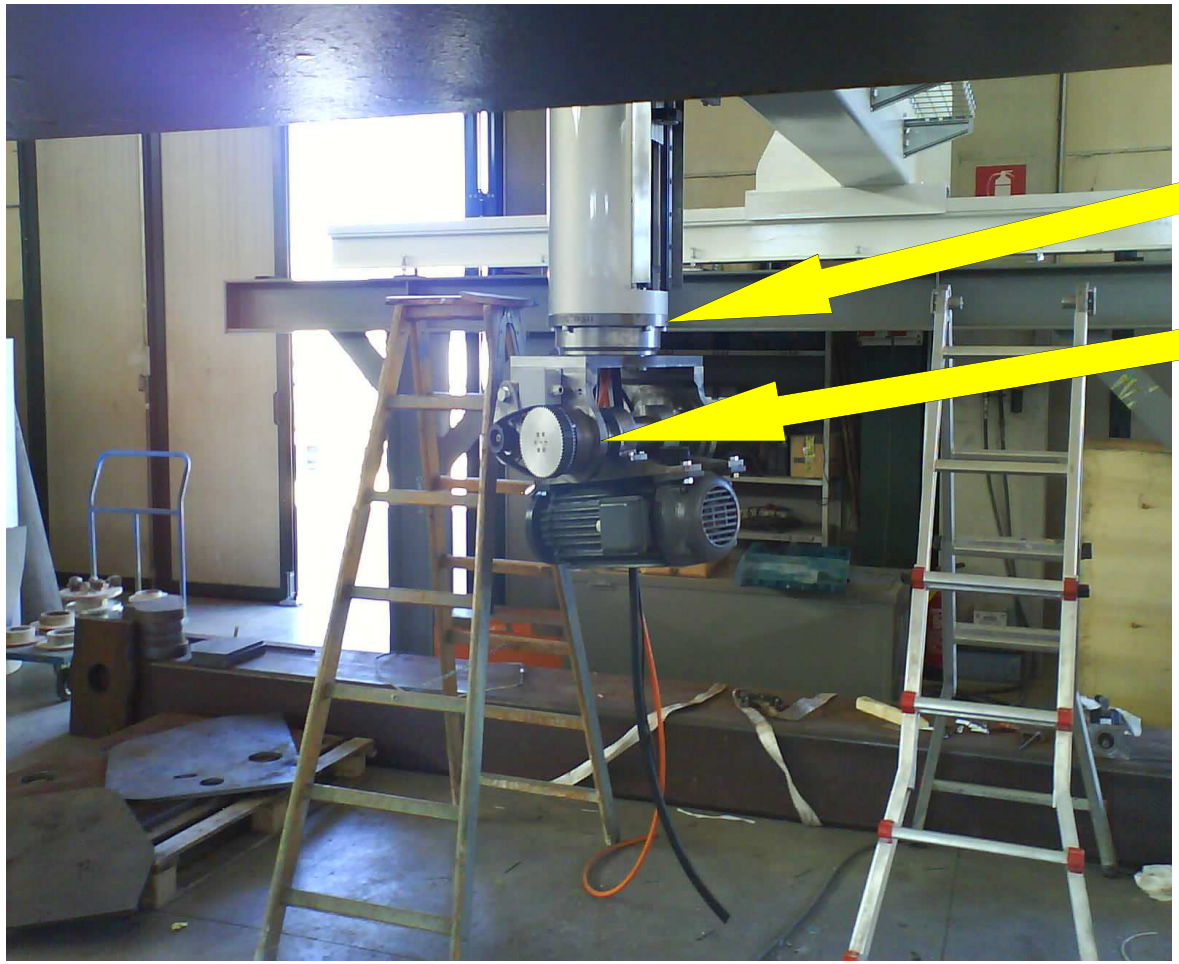
The prototype head will hopefully be tested soon



F2CF-C45-119



marble machining head



GMM

gearbox models	applications
F1C-A35-119	Axis C
F2CS-A25-119	Axis A
CNFXS-6100E-15/G80/C160	Axis X
Graessner Dynagear economy	Axis Y
Graessner Dynagear economy	Axis Z

Axis C

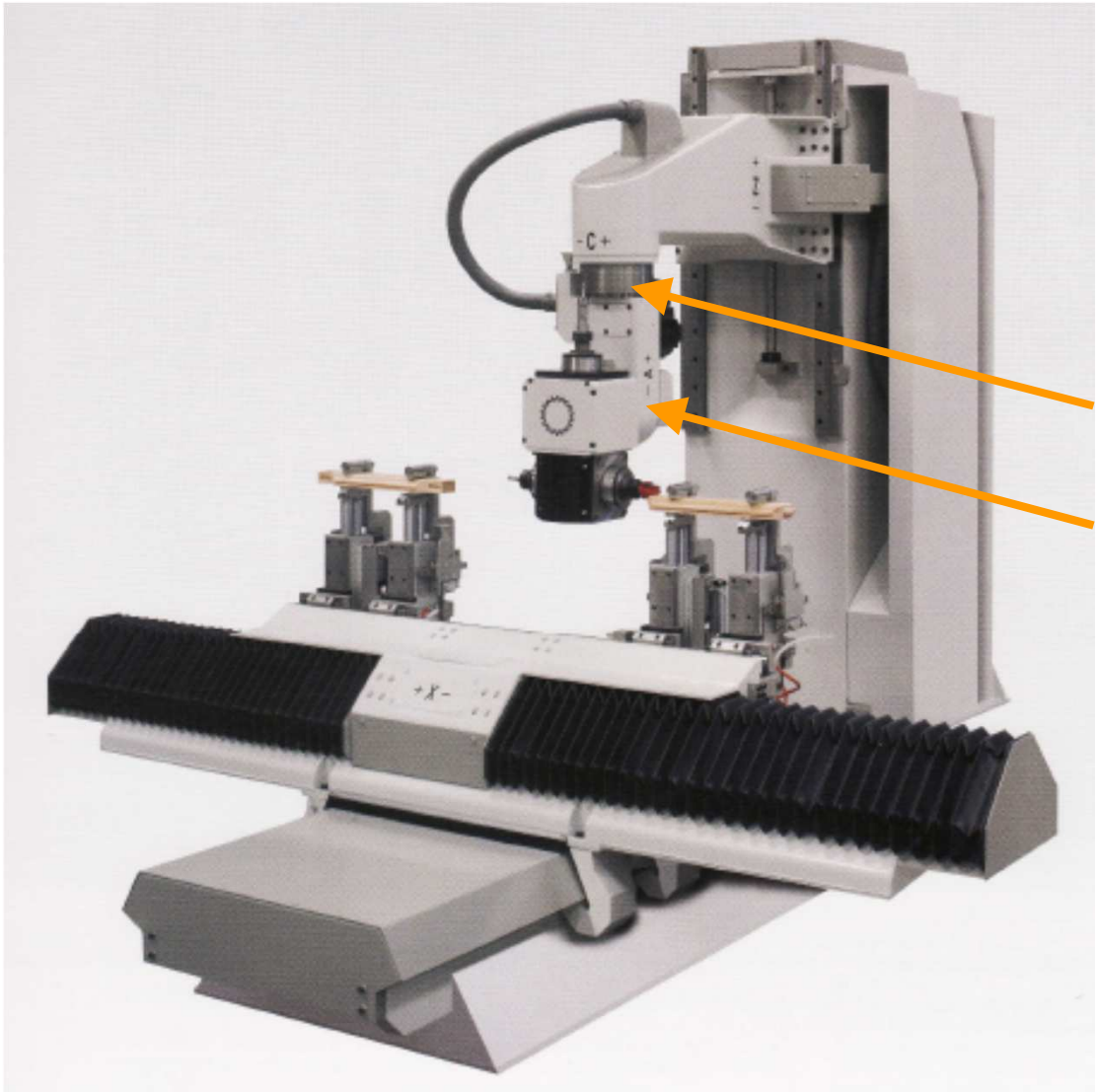
F2CFS-C35-59

gearbox models	applications
F2CFS-C35-59	Axis C
F2CS-A25-119	Axis A

gearbox models	applications
F2CF-C35-119	Axis C
F2C-C25-119	Axis A

gearbox models	applications
F2CF-C35-89	Axis C small machine
FCS-A25G-119	Axis A small machine
FCS-A65G-119	Axis C big machine
FC-A45G-119	Axis A big machine

BACCI – CNC wood machines – sales at oct/2007: 265.000Eur

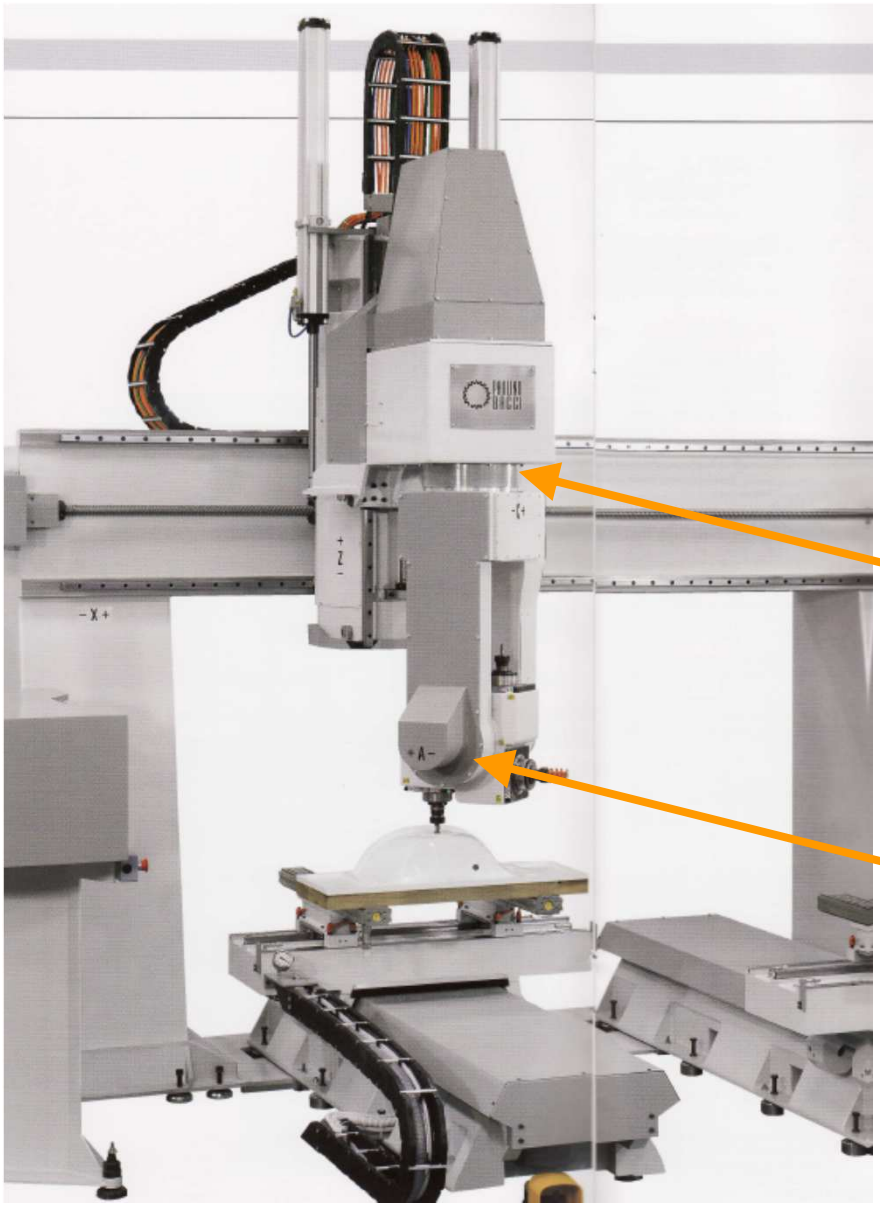


PAOLINO BACCI

INCOMPARABLE TECHNOLOGY *since* 1918

PB012018	F2CFS-C35-59	hollow bore 65mm
750295	F2CS-A45-59	hollow bore 38mm
PB017502	**F2C-C25-119**	**hollow bore 49mm**
PB012609	**F2CS-A25-59**	**hollow bore 22mm**
750365	**F2C-A45-59**	
199612	F2C-A35-59	
184742	F1C-A35-59	
180257	FC-A35G-89	
PB007110	F2CS-A25-119	19mm bore, 5mm key
751612	F2CS-A25-59	19mm bore, std key

