1979

124

Fellows
The profit shapers +

Through more than three-quarters of a century, Fellows has served a worldwide market for gear production and inspection equipment and has earned international acceptance as a leader in this field. Today, working from one of the largest facilities in the world devoted entirely to gear manufacturing equipment, Fellows is better equipped than ever to help make your production more efficient.

GEAR SHAPERS

A full line capable of cutting involute and noninvolute forms including spur, helical, internal, and external gears and splines. External pitch diameters up to 100″ (2540 mm), internal pitch diameters up to 100″ (2540 mm), and face widths up to 12″ (305 mm).

GEAR HOBBING MACHINES

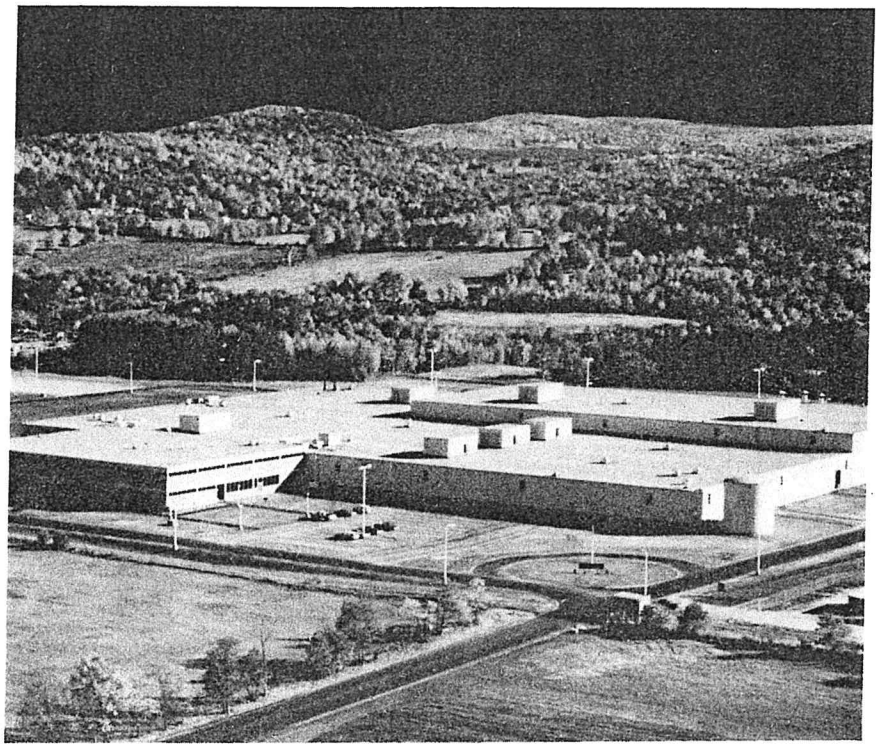
With a workpiece diameter capacity of 200 mm (7.87″), the new FH200 Universal Hobbing Machine is the forerunner of a full line of new Fellows Hobbers now on the way and offering capacities up to 1250 mm (49.2″).

GEAR SHAPER CUTTERS

Designed by computer to eliminate guesswork and insure optimum cutter form for the specific requirements of each job.

GEAR INSPECTION INSTRUMENTS

Composite (Red Liner), lead, involute, and index measuring instruments. Pitch diameter capacities to 24″ (610 mm) for lead, involute, and composite errors and to 36″ (914 mm) for index errors.



An **EMHART** Unit

FELLOWS "HYDROSTROKE" GEAR SHAPERS

D-1

Chip cut on "HYDROSTROKE" Gear Shaper

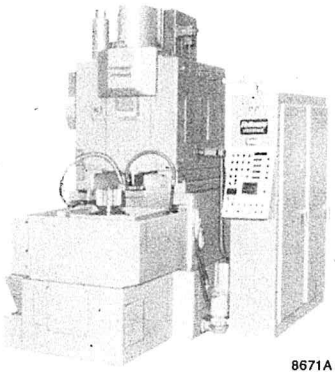
D-2

Chip cut on conventional gear shaper

The exclusive Fellows patented "HYDROSTROKE" system has added an entirely new perspective to the gear cutting process. On most applications within their normal capacities, it is not uncommon for Fellows "HYDROSTROKE" Gear Shapers to achieve performance increases of 300% compared with other shapers in their size range. This is possible, in part, because Fellows hydromechanical stroking places the entire cutting force at the heart of the machine, concentric to the cutter spindle. This results in minimum power loss, with optimum cutting stroke accuracy and efficiency. In addition, "HYDROSTROKE" senses cutting force at near constant cutting velocity and automatically regulates hydraulic pressure and flow to meet cutting conditions.

