

FAGOR AUTOMATION

CNC 8070

Ordering Handbook

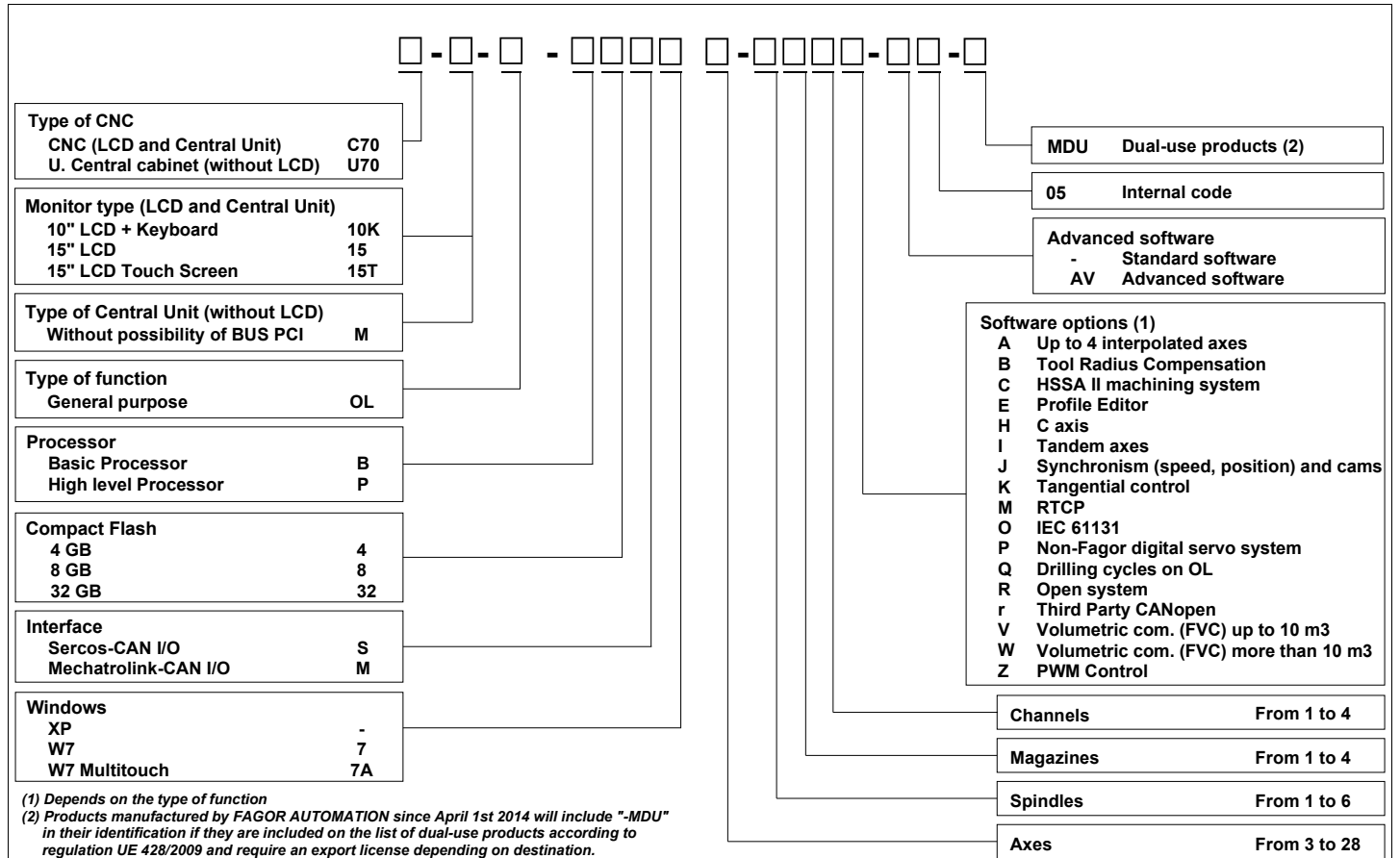
Ref. 1702

Original instructions



FAGOR AUTOMATION

DENOMINATIONS



CONFIGURATION

CENTRAL UNIT



(a)