CNC wood machines



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PB007110	F2CS-A25-119	19mm bore, 5mm key
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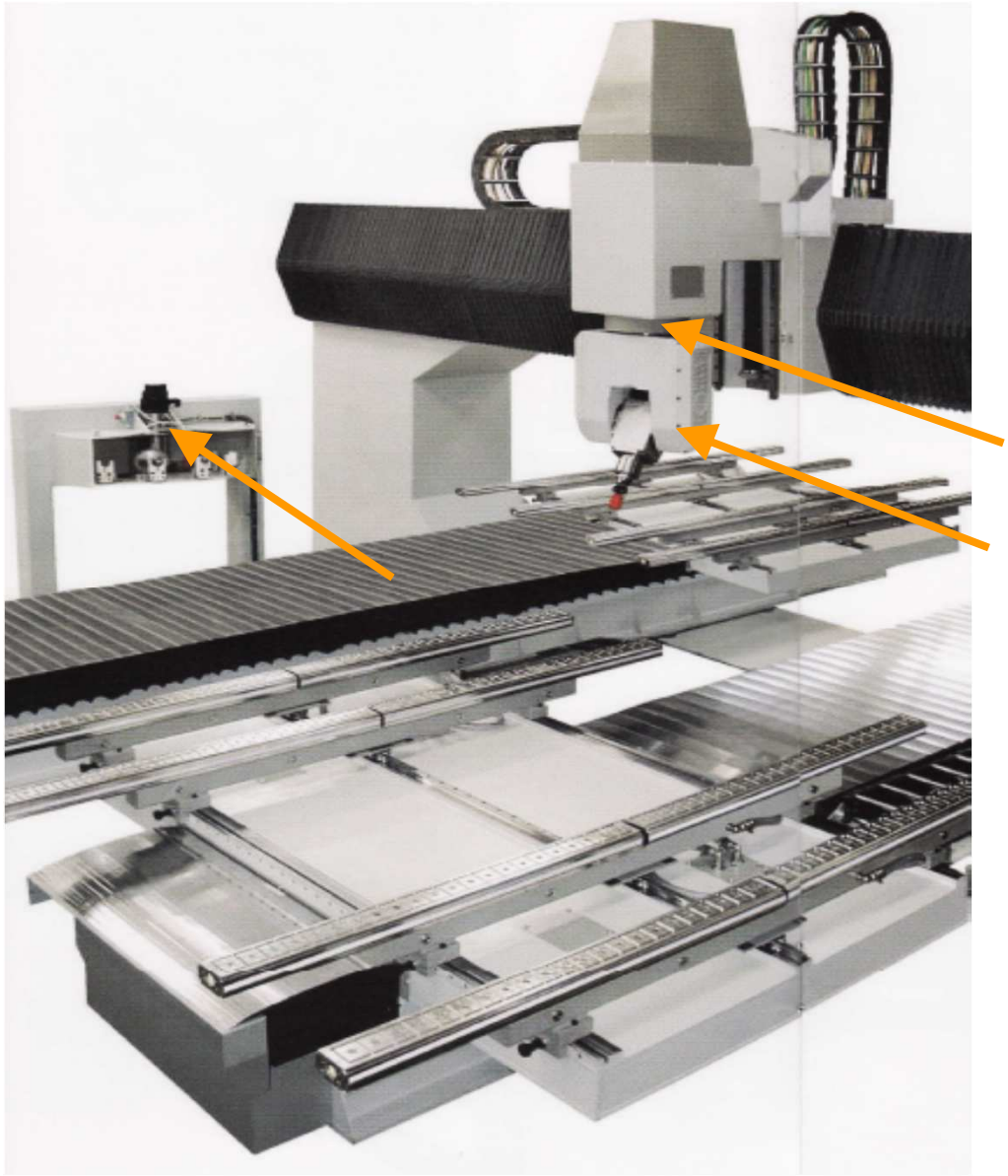
CNC wood machines



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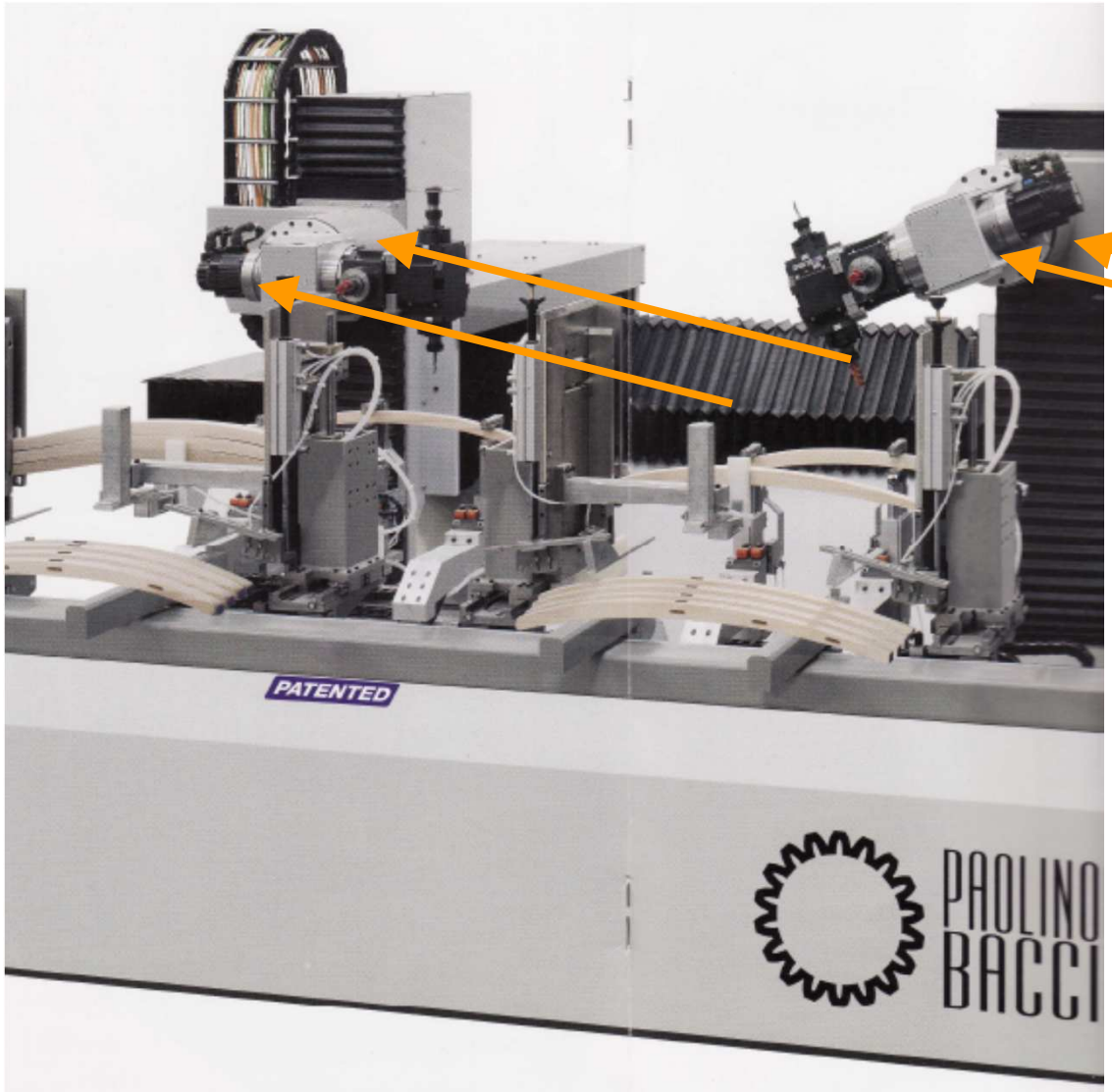

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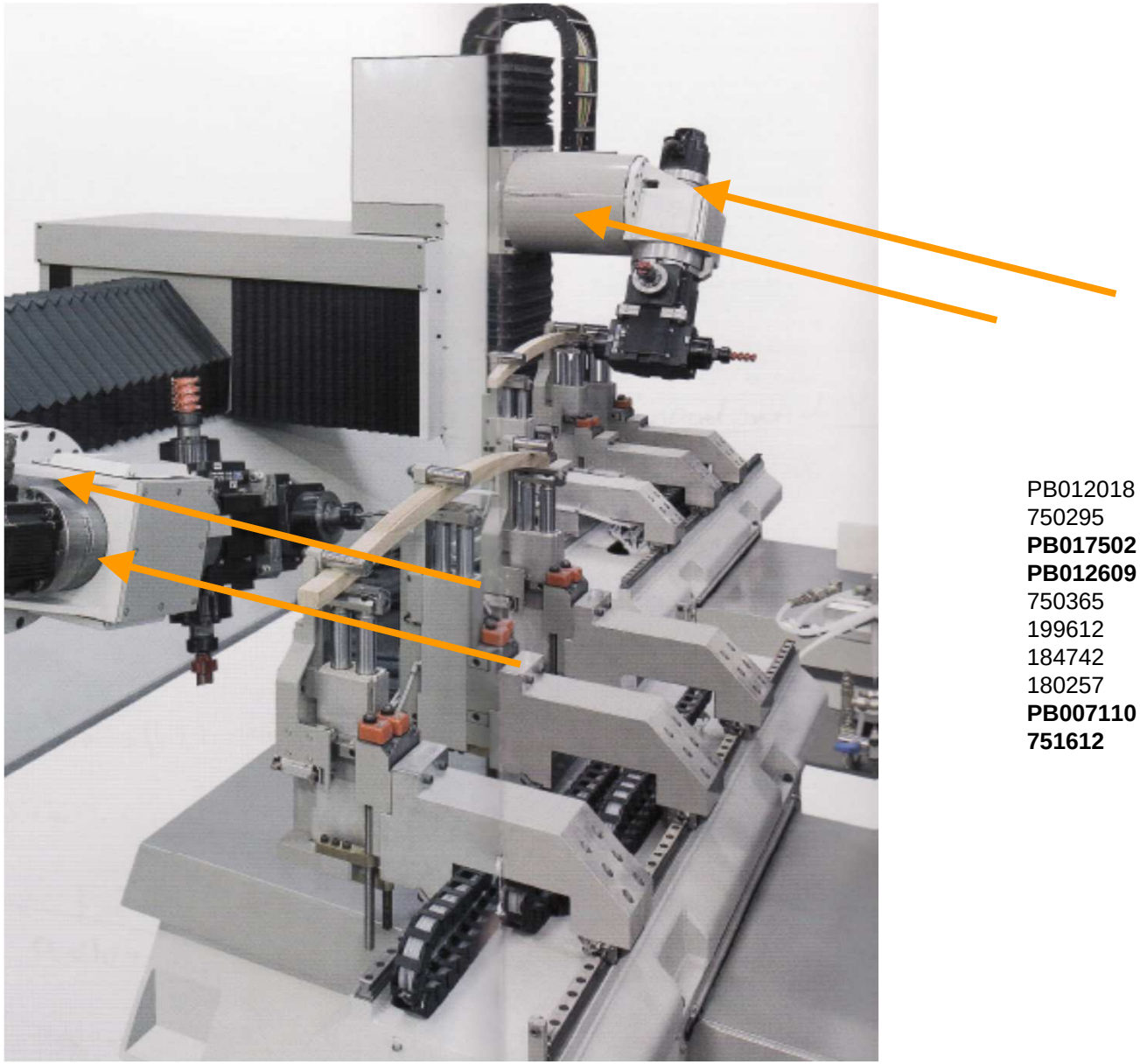

