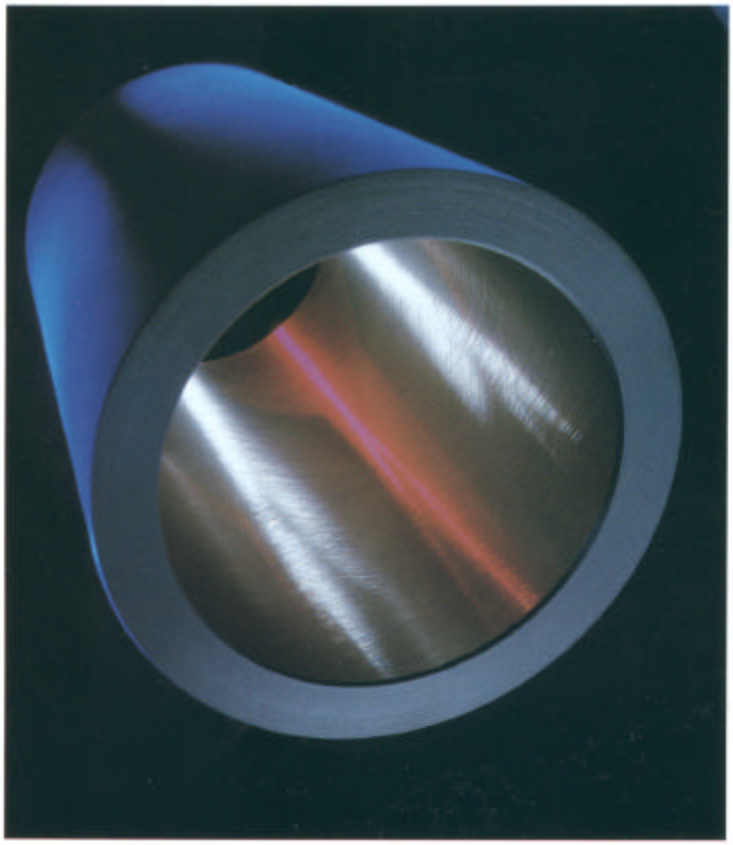
SUNNEN®

21 CASE HISTORIES

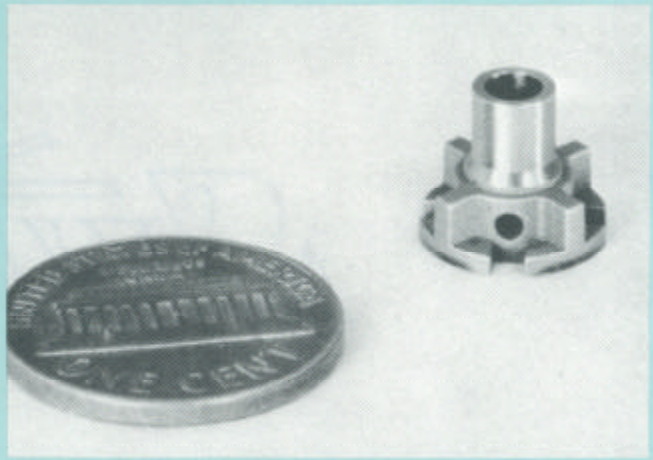


Leadership in the technology of bore sizing and finishing for more than 60 years.

CASE HISTORY 1

Stellite Valve

3.28 mm (.1290") I.D. x 9.53 mm (.375") long—tandem bore



"Faster than grinding, and easier to hold size and finish."

Production Grinding Shop
New York

Grinding these little valves was a tough job. The time needed to hold size and finish kept production down to 10 or 15 parts per hour. With Sunnen Power-Stroked Honing, production has tripled and all specifications are exceeded without a struggle.

Nature of Part: 3.28 mm (.1290") I.D. x 9.53 mm (.375") long—open hole with unequal lands

Material: Stellite, 45-50 Rockwell "C" Scale

Stock Removal: .025 mm (.001")

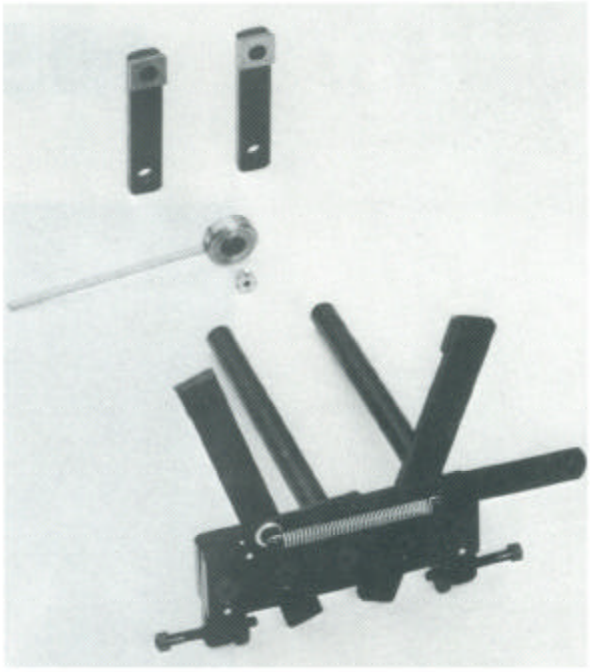
Honing Time per Part: 20 seconds

Previous Condition of Bore:

Ground
Out-of-Round: .008 mm (.0002")
Taper: .012 mm (.0003")
Surface Finish: .5 μm (20 μin.) R_a