FELLOWS 100-12 "HYDROSTROKE" GEAR SHAPER

The Fellows 100-12 "HYDROSTROKE" is the largest gear shaper made in America and handles pitch diameters up to 100"(2540 mm) and face widths up to 12"(305 mm). Developed expressly to shape gears for such applications as marine drives, ordnance components, and power generating equipment, the No. 100-12 "HYDROSTROKE" Gear Shaper can be expected to introduce standards of precision and productivity previously considered impossible in work of this size.



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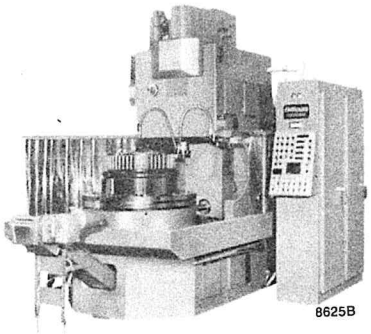
FELLOWS 20-8 "HYDROSTROKE" GEAR SHAPER

Combining the upright (with its patented, hydromechanical stroking system) of the No. 50-8 "HYDROSTROKE" Gear Shaper with the proved-rigid base structure of the No. 20-4, the Fellows No. 20-8 brings new standards of productivity and versatility to the many types of work within the medium work-size range. Maximum capacities are 20" (254 mm) pitch diameter and 8" (203 mm) face width.



8625B

FELLOWS 50-8 "HYDROSTROKE" GEAR SHAPER

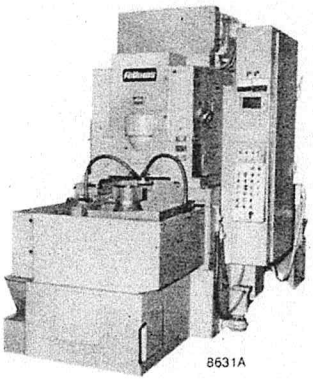
First of Fellows' new patented "HYDROSTROKE" Gear Shapers to be produced and introduced to industry, the No. 50-8 handles pitch diameters up to 50" (1270 mm) and face widths up to 8" (203 mm). This machine has enabled performance levels clearly above those of other gear shapers for the production of massive gears required for construction equipment, off-the-road vehicles, and a variety of similar applications. The 50-8 "HYDROSTROKE" Gear Shaper is available with an optional face width capacity of 12" (305 mm).

FELLOWS GEAR CUTTING MACHINES

Throughout its history, Fellows has planned its product lines to meet industry's needs for a full range of work size capacities—and equally important, its needs for always more efficient production. For this reason, Fellows augmented its lines just a few years ago with its "New Generation" Gear Shapers. Capable of very high stroking speeds, these new machines combine the traditional shaper advantages of superior versatility, accuracy, and finish with a greatly increased productive capacity.

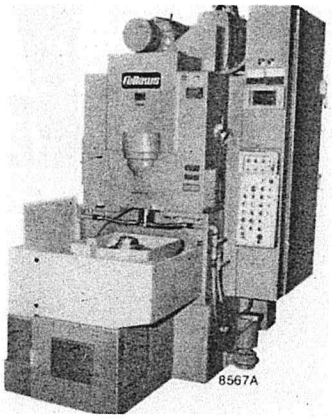
More recently, Fellows introduced its entirely new "HYDROSTROKE" Gear Shapers. Representing the first successful application of hydro-mechanical stroking to the gear shaping process, these Fellows machines are setting new standards for productivity, versatility, and operating efficiency.

Finally, making it possible to offer customers the optimum choice for any gear cutting application, Fellows has re-entered the hobbing field with its new model FH200—the first in a comprehensive line of Fellows Universal Hobbing Machines now on the way.



NO. 20-4 GEAR SHAPER

A fast-stroking, high-production gear shaper similar in design to the Fellows No. 10-4, but offering increased work size capacity. Handles pitch diameters to 20" (508 mm) and face widths to 4" (102 mm) with a face width capacity of 5" (127 mm) optionally available.