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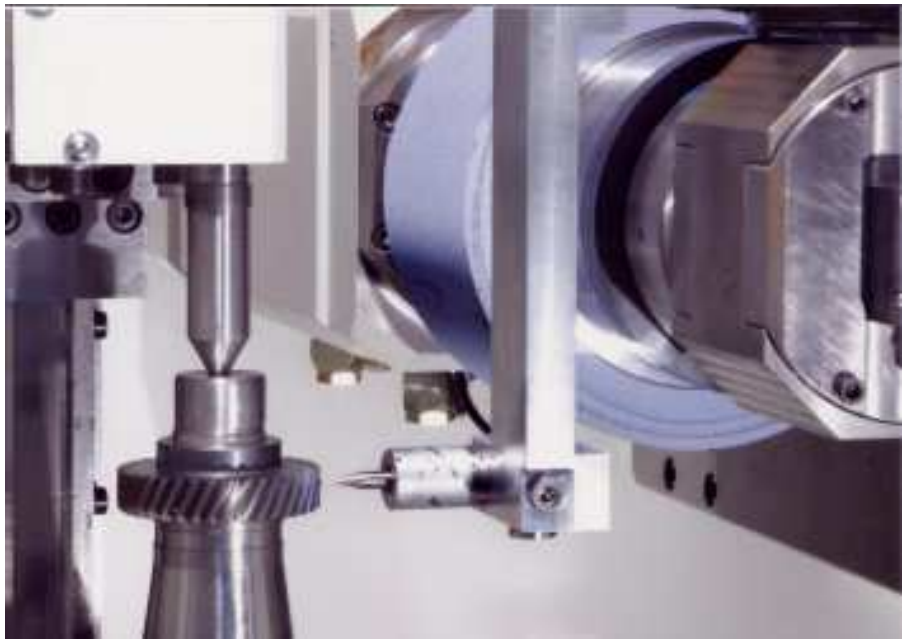
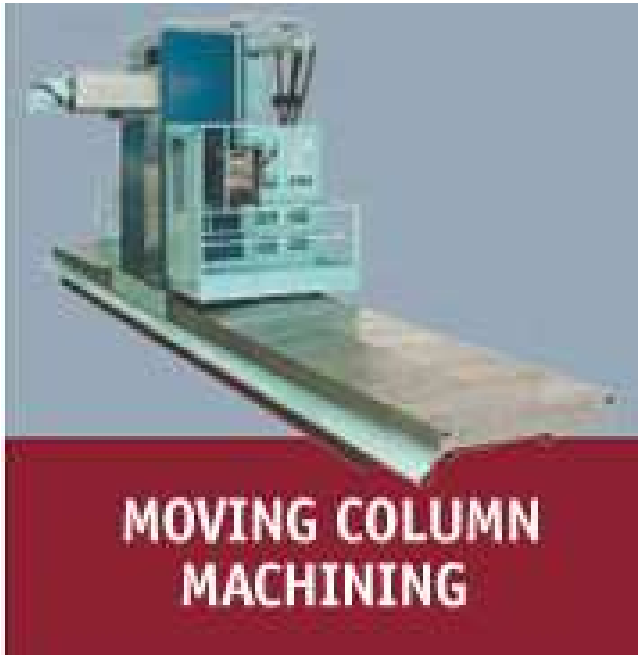


machine tools



gearbox models	applications		
FC-A65G-29	Translation Dual Drive		
FC-A65G-59			

FINE CYCLO in Machine Tool Applications

Turn- tilting table

Special requirements

- High torsional stiffness
- Low temperature rise
- Hollow bore (Turntable)

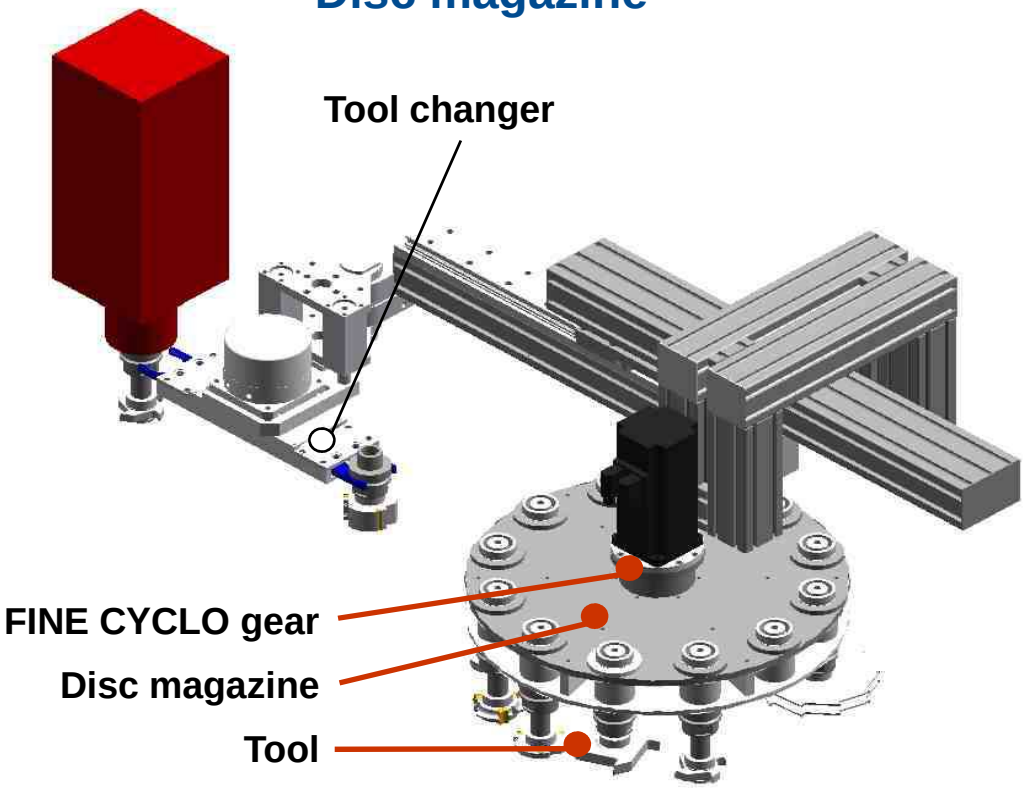
Solution

- Two electrical pre-loaded gears (Version F2C(F)-A, F4C-D, F2C(F)-C) to drive the tilting table on larger tables with high bending moments
- Safety pin of the tilting table via plan tooth pitch (Planverzahnung)
- Two units (version F3C-A) to drive the turntable via pre-loaded pinion/spurgear pairing

HR DIVITECH

FINE CYCLO in Machine Tool Applications

Disc magazine



Special requirements

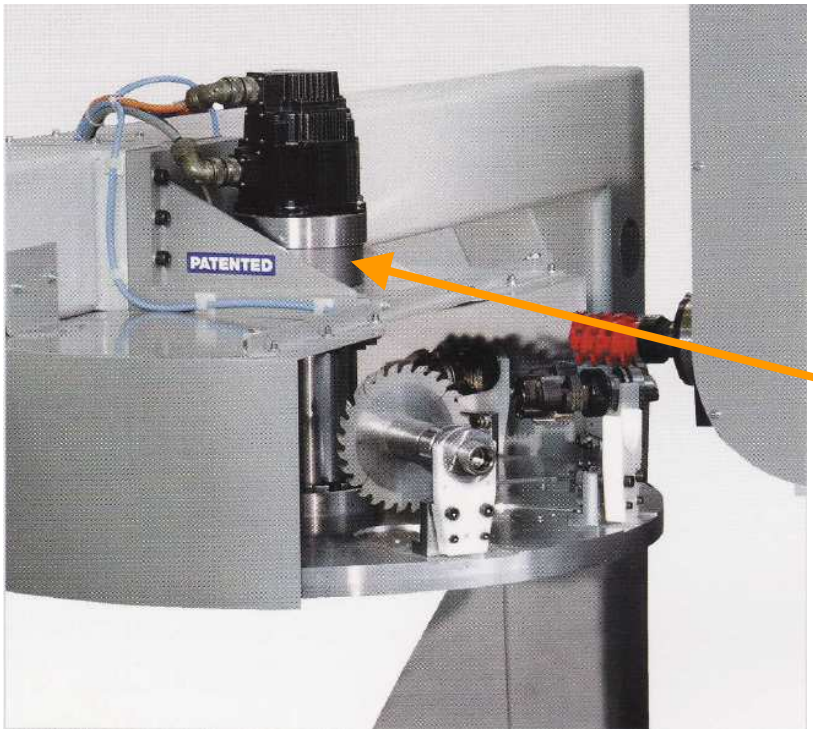
- High torsional stiffness
- High moment stiffness

Solution

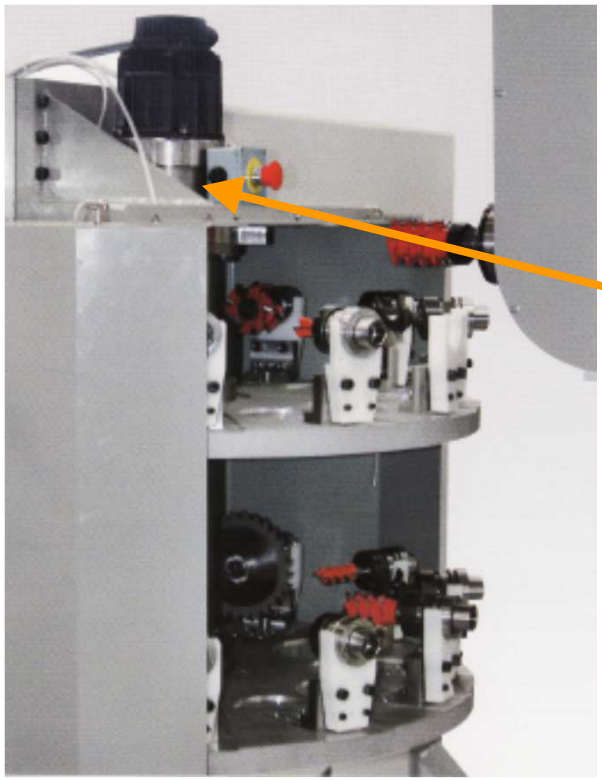
- Gear (Version F2C(F)-A, F4C-D) to drive the disc magazine. On small magazines the unit can carry over the complete bearing load
- Depending on technical design solution the output is via ring gear housing possible (i = z+1) (Casing is rotating)

RIELLO – machine tools

gearbox models	applications		
FC-A25, 35, 65, 75	Tool magazine Turntables		
F1C-A45G-89			
F2C-A15, 35			