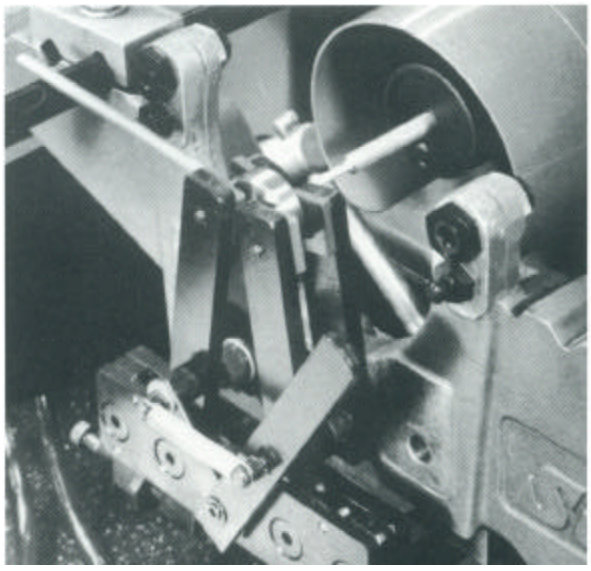
Tolerances Held:

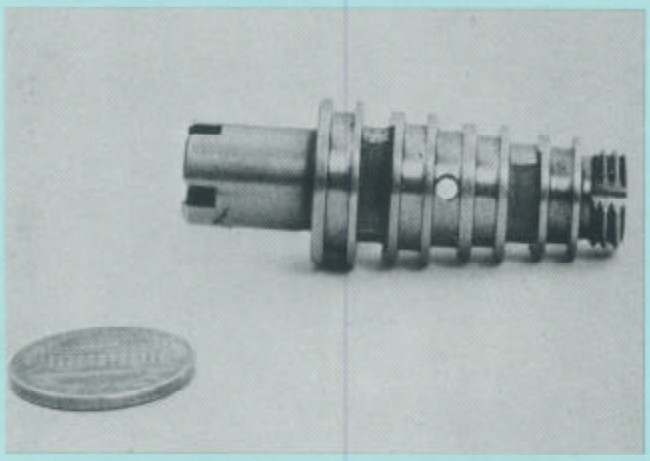
Size: .012 mm (.0003")
Roundness: .0008 mm (.000020")
Straightness: .004 mm (.0001")
Surface Finish: .18 μm (7 μin.) R_a
1.60 μm (62 μin.) R_m



KKN-600 Adjustable Finger Fixture, KKN-720A Fingers, and Customer-Made Nest Fixture used to fixture Valve

Valve ready for honing

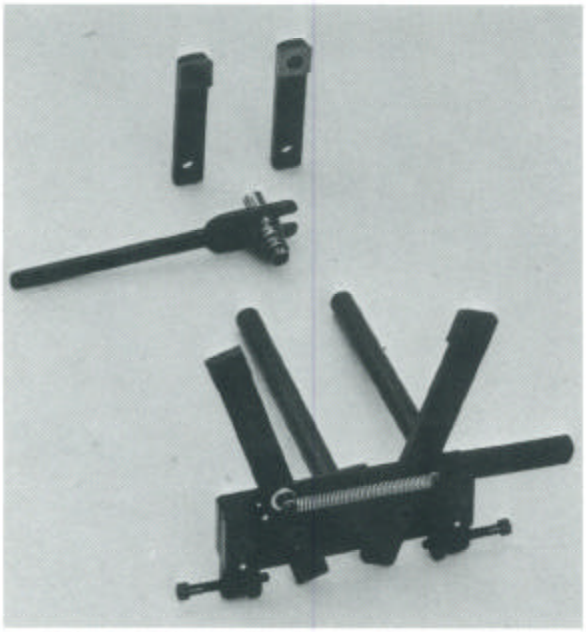




CASE HISTORY 2

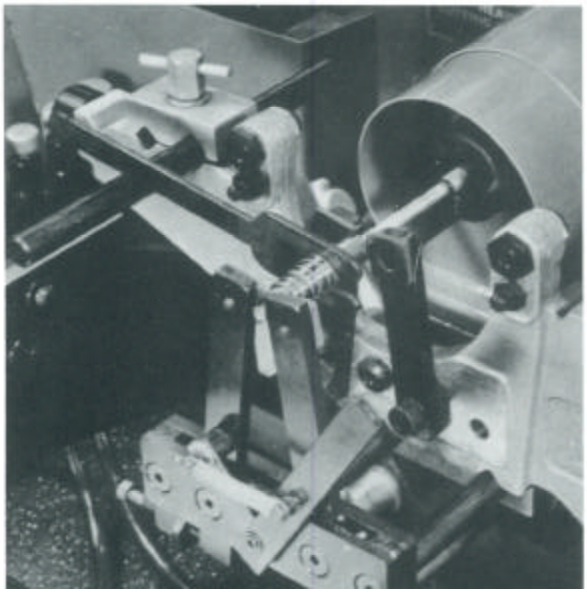
Hard Stainless Steel Hydraulic Valve

4.75 mm (.1870") I.D. x 44.45 mm (1.75") long—open hole



KKN-600 Adjustable Finger Fixture, KKN-720A Fingers, and Customer-Made Torque Absorber which engages flats on the Valve

Hydraulic Valve ready for honing



"Honed these hydraulic valves to ± .005 mm (± .0002") tolerance in 2 minutes…took us 8 minutes with manual honing!"