NO. 10-2 and NO. 10-4 GEAR SHAPERS

High-production machines with stroking speeds up to 1300 strokes per minute for the No. 10-2 and 800 for the No. 10-4. Cut spur, helical, crowned, and tapered gears. Backing off the cutter spindle instead of the more massive work spindle enables very high operating speeds with minimum noise and vibration. Close tolerances and fine finishes are consistently maintained. Internal and external pitch diameters to 10" (254 mm). Face widths to 2" and 4" (51 and 102 mm). Face width to 5" (127 mm) optionally available.

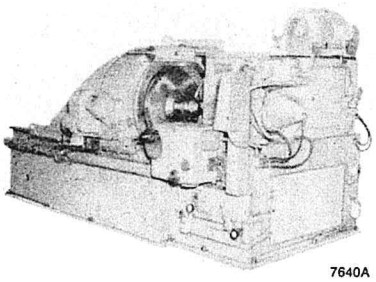
CAPACITIES AND DIMENSIONS

SHAPER MODEL	MAX PITCH DIAM		MAX FACE WIDTH	MAX DIAM PITCH		MAX HELIX ANGLE	MAX DIMENSIONS			NET WEIGHT
	EXTERNAL	INTERNAL		SPUR	HELICAL		LENGTH	HEIGHT	DEPTH	
10-2	10" 254 mm	10" 254 mm	2" 51 mm	4 6.4 mod	5 5 mod	45°	119" 3.01 m	96.5" 2.45 m	53" 1.35 m	12,000 lb 5443 kg
10-4	10" 254 mm	10" 254 mm	4" 102 mm	4 6.4 mod	5 5 mod	45°	119" 3.01 m	96.5" 2.45 m	53" 1.35 m	12,000 lb 5443 kg
20-4	20" 508 mm	20" 508 mm	4" 102 mm	4 6.4 mod	5 5 mod	45°	126" 3.20 m	112.5" 2.85 m	64" 1.65 m	16,000 lb 7256 kg
20-8 "HYDRO-STROKE"	20" 508 mm	20" 508 mm	8" 203 mm	3 8.5 mod	3 8.5 mod	40°	147" 3.7 m	101" 2.6 m	68" 1.7 m	18,000 lb 8165 kg
50-8 "HYDRO-STROKE"	50" 1270 mm	50" 1270 mm	8" 203 mm	2 12.7 mod	2 12.7 mod	40°	226" 5.74 m	119" 3.02 m	90" 2.29 m	33,500 lb 15,196 kg
100-12 "HYDRO-STROKE"	100" 2540 mm	100" 2540 mm	12" 305 mm	2 12.7 mod	2 12.7 mod	40°	275" 6.98 m	154" 3.91 m	167"* 4.24 m	70,000 lb 31,752 kg
10 x 6 HORIZ. Z	10" 254 mm	13" 330 mm	7.5" 191 mm Push Stroke 4" 102 mm Pull Stroke	3 8.5 mod	4/5 6.4/5 mod	45°	168" 4.25 m	79" 2.00 m	88" 2.25 m	22,200 lb 10,070 kg

4-2 STEERING SECTOR	MAX PITCH RADIUS EXTERNAL ONLY	MAX FACE WIDTH	MAX DIAM PITCH	ANGLE OF TEETH TO SHAFT AXIS	MAX DIMENSIONS			NET WEIGHT
					LENGTH	HEIGHT	DEPTH	
	2" 51 mm	2" 51 mm	3 8.5 mod	4° to 7½°	76" 1.9 m	98" 2.5 m	82" 2.1 m	14,000 lb 6350 kg

FH200 HOBBER	MAX WORKPIECE DIAM EXTERNAL	MAX DIAM PITCH	MAX AXIAL HOBBING TRAVEL		MAX DIMENSIONS			NET WEIGHT
					LENGTH	HEIGHT	DEPTH	
	200 mm 7.87"	5 mod 5.08	240 mm 9.45"		2.89 m 112.25"	2.0 m 78.74"	2.55 m 100.4"	6200 kg 13,640 lb

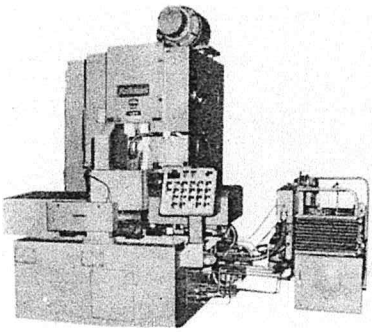
*including operator platform



7640A

10 × 6 HORIZONTAL Z GEAR SHAPER

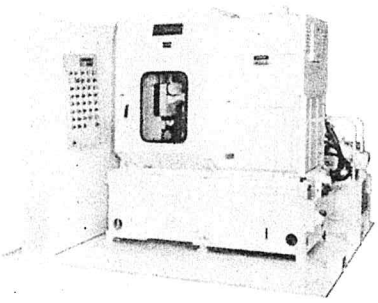
Expressly designed for cutting external, internal, spur, and helical gears on long integral shafts. Work is positioned horizontally and is held by a fixture in a work spindle having a 24″ (610 mm) bore. Work spindle slide is adjustable along the bed for positioning relative to the cutter. Machine also has cutter spindle back-off.