PAOLINO BACCI
INCOMPARABLE TECHNOLOGY *since* 1918



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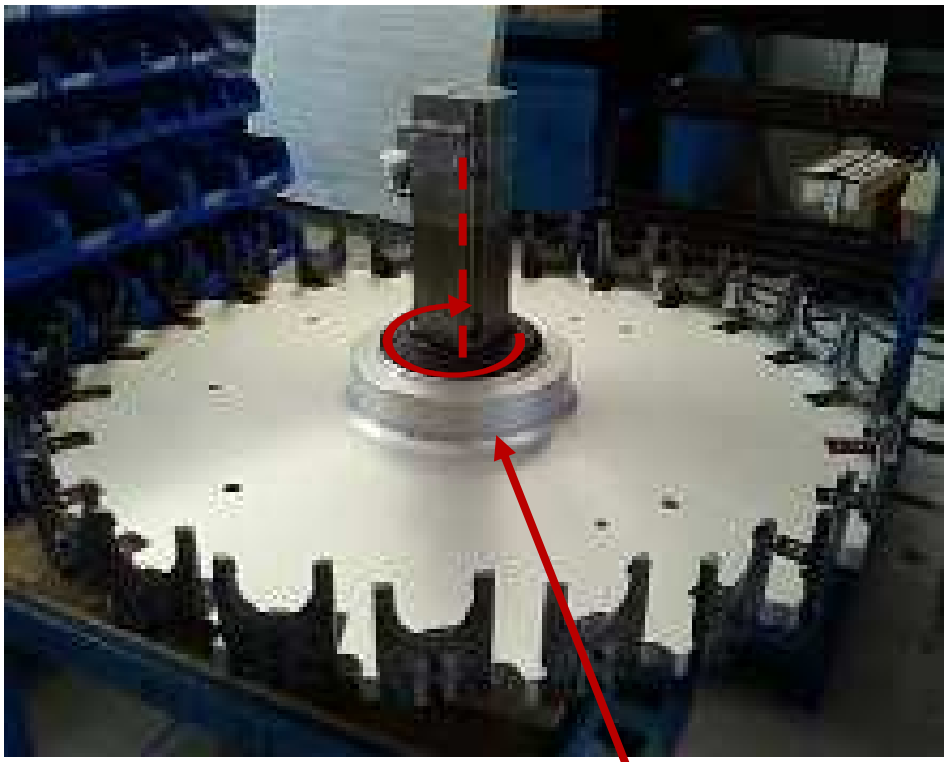
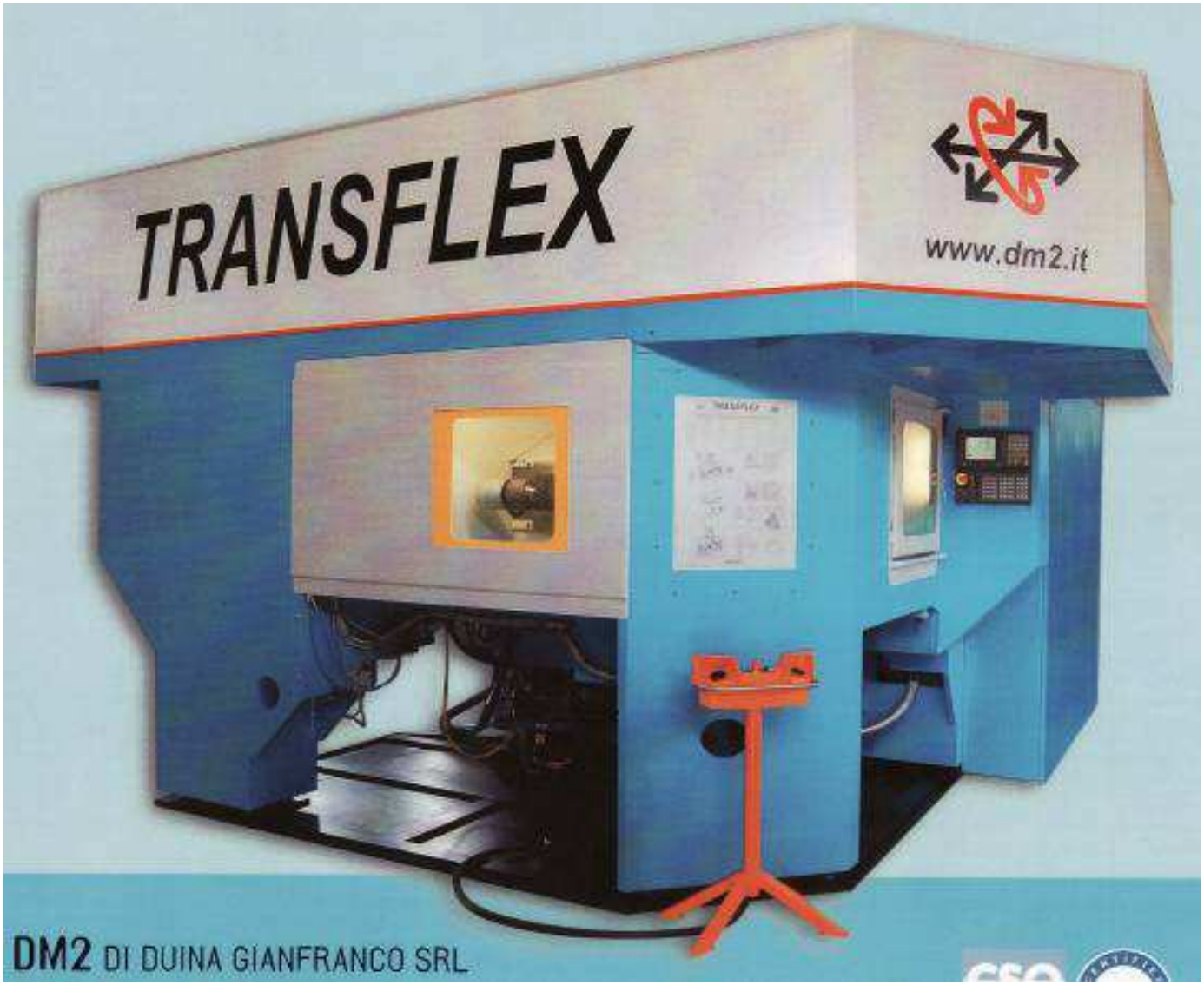


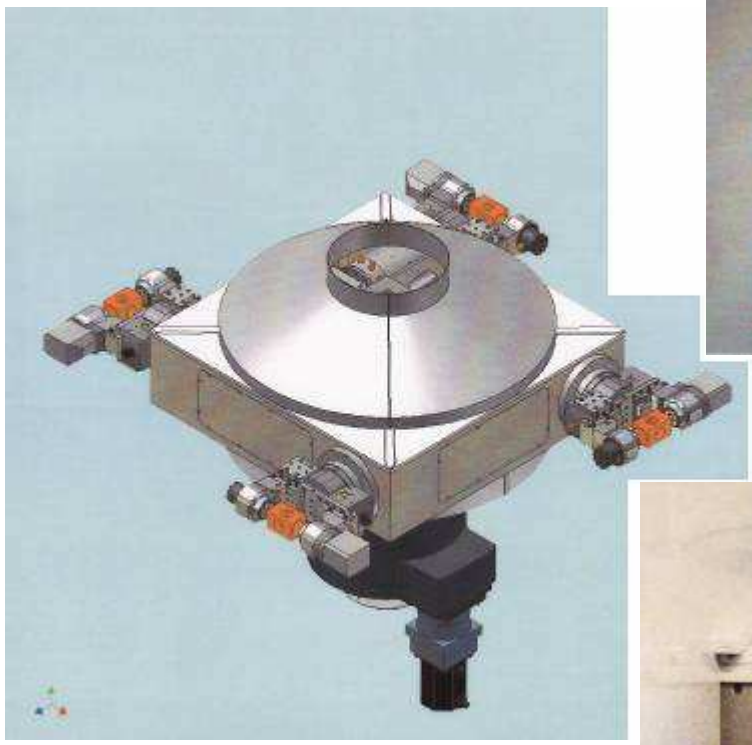
Gearbox: F2CS-A25-119

pipe bending machines

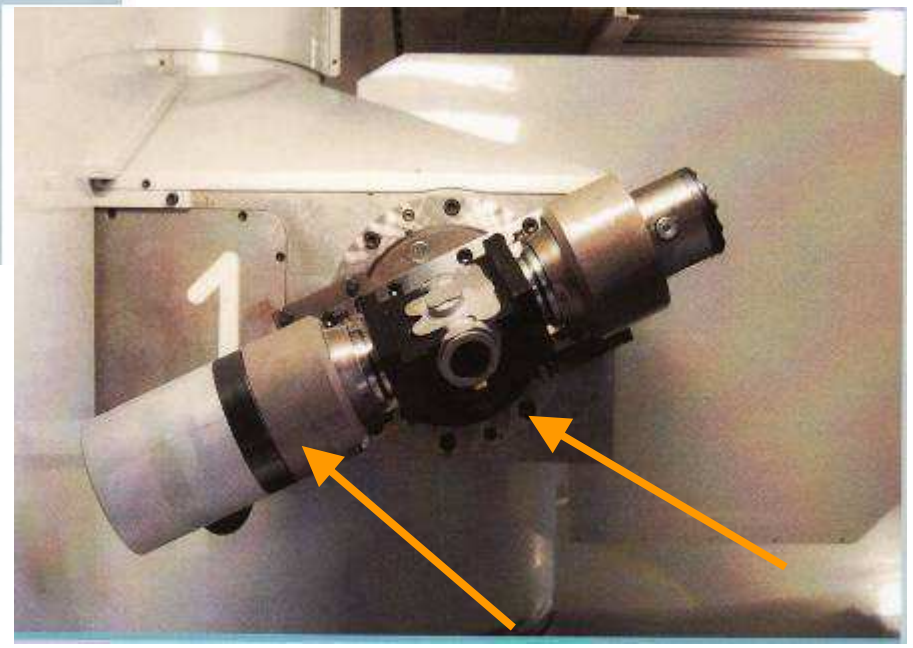
gearbox models	applications		
FCS-A65G-59	Pipe bending head		