Honing Job Shop
Watford, England

This company had no plans to buy a new hone. But when they saw the fantastic production increase possible with Sunnen Power Stroking, they quickly admitted it would be **profitable to make the change.**

Nature of Part: 4.75 mm (.1870") I.D. x 44.45 mm (1.75") long—open hole with ports

Material: 440C Stainless Steel, 58-60 Rockwell "C" Scale

Stock Removal: .15 mm-.20 mm (.006"-.008")

Honing Time per Part: 2 minutes

Previous Condition of Bore:

Bored
Out-of-Round: .05 mm (.002")
Taper: .05 mm (.002")
Surface Finish: 1.58 μm (63 μin.) R_a

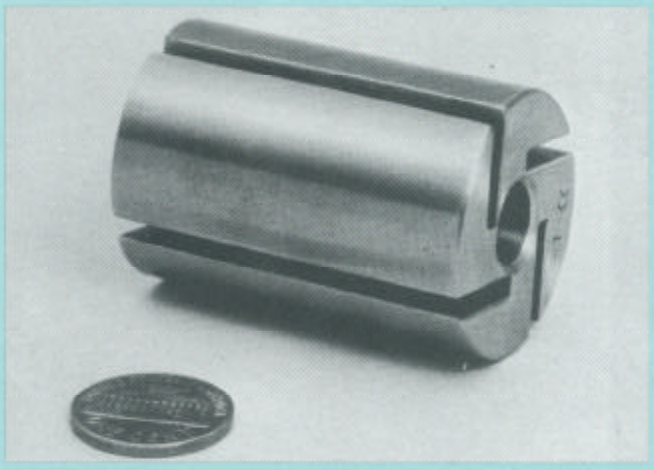
Tolerances Held:

Size: .010 mm (.0004")
Roundness: .005 mm (.0002")
Straightness: .005 mm (.0002")
Surface Finish: .18 μm (7 μin.) R_a
1.40 μm (56 μin.) R_m

CASE HISTORY 3

Hard Steel Rotor

9.53 mm (.375") I.D. x 22.23 mm (1.875") long—open hole with keyway



"Increased production from 27 parts per hour hand honing to 77 with the power stroker—that's almost triple!"

Tool Manufacturer
Iowa

This Sioux City firm was ready to replace an older hand-stroked Sunnen Hone. They took our saleman's word when he told them the Power Stroker was the machine they should choose. Now you can take their word...and their production figures...to help you make up your mind.

Nature of Part: 9.53 mm (.375") I.D. x 22.23 mm (1.875") long—open hole with keyway

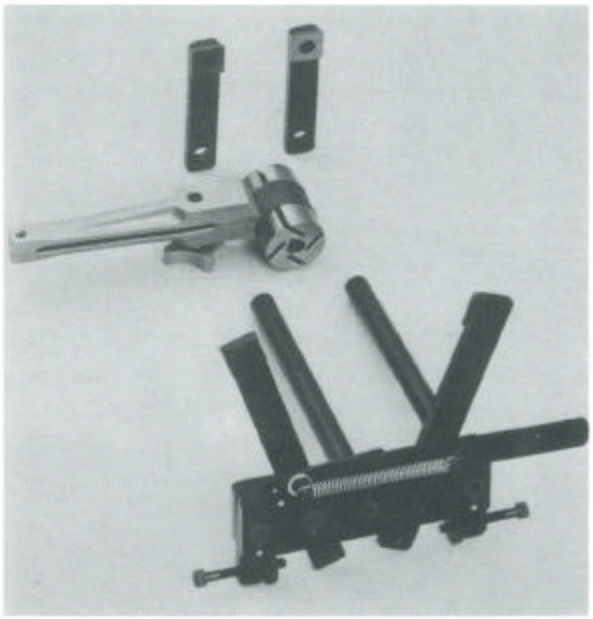
Material: B-1113 Leaded Steel, case hardened to 58-62 Rockwell "C" Scale

Stock Removal: .025 mm (.001")

Production Rate: 77 parts per hour

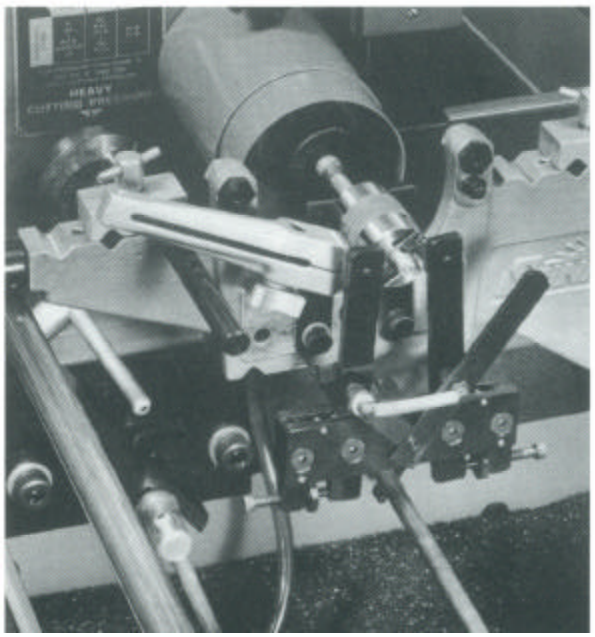
Previous Condition of Bore:
Reamed and hardened

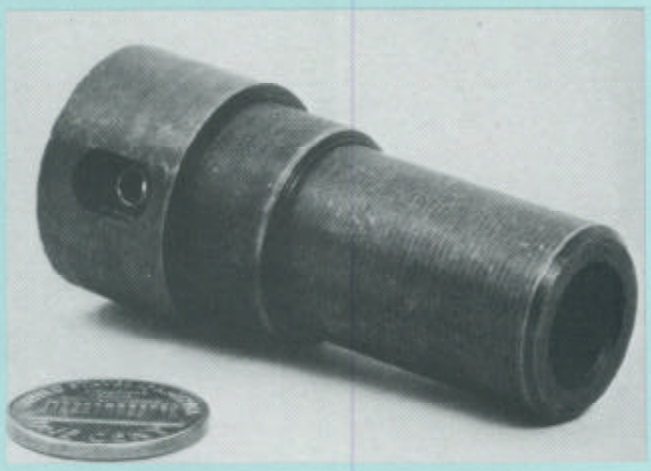
Tolerances Held:
Size: .013 mm (.0005")
Surface Finish: .63 μm (25 μin.) R_a
5.00 μm (200 μin.) R_m



