

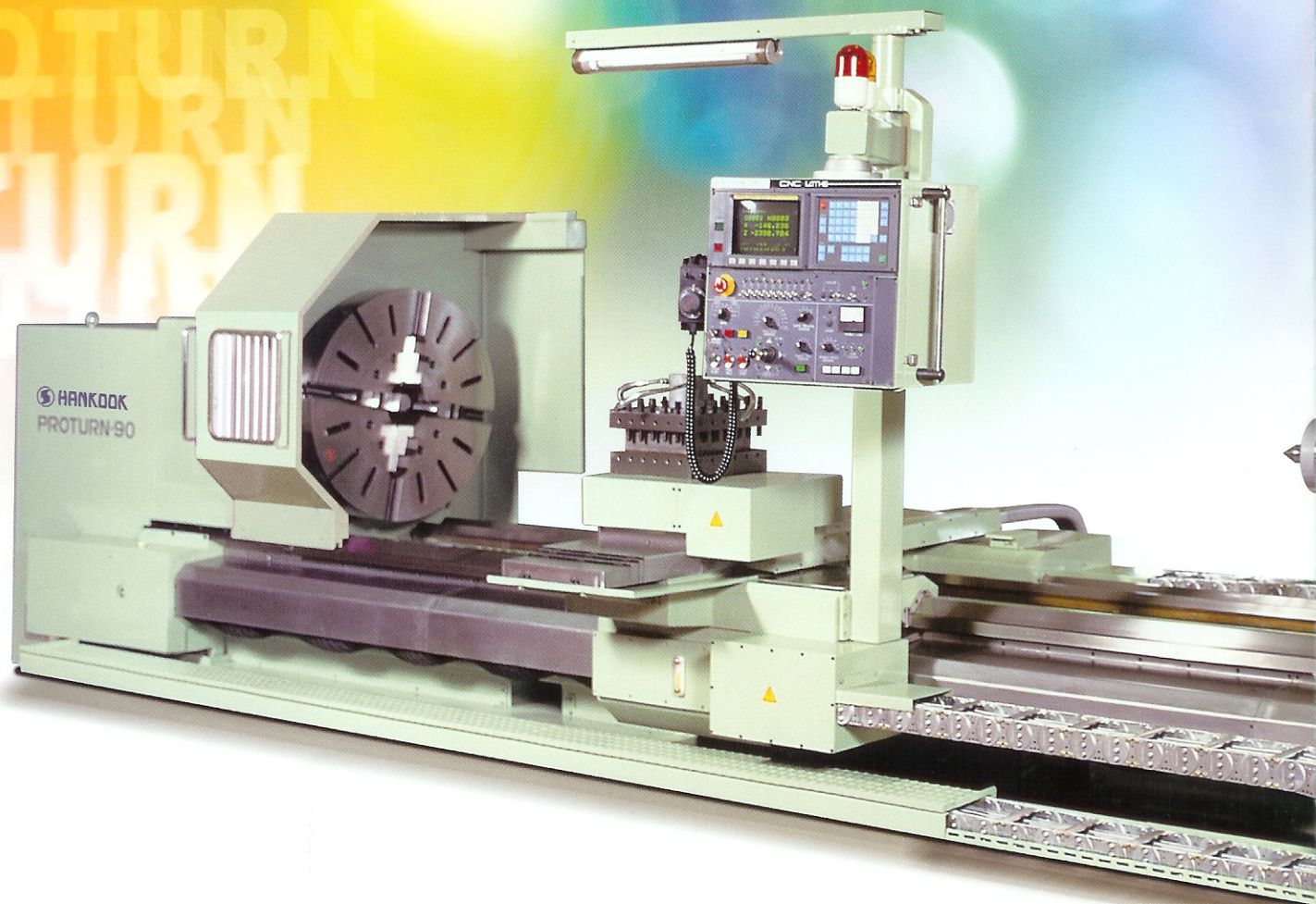


PROTURN 90/100

The Hankook Heavy Duty CNC Turning Machine PROTURN 90/100s are Designed for Maximum Efficiency, Rigidity and Versatility in Heavy Machining Operations.

