



VALUE MEETS OPPORTUNITY

Special Offer Hurth Modul ZFWZ 1600 Hobber

Yes, we advertised price because we know how good it is!

A one of a kind machine at a once in a lifetime price, this Hurth Modul ZFWZ 1.6 meter hobber is ready for your floor! We just equipped this machine with a brand new state-of-the art re-control completed by MTB that includes the new FANUC Oi-F CNC, all new servos & spindle drive systems, all new electrical cabinet enclosure & components, encoder mounts, cables and the list goes on and on! We also included premier features like; Auto back- out on power failure, double helical (herringbone) and measurement of size over pins, balls or span with automatic center distance correction along with MTB's powerful conversational hobbing software. A simplistic program that allows for intuitive data entry, greater gear accuracy and the most user-friendly operation allowing you to quickly store and recall gear, cutter, and process data for jobs.

Frankly, the price alone is reason enough to pursue this machine but then add in the value of the new MTB re-control service and it catapults this machine into another level of performance and galvanizes the unprecedented value of this special offer. As most in gear industry know these machines are prized for their ability to deliver high-margin business, a quick return on investment and enhanced manufacturing capabilities. It's hard to find a better suited workhorse with such a formidable cutting capacity coupled with the advancements in durability, versatility and accuracy! MTB currently has this machine powered up for inspection and ready to hit your floor.

At your convenience please review following pages and let us know if you have any questions or would like to schedule a visit. Again thank you for your interest in this awesome machine!

Sincerely,

Machine Tool Builders Inc
Sales & Marketing Department
PH: 815.636-7502
Info@MachineToolBuilders.com



Machine	
Manufacturer	Hurth Modul
Model	ZFWZ 16
Serial Number	270 502
Year of manufacture	1991
Year of recontrol	2019
Type	Hobber
Description	

Mechanical Specifications				
Number of CNC controlled axes	5	X, Y, Z, A, C		
Number of CNC controlled spindles	1			
Pitch rating	1.411111	DP	18	Mod
Maximum workpiece diameter (w/Tailstock)	62.992	in	1600	mm
Maximum workpiece diameter (wo/Tailstock)	62.992	in	1600	mm
Maximum axial travel	39.370	in	1000	mm
Worktable diameter	62.992	in	1600	mm
Table bore diameter	13.780	in	350	mm
Maximum radial center distance	46.063	in	1170	mm
Minimum radial center distance	9.843	in	250	mm
Maximum axial height from table top	51.181	in	1300	mm
Minimum axial height from table top	11.811	in	300	mm
Maximum hob diameter	12.795	in	325	mm
Maximum hob length	17.717	in	450	mm
Maximum hob shift travel	15.748	in	400	mm
Maximum swivel angle	-45	deg	+45	deg
Hob speed range (Infinitely Variable)	8	to	250	RPM

Hob Spindle Power	63.5	HP	47.4	kW
Machine Power Requirement	113.9	HP	85	kW
Rapid traverse radial	118.1	in/min	3000	mm/min
Rapid traverse axial	59.1	in/min	1500	mm/min
Rapid traverse tangential	15.7	in/min	400	mm/min
Rapid traverse speed of table	50.0	RPM	50	RPM
Machine Length	281.9	in	7160	mm
Machine Width	193.7	in	4920	mm
Machine Height	146.9	in	3730	mm
Approx Machine Weight, net	52,000	lbs	23,500	kg
Plant power	480	VAC	60	Hz

Features

Manually retractable tailstock for large parts
Tailstock with pressure adjustment
Tailstock with swiveling arm
Table bore for large shaft splines
Worm drive hob head for heavy duty cutting

Machine Includes

Side mount coolant tank
Chip Conveyor
Guards
Enclosure
Two copies of the operations manuals
Two copies of the maintenance documentation
1 Year warranty on Fanuc motors and drives only