Code	Model	Description	
83701024	8070-OL-ICU-RS	Integrate Central Unit for General Purpose machines	(a)
83701030	8070-OL-MCU-RS	Modular Central Unit for General Purpose machines	(b)



(b)

Central Unit components

Code	Model	Description	
83700065	SER-CAN-8I-8IO-A	Sercos-Can module	(1)
83700047	MCHTR-CAN-8I-8IO	Mechatrolink-Can module	
83700200	MP-BASIC-4	Basic Processor	(1)
83700201	MP-PLUS-4	High level Processor	
83701061	CF-DMA-4GB	4 GB Compact Flash for Basic Processor	(1)
83701059	CF-DMA-8GB	8 GB Compact Flash for Basic Processor	
83701062	CF-DMA-32GB	32 GB Compact Flash for Basic Processor	
83701090	CF-DMA-B7-4GB	4 GB Win7 Compact Flash for Basic Processor	
83701091	CF-DMA-B7-8GB	8 GB Win7 Compact Flash for Basic Processor	
83701092	CF-DMA-B7-32GB	32 GB Win7 Compact Flash for Basic Processor	
83701064	CF-DMA-P-4GB	4 GB Compact Flash for High level Processor	
83701066	CF-DMA-P-8GB	8 GB Compact Flash for High level Processor	
83701065	CF-DMA-P-32GB	32 GB Compact Flash for High level Processor	
83701081	CF-DMA-P7-8GB	8 GB Win 7 Compact Flash for High level Processor	
83701080	CF-DMA-P7-32GB	32 GB Win 7 Compact Flash for High level Processor	

(1) Choose one of them

MONITOR & OPERATOR PANEL

10.4" LCD and Operator Panel



Code	Model	Description
83600004	MONITOR-LCD-10K-001	10" LCD Monitor + Keyboard

15" LCD, Keyboard and Operator Panel

Monitor (choose one of them)

Code	Model	Description	
83700053	MONITOR-LCD-15	15" LCD monitor	(1)
83700054	MONITOR-LCD-15-TOUCH	15" LCD Touch Screen monitor	

Keyboard (choose one of them)

Code	Model	Description	
83760020	HORIZONTAL KEYB	Horizontal Qwerty keyboard	(2)
83760021	HORIZONTAL KEYB+MOUSE	Horizontal Qwerty keyboard with mouse	
83760022	VERTICAL KEYB	Vertical alphanumeric keyboard	(3)
83760023	VERTICAL KEYB+MOUSE	Vertical alphanumeric keyboard with mouse	

Operator Panel (choose one of them)

Code	Model	Description	
83760024	OP PANEL	JOG Panel	(4)
83760025	OP PANEL+SPDL RATE	JOG Panel with Spindle override	



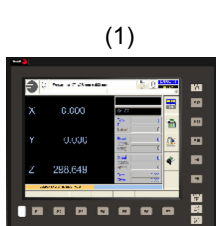
(1)



(2)



(3)



(1)

(3)



(4)

