



10XP
SERIES

RETOS
VARNSDORF

RET10X

T-TYPE HORIZONTAL
BORING MILL

RET10X

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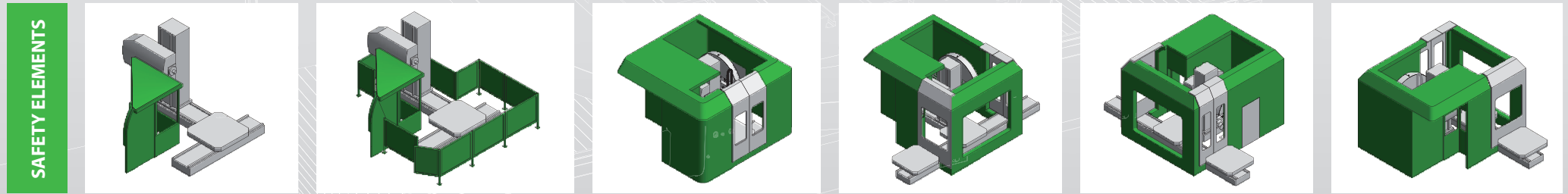
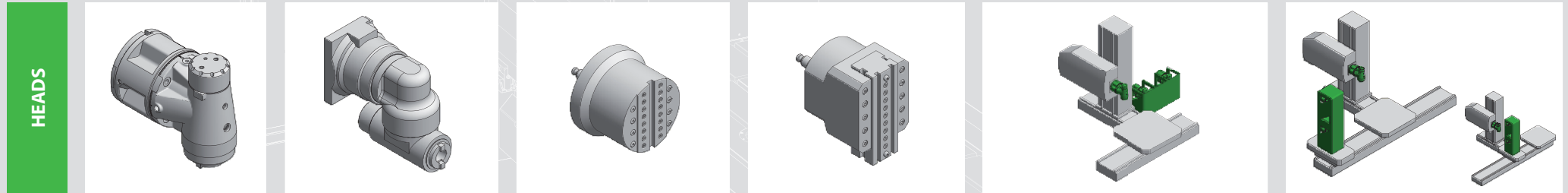
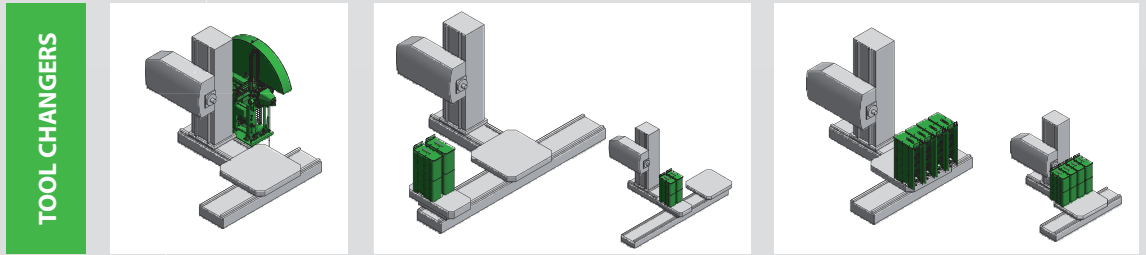
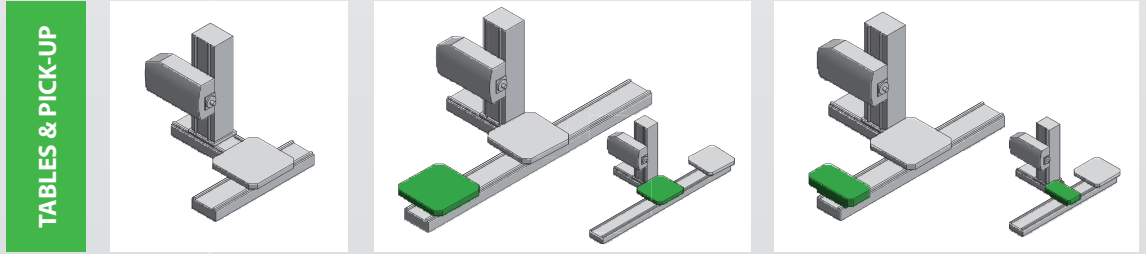
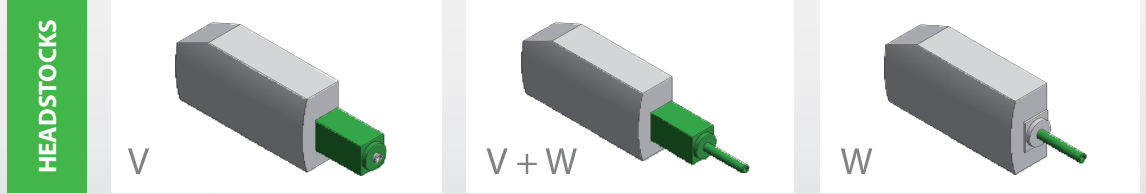
RET10X – T-TYPE HORIZONTAL BORING MILL DESIGNED BY RETOS VARNSDORF