8709A

NO. 4-2 STEERING SECTOR GEAR SHAPER

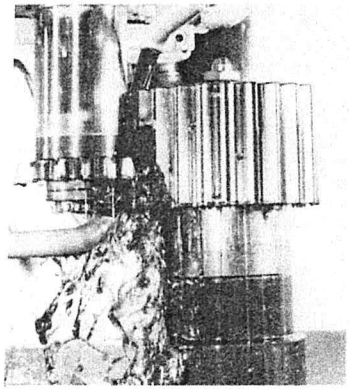
Utilizing a modified upright based on our high-output No. 10-2 Gear Shaper, this is a specialized machine designed expressly for the efficient production of steering sector gears. Straight or variable ratio types can be produced in pitch radii and face widths up to 2″ (51 mm).



8697

FELLOWS FH200 UNIVERSAL HOBBING MACHINE

First fully metric hobber manufactured in the U.S., the FH200 has a work diameter capacity of 200 mm (7.98″) and features rigid construction. A variety of options are available to meet a wide range of application needs. Numerous engineering advances are incorporated for increased production, precision, and reliability. Stationary work spindle makes automation easy where maximum productivity is required.



7248

FELLOWS GEAR SHAPER CUTTERS

Because no machine tool can be any better than the cutting tool it drives, it is important to equip your gear shaper—whether it's a Fellows or any other—with the best possible cutters. For this reason, Fellows produces gear shaper cutters unsurpassed for uniform high quality and close tolerances. Fellows Gear Shaper Cutters are computer designed, drawing on a memory bank that represents over seventy-five years of experience and more than 3 million cutter designs. This assures the right cutter for your production needs.

FELLOWS GEAR INSPECTION INSTRUMENTS

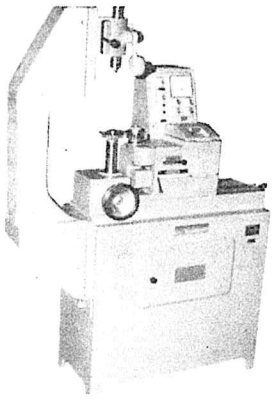
These instruments check all essential gear dimensions easily, quickly, and accurately. They were used as the national standards by the National Bureau of Standards Gear Metrology Laboratory until its closing in 1970, and all Fellows master gages are traceable to that standard.

NEW RECTILINEAR RECORDING SYSTEM

Replacing the older curvilinear system, this is now standard on all new instruments and can also be retrofitted on older models. Advantages include: A truer representation of profiles for easier analysis • Nonsmudging ink system with easy-to-replace pressurized ink cartridges • All ranges calibrated with one adjustment and no readjustment required • Easy changeover from U.S. to metric system or vice versa • Solid state circuitry for highest reliability • A more durable, easily copied charting paper.

MASTER GAGE CALIBRATION SERVICE

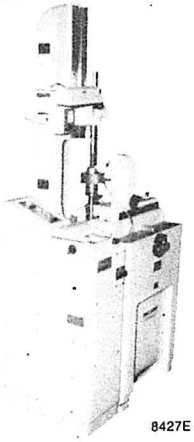
Providing a unique service for its customers, Fellows maintains a White Room—a super-clean, environmentally controlled area for the measurement, calibration, and certification of master gages, precision gears, and selected noninvolute shapes. Fellows guarantees a standard master calibrating accuracy of 0.000050" (0.001270 mm) with a repeatability of 0.000025" (0.0006350 mm).



8666C

RED LINERS

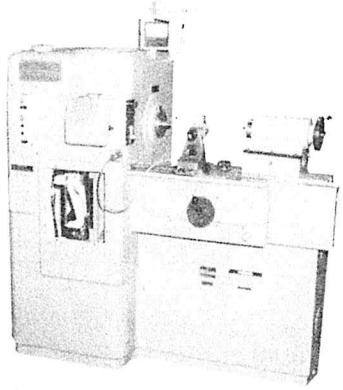
Measure and record the composite error resulting from variations in circular pitch, tooth profile, lead, and runout. This is the manufacturer's production check on gear performance, because composite inspection of all errors is made under conditions closely approximating actual operation. Magnifications to 5000X.