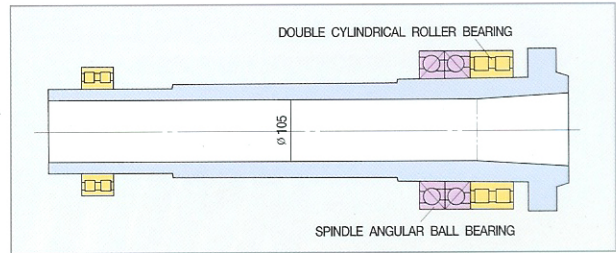
STANDARD FEATURES

- Automatic 3 speed geared headstock
- 1,800 rpm spindle
- 50HP AC spindle motor
- Swing up to 1000mm
- Up to 8000mm shaft turning capacity
- 8 tons load capacity between centers
- Induction hardened and precision ground guide ways
- Extra wide one-piece cast iron bed(710mm width)
- Built-in live tailstock spindle(200mm quill dia.)
- Tailstock load meter
- Automatic V-8 turret tool post
- Full length rear chip guard and a rail mounted traveling single front door(optional)



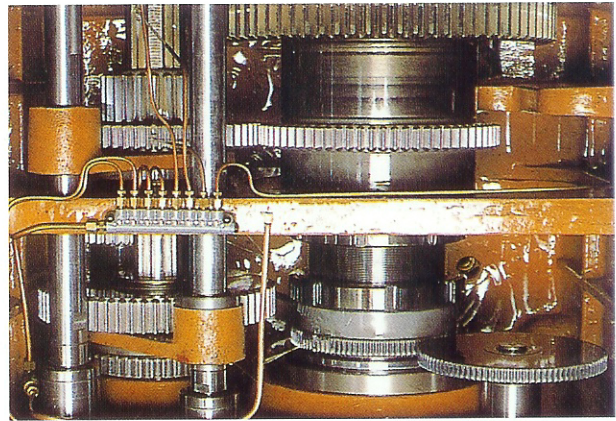
MAIN SPINDLE

The rigid main spindle is made of forged Chrome Molybdenum steel. All spindle bearings are high precision class and are permanently grease lubricated and sealed for maximum performance. The main spindle delivers up to 385kgf.m. of torque.



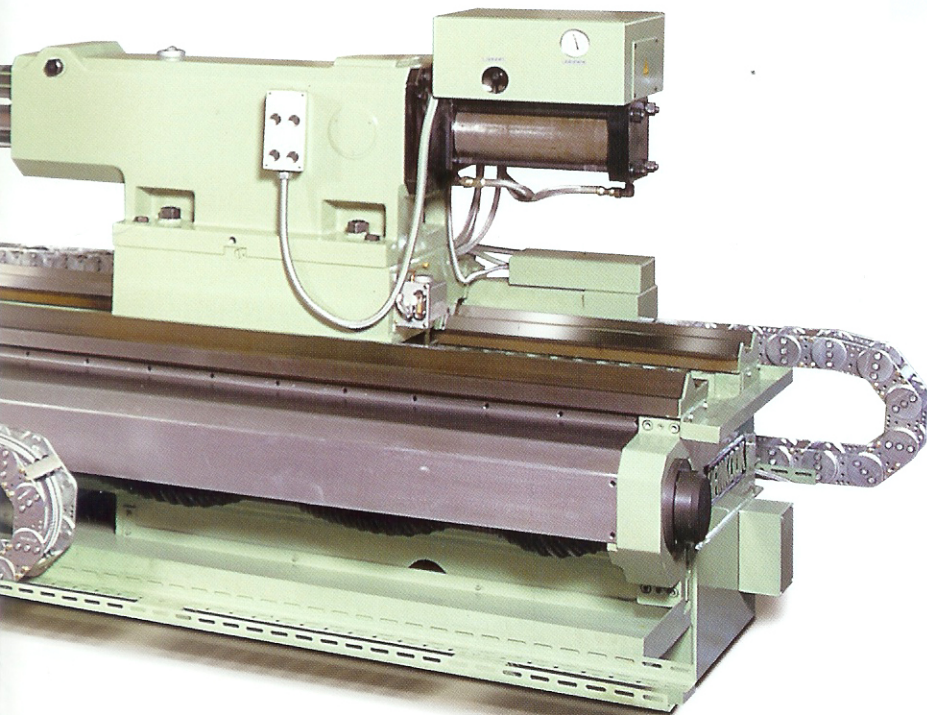
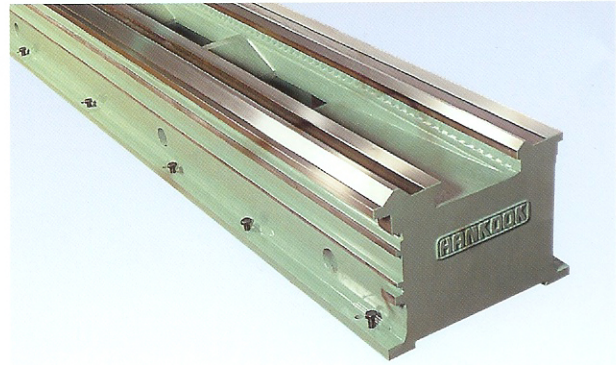
HEAVY DUTY HEADSTOCK