- Thanks to its unit principle, this machine excels in a maximum variability of design for various technological applications.
- According to your specific needs, you can choose between feeds in the V axis (ram) or W axis (spindle) or in both of them.
- Travel ranges in the main axes X, Y and Z, the size and number (1 or 2) of clamping plates with various functions (interpolation, positioning rotary tables, non-rotating tables) can be customized. In addition, milling heads, facing heads, ATCs and further accessories are available.

X OPTIONS

A MACHINE THAT MEETS YOUR REQUIREMENTS



GENERAL INFORMATION

FEATURES

- contouring T-type of horizontal boring machine
- 4 / 5 linear axes + rotary / non-rotary table
- sliding ram / workspindle or a combination of them
- machine designed for universal use in mechanical engineering production
- suitable for roughing as well as for finishing
- travel ranges, number of axes, and clamping plates (1 or 2) and the level of coverage can be customized according to your specific needs
- according to your needs, option of fitting with a broad spectrum of accessories, such as automatic tool changing systems (ATC), various milling heads and milling head changing systems (AHC), a facing head, tool cooling kit (CHZ), cooling through spindle axis (CHOV), oil-mist cooling (CHM) or swarf conveyor
- it is ready for "Industry 4.0"

CONTROLLING OF THE MACHINE

- all machine functions, except for clamping and unclamping, are controlled via the control panel, which consists of a keyboard, a switch panel and an LCD monitor
- the clamping and unclamping of tools is controlled by the key on the headstock
- the control panel is supplemented by a portable control panel (handwheel), which duplicates some of the basic control functions of the machine
- the control panel is swivellingly connected to the wall inside the operator housing
- the control system allows manual, semiautomatic and fully automatic modes
- the standard communication interface allows a connection with the Ethernet for easy administration and distribution of technological programs, machine operation monitoring, diagnostics or servicing of the control system, etc.

STANDARD VERSION ►

CONTROL SYSTEM

- HEIDENHAIN TNC 640 + handwheel
- HEIDENHAIN drives
- SIEMENS motors

POWERED AXES

- X – travel of rotary table slide on transversal bed
- Z – travel of column slide on longitudinal bed
- Y – vertical headstock travel on column
- V – ram travel
- B – table rotation
- S – workspindle rotation

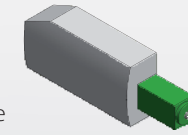
MACHINE CAPABILITIES

- interpolation controlled X, Y, Z, V axes
- B axis controlled as positioning axis
- linear interpolation
- circular interpolation
- spiral interpolation
- spacial interpolation – spline in space
- interpolation of S and Z (V) axes – spindle rotation depending on the Z (V) axis position – enables thread cutting without use of a compensating bushing
- potential limitations regarding the machine capabilities due to territorial differences in the control system's NC program