Additional Accessory Items Included In Purchase

1.25" Hob Arbor	Included
1.5" Hob Arbor	Included
2.0" Hob Arbor	Included
2.5" Hob Arbor	Included
3.0" Hob Arbor	Included
40 mm Hob Arbor	Included
50 mm Hob Arbor (2)	Included
60 mm Hob Arbor	Included
80 mm Hob Arbor	Included
100 mm Hob Arbor	Included



Assortment of hob arbor nuts, regular and face key spacers

Included



Controls

New Fanuc 0i-MF CNC
New Fanuc Alpha HVi Drives and Motors

Base Software

Conversational based platform within the CNC	Included
Automatic or manual overtravel and approach calculations	Included
Auxilliary function selection (tailstock/clamping seq.)	Included
Axial or radial/axial cycles	Included
Radial only cycle	Included
Crowning with high point offset capability	Included
Hobbing of four sequential gears in one cycle	Included
Inch / Metric switchable	Included
Incremental shifting by part count	Included
Multiple program storage and retrieval	Included
Orientation of cutter and workpiece	Included
Programmable dwell	Included
Taper compensation	Included
Shifting with table compensation. (Requires servo controlled Y and C axis)	Included
Up to three sequential cuts per cycle	Included
Tool offsets for quick size changes	Included
Up to four sequential surfaces	Included
Workpiece counter	Included
Simple single indexing (Requires servo controlled C axis)	Included

The MTB premier recontrol offering included all new servo motors, all new spindle motors, new cabling to the motors and all dry rotted cables to machine as well as building a new cabinet with all new feedback systems in use on the machine with new absolute type systems and cables that require no homing of axes. Adding even more value, this machine comes with a variety hob arbors (10), bin of hob arbor nuts, regular and face key spacers and a completely refinished guarding/enclosure. This machine is currently ready for inspection at our Machesney Park facility.

NOTE: Machine Includes Full Enclosure (NOT PICTURED)



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www.machinetoolbuilders.com

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MTB's Recontrol scope-of-supply:

ZFWZ Re-control		
Item	General	
1	All work has been completed per scope-of-supply	Included
2	The machine has been re-controlled with all new CNC and all new drives	Included
3	X axis received a new servo motor	Included
4	Y axis received a new servo motor	Included
5	Z axis received a new servo motor	Included
6	A axis received a new servo motor	Included
7	C axis received a new set of tandem servo motors	Included
8	C axis received a new brake motor	Included
9	The spindle (B) received a new spindle motor	Included
	Cleaning	
10	Machine & enclosure were cleaned, enclosure removed and both painted	Included
	Mechanical	
11	Engineered, manufacture and supplied all motor adaptation flanges, couplings and pulleys.	Included
12	Removed old servo motors and install brand new FANUC servo motors	Included
13	Removed old spindle motor and install brand new spindle motor	Included
14	Removed old encoders and install new encoders	Included
	Hydraulic	
15	MTB interfaced the new CNC with the existing hydraulic system. No hydraulic system modifications were undertaken unless required per the recontrol.	Included
	Lubrication	
16	MTB interfaced the new CNC with the existing lubrication system. No lubrication system modifications were undertaken unless required to complete the recontrol.	Included
	Coolant	
17	MTB interfaced the new CNC with the existing coolant system. No coolant system modifications were undertaken unless required to complete the recontrol.	Included
	Chip Extraction	
18	MTB interfaced the new CNC with the existing chip extraction system. No chip extraction system modifications undertaken unless required to complete the recontrol.	Included
	Electrical	
19	A new electrical cabinet was built and installed with all new equipment inside. IEC devices along with circuit breakers used wherever possible.	Included
20	A new operator's station was built and installed where. It includes the CRT, Keyboard and Machine operation panel mounted inside.	Included
21	All new secondary encoder cabling run.	Included