The robust box type 3-speed geared headstock guarantees unsurpassed stability and machining smoothness throughout the entire range of speed and load conditions. All gears and shafts are made of special alloy steel. They are induction hardened, precision ground, and then balanced at high speed for maximum performance. The high volume forced lubrication system maximizes service life of both drive gears and drive shaft bearings.

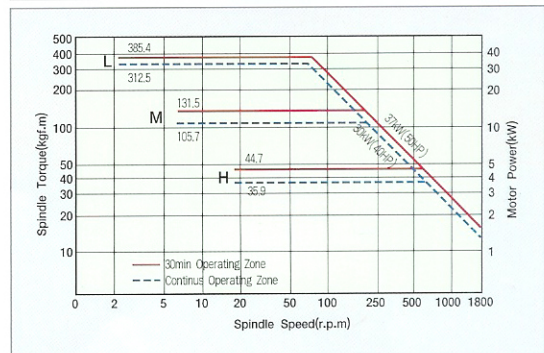


BED

The extra wide (710mm) bed is a heavy one-piece casting and is heavily ribbed to prevent twisting and deformation. Fine grain Meehanite cast iron is used for its excellent dampening characteristics. All guide-ways are induction hardened and precision ground in one set up. Chips are easily disposed of through steep angle chutes provided in between bed ways. The flat bed design is ideal for heavy shafts as the weight of the work-piece is directed downward onto the bed ways. The bed ways are double "V" type to ensure superior machining accuracy.



SPINDLE TORQUE

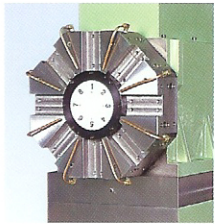
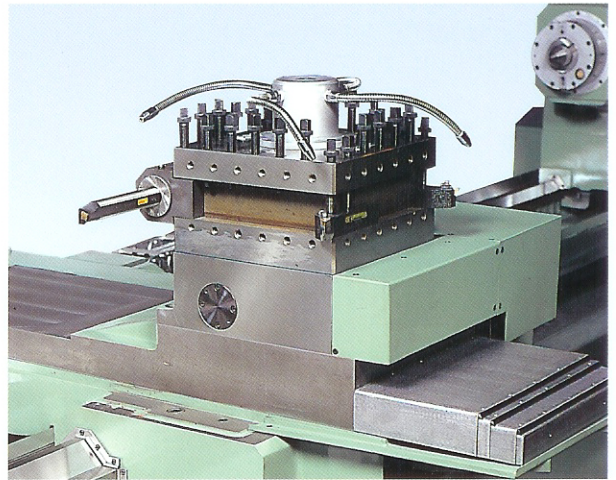


CARRIAGE & TURRET TOOL POST

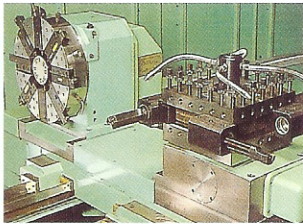
The extremely rigid extended H-style saddle and wide cross slide allow heavy and interrupted cuts with ultimate stability and high accuracy. Floplastic resin is bonded to the sliding surfaces and then hand scraped for a perfect match.