RETIOX

V1 HEADSTOCK

- sliding ram
- non-sliding workspindle
- spindle cavity blown with air during tool-changing cycle
- spindle driven by two speed ranges – speed reduction gear
- hydraulic shifting of each speed range
- set-up for tool cooling kit on ram front side



KINEMATICS OF THE X, Y, Z AXES

- brushless digital servomotor with servo-drive
- clearance-free gearing by timing belt
- ball screw

KINEMATICS OF THE V AXIS

- brushless digital servomotor with servo-drive
- planetary gearbox with minimum clearance
- ball screw

KINEMATICS OF THE B AXIS – V1 TABLE

- brushless digital servomotor with servo-drive
- planetary gearbox with minimum clearance
- gear ring

GROUP GUIDANCE

- X, Y, Z, V axes – Caged Roller LM Guides
- B axis – crossed roller slewing bearing

LUBRICATION

- central, axial lubrication
- frequency of lubrication cycles correlates with travelled track of the particular group

CLAMPING

- X, Y, Z, V axes – not clamped – positional feedback
- B axis – hydraulically

HYDRAULIC POWER PACKS

- HYTOS lubrication set – lubrication of all axes
- HYTOS pressure set – unclamping of tools, fixing of B

POSITION MEASUREMENT

- X, Y, Z axes – HEIDENHAIN absolute digital optical linear encoders
- V axis – absolute rotary encoder in motor
- B axis – HEIDENHAIN absolute angle encoder
- S axis – HEIDENHAIN incremental rotary encoder

COVERAGE OF MACHINE

- X, Y, Z axes – fully enclosed groups

MACHINE PARAMETERS

Tool Standard		
Clamping taper	50	ISO
Tool shank	69871	DIN
Clamping adapter – screw	4100793	TOS
Headstock – V1, V2, V3		
Ram cross section – width x height	315 x 380	mm x mm
Workspindle diameter	105	mm
Spindle speed range	10 - 3500	rpm
Main motor power (S1/S6-40%)	22 / 34	kW
Maximum torque of the spindle (S1/S6-40%)	567 / 851	Nm
V... ram stroke	650	mm
W... spindle stroke	610	mm
Feeds... V, W – manual mode	4 - 500	mm / min
Feeds... V, W – automatic mode	4 - 10000	mm / min
Rapid traverse... V, W	13000	mm / min
Other Axes		
X... transversal travel of table	1000, 1250, 1500, 1750, 2000	mm
(rapid traverse 18 m / min)	2500	mm
(rapid traverse 13 m / min)	3000	mm
Z... longitudinal travel of column	1000, 1250 , 1500, 1750, 2000	mm
Y... vertical travel of headstock	1000, 1250, 1500, 1750, 2000	mm
Feeds... X, Y, Z – manual mode	4 - 500	mm / min
Feeds... X, Y, Z – automatic mode	4 - 10000	mm / min
Rapid traverse... X, Y, Z	25000	mm / min

Rotary Table – V1, V2		
Table clamping surface	1250 x 1250	mm x mm
	1500 x 1500	mm x mm
	diameter 1300	mm
Width of T-slots	22 H8	mm
Table loading capacity	8000	kg
Feeds of table rotation... B ...V1/V2	0 - 8 / 0 - 16	rpm
Rapid traverse of table rotation... B ...V1/V2	14 / 21	rpm
Planing Table – V3		
Table clamping surface	1250 x 1250	mm x mm
	1500 x 1250	mm x mm
	1500 x 1500	mm x mm
Width of T-slots	22 H8	mm
Table loading capacity	8000	kg
Total power consumption		
	65	kVA
Machine weight – standard		
	11000	kg
Machine and accessories standard colour		
	white 9010 / green 6018	RAL
Fence standard colour		
	black 9011 / yellow 1018	RAL
Total area including CE – approximate, standard		
	5900 x 8000	mm x mm