KKN-600 Adjustable Finger Fixture, HF-75 Workholder, and KKN-720A Fingers used to fixture Rotor

Rotor ready for honing

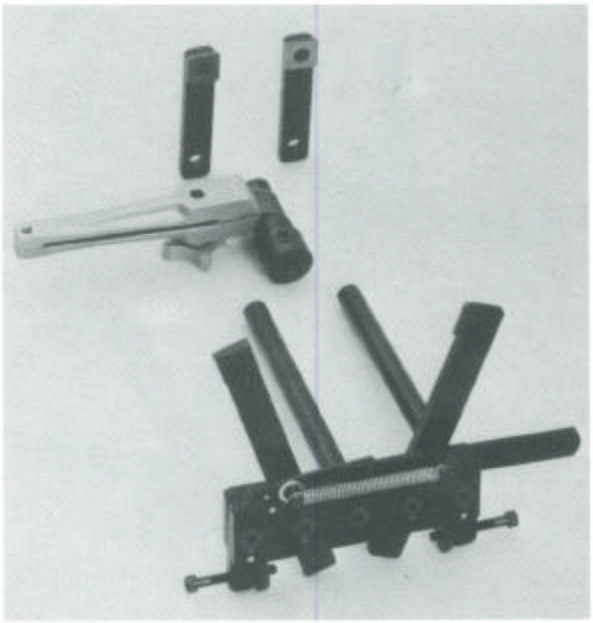




CASE HISTORY 4

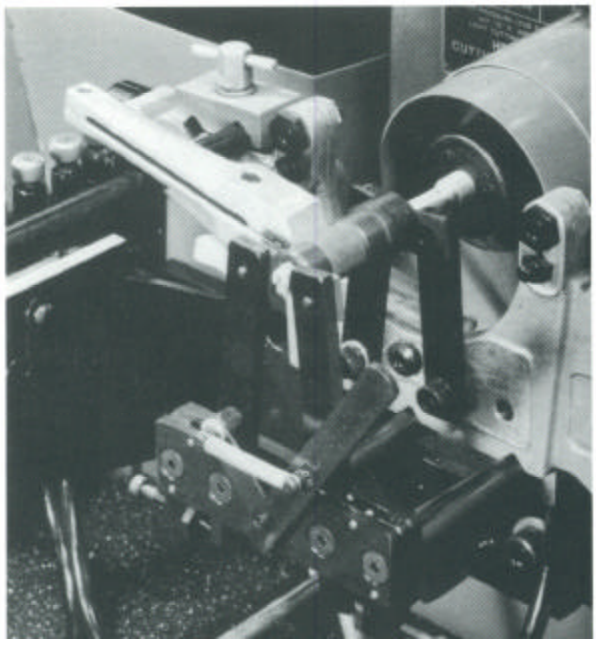
Hard Steel Barrel

10.965 mm (.4317") I.D. x 50.80 mm (2.00") long with grooves and ports



KKN-600 Adjustable Finger Fixture, HF-75 Workholder, and KKN-720A Fingers used to fixture Barrel

Barrel ready for honing



"Floor-to-floor time per part less than 1/5 the time needed on an expensive automatic hone."

Fuel Injection
Re-Manufacturing
Mexico City, Mexico

Part was being honed in two operations... roughing and finishing...on a big automatic hone. Floor-to-floor time was 7 minutes per part. With Sunnen Power Stroking, floor-to-floor time was cut to 1 minute and 20 seconds.

Nature of Part: 10.965 mm (.4317") I.D. x 50.80 mm (2.00") long—open hole with ports and grooves

Material: Cold Drawn Steel, 50 Rockwell "C" Scale

Stock Removal: .125 mm (.005")

Honing Time per Part: 50 seconds

Previous Condition of Bore:

Gun Drilled
Out-of-Round: .020 mm (.0008")
Taper: .055 mm (.002")
Surface Finish: .25 - 1.00 μm (10 - 40 μin.) R_a

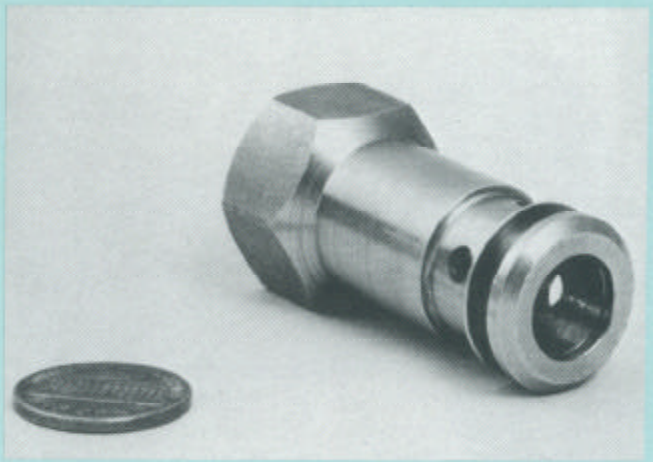
Tolerances Held:

Size: .005 mm (.0002")
Roundness: .0025 mm (.0001")
Straightness: .0025 mm (.0001")
Surface Finish: .80 μm (32 μin.) R_a
7.60 μm (304 μin.) R_m

CASE HISTORY 5

Stainless Steel Seal Housing

11.11 mm (.4375") I.D. x 19.05 mm (.75") long—open hole with ports



"Improved production from 28 pieces per hour manual honing to 69 per hour with stroker."

Liquid Flow Measuring Equipment Manufacturer California

Manufacturing Engineers for this company saw the Sunnen Stroker at the Westec Show in Los Angeles...investigated it...and found that it would save them more than enough to justify its purchase.