SOFTWARE OPTIONS

			8070 OL		
		AXES		3 to 28	
		INTERPOLATED AXES		3 to 28	
		SPINDLES		1 to 6	
		MAGAZINES		1 to 4	
		CHANNELS		1 to 4	
83740030		SOFT ADDIT AXES	()		Additional axes
83740031		SOFT ADDIT SPINDLES	()		Additional spindles
83740032		SOFT ADDIT TOOL MAGAZ	()		Additional magazines
83740033		SOFT ADDIT CHANNELS	()		Additional channels
83740008	A	SOFT 4 AXES INTERPOLATION LIMIT	()		Up to 4 axis interpolated simultaneously
83740011	B	SOFT TOOL RADIUS COMP	()		Tool radius compensation, G40 ... G43 functions
83740013	C	SOFT HSSA II MACHINING SYSTEM	()		High Speed algorithm
83740019	D	SOFT EDIT/SIMUL	(A)		Edition - Simulation
83740018	E	SOFT PROFILE EDITOR	()		Profile Editor
83740021	F	SOFT DIGITAL SERCOS	(A)		Sercos driver system
83740007	G	SOFT PROBE (3)	(A)		Probe
83740042	P	SOFT DIGIT NO FAGOR	()		NO Fagor digital drive system
83740010	H	SOFT C AXIS	()		C axis
83740034	I	SOFT TANDEM AXES	()		2 axes acting as Tandem (Backlash rack & Pinion)
83740035	J	SOFT SYNCHRONISM	()		Spindle / Axes Synchronization
83740012	K	SOFT TANGENTIAL CONTROL	()		Tangential control
83740009	M	(*) SOFT RTCP	()		RTCP option
83740070	O	(*) SOFT IEC 61131 LANGUAGE	()		IEC 61131 Language
83740041	Q	SOFT DRILL CYCL OL	()		Drilling canned cycles for OL models
83740043	R	SOFT OPEN SYSTEM	()		Open system, to install others softwares
83740065	r	SOFT THIRD PARTY CANOPEN	()		Third party CANOPEN
83740078	V	SOFT FVC UP TO 10m3	()		Volumetric compensation, up to 10 m3
83740079	W	SOFT FVC MORE 10m3	()		Volumetric compensation, for more than 10 m3
83740062	Z	SOFT PWM CONTROL	()		PWM control

(-)	Not available
()	Optional Feature
(A)	Standard

(3) Only PROBE without cycles

SOFTWARE DESCRIPTIONS

Compact Flash (GB)

It must be present in all the configurations. By default, the option with the least capacity (4GB) is always offered.

Live tool

The live tool must always be set as another spindle, both in open loop and in threading operations.

SOFT 4 AXES INTERPOLATION LIMIT

It limits the number of axes that may be interpolated at the same time. When having this software option, they can interpolate a maximum of 4 axes at the same time.

SOFT TOOL RADIUS COMP

Tool compensation allows programming the contour to be machined based on part dimensions and without taking into account the dimensions of the tool that will be used later on. This avoids having to calculate and define the tool path depending on the radius of the tool.

SOFT HSSA II MACHINING SYSTEM (HIGH SPEED)

The acronym "HSSA" means High Speed Surface Accuracy. It is the new improved version of HSC (High Speed Cutting).

HSSA algorithm calculations make it possible to optimize high speed machining. This achieves higher cutting speeds, smoother contours, better surface finish and higher accuracy.

SOFT PROFILE EDITOR

It allows editing and modifying profiles. The editor shows a graphic representation of the profile being defined.

SOFT EDIT/SIMUL (Standard on all models)

It allows editing, modifying and simulating a part-program.

SOFTWARE DESCRIPTIONS

SOFT DIGITAL SERCOS (Standard on all models)

Sercos drive system bus.

SOFT DIGIT NO FAGOR

Mechatrolink drive system bus.

SOFT PROBE

The CNC may have two probes; usually a tabletop probe to calibrate tools and a measuring probe to measure the part.

It also offers functions G100 to G104 for programming probing moves; but the probing canned cycles are not included.

SOFT C AXIS

It activates the kinematics for working with C axis and their associated machining cycles.

The CNC may be used with several C axis spindles. The parameters of each spindle indicate whether it will work as a C axis or not and it won't be necessary to activate another axis in the machine parameters.

SOFT TANDEM AXES

A tandem axis consists in two motors mechanically coupled (slaved) and making up a single transmission system (axis or spindle). This system is normally used to move the axes on large machines.