TRANSFLEX
www.dm2.it
DM2 DI DUINA GIANFRANCO SRL

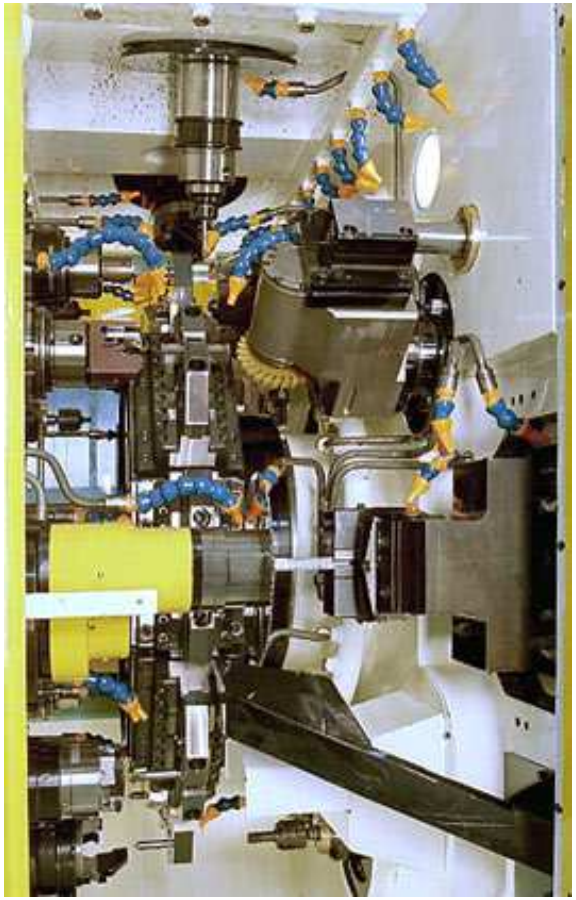
DM2 – transfer machines



180420	FCS-A25G-89	19mm bore, std keyway
184986	FCS-A15G-59	14mm bore, std keyway



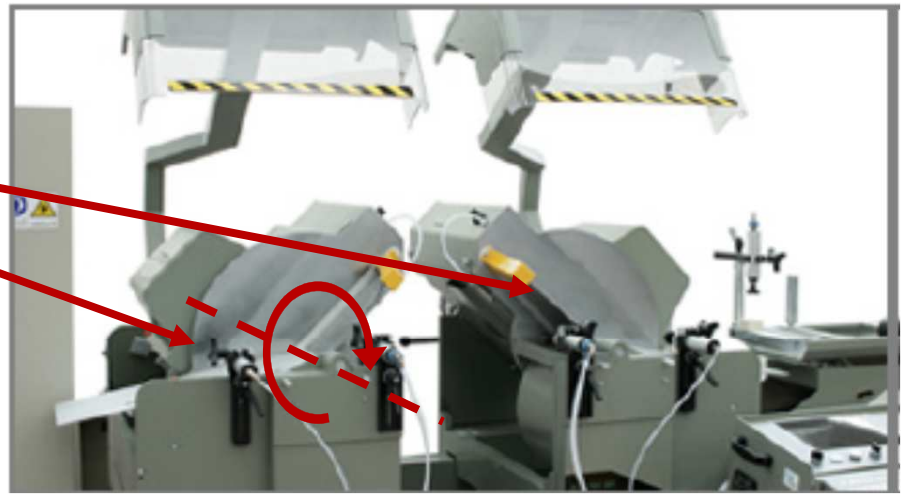
BUFFOLI – transfer machines

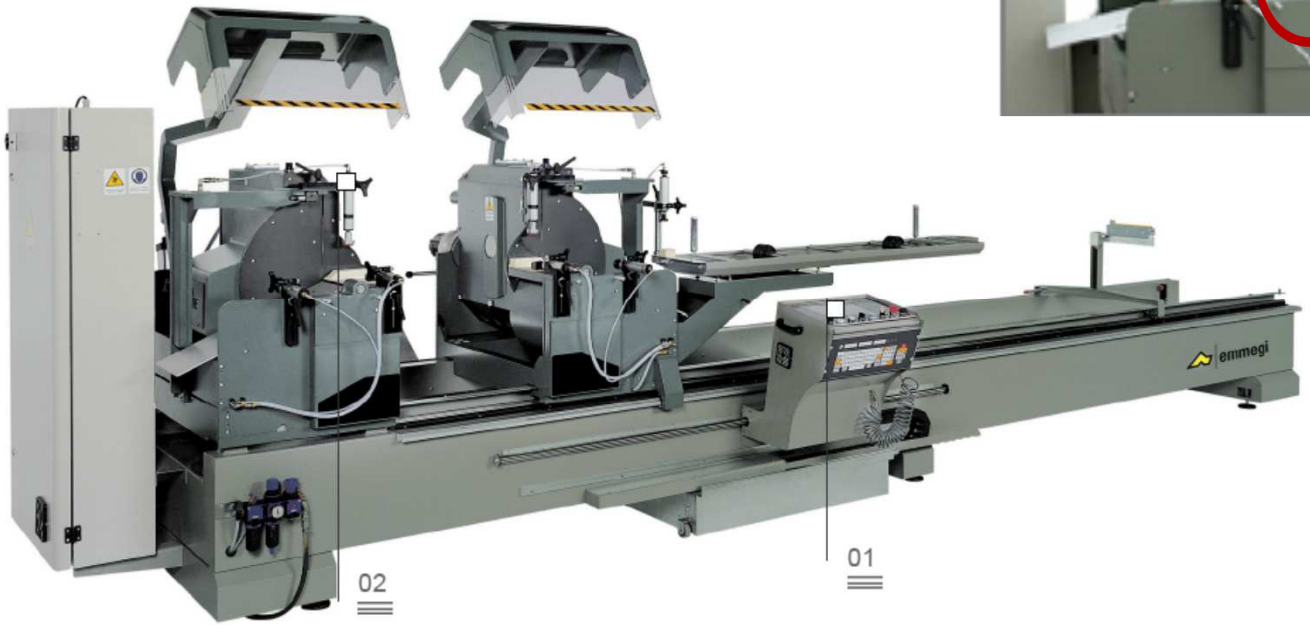


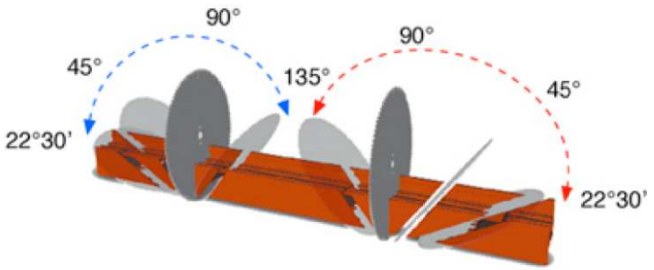
gearbox models	applications		
FC-A65G-59	Transfer table		

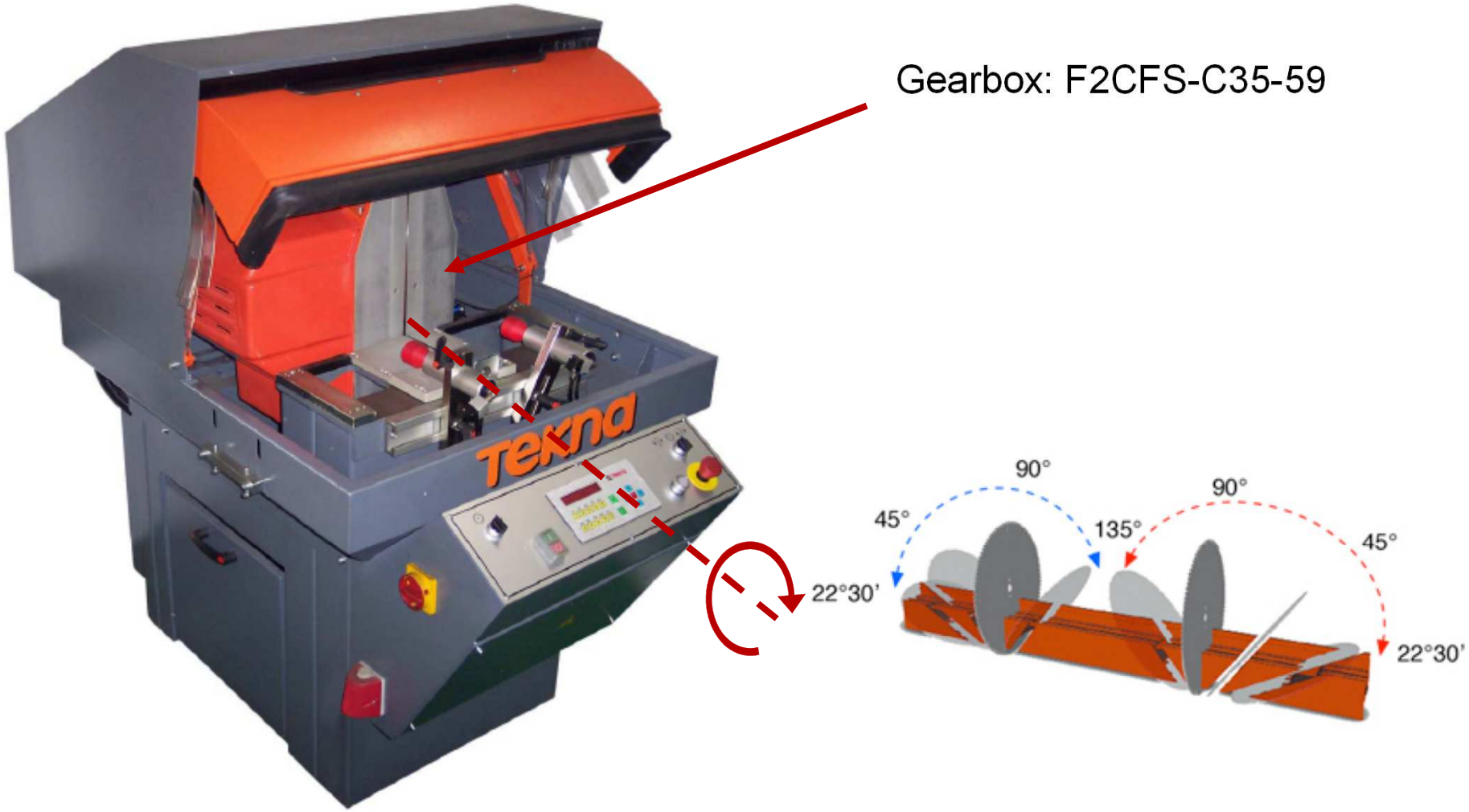
Twin Electra 550

Gearbox: F2CS-A25-119





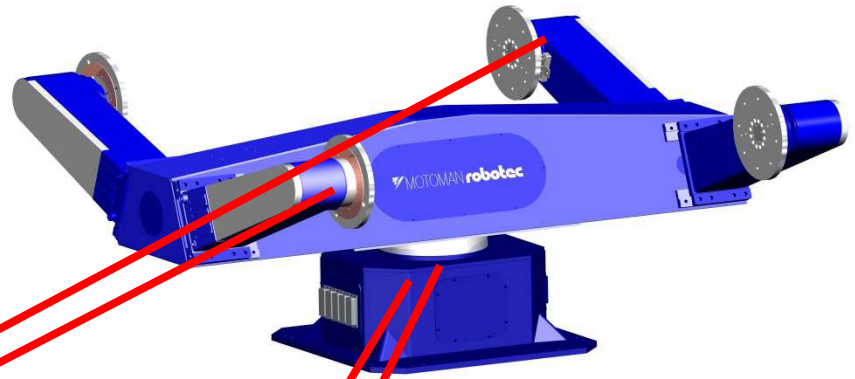



Gearbox: F2CFS-C35-59
tekna
90°
45°
135°
90°
45°
22°30'
22°30'

FINE CYCLO APPLICATIONS

POSITIONERS

Fine Cyclo in Automotive Anwendungen



Horizontal- /Vertikal-Drehachsen

Fine Cyclo-Getriebe

Besondere Anforderungen

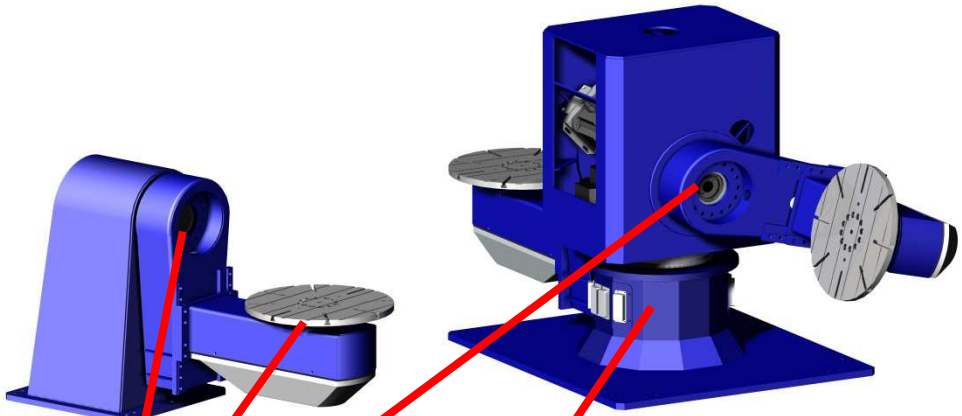
- **Hohe Genauigkeit**
- **Steifigkeit**
- **Kompakter Aufbau**

Lösung

- **Drehbewegung bei kleinen Drehzahlen als F2C(F)-T mit integrierter Kegelrollenlagerung**
- **Drehbewegung bei Low-Cost-Versionen als F2C-A Ausführung**
- **Bei größeren Axialkräften/ Kippmomenten als F1C-A Ausführung mit Kreuzrollenlagerung**

Fine Cyclo in Automotive Anwendungen

L - Positionierer



Fine Cyclo-Getriebe

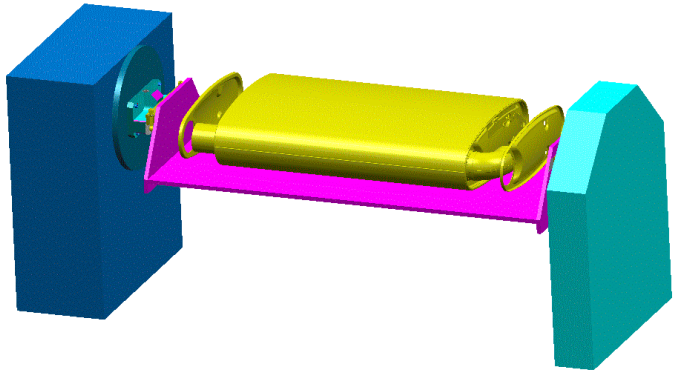
Besondere Anforderungen

- Hohlwelle
- Steifigkeit
- Kompakter Aufbau

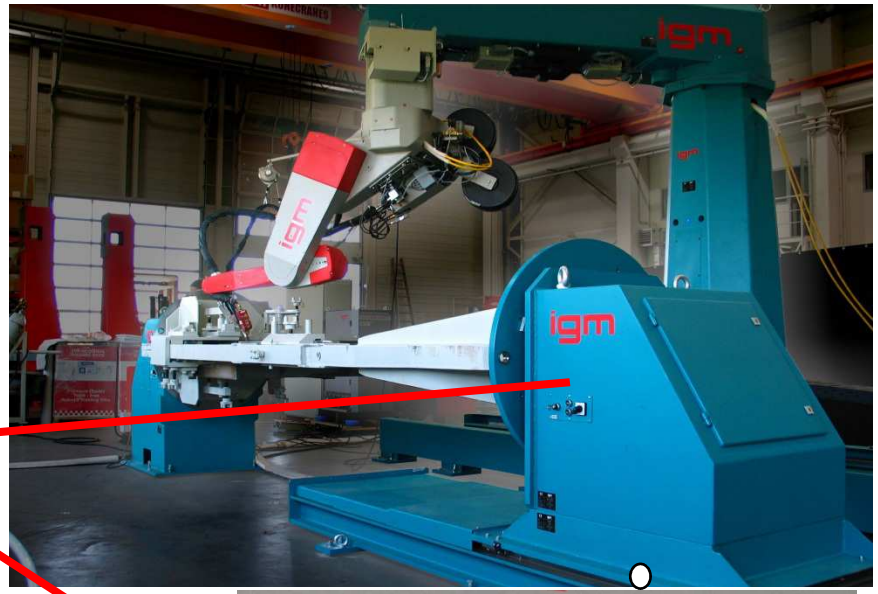
Lösung

- Drehbewegung bei größeren Hohlwellen über F2C(F)-C mit integrierter Kegelrollenlagerung
- Drehbewegung bei kleineren Hohlwellendurchmessern als F1C-A Ausführung
- Bei größeren Kippmomenten/Axialkräften und kleinen Drehzahlen mit separatem Kreuzrollenlager als F1C-C Ausführung