Nature of Part: 11.11 mm (.4375") I.D. x 19.05 mm (.75") long—open hole with ports

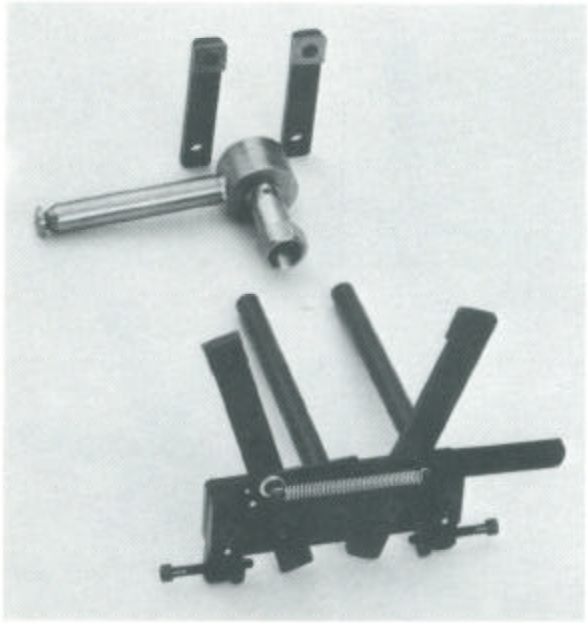
Material: 303 Stainless Steel

Stock Removal: .08 mm (.003")

Production Rate:
Roughing: 127 per hour
Finishing: 149 per hour

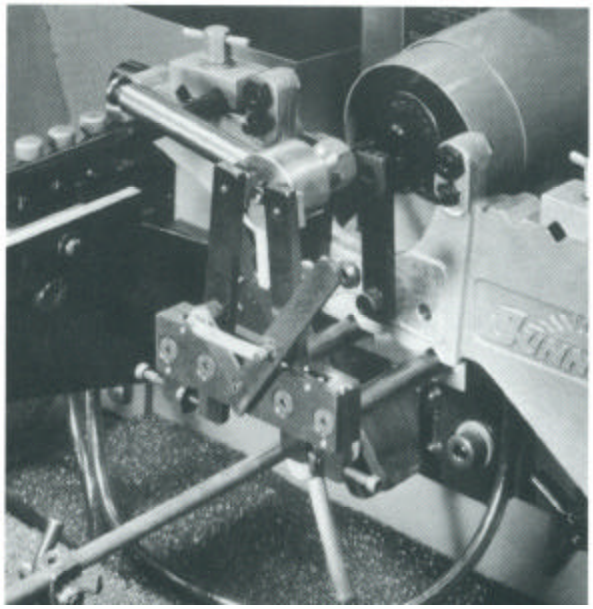
Previous Condition of Bore:
Reamed

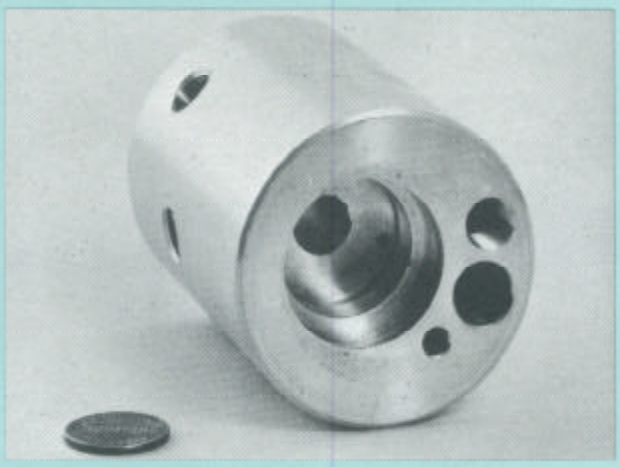
Tolerances Held:
Size: .025 mm (.001")
Surface Finish: .40 μm (16 μin.) R_a
4.80 μm (192 μin.) R_m



Customer-Made Spring-Loaded Plunger to pick up cross-hole in part, KKN-600 Adjustable Finger Fixture, and KKN-720A Fingers used to fixture Housing