22	Auxiliary cabinet lighting and programming terminal power supplied.	Included
23	Machine wiring which is not directly a part of the recontrol or retrofit was inspected and any damaged wiring was replaced and connected via terminal strips or plugs within the new panel.	Included
24	MTB provided all wire, tags, conduit, flex and other miscellaneous equipment required to complete the installation per NFPA codes.	Included
25	New Heidenhain ROD426 incremental encoder were installed for the spindle.	Included
26	All axis with scales were replaced with new absolute scales and installed	Included
27	All electrical prints and parts lists were drawn with AutoCAD Electrical.	Included
28	All new servo motor power and feedback cables were run.	Included
29	All new spindle motor power and feedback cables were run.	Included
30	Cabinet was rebuilt but remained in the current location	Included
31	Power requirements are 460VAC; 60Hz. Power figures are available	Included

Controls

32	Brand new Fanuc 0iF CNC	Included
33	All brand new Fanuc Digital Drives and Fanuc Servo Motors.	Included
34	All new Fanuc Digital Spindle was installed replacing current DC motor	Included
35	All new Fanuc Digital Spindle Drive installed	Included
36	NOTE - If your plant power system is not a wye scheme with grounded center point, you will require an isolation transformer for these new drives.	Excluded

Software

37	MTB State of the Art Conversational based Intuitive platform with the CNC	Included
38	Automatic or manual hob swivel angle calculation.	Included
39	Automatic or manual over travel and approach calculations	Included
40	Auxiliary function selection (tailstock/clamping seq.)	Included
41	Axial or radial/axial cycles	Included
42	Crowning with high point offset capability	Included
43	Hobbing of four sequential gears in one cycle	Included
44	Inch / Metric switchable	Included
45	Incremental Shifting	Included
46	Incremental shifting by part count	Included
47	Multiple program storage and retrieval	Included
48	Programmable dwell	Included
49	Radial only cycle	Included
50	Taper compensation	Included
51	Three passes (same or alternating directions)	Included
52	Tool offsets for quick size changes	Included
53	Simple single indexing	Included

Painting

54	The machine, guarding and electrical enclosure have all been painted	Included
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Documentation



55	Two (2) copies of the wiring diagrams on 11x17 paper	Included
56	Two (2) copies of the MTB operators Instruction manuals	Included
57	Two (2) copies of spare parts and service manuals for equipment supplied by MTB	Included
58	Two (2) copies of the PLC logic interface program and backup CDROM	Included
59	Two (2) copies of any mechanical prints for changes which MTB makes during the recontrol / retrofit / rebuild	Included
60	PDF of Fanuc manuals	Included

Installation and Run Off

61	Installation, wire-up, foundation setting, leveling, assembly, runoff or commissioning are the responsibility of buyer	Customer Responsibility
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Build Specifications

63	Electrical, mechanical, hydraulic, pneumatic and safety systems will be installed in accordance with all applicable customer specifications, and ISO, IEEE, ANSI, DIN and NFPA standards	Included
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Premium Options Added

Controls Options

A	Hand held pendant with hand wheel, axis select, dead man buttons, E- Stop button and coil cord installed.	Included
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Software Options

B	MTB replaced all dry rotted cables on the machine in work area and cables that run from cabinet to machine.	Included
C	Double helical (herringbone gears) installed	Included
D	Measurement of size over pins, balls or span with automatic center distance correction installed.	Included
E	Optional ©MTB Generative Gear Milling Software MTB's special software for coarse pitch gear manufacturing	\$39,000.00
F	Power Failure Emergency Retraction	Included
	Special control module and capacitor banks to keep the 24 volts and bus voltage up in the case of plant power failure to provide enough power to withdraw the X axis from the workpiece to avoid damage to the gear or the cutter. Awesome feature and money saver!	Included

Machine Special Pricing

Hurth Modul ZFWZ 1600	\$649,000.00
SPECIAL PRICE	\$562,000.00

Financing available - ask us for details.