8427E

INVOLUTE MEASURING INSTRUMENTS

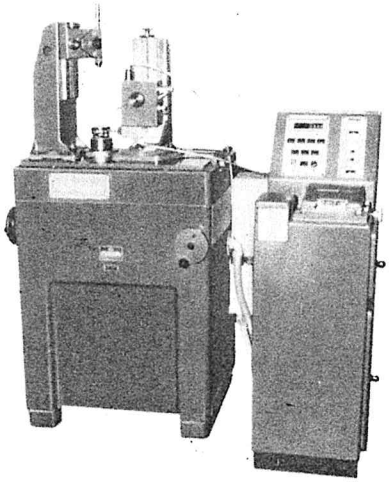
Measure deviations in gear tooth profiles from the true involute form on both internal and external spur and helical gears. Errors in tooth form and tooth modifications can be determined. Magnifications to 5000X.



8429A

LEAD MEASURING INSTRUMENTS

Measure gear tooth flanks across the face width to determine lead profile. Check internal and external spur and helical gears. Magnifications to 5000X.



8472A

MICRODEX® INDEX MEASURING INSTRUMENTS

Measure index spacing between gear teeth or other equally spaced forms in relation to truly equal increments. A computer control can be added for analysis. Magnifications to 5000X.

INSPECTION INSTRUMENTS

Capacities and Dimensions

RED LINERS

600RL	MAX GEAR DIAM	MAX DIMENSIONS LENGTH	WIDTH	HEIGHT	NET WEIGHT
With Center Support	24" 600 mm	50" 1270 mm	20" 508 mm	68" 1727 mm	1450 lb 660 kg
Without Center Support	24" 600 mm	38" 965 mm	20" 508 mm	59" 1498 mm	1150 lb 520 kg

LEAD

TYPE	MAX PITCH DIAM	MAX ROT. WK (SM)	MAX ROT. WK. (LG)	MAX TRAVEL MEAS. SLIDE	MAX DIMENSIONS LENGTH	WIDTH	HEIGHT	NET WEIGHT
12H	12" 305 mm	120°		10.3" 262 mm	63" 1600 mm	29" 737 mm	62" 1575 mm	3500 lb 1588 kg
24H	24" 610 mm	120°	60°	10.3" 262 mm	79" 2007 mm	32" 813 mm	67" 1702 mm	4275 lb 1939 kg

INVOLUTE

TYPE	MAX PITCH DIAM	MAX TRAVEL POINTER HOLDER	MAX TRAVEL WORK SPINDLE	MAX TRAVEL TAIL-STOCK	MAX DIST. BETWEEN CENTERS	MAX DIMENSIONS LENGTH	WIDTH	HEIGHT	NET WEIGHT
12M	12" 305 mm	9¾" 248 mm	4" 102 mm	26½" 673 mm	30" 762 mm	38" 965 mm	36" 914 mm	82" 2083 mm	2220 lb 996 kg
24M	24" 610 mm	9¾" 248 mm	5¼" 133 mm	24 5/16" 617 mm	34 1/16" 866 mm	68" 1727 mm	42" 1067 mm	72" 1829 mm	4700 lb 2132 kg

INDEX (MICRODEX®)

TYPE	MAX P.D. W/O CTR. SUPPORT	MAX DIAM PITCH	NO. OF INDICES	MAX VERT. ADJ. OF STYLUS	MAX DIMENSIONS LENGTH	WIDTH	HEIGHT	NET WEIGHT
NO. 8	13⅜" 345 mm	120 & Coarser .2 mod	6 & Up	7" 178 mm	45" 1143 mm	30" 762 mm	60" 1524 mm	1725 lb 772 kg
NO. 36	36" 914 mm	96 & Coarser .26 mod	6 & Up	20" 508 mm	88" 2235 mm	53" 1346 mm	*70"/88" 1778 mm 2235 mm	4240 lb 1923 kg

*70" without center support, 88" with center support.

NOTE: The information included herein was correct at the time of publication. However, it is our policy to continually improve our products to insure ever better performance. Consequently, current Fellows machines and products may incorporate modifications not shown or described on these pages.

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RA-5-479

Printed in U.S.A.