

# HIGH PRODUCTIVITY TURNING CENTER







# Lynx 220 SERIES

Lynx 220 series machines are accurate, high productivity turning centers equipped with ultra fast rapids and high-speed turret indexing that deliver improved operational efficiency and greater productivity.







### ENHANCED COMPLEX AND PRISMATIC MACHINING

The C-axis is responsive and can be positioned in 0.001 degree increments, and the X- and Z-axes can be synchronized.

## HIGH PRODUCTIVITY THROUGH MINIMIZING NON-CUTTING TIME

Fast, accurate and high-precision Roller type LM guideways are applied on all axes and the machine's high torque spindle maximizes productivity.

### IMPROVED USER-FRIENDLY DESIGN FOR EFFICIENCY AND PRODUCTIVITY

The user-friendly operation panel, including access to EZ Guide i and the EZ Work, helps customers improve their performance and productivity.

# **BASIC STRUCTURE**

Roller LM guideways deliver speed, reliability and rigidity.

#### **Travel distance**

 

 Lynx 220A {LA}

 X-axis
 Ø320 mm 12.6 inch

 Y-axis
 322 {542} mm 12.7 {21.3} inch

 z-axis
 330 {550} mm 13.0 {21.7} inch

 Lynx 220C {LC}
 X-axis

 X-axis
 Ø320 mm 12.6 inch

 Y-axis
 305 {525} mm 12.0 {20.7} inch

 Z-axis
 330 {550} mm 13.0 {21.7} inch

### Rapid traverse (X/Zaxis)

**J0/36** m/min 1181.1/1417.3 ipm

# High-rigidity, high-precision Roller type LM guide

High-precision Roller type LM guideways improve cutting speeds and processing times.

The high-torque motor on both axes is directly connected to the ball screw, without the use of intermediate gears, ensuring quiet operation and increased responsiveness without any of the problems associated with backlash. Each axis is also driven by a durable digital ac servo motor. resting the second seco



The heavily ribbed torque tube design prevents twisting and deformation. All guideways are wide wrap-around rectangular types for delivering unsurpassed long-term rigidity and accuracy.



FEM analysis is used to design a stable structure. (FEM : Finite Element Method)



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# SPINDLE

High-torque motors drive the powerful spindle and facilitate high precision machining. High precision as well as heavy duty machining at low revolutions, can both be achieved.

# Main spindle

C-axis positioning occurs in 0.001 degree increments. By synchronising the spindle with the X- and Z- axes, three dimensional contouring, and complex and prismatic machining can be achieved.

# Tailstock

Widely spaced guideways and the heavy-duty design of the tailstock body ensures good rigidity and a stable structure. The tailstock body is positioned by the traction bar, which engages with the carriage. Traction bar movement and hydraulic body clamping are performed manually.

		{ }:option	
Tailstock specification	Unit	Lynx 220series	
Tailstock travel	mm ( inch )	550(21.7) {330(13.0)}	
Tailstock quill diameter	mm ( inch )	65 (2.6)	
Taper hole of tailstock quill		MT4 < Live center >	
Tailstock quill travel	mm ( inch )	80 (3.1)	
		● Standard ○ Optional	
Lynx 220LA / LC		•	
Lynx 220A / C		0	

# TURRET

With the two-axis servo turret, the curvic coupling and hydraulic clamp force ensure high cutting accuracy. With BMT (Base Mount Tool) set up times are reduced and machine efficiency is increased as a result.



Headstock and spindle



# 2 axis servo turret (A/C)

Index time (1-station index)

**11** S

### No. of tool stations

Lynx 220A / LA 12 ea Lynx 220C / LC 10 ea

# HIGH PERFORMANCE | ACCURACY

A more powerful motor has been adopted to improve productivity.

### Roughness

**0.07** μm(Ra)

### Roughness

**0.3** μm





Assessment length 4.80 mm Vt = 0.50 mm/s

Material		Brass	
Cutting feed	mm/rev (ipr)	0.025 (0.0)	
Cutting depth	mm (inch)	0.025 (0.0)	
Cutting speed	m/mm (ipm)	300 (11811.0)	
Tool		Diamond (Nose R0.1)	

\* This is an actual test cut result. It might not be achievable under different conditions.

# MULTI-TASKING FUNCTIONS

High torque motor improves precision and productivity for heavy duty cutting.