If you would like to submit a reasonable offer for consideration please do so in writing



Machine Tool Builders

REBUILDING • RECONTROLLING • SERVICE

**Customer
Responsibilities:**

1. Assembly of the machine after shipment.
2. Provide assistance in the form of ladders, rigging and lifting, and other difficult tasks.
3. Provide all qualified blanks for the machine runoff.
4. Provide all inspection fixtures, pins, micrometers etc. for part inspection, if required
5. Provide part process and inspection criteria.
6. Provide all cutters if purchased run off.
7. Machine's run-off, (cutting of parts, and final acceptance, etc.) to be performed on the customer's floor.
8. Buyer is responsible for all costs associated with rigging, shipping, installation, wire-up, foundation setting, leveling, assembly, runoff & commissioning

Shipping: All shipping and rigging charges, are the responsibility of buyer from our facility to your facility.

Safety: Buyer is responsible for safety systems in connection with the manufacture, use, operation, modification and design of any good, equipment, machine or control purchased hereunder. MTB is not providing any safety related equipment for any good, equipment, machinery or control referenced herein, and consequently MTB cannot be responsible for insuring the safety of the various user personnel. MTB expressly disclaims any such responsibility.

Payment Terms: See "Standard Terms and Conditions of Sale".

Warranty: 1 Year on Fanuc motors and drives following completion of recontrol service power up

Delivery: Delivery for the machine is 1mo ARO and after clarification of all technical details and technical documents. All deliveries are subject to change

Validity: This quote is valid for 30 days from the day of issue.



STANDARD TERMS AND CONDITIONS OF SALE

I, the authorized representative of the Buyer, understand and agree that any contract formed between Buyer and Machine Tool Builders, Inc., an Illinois corporation ("MTB") is conditioned on the following terms and conditions which shall apply to all invoices submitted by MTB to Buyer. I also understand and agree that it is a condition of any contract formed between Buyer and MTB that any terms or conditions that are contained in any acknowledgment hereof, including without limitation any purchase order issued by Buyer to MTB, and which are inconsistent with or in addition to those stated herein, shall have no force and effect, and that MTB expressly rejects any such inconsistent and/or additional terms or conditions.

Acceptance of Order

Orders based on this proposal are subject to acceptance only at MTB's headquarters signed by an authorized representative.

Prices

All prices quoted herein are subject to change (without notice) after 30 days.

Invoice Payment Terms

Invoices shall be issued and paid as follows:

50% of the total purchase price upon acceptance of the purchase order by MTB;

50% of the total purchase price upon shipment;

Above terms apply to all machine purchases UNLESS special arrangements are agreed to by MTB ownership

Invoices shall be paid within 30 days after invoice date. MTB shall charge interest at the rate of 1.5% per month on any amounts unpaid 30 days after invoice date.

Title and Delivery

Goods shall be delivered FOB Seller's facility. Title and liability of loss or damage to such goods shall pass to Buyer upon Seller's loading of the goods onto the Buyer's designated truck or other mode of transport. Buyer shall bear all transport expenses, liability, and all tax expenses (e.g., sales, use or other), associated with delivery of all goods. Buyer must pay any such taxes and indemnify MTB against any claim or liability for such taxes.

Shipping dates are approximate. MTB shall not be liable for any loss or expense (e.g., consequential, incidental or otherwise) incurred by Buyer or Buyer's customers if MTB fails to meet any specified delivery schedule. Estimated delivery times assume timely receipt of all necessary information and material from Buyer. MTB may make partial shipment and invoice for same at MTB's reasonable discretion. Buyer agrees that all goods may be manufactured by or for MTB to fulfill this order, and delivery dates are based on the assumption that there will be no delay due to causes beyond the reasonable control of MTB. MTB shall not be



charged with any liability for delay or non-delivery when due to delays of suppliers, acts of God, the public enemy, compliance in good faith with any applicable foreign/domestic governmental regulations or order whether it proves to be invalid, fires, riots, labor disputes, severe weather or any other cause beyond the control of MTB. To the extent that such causes delay deliveries, the time for the performance shall be extended by a period of time *mutually* agreed upon by the parties.