Seal Housing ready for honing

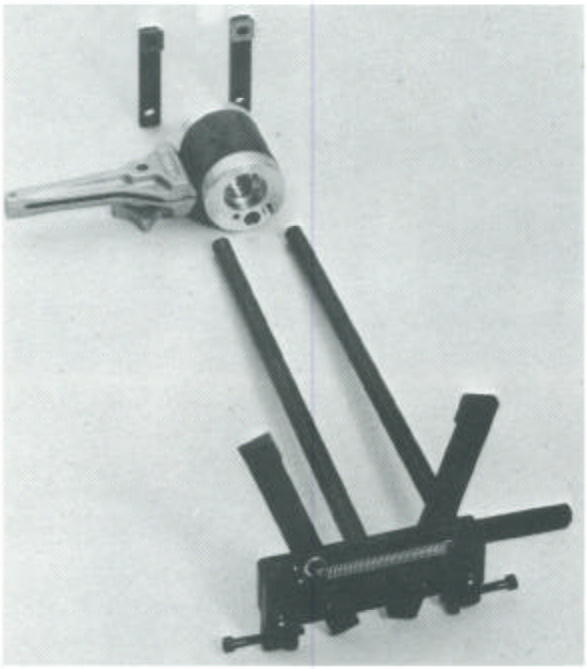




CASE HISTORY 6

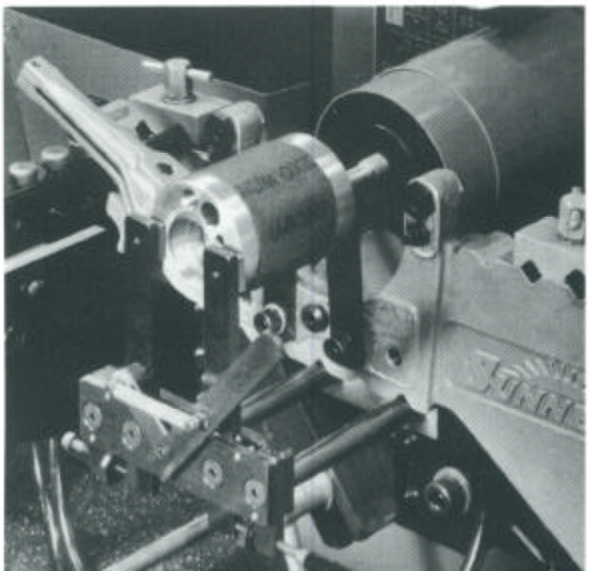
Aluminum Body—2 Open Holes

11.13 mm (.438") I.D. x 76.2 mm (3") and 50.17 mm (1.975") long with cross holes



KKN-600 Adjustable Finger Fixture, HF-200 Workholder, and KKN-720A Fingers used to fixture Body

Body ready for honing



"Improved production from 8 pieces per hour manual honing to 15...that's 2 holes, roughing and finishing."

Liquid Flow Measuring Equipment Manufacturer California

Reducing costs is a major goal of this company. Their Manufacturing Engineering Department investigated Sunnen Power Honing and found that they could show Management the kind of savings that made the purchase of a new Stroker well worthwhile.

Nature of Part: Two 11.13 mm (.438") holes—one 76.2 mm (3") long; one 50.17 mm (1.975") long. Open hole with cross holes.

Material: 6061 T-6 Aluminum

Stock Removal: .09 mm-.10 mm (.0035"-.004")

Production Rate: 15 pieces per hour (2 holes; roughing and finishing)

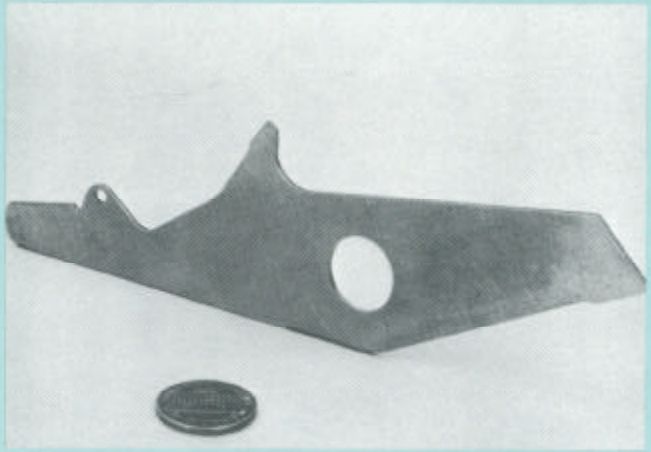
Previous Condition of Bore:
Reamed

Tolerances Held:
Size: .025 mm (.001")
Surface Finish: .40 μm (16 μin.) R_a
4.10 μm (163 μin.) R_m

CASE HISTORY 7

Steel Selector

14.15 mm (.5570") I.D. x 1.09 mm (.043") long—open hole



"Increased production 10 times over I.D. grinding, and less scrap...using an operator with a lower labor grade."

Production Shop
Pennsylvania

Customer was fixturing 25 Selectors at a time and I.D. grinding at 15 minutes per load. Problems: Too much time in setup, high scrap rate, high labor grade, low production. Customer switched to Power-Stroked Honing, is now honing 85 parts at a time in 4 minutes with minimal scrap...and doing it with a lower labor grade operator.

Nature of Part: 14.15 mm (.5570") I.D. x 1.09 mm (.043") long—open hole

Material: Mild Steel

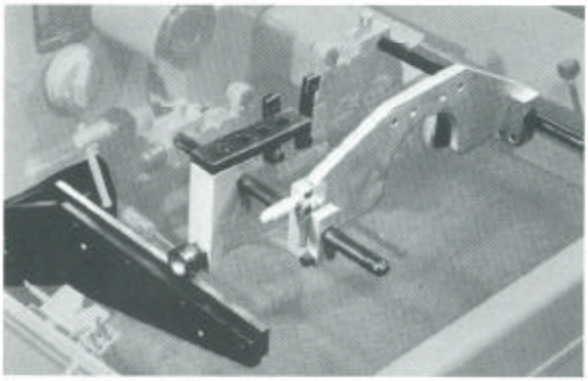
Stock Removal: .20 mm (.008")

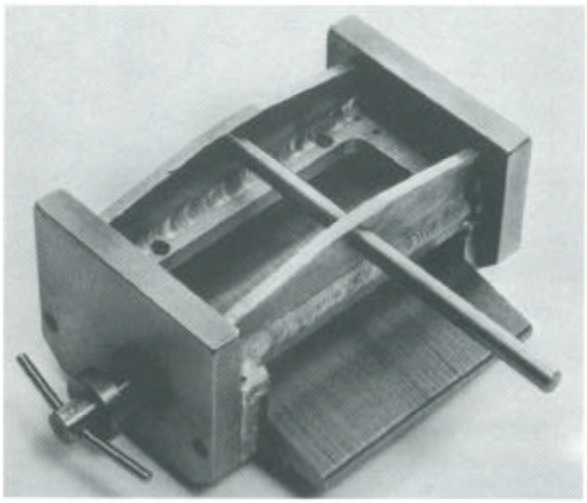
Honing Time: 4 minutes per fixture load of 85 parts

Previous Condition of Bore:
Stamped from Die

Tolerances Held:
Size: .013 mm (.0005")
Roundness: .005 mm (.0002")