### Heavy duty cutting

Center drilling



Total cutting time

# **80.3** S



### in heavy cutting conditions

Carbon steel, SM45C Size : ø 62 x 66mm

(ø2.4 x 2.6 inc

# 0.16 inch

### Carbon steel, SM45C

Cutting speed 200 m/min 7874.0 ipm

**Cutting depth** 

**4** mm

Feedrate 0.4 mm/rev 0.0 ipr

Chip removal rate

**320** cm<sup>3</sup>/min

19.5m<sup>3</sup>/inch

## Chip removal rate

**168** cm<sup>3</sup>/min 10.25m<sup>3</sup>/inch

# Carbon steel, SM45C

Cutting speedFeedrate80 m/min0.28 mm/rev

**80** m/min 3149 ipm

Process	Cutting time (s)	Cutting speed (m/ min)	Feedrate (mm/rev)
U-drilling ( ø30 mm )	18.1	120 (4724.4 ipm)	0.2 (0.0 ipr)
O.D. cutting ( Rough )	9.2	200 (7874.0 ipm)	0.45 (0.0 ipr)
O.D. cutting ( Finish )	18.2	250 (9842.5 ipm)	0.2 (0.0 ipr)
O.D. grooving1 ( 4 mm )	3.5	140 (5511.8 ipm)	0.2 (0.0 ipr)
O.D. grooving2 ( 8 mm )	5.8	140 (5511.8 ipm)	0.17 (0.0 ipr)
O.D. threading (M45 x P1.5)	10.4	201 (7913.4 ipm)	1.5 (0.1 ipr)
Cut-off cutting ( 4 mm )	15.1	120 (4724.4 ipm)	0.1 (0.0 ipr)

0.011 ipr

\* Cutting timetable above shows the results from real test cut. These results will differ according to cutting conditions, machining strategies etc.

# **STANDARD | OPTIONAL SPECIFICATIONS**

A range of options is available to suit individual requirements.

Description	Features	Lynx 220A,LA / C,LC
	6 inch	
Chuck		(Only Lynx 220A,LA)
	8 inch	(except Lynx 220A,LA)
law	SOFT JAW	•
Jaw	HARDENED & GROUND HARD JAWS	0
Chucking option	DUAL PRESSURE CHUCKING	•
chucking option	CHUCK CLAMP CONFIRMATION	•
Tailstock	Manual	X
	Programmable	X
	PUMP 1 (1.5 BAR)	•
Coolant pump	PUMP 2~6 (4.5/7/10/14.5/20 bar)	$\bigcirc \\ (\text{except } 14.5 \rightarrow \text{X})$
	CHUCK COOLANT	0
	COOLANT CHILLER	0
Co claut autiens	OIL SKIMMER	0
Coolant options	COOLANT PRESSURE SWITCH	0
	COOLANT LEVEL SWITCH	0
	COOLANT GUN	0
	RIGHT DISPOSAL	0
	REAR DISPOSAL	0
Chip disposal	CHIP BUCKET	0
options	AIR BLOWER	0
	MIST COLLECTOR INTERFACE (DUCT ONLY)	0
	MIST COLLECTOR INTERGRATED MIST COLLECTOR	0
	MANUAL/AUTO TOOL SETTER	0
	PARTS CATCHER FOR MAIN WITH PARTS BOX	0
Measuring &	PARTS CATCHER FOR MAIN WITH PARTS CONVEYOR	0
automation	WORKPIECE EJECTOR	X
	AUTOMATIC FRONT DOOR WITH SAFETY DEVICE	0
	BAR FEEDER INTERFACE	0
	TOOL MONITORING SYSTEM	0
Others	SIGNAL TOWER (YELLOW, RED, GREEN)	0
others	AIR GUN	0
	AUTOMATIC POWER OFF	0
	BALL SCREW NUT COOLING_X-AXIS	0
	CHIP CONVEYOR_DRUM FILTER TYPE	0
	AIR BLOWER THROUGH TURRET	0
Customized special option	COOLANT CHILLER	0
	AUTO WORK MEASUREMENT_OLP40_RENISHAW	0
	CHIP CONVEYOR TYPE_SCREW	0
	AIR LIMIT SENSING ON CHUCK_PREPARATION	0
	FLUSHING COOLANT FOR REAR CHIP DISPOSAL	0
	WISKER SWITCH FOR CYCLE START	0
	AIR CHUCK PREPARATION	0
	MIST COLLECTOR_0.4KW	0
	MIST COLLECTOR_0.75KW	0
	TSC FOR MAIN/LEFT SPINDLE_ PREPARATION	0
	TSA FOR MAIN/LEFT SPINDLE_PREPARATION	0
	GANTRY LOADER_ PREPARATION	0

\* Please contact DN Solutions to select detailed steady rest specifications

• Standard • Optional X Not applicable

 Fire Safety Precautions
 There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting the controlled and careful use of coolants and modifying the machine without the consent of the manufacturer. Always check the SAFETY GUIDELINES carefully before using the machine.