Fine Cyclo in Automotive Anwendungen



Horizontal - Drehtisch



Fine Cyclo-Getriebe

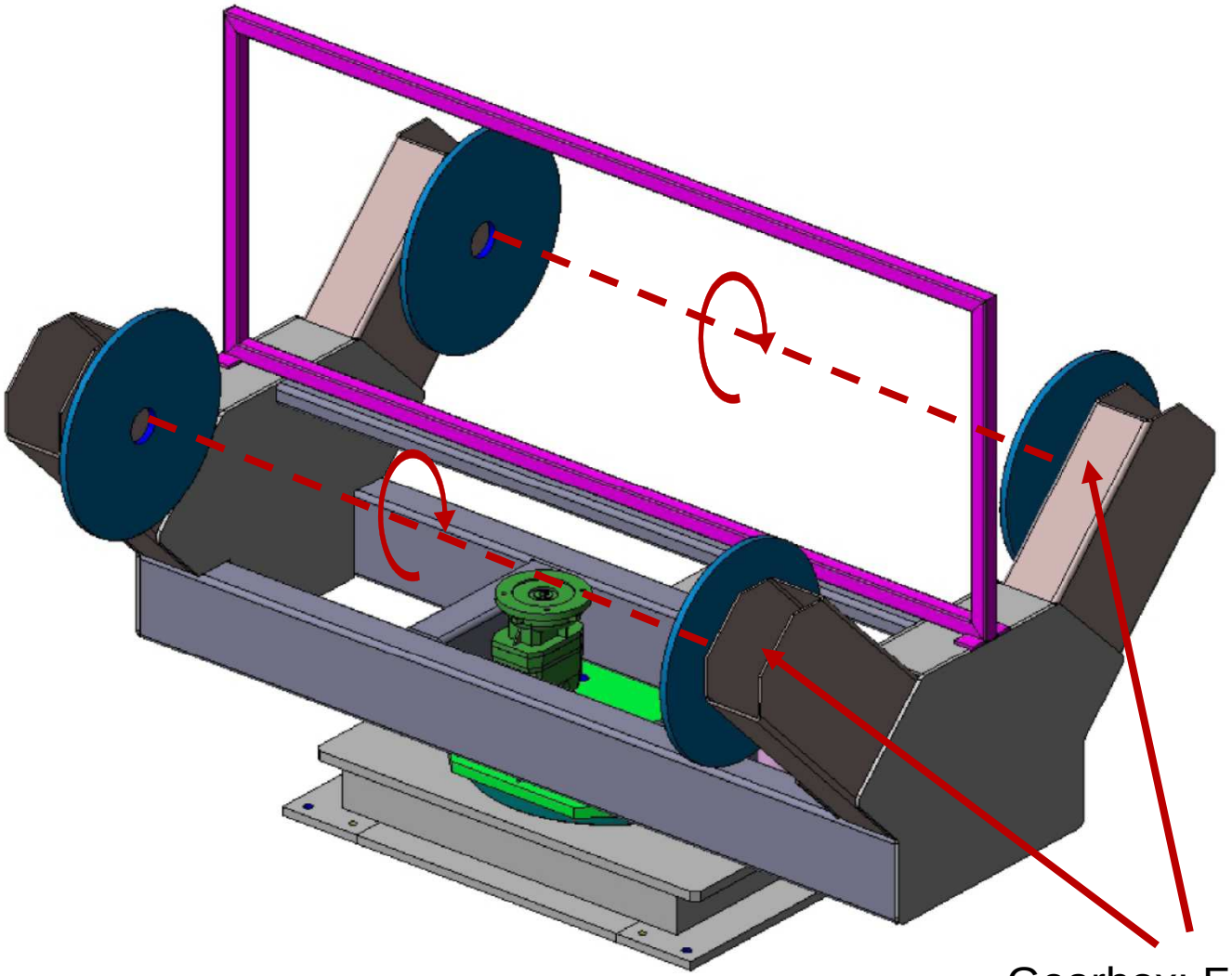
F2CF-C

Besondere Anforderungen

- **Hohlwelle**
- **Steifigkeit**
- **Kompakter Aufbau**

Lösung

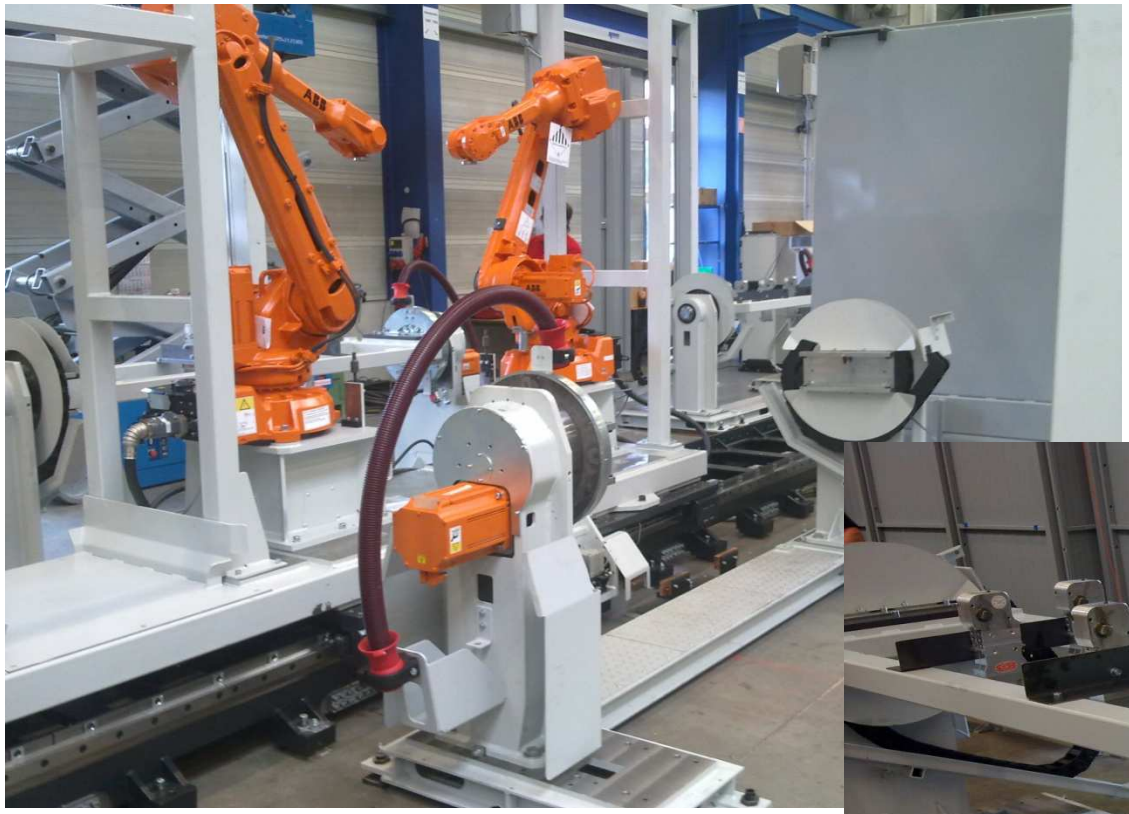
- **Drehbewegung bei größeren Hohlwellen über F2C(F)-C mit integrierter Kegelrollenlagerung**
- **Drehbewegung bei kleineren Hohlwellendurchmessern als F1C-A Ausführung**
- **Bei größeren Kippmomenten und kleinen Drehzahlen mit separatem Kreuzrollenlager als F1C-C Ausführung**

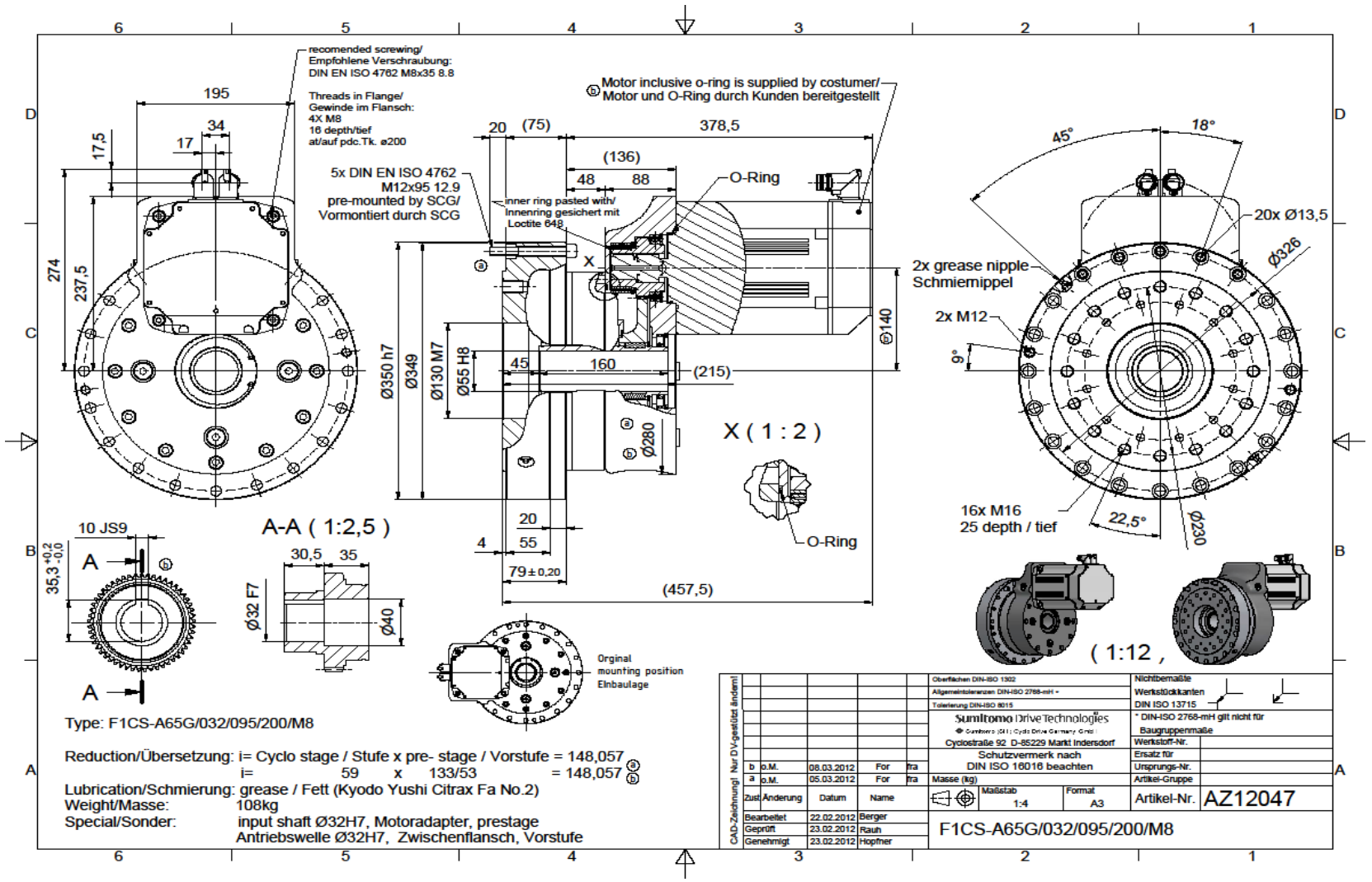


Gearbox: F2C-A45-119

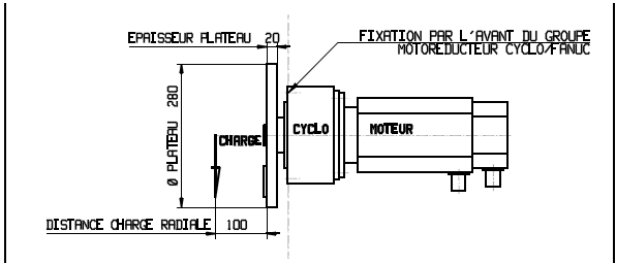
ACG Automatismes Welding Machines

Axis 1 : F2CFS-C 55-59 with integrated involute prestage gear
(ratio 3:1) and bevel unit (ratio 1:1))
Axis 2, 3 & 4 : F4CFS-UA 35 – 166 (or 181)