The floplastic resin combined with fully automatic metered way lubrication provides a low friction surface and virtually eliminates guide-way wear.

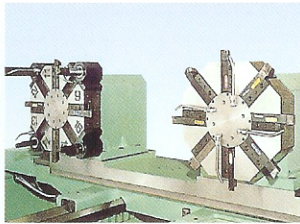
The fully automatic horizontal 4-station turret tool post features bi-directional indexing. The large diameter(320mm) Curvic couplings and the powerful hydraulic clamping force(4200kgf) of this heavy duty turret tool post insure unmatched metal removal rate, extended tool life and superb finish and accuracy. Vertical 8-station turret as any combination of dual turret configurations is available as an option. Vertical 8-station power tool turret, special milling unit with manual Y-axis, or deep hole boring device is also available as an option.



V8 Turret



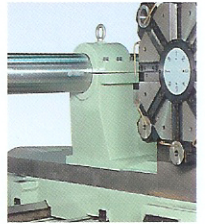
H4+V8 Double Turret



V8+V8 Double Turret



Milling Unit



Boring Bar Device

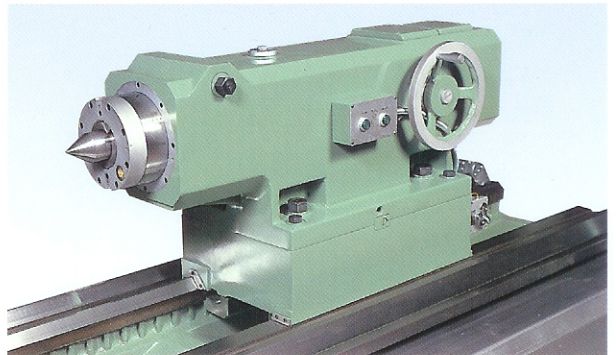
TAILSTOCK

The heavy duty box type tailstock combined with a large diameter(200mm) heavy duty quill and built-in rotating spindle with MT #6 taper assures maximum stability and accuracy even under 8 tons of weight loaded between centers.

All tailstock spindle bearings are high precision class.

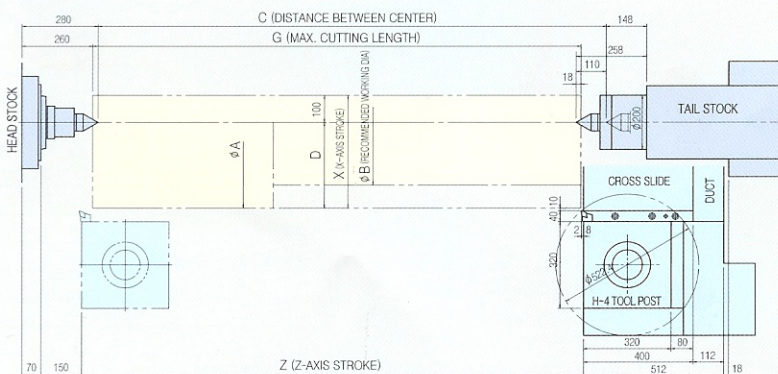
The hydraulic tailstock load meter permits precise setting of quill thrust : work weight vs. thrust requirement chart provided at the tailstock.

Motorized rapid traverse device provided for fast positioning.



TOOL TRAVEL RANGE

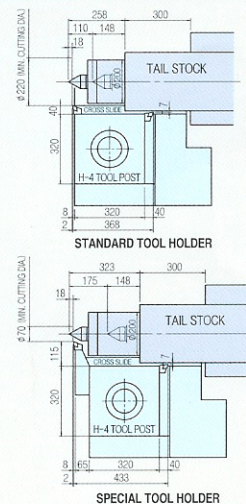
H-4 Turret



	A	B	D	X	Distance centers	2000	3000	4000	5000	6000	7000	8000
PROTURN-90	710	560	355	455	C	2187	3187	4187	5187	6187	7187	8187
PROTURN-100	800	660	400	500	G	2115	3115	4115	5115	6115	7115	8115
					Z	2165	3165	4165	5165	6165	7165	8165