The CNC configuration contemplates both axes of the tandem. Only an axis is programmed (the master tandem). The other one (the slave tandem) cannot be programmed, but it is controlled by the CNC.

When activating this feature, it must be borne in mind that for each Tandem axis of the machine, another axis must be added to the whole configuration of the machine.

SOFT SYNCHRONISM

Axes and spindles may be synchronized in 2 ways, in velocity or in position.

The CNC configuration contemplates 2 axes or 2 spindles that are synchronized. Once synchronized, only the master is displayed and programmed.

SOFT TANGENTIAL CONTROL

"Tangential Control" Keeps a rotary axis always in the same orientation with respect to the programmed path. The machining path is defined in the axes of the active plane and the CNC keeps the orientation of the rotary axis along the whole path.

SOFT RTCP

The "RTCP" option is a must for machining in RTCP (Rotating Tool Center Point) with 4, 5 or 6-axis interpolation.

SOFT IEC 61131 LANGUAGE

The IEC 61131 is PLC programming language, very popular on alternative markets and is entering the machine-tool market little by little.

When activating this feature, the PLC may be programmed either in the usual Fagor language or in IEC 61131 format.

SOFT DRILL CYCL OL

Drilling canned cycles for OL models.

SOFT OPEN SYSTEM

The CNC is a closed system that offers all the features needed to machine parts. However, sometimes, specific customers use third-party applications for taking measurements, doing statistics or running other tasks besides machining a part.

This feature must be active when installing this type of applications, even if it is an Office file. Once the application has been installed, it is recommended to close the CNC back in order to prevent the operators from installing other kinds of applications that could slow the system down and affect the machining operations.

SOFT THIRD PARTY CANOPEN

Enables the use of CANopen non-Fagor modules.

SOFT FVC (Fagor Volumetric compensation) UP TO 10m3

SOFT FVC (Fagor Volumetric compensation) MORE 10m3

5-axis machines are usually used to make large parts. The accuracy of the parts is limited by the machine manufacturing tolerances and by the effect of temperature while machining.

In industries like aerospace, the machining demands render the classical compensation tools insufficient. Volumetric compensation FVC comes in to complement the machine adjusting tools. By mapping the total work volume of the machine, the CNC knows the exact position of the tool at all times. After applying the necessary compensations, the resulting part has the desired accuracy and tolerance.

There are 2 choices depending on the size of the machine, up to 10 m3 and over 10 m3.

SOFT PWM CONTROL

This feature is only available with Sercos drive system bus. Aimed mainly at Laser machines for cutting very thick sheet metal.

The CNC generates a series of PWM pulses to control the power of the Laser when drilling the starting point.

This feature is a must for cutting very thick sheet metal and requires two quick outputs available at the module "SER-CAN-8I-8IO-A (83700065)" of the central unit of the CNC 8070.

With this new feature, the OEM does not need to install external devices and programming them, thus reducing the cost of the machine and installing time. The end user also benefits because the "Cutting with PWM" feature is much easier to use and program.

ACCESORIES

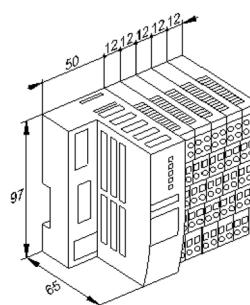
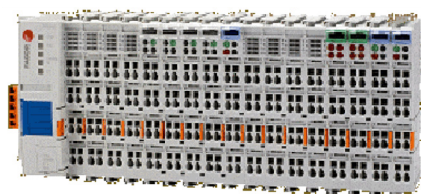
Code	Model	Description
83760005	CNC FPU	Fagor Power Unit
83700075	TRANSP-KEYS & EXTRACTOR	20 transparent key caps and an extractor tool
83700076	TRANSP-KEYS	20 transparent key caps
83700077	WHITE-KEYS	20 white key caps

REMOTE I/O MODULES

Are easy to install, they can be mounted at strategic points of the machine for having extra inputs and outputs distributed next to each device. They are distributed in groups and are connected to the central unit through the CAN bus.