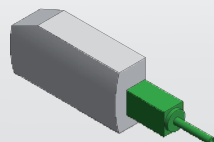
OPTIONALLY ►

CONTROL SYSTEM

- SIEMENS SIN 840D + handwheel
- SIEMENS drives and motors

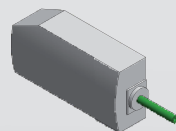
V2 HEADSTOCK

- sliding ram – V axis
- sliding workspindle – W axis



V3 HEADSTOCK

- non-sliding, fixed ram
- sliding workspindle – W axis



V2 / V3 HEADSTOCK

- W drive – servomotor, planetary gearbox, ball screw
- W guidance – Caged Roller LM Guides
- W clamping – not clamped – positional feedback
- W measurement – absolute rotary encoder in motor
- for further details see V1 Headstock

V2 TABLE

- B axis interpolation controlled
- cylindrical interpolation using the rotary table
- drive – 2 servomotors (Master/Slave), 2 planetary gearboxes, gear ring
- for further details see V1 Table

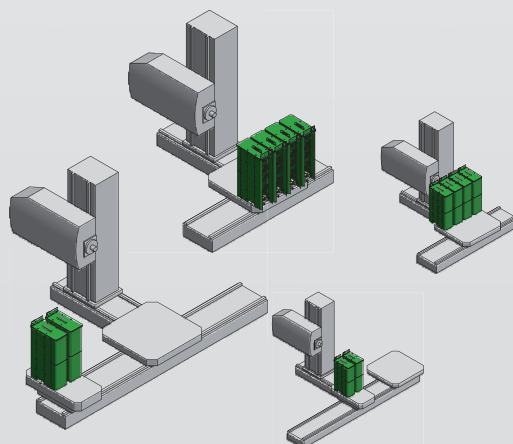
V3 TABLE – non-rotating table

2 TABLES – arbitrary combination of V1, V2, V3 tables

- palletising mode – 1st active table with 2nd table in idle mode
- coupling mode – tables behave like 1 clamping surface travelling together along the X axis
- other purposes of use need to be clarified before ordering the machine

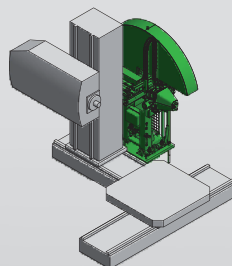
ATC R04-10 – AUTOMATIC TOOL CHANGER

- rack system on the table or pick-up
- application of several racks at various places possible
- tool changing by workspindle of the machine
- including TS 460 workpiece touch probe



ATC R03-30/40 – AUTOMATIC TOOL CHANGER

- the ATC is a separate unit
- magazine with servodrive for tool pocket positioning
- changer driven electrically / pneumatically



ATC R04-10 Parameters

Tool changing time	20	s
Number of tools in one rack	10	pcs
Maximum number of racks – table – V1, V2	4	pcs
Maximum number of racks – pick-up – fixed	2	pcs
Maximum number of racks – pick-up – rotary	4	pcs
Tool pocket pitch	130	mm
Maximum tool diameter	125	mm
Maximum tool length	500	mm
Maximum tool weight	15	kg
Weight without tools	110	kg

ATC Parameters

	R03-30	R03-40	
Tool changing time	15	15	s
Number of tools	30	40	pcs
Tool pocket pitch	130	130	mm
Maximum tool diameter – unrestricted	125	125	mm
Maximum tool diameter – with free pockets	200	200	mm
Maximum tool length	500	480	mm
Maximum tool weight	15	15	kg
Maximum weight of tools in magazine – total	250	300	kg
Maximum tool unbalance in magazine wheel	50	70	kg
Maximum wheel speed	8	5	rpm
Operating air pressure	5	5	bar
Required air purity	40	40	µm
Weight without tools	1240	1380	kg

OPTIONALLY ◀

CHZ – TOOL COOLING KIT – FLUID

- tool cooling set with jets on headstock front side
- cooling unit integrated into the foundation of the machine
- unit with pump and level gauge
- tank (pit) volume approx. 150 l (usable)
- maximum pressure 4 bar / 32 l/min
- set-up for tool cooling always included – distribution pipes, jets