Unit : mm

TOOL POST & TAIL STOCK INTERFERENCE



MACHINE SPECIFICATIONS

Items		Unit	PROTURN						
			90		100		90M		100M
Capacity	Swing over bed	mm(inch)	900(35.4)		1000(39.4)		900(35.4)		1000(39.4)
	Swing over cross slide	mm(inch)	560(22.0)		660(26.0)		560(22.0)		660(26.0)
	Max. turning diameter	mm(inch)	710(28.0)		800(31.5)		710(28.0)		800(31.5)
	Distance between centers	mm(inch)	2000(79)	3000(118)	4000(157)	5000(197)	6000(236)	7000(276)	8000(315)
	Max. turning length	mm(inch)	Same as center distance						
	Max. load between centers	kg(lbs)	8000(17600)						
Spindle	Spindle speed	rpm	2-1800						
	Spindle speed range	-	Automatic 3 steps						
	Spindle nose	ASA	A1-11						
	Spindle bore	mm(inch)	105(4.13)						
	Spindle taper	-	1/10 metric taper #120						
	Max. spindle torque	kg.m(ft.lb)	385.4(2787)						
C-axis	Max. speed	rpm	-				11.11		
	Max. torque	kg.m(ft.lb)	-				270(1952)		
Turret Tool Post	Standard tool post	-	Automatic V-8 Turret						
	Cutting tool size(O.D./I.D.)	mm(inch)	32sq./Ø63(1.26sq./Ø2.5)						
	Curvic coupling diameter	mm(inch)	320(12.6)						
	Turret clamping force	kgf(lbs)	4200(9260)						
Travel	X-axis	mm(inch)	465(18.3)		510(20.1)		465(18.3)		510(20.1)
	Z-axis	mm(inch)	2165(85.2)	3165(124.6)	4165(163.9)	5165(203.3)	6195(243.9)	7195(283.3)	8198(322.6)
	X-axis rapid traverse	mm(ipm)	6(236)				4(160)		
	Z-axis rapid traverse	mm(ipm)	9(350)		6(236)		4(160)		
Tailstock	Quill diameter	mm(inch)	200(7.87)						
	Quill type	-	Built-in live spindle						
	Spindle taper	-	MT #6						
	Max. quill travel	mm(inch)	250(9.87)						
Motor	Main spindle motor	kW(HP)	AC 30/37(40/50)						
	X-axis servo motor	kW(HP)	AC 3(4)						
	Z-axis servo moto	kW(HP)	AC 7(9.4)						
	C-axis servo motor	kW(HP)	-				AC 4(5.4)		
Bed	Bed width	mm(inch)	710(28)						
	Bed height	mm(inch)	600(24)						
Machine weight	PROTURN-90	kg(lbs)	9300	10100	10900	11700	12500	13300	14100
	PROTURN-100		(20500)	(22300)	(24000)	(25800)	(27600)	(29300)	(31100)
CNC Controller	-	Add. 120(265) FANUC 21i-TB							

STANDARD ACCESSORIES

- CNC controller, FANUC 21i-TB
- AC spindle and servo drives and motors
- 4-jaw independent chuck 24" (1)
- C-axis, 90M/100M only
- Auto H4 turret tool post
- Tailstock load meter (3 ton)
- Coolant system
- Hydraulic power unit
- Live tailstock spindle
- Tailstock body rapid feed system
- Center sleeve (1)
- Centers (2)
- Turning tool holder I (1)
- Facing holder II (1)
- Boring tool holder (1)
- Boring bar sleeve (ø 63 × ø 50, 40mm)
- Drill sleeve (ø 63mm × MT#4, #3)
- Leveling plates, foundation bolts and nuts
- Maintenance tool kits