REMOTE MODULES - RIOW serie

RIOW series. Remote modules with CANopen protocol



Header CANopen.....	RIOWCANOPENSTAND	03300010
Expansion module with 8 digital inputs.....	RIOW 8DI-51205053	03300008
Expansion module with 8 digital outputs.....	RIOW 8DO-51205043	03300007
Expansion module with 4 analog inputs.....	RIOW 4AI-51205050	03300006
Expansion module with 4 analog outputs.....	RIOW 4AO-51205039	03300005
Expansion module with 2 PT100 inputs.....	RIOW 2AI PT100-51205048	03300004
24V _{DC} 10A power supply for the modules.....	RIOW PS24-51205036	03300003
Line terminating module.....	RIOW END-51205037	03300000

REMOTE MODULES - RIOR serie

RIOR series. Remote modules with CANopen protocol



RIOR-48I32O.....	83720200
Module with 48 digital inputs and 32 digital outputs	
RIOR-4AI2AO.....	83720201
Module with 4 analog inputs and 2 analog outputs	

REMOTE MODULES - RCS-S

RCS-S series. Remote counter Station - Sercos protocol

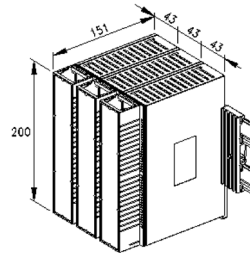


RCS-S-4F4AO.....	83720500
Module with 4 feedback inputs and 4 analog outputs	

REMOTE I/O MODULES

REMOTE MODULES - RIO5 serie

RIO5 series. Remote modules with CANopen protocol

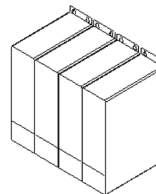
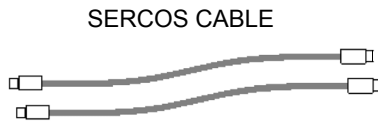
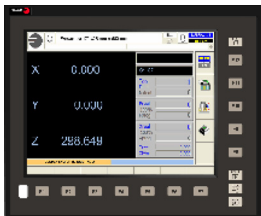


- RIO5 PS-24I/16O**..... 83070015
Header module with power supply, 24 digital inputs and 16 digital outputs
- RIO5 PS-2PT100/4AI/4AO**..... 83070018
Header module with 4 analog inputs, 4 analog outputs and 2 inputs for PT100 temperature gages
- RIO5 24I/16O EXP MOD**..... 83070016
Expansion module with 24 digital inputs and 16 digital outputs
- RIO5 48I/32O EXP MOD**..... 83070017
Expansion module with 48 digital inputs and 32 digital outputs

SELECT THE CABLES NECESSARY FOR EACH CONFIGURATION

CENTRAL UNIT IN OPERATOR PANEL

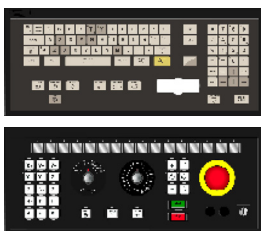
Ready Made cables for CAN Bus (CAN CABLE) and Sercos ring (SFO & SFO-FLEX).



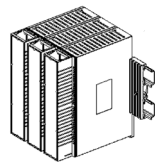
Each drive module having the Sercos interface option offers a small cable for connecting it to the adjacent module. Only the lines going to the CNC (Back and forth) or the ones joining the far between modules.