CHZ-V – TOOL COOLING – AIR

- cold air gun
- cooling without a thermal shock
- positive impact on the accuracy and the surface quality
- high reliability
- environmentally friendly
- almost zero operating costs

CHOV-K – COOLING THROUGH SPINDLE AXIS – FLUID

- not possible to add into configuration, once the production has started
- separate cooling unit with filter and magnetic swarf separator
- tank volume 1000 l
- maximum pressure 40 bar / 30 l/min
- other alterations to machine and CE features
- for pressure higher than 10 bar a workpiece or machine cover is necessary

CHOV-V – COOLING THROUGH SPINDLE AXIS – AIR

- not possible to add into configuration, once the production has started
- maximum pressure 5 bar

CHOV-M – COOLING THROUGH SPINDLE AXIS – OIL-MIST

- not possible to add into configuration, once the production has started
- separate programmable cooling unit
- maximum pressure 5 bar

CHM – OIL-MIST COOLING

- with V3 headstock only (external supply for cooling medium)
- can be added to machine at any time
- easy to install
- easy to use

SWARF CONVEYOR

- in the concrete foundation of the machine
- between the beds along the X axis

CE – COMPULSORY IN EU

- comprehensive safety elements according to the applicable legislation and technical standards
- operator housing
- protective workpiece cover
- working area of the machine is fenced off
- fully enclosed machine

- machine design can be customized

ACCESSORIES



STANDARDLY DELIVERED ACCESSORIES

- VP10-170 spindle guiding support – for sliding spindle only
- VK-ISO50 cleaning brush
- clamping adapters – 15 pieces
- KM anchoring kit
- basic tool kit for operation and maintenance of the machine
- basic spares kit
- accompanying technical documentation

OPTIONAL ACCESSORIES

- VP10-320 spindle guiding support – for sliding spindle only
- VP10-470 spindle guiding support – for sliding spindle only
- HPR50, FP40 vertical manual milling head
- HUR50, UFP40 universal manual milling head
- SEMPUCO vertical and universal indexing head
- SEMPUCO universal NC milling head
- COGSDILL facing head – with V2, V3 headstocks only (spindle feed necessary)
- SHC – semiautomatic head changer
- AHC – automatic head changer
- LN100X steady rest (tailstock) + technological accessories
- UK500, UK1000, UK1500, UK2000 clamping cube
- UU800, UU950, UU1120, UU1450, UU1620, UU2000 clamping angle plates
- spares kit for 3-year operation
- HEIDENHAIN DA400 compressed-air filter system
- 3D touch probes with radio/infrared signal transmission (Heidenhain/Renishaw/Hexagon)
- HEIDENHAIN HR 550 FS wireless handwheel
- CE security mode 3 (for German market only)

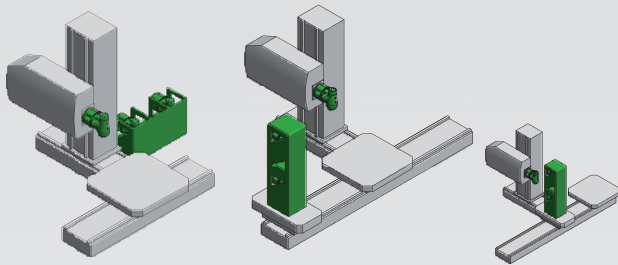
MILLING HEAD CHANGER

SEMIAUTOMATIC MILLING HEAD CHANGING (FOR MANUAL HEADS)

- first step – crane puts head onto the table
- second step – headstock and ram put head onto the ram front
- head clamping – manually / automatically according to the head
- max. 3 milling heads

AUTOMATIC MILLING HEAD CHANGING (FOR AUTOMATIC HEADS)

- changing – headstock, ram, pick-up
- head clamping – automatically
- max. 3 milling heads
- option of combining it with the tool changer R04-10



MANUAL MILLING HEADS

HPR50 – TOS VARNSDORF

- vertical manual milling head
- hydraulic tool clamping / unclamping by means of tongues
- tool cooling through the spindle axis or by means of jets