recomended screwing/
Empfohlene Verschraubung:
DIN EN ISO 4762 M8x35 8.8
Threads in Flange/
Gewinde im Flansch:
4X M8
16 depth/tief
at/auf pdc.Tk. ø200
Motor inclusive o-ring is supplied by costumer/
Motor und O-Ring durch Kunden bereitgestellt
5x DIN EN ISO 4762
M12x95 12.9
pre-mounted by SCG/
Vormontiert durch SCG
inner ring pasted with/
Innenring gesichert mit
Loctite 648
O-Ring
2x grease nipple
Schmiernippel
2x M12
20x Ø13,5
16x M16
25 depth / tief
10 JS9
A-A (1:2,5)
X (1 : 2)
O-Ring
Orginal
mounting position
Einbaulage
(1:12 ,
Type: F1CS-A65G/032/095/200/M8
Reduction/Übersetzung: i= Cyclo stage / Stufe x pre- stage / Vorstufe = 148,057
i= 59 x 133/53 = 148,057
Lubrication/Schmierung: grease / Fett (Kyodo Yushi Citrax Fa No.2)
Weight/Masse: 108kg
Special/Sonder: input shaft Ø32H7, Motoradapter, prestage
Antriebswelle Ø32H7, Zwischenflansch, Vorstufe
Sumitomo Drive Technologies
Cyclostraße 92 D-85229 Markt Indersdorf
Schutzvermerk nach
DIN ISO 16016 beachten
Maßstab 1:4
Format A3
Artikel-Nr. AZ12047
F1CS-A65G/032/095/200/M8

F2C A45-89
F1C A45 – 89
F1C A75 - 119



CARACTERISTIQUES à obtenir

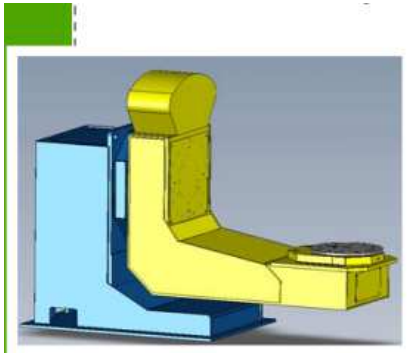
VITESSE DE SORTIE NOMINALE	22 Tr/mn
DEBATTEMENT ANGULAIRE	± 10 Tr
COUPLE DE SORTIE NOMINAL	40 m.daN
CHARGE RADIALE MAXI	500kg à 100mm du plateau
CHARGE AXIALE 0.1 X CHARGE RADIALE	
INERTIE DE LA CHARGE	40 kg.m2

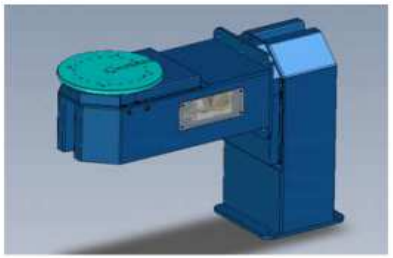
DONNEES DE L'APPLICATION

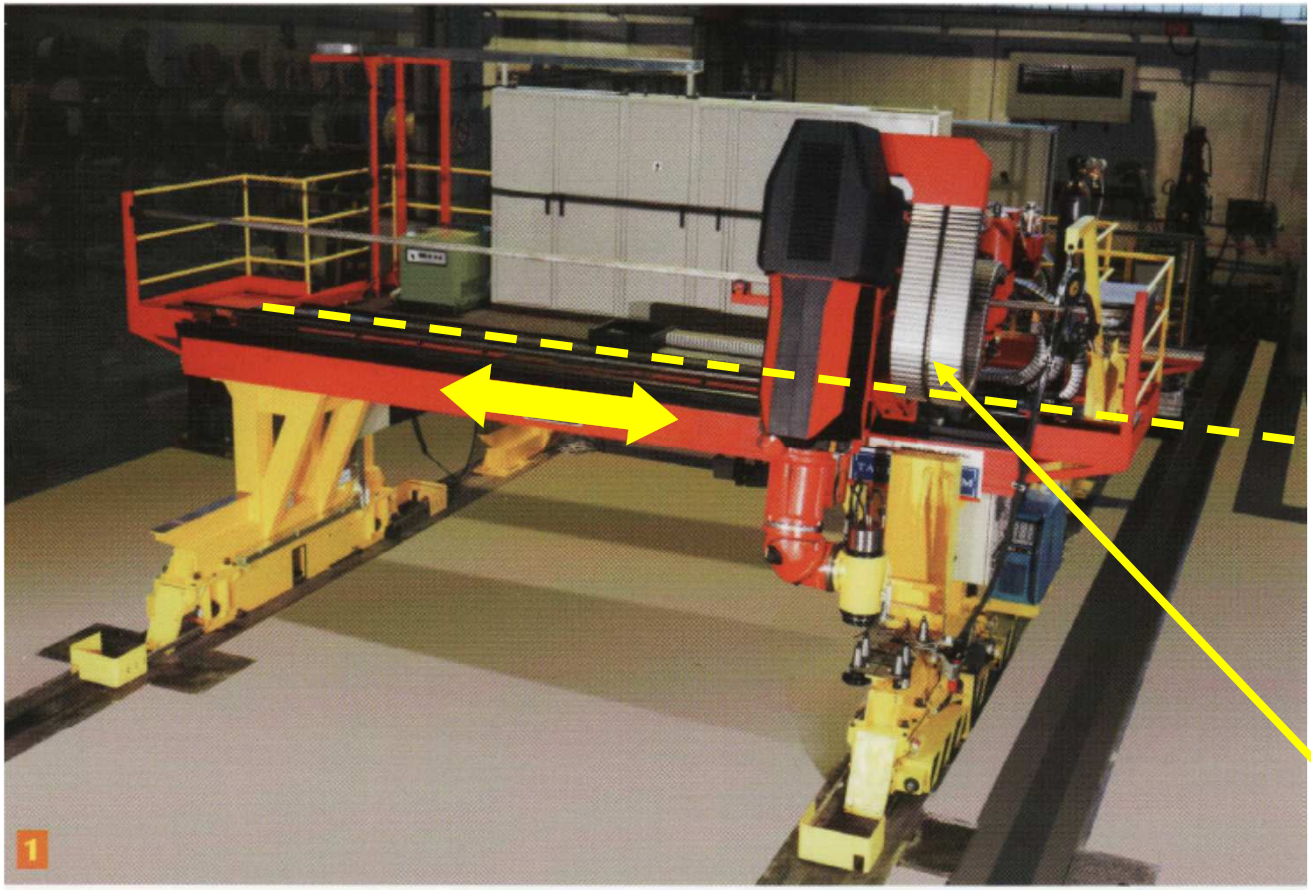
TEMPS D'ACCELERATION	0.1sec
DUREE DU MOUVEMENT	0.5sec à 3sec
TEMPS DE DECELERATION	0.1sec
DUREE DE LA PAUSE	1 à 5sec
JEU DEMANDE	1'
POSITION DE MONTAGE	AXE HORIZONTAL
FONCTIONNEMENT	2 * 8H par jour
FREINAGE D'URGENCE MOTEUR	1fois par jour

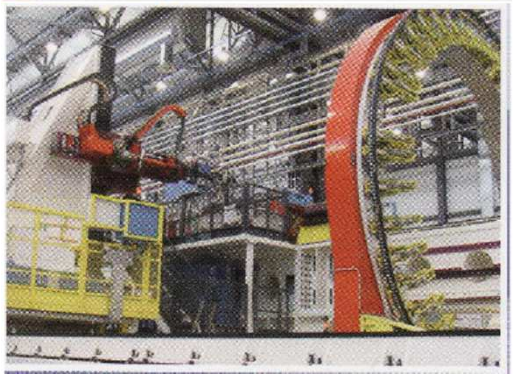
MOTEUR BRUSHLESS + RESOLVER + FREIN MARQUE FANUC
REFERENCE BETA 8-3000
VITESSE NOMINALE 3000tr/mn
COUPLE NOMINAL 8m.N

	Vérif.:	AIR LIQUIDE WELDING — AIR LIQUIDE WELDING FRANCE, Route de Boncourt-BP 70079, 55202 Commercy cedex, www.airliquidewelding.com
	Des.: RE	
STRICTEMENT CONFIDENTIEL PROPRIETE DE AIR LIQUIDE WELDING FRANCE NE PAS COMMUNIQUER A	Date.: 25/06/12	FICHE MO-40 POUR CYCLO POSITIONNEUR AXE HORIZONTAL
	Ech.:	









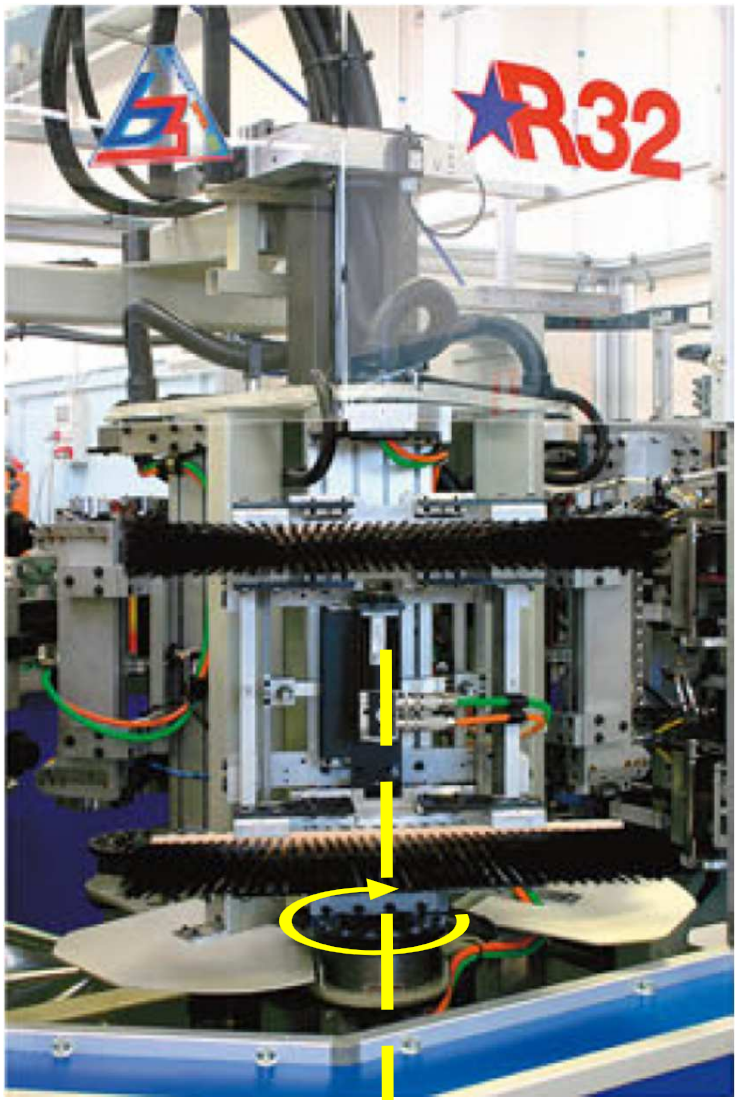
Gearbox: F2CS-A35-29

ROBOT-CONTROLLED AERONAUTIC ASSEMBLY AND WELDING SYSTEMS

FINE CYCLO APPLICATIONS

AUTOMATIC MACHINES

automatic machines for drilling and filling bristles in brushes



The wood/plastic support of the brush is quickly positioned and drilled by a drilling machine (fixed); then the bristles are put into the drilled bores by a filling machine (fixed)

Due to the high frequency of operations (up to 500bpm) high precision and stiffness is requested for exact positioning of the support