OPTIONAL ACCESSORIES

- C-axis, 90/100 only
- Hydraulic chuck (ø 15", ø 18", ø 21", ø 24")
- 3-jaw scroll chuck (ø 14", ø 16")
- 4-jaw independent chuck (ø 28", ø 32")
- Manual steady rest, roller jaws (ø 50-250, ø 250-450, ø 450-650mm)
- Manual steady rest, metal jaws (ø 50-250, ø 250-450, ø 450-650mm)
- Manual follow rest, metal jaws (ø 20-200mm)
- Self-centering hydraulic follow/steady rests
- Face plate (ø 800mm)
- Roll chock stand (ø 400-630mm)
- Chip conveyor
- Hydraulic tail stock (quill in & out only)
- Auto V8-M turret tool post, 90M/100M only
- H4+H4, H4+V8, V8+H4, V8+V8, Turrets (In of standard)
- Milling unit, 90M/100M only
- Axial mill holder, 90M/100M only
- Radial mill holder, 90M/100M only
- Deep hole boring bar device (ø 100 × 150/200mm)
- Tool setter
- Tool holders
- Boring bar sleeves and drill sleeves
- Full length rear chip guard and single front door
- Full enclosed chip guard

STANDARD CNC CONTROL FEATURES

FANUC 21i-TB CONTROL FEATURES:

- Simultaneously controllable axes : 2
- Minimum programmable increment : 0.001mm(0.00001")
- Tape storage length : 320m(1050 feet)
- Registerable programs : 63
- Backlash compensation
- Pitch error compensation
- Constant surface speed control
- Self diagnostic functions

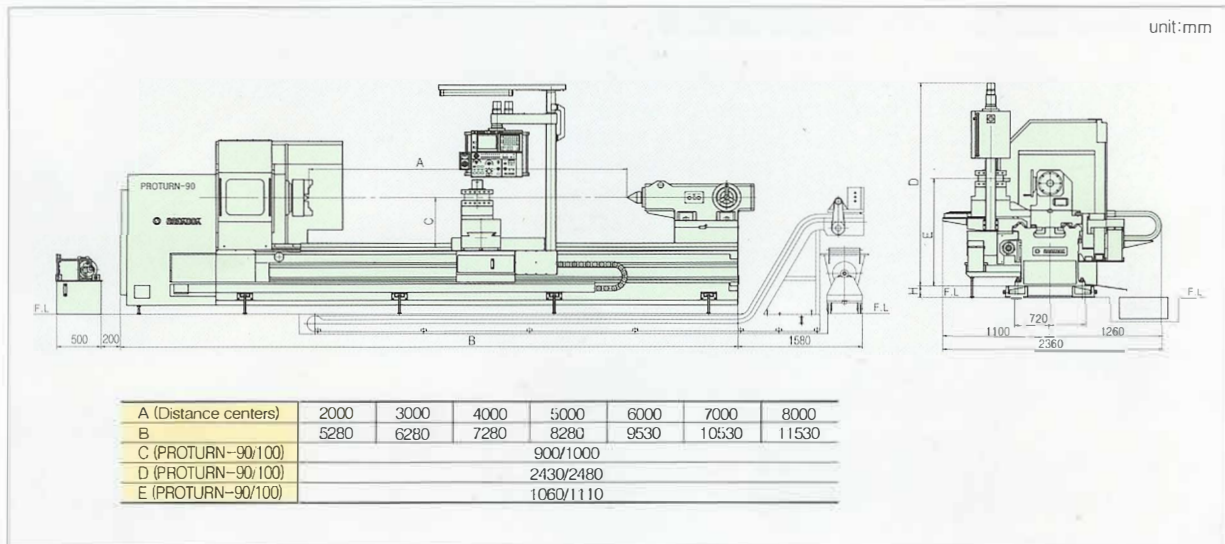
PROGRAMMING FEATURES:

- Circular interpolation by radius designation
- Tool nose radius compensation(G40-G42)
- Combined use of absolute/incremental command
- Inch/Metric programming
- Chamfering, corner R
- Multiple repetitive cycles(G70-G76)
- Canned cycles(G90,G92,G94)
- Decimal point programming
- Reference point return(G27-G30)
- Sub-program 4 holds nested

OPERATION FEATURES:

- 10.4" color LCD
- Absolute position encoders(no zero return required)
- Geometry and wear offsets
- 16 pairs of tool offsets
- Run hour display
- Thread cutting retract
- Direct input of offset value measured
- Input/output interface(RS232C)
- Keyboard type manual data input (MDI full key)
- Program protect key
- Incremental offset
- Rapid traverse override
- Feed rate override
- Spindle speed override
- Tape code:EIA, ISO Automatic recognition

EXTERNAL DIMENSIONS



• Specifications and features are subject to change without prior notice.



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