Software

All software is owned by MTB or its suppliers and it is protected by all copyright laws. Buyer can use software on a single machine controller. The Buyer may not resell, rent or lease the software without paying an additional software license royalty (agreed to by MTB). Buyer may transfer the software and accompanying written materials on a permanent basis, provided Buyer retains no copies and the recipient agrees to the terms of this contract. Buyer may not reverse engineer, decompile or disassemble the software. If the software is updated, any transfer must include the most recent update and all prior versions. Buyer may make a copy of the software solely for backup or archival purposes. Buyer may not copy the written materials accompanying the software.

Warranty:

A. Hardware

There is no warranty for used equipment or used parts. However, the following warranties shall apply:

1. MTB warrants that all new equipment manufactured by MTB and supplied hereunder, will be free from defects in materials or workmanship for 12 months from the date of shipment. If a failure occurs during this period, MTB shall, upon prompt notice, correct such failure (at its option) by either repair or replacement at the jobsite or at CIF MTB's designated repair facility. If any repair or replacement is done at the jobsite, it shall be made at no charge for warranty labor when work is performed during MTB's normal working hours. Labor performed at any other times will be billed at the applicable rates for services of MTB personnel.
2. MTB warrants repair equipment and parts for 90 days from the date of shipment, provided that any repair or replacement shall not renew or extend the warranty period of such equipment. Replaced equipment or parts become the property of MTB. Equipment and parts supplied hereunder which have been purchased by MTB from other manufacturers shall only have the warranty offered by the manufacturer thereof.
3. MTB warrants that rebuilt, reconditioned, re-manufactured, re-controlled, or retrofitted machinery will be free from defects in materials or workmanship for 12 months from the date of shipment. The warranty applies solely to workmanship and MTB manufactured or engineered parts installed by MTB. This warranty is void if the machine is abused, experiences a lack of routine maintenance, and is used for work which the machine is not rated to perform, operated in an unsafe manner, or damaged by accident.
4. A charge will be made for parts and services, which either fall into the general category of normal maintenance, are needed to make additions or modifications requested by Buyer, or are needed to make repairs not covered by this warranty (e.g., damages caused by accident, misuse, or neglect).
5. The Buyer is responsible for all recommended normal maintenance and plant supplied power sources. Failure to supply clean dry air, clean non-fluctuating plant power, proper coolants and oils will void the warranty on any affected items.

B. Software:

MTB warrants that all software will be free from defects in materials and workmanship under normal use for 90 days from the date of shipment. Standard software products sold by MTB under license to Buyer are warranted for 90 days from the date of shipment. Software developed for Buyer's application is warranted for 12 months from the date of shipment. This warranty is waived if the software is modified without MTB's consent. If a warranty claim is made, MTB's sole liability is limited to providing programming services to attempt to correct any substantial nonconformity.

C. Service:

MTB warrants that where it undertakes to perform or assist in any servicing, installation, demonstration, repair or replacement, its performance or assistance will be free from defect in material or workmanship.

THE FOREGOING WARRANTIES FOR HARDWARE, SOFTWARE AND SERVICE ARE EXCLUSIVE. MTB MAKES NO OTHER WARRANTIES EITHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY OR THE WARRANTY OF FITNESS FOR PARTICULAR PURPOSE.