# PERIPHERAL EQUIPMENT

#### Oil skimmer OPTION

The oil skimmer keeps coolant and lubricant isolated from each other for extending life cycle of coolant.



### Quick change CAPTO

The Quick Change Tool system simplifies tool change operation. Recommended for users who need to change tools frequently or reduce the set-up time.



#### Tool setter OPTION

The tool setter facilitates setting of tools, and fast and precise length compensation of worn tools



#### Coolant Chiller (recommended)

A coolant chiller is recommended to help prevent temperature rises and to reduce thermal deformation when using a water-insoluble coolant or highpressure coolant system (i.e., power over 1.5kW).



#### Part catcher OPTION

The part catcher automatically accepts parts completed of machining, and ejects them out of the system.



#### Mist collector OPTION

The mist collector absorbs airborne oil vapor and fine dusts in the system to improve working environment.



#### Auto tool setter OPTION



Singnal tower OPTION



Coolant blower OPTION



#### Collet chuck OPTION



#### Chip conveyor



Chip conveyor type	Material	Description	
Hinged belt	Steel	Most typical type of chip conveyor. Appropriate for steel materials generating chips of length of 30 mm or more.	
Screw	Steel	Chip conveyor with smallest footprint. Demands 80% of footprint comparing to hinged belt.	
Magnetic scrapper	Cast iron	Chip conveyor with magnet equipped: Appropriate for cast iron workpieces generating fine chips.	

# **DN SOLUTIONS FANUC i PLUS**

DN Solutions Fanuc i Plus maximizes customer productivity and convenience.

# 15" Screen + New OP

**DN Solutions Fanuc i Plus'** operation panel enhances operating convenience by incorporating common-design buttons and layout. It features a Qwerty keyboard for fast and easy data input and operation.

# **DN Solutions Fanuc i Plus**

15-inch color display Intuitive and user-friendly design

### **USB and PCMCIA card** QWERTY keyboard

- EZ-Guide i standard Ergonimic operator panel

#### iHMI touchscreen

iHMI provides an intuitive interface that uses a touchscreen for quick and easy operation.

### **Range of applications**

Providing various applications related to planning, machining, improvement and utility, for customer convenience.

### SKETCH-TURN OPTION

#### DN Solutions Conversational programming software for PC

- Easy to learn for beginners
- Time savings in programming
- Reduce processing cycle time



# NUMERIC CONTROL SPECIFICATIONS

#### 2-Axis v Description Item **Specifications DN Solutions Fanuc i Plus DN Solutions Fanuc i Plus** Controlled axes 2(X,Z) 4(X,Z,C,Y)Controlled axis Simultaneously controlled axes 2 axes 4 axes Fast data server С Memory card input/output • • Data input/output USB memory input/output • • Note \*2) Available Option only with 15" Larger capacity memory\_2GB O\*2) O \*2) Touch LCD (iHMI Only) Embedded Ethernet Interface function Fast Ethernet Enhanced Embedded Ethernet function **DNC** operation Included in RS232C interface. Operation DNC operation with memory card • • Program input Workpiece coordinate system G52 - G59 • AI contour control I G5.1 Q\_, 40 Blocks • Feed function AI contour control II G5.1 Q\_, 200 Blocks $\bigcirc$ EZ Guidei (Conversational Programming Solution) • • Note \*1) Only with 15" Touch LCD Operation ()\*1) iHMI with Machining Cycle O\*1) **Guidance Function** standard EZ Operation package Setting and display CNC screen dual display function • 0 FANUC MTConnect 0 O Network FANUC OPC UA ٥ ٥ 15" color LCD • • Display unit 15" color LCD with Touch Panel 0 0 Others Part program storage size & 640M(256KB)\_500 programs Х Х Number of registerable programs 5120M(2MB)\_1000 programs

FANUC

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# POWER | TORQUE



FRONT



SIDE



# TOOLING SYSTEM | TOOL INTERFACE

## **Tooling system**

Lynx 220A/C [LA/LC]



## **Tool interface**



Lynx 220C / LC



#### 12

OD TOOL HOLDER

Unit : mm (inch)