Fine Cyclo is very suitable for this application

Units sold:

F2C-A15-59

F2C-A25-59

F2C-A25-119

FC-A45-119

F2C-T555-171

polishing machines

The polishing disc is positioned like a machine tool spindle and the workpiece is fixed

Fine Cyclo offers precision of positioning, compact solution and can support the weight of the polishing head

Units sold:

F2C-A15-89

F2C-A25-119

F2C-A35-119

F2C-A45-119

Turnover in 2007:

132.000 Eur

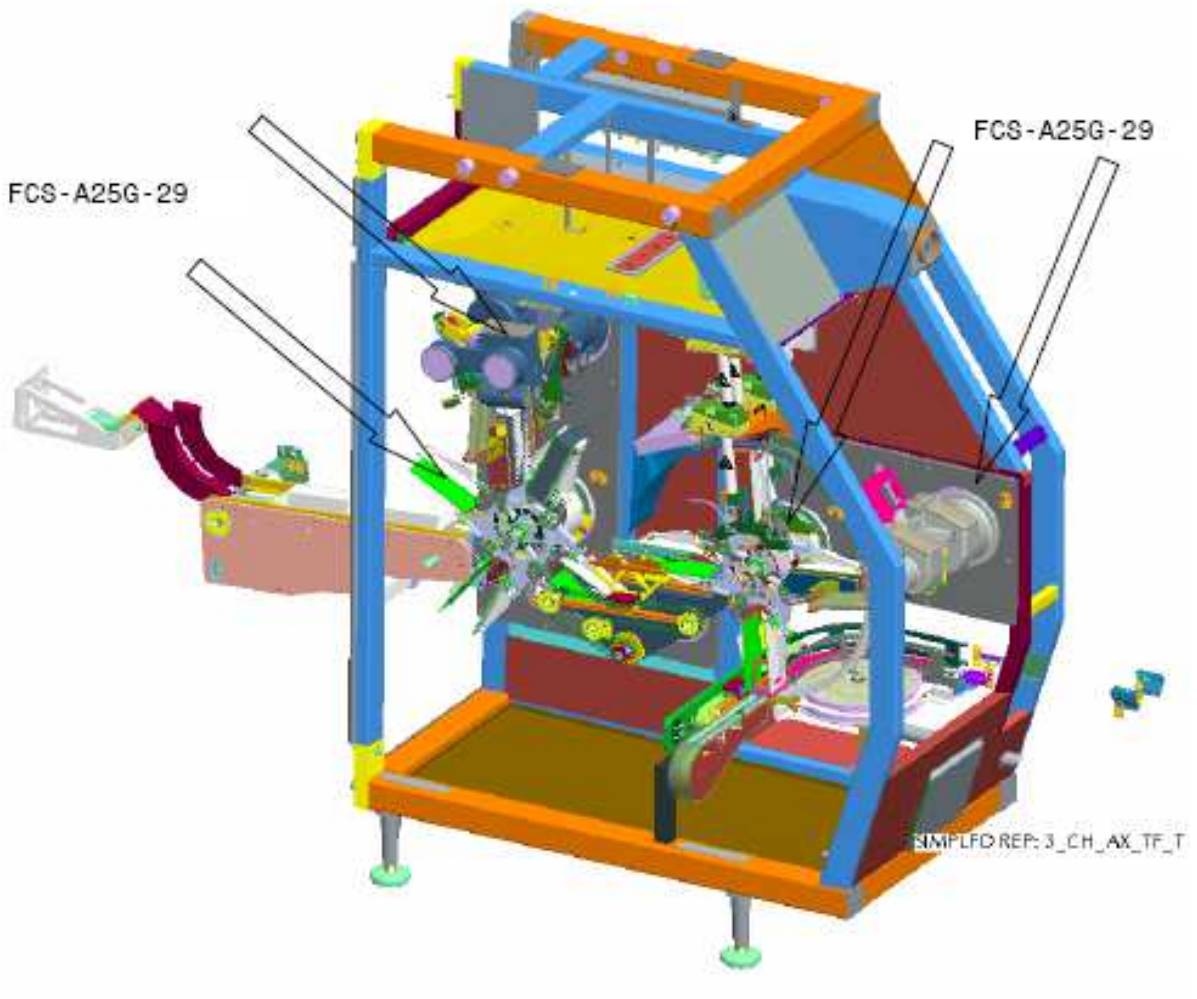
marking machines

gearbox models	applications		
FCS-A15G-89	Marking machine		

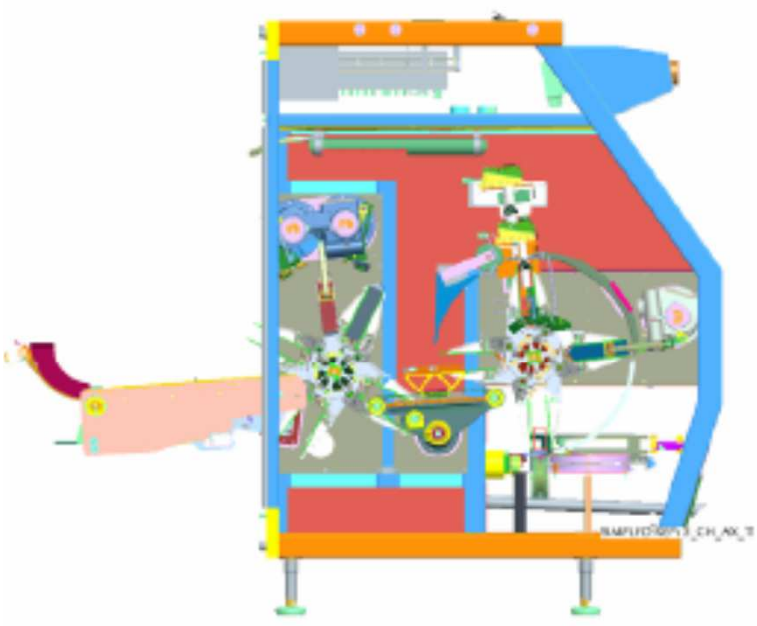
FINE CYCLO APPLICATIONS

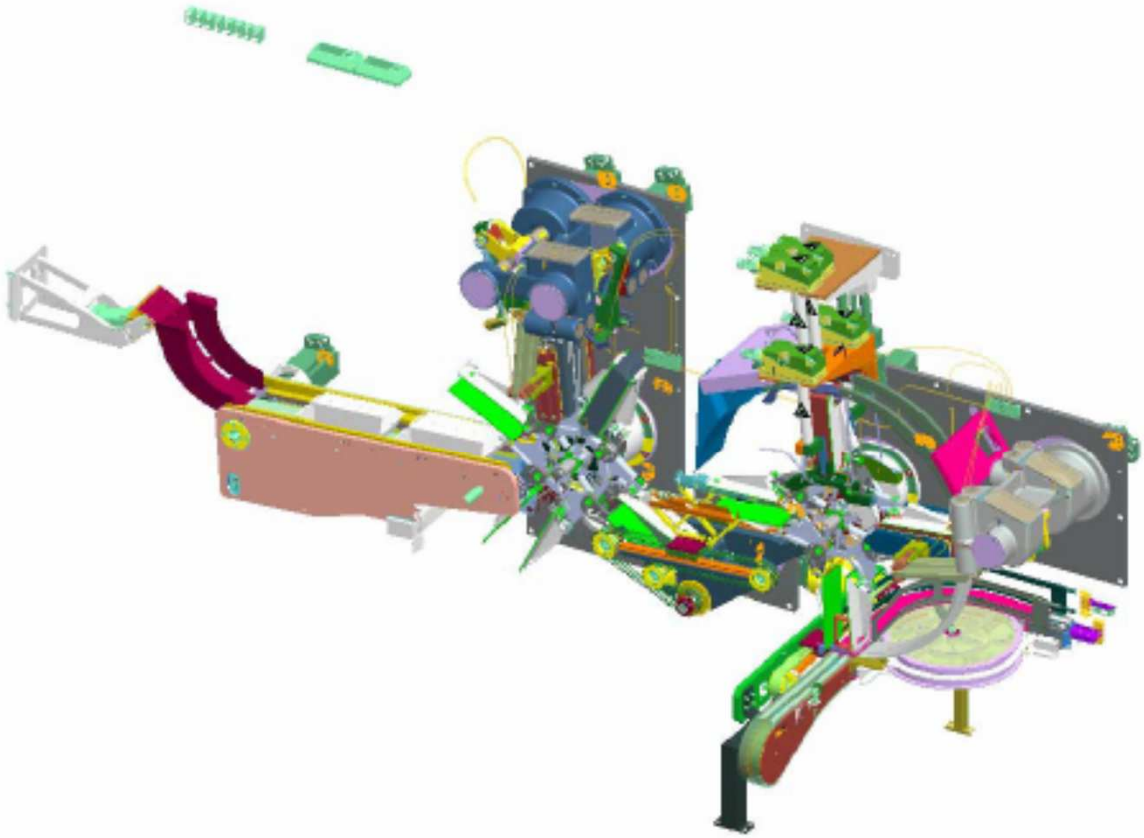
PACKAGING MACHINES

food industry (packaging) –

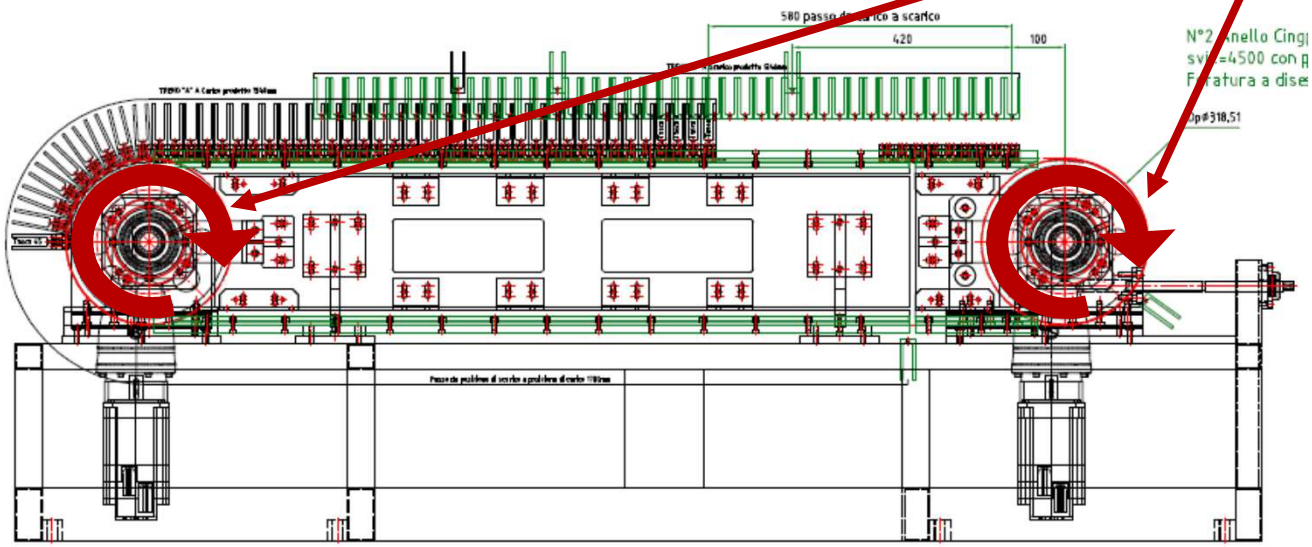


food industry (packaging)





Gearbox: F2CS-A35-29



FINE CYCLO APPLICATIONS

PRINTING MACHINES

printing machines for textile industry

The fabric to be printed passes below a printing head, like a common inkjet printer

The application requires an accurate positioning to avoid misalignments in the printout

Fine Cyclo offers zero backlash, high stiffness and a compact solution

Units sold:

F2C-A15-89

printing machines for textile industry

This machine has a very long rubber tape for supporting and feeding the fabric to be printed

The feeding is step by step, and the fabric progressively goes under several printing stations where it is printed with different colours

The application requires extremely high positioning accuracy to avoid colour misalignment in the printout

Fine Cyclo can satisfy the requirements

Unit sold:

F1C-A65G-29

The prototype machine will be tested in summer 2008

Gearbox: F2CS-T755-171