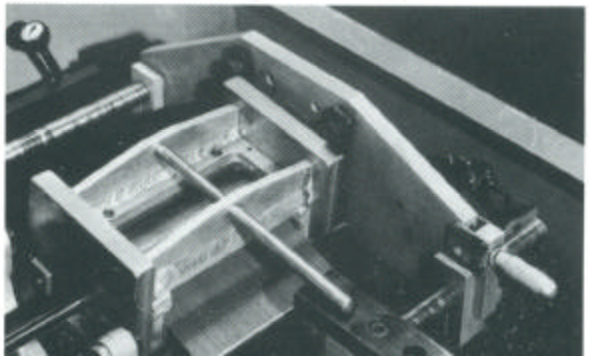
Surface Finish: .40 μm (16 μin.) R_a
3.92 μm (157 μin.) R_m

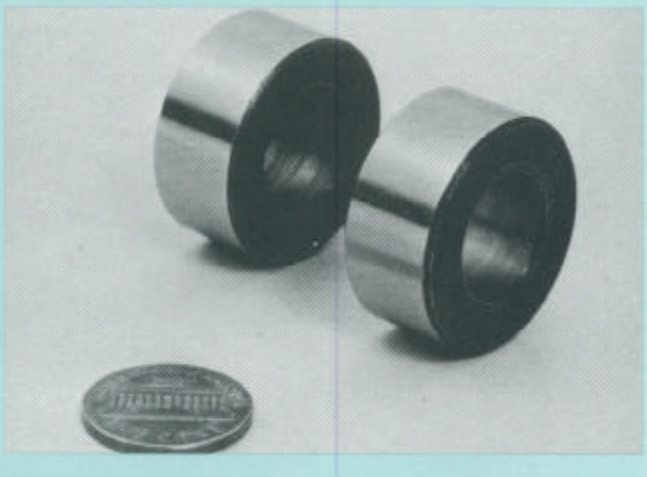




KKN-700 Universal Honing Fixture and Customer-Made Workholder used to fixture Selectors 85 at a time

85 Selectors ready for honing

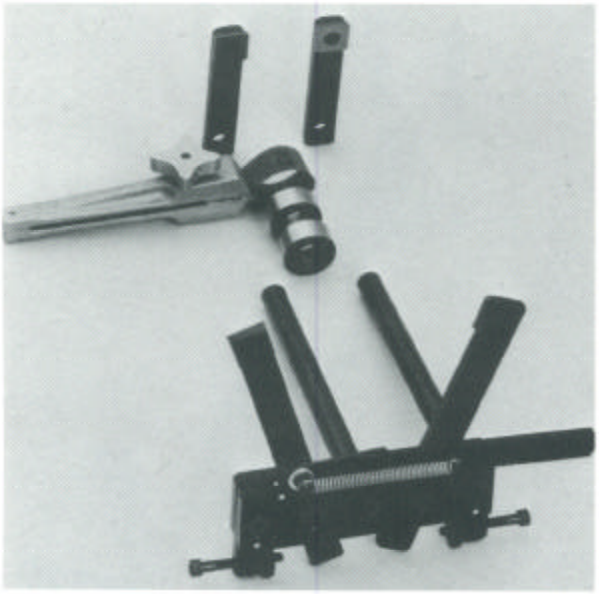




CASE HISTORY 8

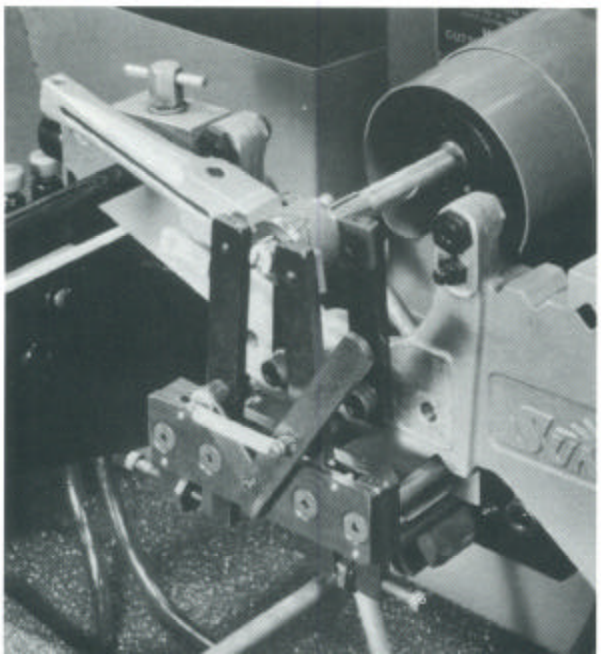
Hard Steel Roller

14.29 mm (.5625") I.D. x 12.70 mm (.50") long—open hole



KKN-600 Adjustable Finger Fixture, HF-75 Workholder, and KKN-720A Fingers used to fixture Rollers

Rollers ready for honing 2 at a time



"We've been sending out our honing because we thought it was too difficult to do. When we found out how easy Sunnen Power Stroking is, we started doing our own honing."

Conveyor Manufacturer
West Germany

This Machine Shop had a large volume of gear blanks and hardened rollers to produce. They had been jobbing out their honing and living with the related uncertainties in scheduling and work flow because they thought honing was a difficult job. A demonstration of Sunnen Power Stroking showed them how easy it was, so they decided to do the entire job in their own shop. They bought an MBC-1804, and are quite pleased with the control this gives them, plus being pleasantly surprised by the high production rate.