CAN CABLE

DRIVE SYSTEM



REMOTE MODULES GROUP



SERCOS cables

Sercos optic fiber

1m	SFO-1	03900001
2m	SFO-2	03900002
3m	SFO-3	03900003
5m	SFO-5	03900005
7m	SFO-7	03900007
10m	SFO-10	03900010
12m	SFO-12	03900012

Flexible Sercos optic fiber

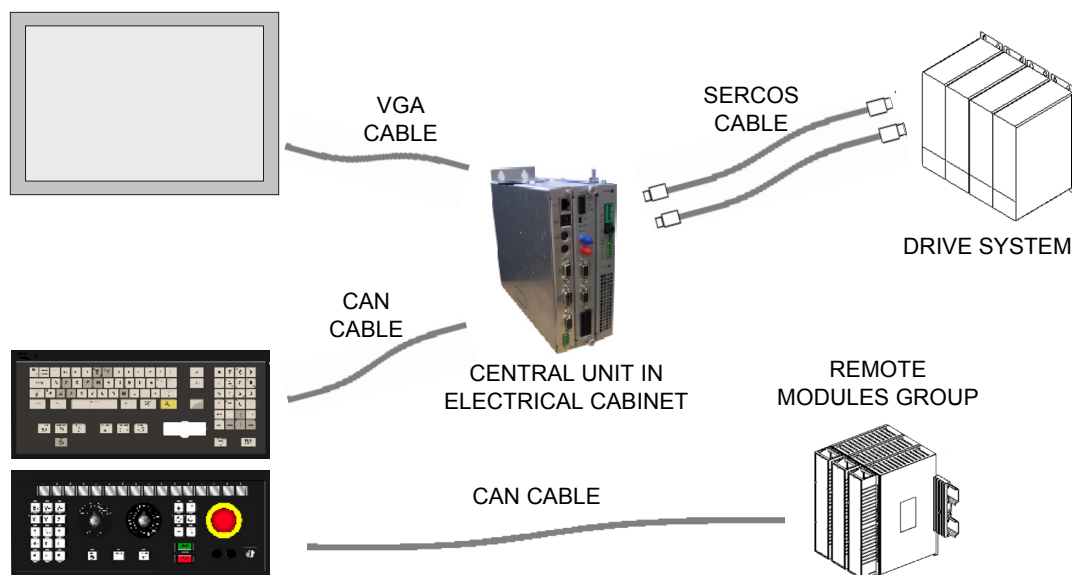
10m	SFO-FLEX-10	03910010
15m	SFO-FLEX-15	03910015
20m	SFO-FLEX-20	03910020
25m	SFO-FLEX-25	03910025
30m	SFO-FLEX-30	03910030
35m	SFO-FLEX-35	03910035
40m	SFO-FLEX-40	03910040
40m	SFO-V-FLEX-40	03920040
50m	SFO-V-FLEX-50	03920050
60m	SFO-V-FLEX-50	03920060
75m	SFO-V-FLEX-75	03920075
100m	SFO-V-FLEX-100	03920100

CAN cable for Remote I/Os

5m	CAN CABLE 5M	03780100
10m	CAN CABLE 10M	03780101
15m	CAN CABLE 15M	03780102
20m	CAN CABLE 20M	03780103
25m	CAN CABLE 25M	03780104
30m	CAN CABLE 30M	03780106
35m	CAN CABLE 35M	03780107
40m	CAN CABLE 40M	03780108
45m	CAN CABLE 45M	03780109
50m	CAN CABLE 50M	03780110
75m	CAN CABLE 75M	03780111
100m	CAN CABLE 100M	03780112
150m	CAN CABLE 150M	03780113

CENTRAL UNIT IN ELECTRICAL CABINET

Ready Made cables for passive monitor, CAN Bus (CAN CABLE) and Sercos ring (SFO & SFO-FLEX).



DRIVE System

Each drive module having the Sercos interface option offers a small cable for connecting it to the adjacent module. Only the lines going to the CNC (Back and forth) or the ones joining the far between modules.