Limit of Liability

MTB's sole and exclusive liability hereunder shall be limited to repair or replace equipment or parts thereof found to be defective within the warranty period or, upon failure of such remedy, to refund to Buyer the purchase price of the equipment or part thereof which gives rise to the claim. **IN NO EVENT SHALL MTB BE LIABLE TO BUYER FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES WHETHER IN CONTRACT, TORT, NEGLIGENCE OR STRICT LIABILITY, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS OR REVENUE, LOSS OF USE OF THE EQUIPMENT OR ANY ASSOCIATED EQUIPMENT, COST OF SUBSTITUTE EQUIPMENT, DOWNTIME COSTS, OR OTHER DAMAGES TO BUYER OR ITS CUSTOMERS.**



Remedies and Damages

If MTB breaches any provisions of this contract, MTB's sole and exclusive maximum liability and Buyer's sole and exclusive remedy whether based on contract, tort, or otherwise, shall not in any event exceed the contract price for the particular item of equipment involved. No action shall be brought for breach of this contract more than one year after the accrual of the cause of action thereof.

Safety Equipment

Buyer is responsible for all safety systems in connection with the manufacture, use, operation, modification and design of any good, equipment, machine or control purchased hereunder. MTB is not providing safety related equipment for any good, equipment, machinery or control referenced herein, and consequently MTB cannot be responsible for insuring the safety of the various user personnel. MTB expressly disclaims any such responsibility.

Expenses and Attorneys' Fees

Buyer agrees to pay MTB's reasonable costs, expenses and attorneys' fees incurred by MTB in enforcing Buyer's obligations or MTB's rights hereunder, and/or in collecting any money due from Buyer or in successfully defending against any claim made by Buyer.

Applicable Law

The validity, performance and construction of this contract shall be governed by the laws of the state of Illinois. Buyer further agrees and consents to the jurisdiction of any court located in Winnebago County, Illinois, and venue for all actions involving MTB and Buyer shall be in Winnebago County, Illinois.

Waiver

The failure of MTB to enforce at any time any of the provisions of this contract, to exercise any election or option provided herein, or to require at any time performance by Buyer of any of the provisions hereof shall not way be construed as a waiver of such provisions, rights or remedies, nor in any way to affect the validity of this contract or the right of MTB thereafter to enforce each and every such provision, right or remedy.

Acceptance

After completion of a runoff to MTB standards, or the completion of a runoff to predetermined and MTB accepted Buyer standards, the Buyer's representative in attendance at the MTB designated runoff facility will sign a form indicating acceptance of the design, build, and materials of all MTB supplied equipment, authorizing MTB to disassemble and ship the equipment without further modification.

Validity

In the event that any of the provisions of this contract shall be held by a court or other tribunal of competent jurisdiction to be unenforceable, the remaining portions of this contract shall remain in full force and effect.

Authority

Buyer has the requisite power and authority to execute and deliver this contract. The execution and delivery by Buyer of this contract, as well as the consummation of the transactions contemplated hereby, do not require any consent, waiver, approval, exemption, authorization, or other action by any other person or entity.

Absence of Duress

This contract and the documents to be executed pursuant to its provisions have been executed by the parties voluntarily and in good faith, with the benefit of legal counsel, without any fraud, misrepresentation, duress, undue influence, or misunderstanding by any of the parties.

Cancellation

Upon termination or cancellation of any order, Buyer shall pay MTB the following: (1) on all machines and controllers, whether incorporated into a system or sold as an individual unit, the full purchase order price applicable to the machines and/or controllers; (2) the purchase order price for all items or services which have been completed in accordance with this order and not previously paid for; (3) the actual costs plus a reasonable profit, not to exceed the aggregate purchase price specified by MTB in furnishing the items or services under this order, or any amendments to this order, to the extent such costs are reasonable in amount and are properly allocable for apportionment, under generally accepted accounting practices, to the terminated portion of this order. Buyer will make no payments for finished work, work-in-process or raw material fabricated or procured by MTB in amounts in excess of those authorized in delivery schedules.

Entire Contract

This contract constitutes the entire contract between the parties and it supersedes all previous communications, representations or contracts, either oral or written. No representations or statements made by any representative of MTB, which are not stated herein, shall be binding on MTB. No addition to or modification of any provision of the contract shall be binding on MTB unless made in writing and signed by MTB's duly authorized representative.