#### ID TOOL HOLDER



#### EXTENDED OD TOOL HOLDER

#### FACE TOOL HOLDER





# MACHINE SPECIFICATIONS

Lynx 220 series

Description		Unit	Lynx 220A [LA]	Lynx 220C [LC]		
	Swing over bed		mm (inch)	510(20.1)		
-	Swing over saddle		mm (inch)	290 ( 11.4 )		
	Recom. Turning diameter		mm (inch)	170(6.7)	210(8.3)	
Capacity	Max. Turning diameter	Max. Turning diameter		320 (	12.6)	
	Max. Turning length		mm (inch)	322 [ 542 ] ( 12.7 [ 21.3 ] )	305 [ 525 ] ( 12.0 [ 20.7 ] )	
	Chuck size	ıck size		6	8	
	Bar working diameter		mm (inch)	45 ( 1.8 )	65(2.6)	
Travels	Travel distance	X-axis	mm (inch)	175 ( 6.9 )		
		Z-axis	mm (inch)	330 [ 550 ] ( 13.0 [ 21.7 ] )		
		B-axis	mm (inch)	-		
Feedrate		X-axis	m/min (ipm)	30 ( 11	.81.1)	
	Rapid Traverse Rate	Z-axis	m/min (ipm)	36(1417)		
reeurate		B-axis	m/min (ipm)	-		
	Cutting feedrate		m/min (ipm)	500 / 500 ( 2	19.7 / 19.7 )	
	Max. Spindle speed		r/min	6000	4000	
Main spindle Spindle b Spindle b	Spindle nose		ASA	A2 #5	A2 #6	
	Spindle bearing diameter (Front)		mm (inch)	90 ( 3.5 )	110(4.3)	
	Spindle through hole		mm (inch)	53(2.1)	76(3.0)	
	Min. spindle Indexing angle(C-axis)		deg	-		
No. of tool stations		ea	12	10		
Turret	OD tool size		mm (inch)	25 x 25 ( 1	1.0 x 1.0 )	
	Max. boring bar size		mm (inch)	40 ( 1.6 )		
	Turret Indexing time (1 station swivel)		S	0.11		
	Max. Rotary tool speed		r/min	-		
	Quill diameter		mm (inch)	65 ( 2.6 )		
Tail Stock   Quill bore taper			MT	MT#4		
	Quill travel		mm (inch)	80 ( 3.1 )		
	Spindle speed		r/min			
	Spindle nose		FLAT	-		
Sub s pindle	Spindle bearing diameter (Front)		mm (inch)	-		
	Spindle through hole		mm (inch)	-		
	Min. spindle Indexing angle (C-axis)		deg	-		
	Main spindle motor power (30min./ cont.)		kW (Hp)	15 / 11 ( 20.1 / 14.8 )		
Motors	Sub spindle motor power		kW (Hp)	-		
Motors Rotary tool motor power		ver	kW (Hp)	-		
	Coolant pump motor power		kW (Hp)	0.4 ( 0.5 )		
Power source	Electric power supply	(rated capacity)	kVA	23.68		
	Height		mm (inch)	1655 ( 65.2 )		
Machine Dimensions	Length		mm (inch)	2325 [ 2560 ] ( 91.5 [ 100.8 ] )		
ennensions	Width		mm (inch)	1600 ( 63.0 )		
	Weight		kg (Ib)	2900 [ 3100 ] ( 6393.3 [ 6834.2 ] )		

# RESPONDING TO CUSTOMERS ANYTIME, ANYWHERE

# **DN Solutions Global Network**

DN Solutions provides systems-based professional support services, before and after the machine tool sale, by responding quickly and efficiently to customers. By supplying spare parts, product training, field service and technical support, we provide the expert care, attention and assistance our customers expect from a market leader.

Global sales and service support network		51	<b>Technical centers</b> Technical center, Sales support, Service support, Parts support
4	Corporations	200	Service posts
156	Dealer networks	3	Factories



# CUSTOMER SUPPORT AND SERVICES

## We're there for you whenever you need us.

We help our customers operate at maximum efficiency by providing them with a range of tried, tested and trusted services - from pre-sales consultancy to post-sales support.



# Field services

- On-site service
- Machine installation and testing
- Scheduled preventive maintenance
- Machine repair service



# Training

- Programming, machine setup and operation
- Electrical and mechanical maintenance
- Applications engineering



## Parts supply

- Supplying a wide range of original DN Solutions spare parts
- Parts repair service

# **Technical support**

- Supports machining methods and technology
- Responds to technical queries
- Provides technical consultancy



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\* For more details, please contact DN Solutions.

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\* Specifications and information contained within this catalogue may be changed without prior notice.

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