SERCOS cables

Sercos optic fiber

1m	SFO-1	03900001
2m	SFO-2	03900002
3m	SFO-3	03900003
5m	SFO-5	03900005
7m	SFO-7	03900007
10m	SFO-10	03900010
12m	SFO-12	03900012

Flexible Sercos optic fiber

10m	SFO-FLEX-10	03910010
15m	SFO-FLEX-15	03910015
20m	SFO-FLEX-20	03910020
25m	SFO-FLEX-25	03910025
30m	SFO-FLEX-30	03910030
35m	SFO-FLEX-35	03910035
40m	SFO-FLEX-40	03910040
40m	SFO-V-FLEX-40	03920040
50m	SFO-V-FLEX-50	03920050
60m	SFO-V-FLEX-50	03920060
75m	SFO-V-FLEX-75	03920075
100m	SFO-V-FLEX-100	03920100

CAN cable for Remote I/Os

5m	CAN CABLE 5M	03780100
10m	CAN CABLE 10M	03780101
15m	CAN CABLE 15M	03780102
20m	CAN CABLE 20M	03780103
25m	CAN CABLE 25M	03780104
30m	CAN CABLE 30M	03780106
35m	CAN CABLE 35M	03780107
40m	CAN CABLE 40M	03780108
45m	CAN CABLE 45M	03780109
50m	CAN CABLE 50M	03780110
75m	CAN CABLE 75M	03780111
100m	CAN CABLE 100M	03780112
150m	CAN CABLE 150M	03780113

VGA cable for passive Monitor

15m	CABLE VGA 15M	03780215
20m	CABLE VGA 20M	03780220
30m	CABLE VGA 30M	03780230

UPGRADES

The following upgrades are used to update a CNC with Windows XP to Windows 7. There are different references depending on the type of processor (Basic or High Level) and the size of the memory.

Code	Model	Description
83701100	CF-DMA-B7- 4GB UPG (RF)	4GB Compact Flash + Windows 7 Upgrade for Basic Processor
83701101	CF-DMA-B7- 8GB UPG (RF)	8GB Compact Flash + Windows 7 Upgrade for Basic Processor
83701102	CF-DMA-B7- 32GB UPG (RF)	32GB Compact Flash + Windows 7 Upgrade for Basic Processor
83701103	CF-DMA-P7- 8GB UPG (RF)	8GB Compact Flash + Windows 7 Upgrade for High level Processor
83701104	CF-DMA-P7- 32GB UPG (RF)	32GB Compact Flash + Windows 7 Upgrade for High level Processor

Consider the following table to understand the handling capacity of the spare parts and upgrades.

	Repair centers	Subsidiaries	Service centers	Customers
(R)	✓	✓	✓	✓
(RS)	✓	✓	✓	
(RF)	✓	✓		
(RC)	✓			

MANUALS

Printed manuals

03753620	M.CN8070 OEM (CAS)	OEM manual in Spanish
03753621	M.CN8070 OEM (IN)	OEM manual in English
03753630	M.CN8070 USER (CAS)	User manual in Spanish
03753631	M.CN8070 USER (IN)	User manual in English
03753632	M.CN8070 USER (FRA)	User manual in French
03753633	M.CN8070 USER (ALE)	User manual in German
03753634	M.CN8070 USER (ITA)	User manual in Italian
03753635	M.CN8070 USER (BRA)	User manual in Portuguese-Brazilian

The manuals of the CNC may be downloaded from our FAGOR corporate website.
<http://www.fagorautomation.com>

Fagor Automation shall not be held responsible for any printing or transcribing errors in the Ordering Handbook and reserves the right to make any changes to the characteristics of its products without prior notice. You must always compare the data with that appearing in the manual.

Fagor Automation S.Coop.
B.º San Andrés 19, Apdo. 144
E-20500 Arrasate - Mondragón
Spain

FAGOR 
FAGOR AUTOMATION

www.fagorautomation.com
E-mail: info@fagorautomation.es
Tel. 34-943 71 92 00 / 34-943 03 98 00
Fax. 34-943 79 17 12