HUR50 – TOS VARNSDORF

- universal manual milling head
- hydraulic tool clamping / unclamping by means of tongues
- tool cooling through the spindle axis or by means of jets

AUTOMATIC MILLING HEAD

KF-D2/90 – SEMPUCO

- vertical positioning milling head
- one-axis, 90°, pitch 1° or 2,5°

KFU-D2/90 – SEMPUCO

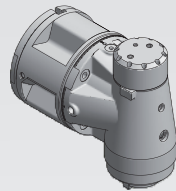
- universal, orthogonal positioning milling head
- two-axes, 90° / 90°, pitch 1° or 2,5°

KFU-D2/45 – SEMPUCO

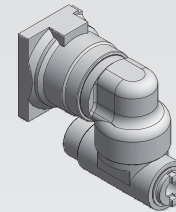
- universal positioning milling head
- two-axes, 90° / 45°, pitch 1° or 2,5°

KFU-NC2/45 – SEMPUCO

- V1 – universal milling head – dividing accuracy 5" (0,0014°)
- V2 – universal NC milling head, for NC mills
- two-axes, 90° / 45°, continuous



manual milling head
HPR50



automatic milling head
KFU-D2/90

FACING HEADS **RETIOX**

BASIC INFORMATION

- mechanical facing head driven by machine spindle
- slide stroke derives from work spindle stroke
- coolant supply for the tool through spindle axis
- surface quality up to Ra1,6; hole accuracy H7

ZX 200-TC – COGSDILL

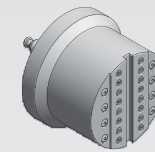
- Dmax = 500 mm; Mmax = 100 Nm; Nmax = 800 rpm; m = 107 kg
- slide stroke U axis = 38 mm

ZX 300-TC – COGSDILL

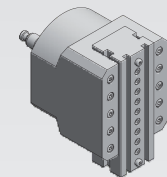
- Dmax = 800 mm; Mmax = 800 Nm; Nmax = 500 rpm; m = 168 kg
- slide stroke U axis = 75 mm

ZX 420-TC – COGSDILL

- Dmax = 980 mm; Mmax = 800 Nm; Nmax = 350 rpm; m = 175 kg
- slide stroke U axis = 102 mm



ZX-200-TC



ZX-420-TC

RETOS VARNSDORF s.r.o.

CZECH PRODUCER OF HORIZONTAL BORING MILLS WITH WORLDWIDE SALES NETWORK

The development of our new horizontal boring mills has benefitted from our long experience resulting from over 800 overhauls and modernisations. Therefore, we attach great importance to flexibility, easy maintenance, longevity and reliability of our products as well as to maximum environmental friendliness. We are a stable company founded in 1993 with about 100 motivated employees and a turnover of about 8 million €.

WE ARE YOUR PARTNER

- Production
- Sale
- Consultation
- Modernisations
- Overhauls
- Second hand machines
- Service
- Spare parts

PRODUCTION OF NEW MACHINES

- RET10X – CNC T-type boring mill
- RET10P – CNC floor type boring mill
- RET100B – CNC table type boring mill
- customizable machine design with a wide range of technological accessories
- W100A – conventional table type boring mill
- HP100A – conventional floor type boring mill

SERVICE

- Customer service and machine maintenance during and after the warranty period with the option of a service contract
- Geometry measurement and accuracy and performance optimisation of your machine applying conventional methods as well as laser interferometers and ballbars
- Machine relocation (disassembly, transport, assembly, putting into operation)

OVERHAULS AND MODERNISATIONS

- Partial and general overhauls of RETOS VARNSDORF and TOS VARNSDORF boring mills
- CNC and conventional machine types
- Overhauled or modernised machines have technological capabilities comparable with new machines of the same category

MADE IN EUROPE

- Production and overhauls performed by experienced experts at our premises in the Czech Republic
- High-quality gray cast iron parts of traditional Czech production
- ISO 9001 certified

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RET10X



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