Nature of Part: 14.29 mm (.5625") I.D. x 12.70 mm (.50") long—open hole

Material: 4140 Steel, Heat Treated to 42-44 Rockwell "C" Scale

Stock Removal: .06 mm-.08 mm (.0025"-.003")

Production Rate: 133 per hour (honed 2 at a time)

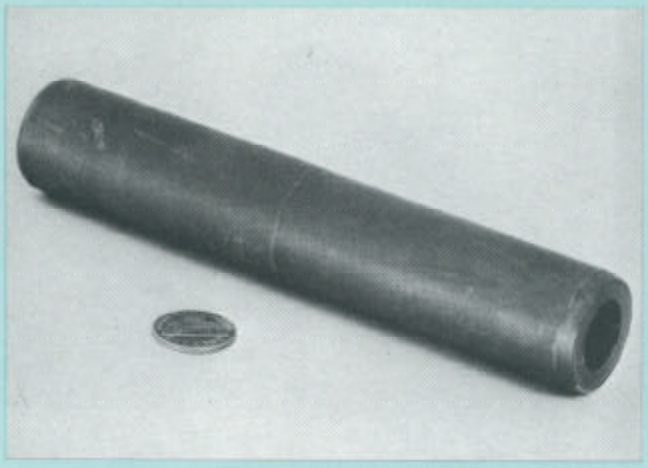
Previous Condition of Bore:
Reamed and Hardened

Tolerances Held:
Size: .013 mm (.0005")
Surface Finish: .80 μm (32 μin.) R_a
7.36 μm (294 μin.) R_m

CASE HISTORY 9

Meehanite Valve Guide

15.84 mm (.6235") I.D. x 157.16 mm (6.19") long—open hole



"We get 22 pieces per hour now versus 12 per hour with manual honing...and our operator doesn't work nearly as hard."

Diesel Engine Parts Supplier
Taipei, Taiwan

This company has manufactured this part for many years. Then competition forced them to cut their price, and they had to find ways to cut production costs. They did...with Sunnen Power Honing.

Nature of Part: 15.84 mm (.6235") I.D. x 157.16 mm (6.19") long—open hole

Material: Meehanite, Heat Treated to 360-390 Brinell

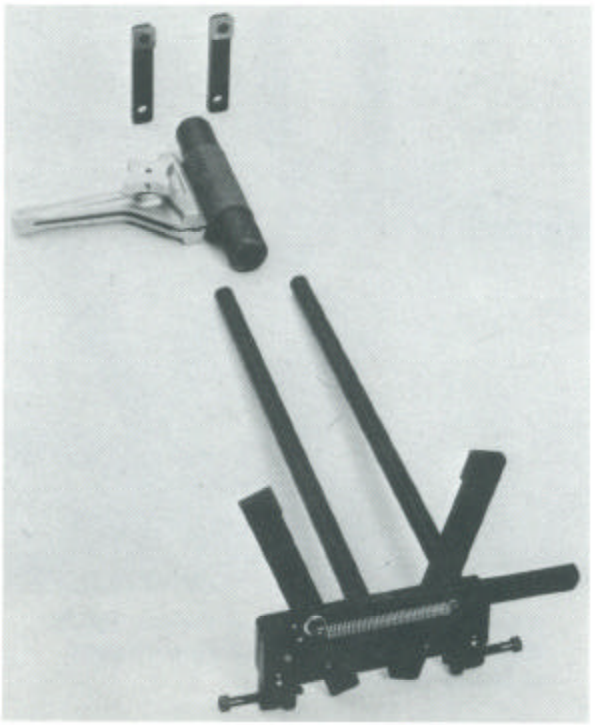
Stock Removal: .050 mm-.080 mm (.002"-.003")

Production Rate: 22 per hour

Previous Condition of Bore:
Gun Drilled

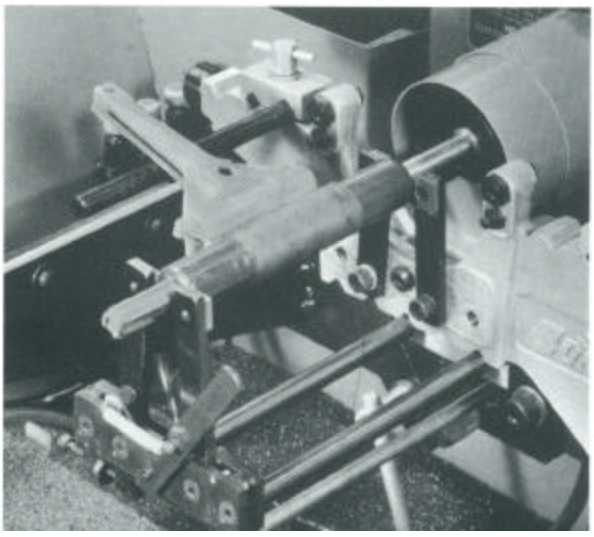
Tolerances Held:
Size: .013 mm (.0005")

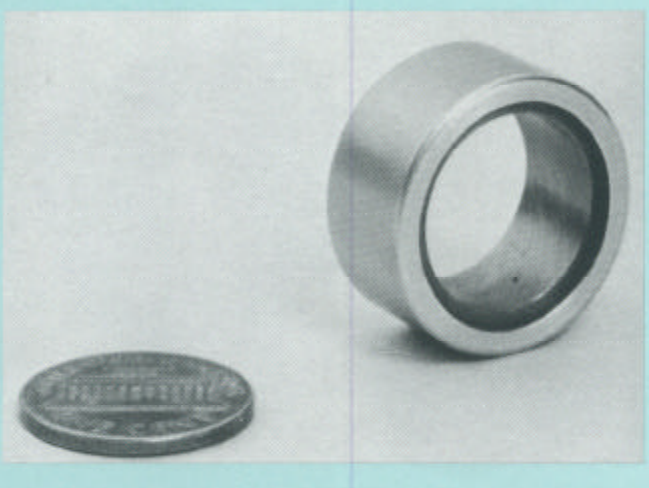
Surface Finish: .80 μm (32 μin.) R_a
9.00 μm (358 μin.) R_m



KKN-600 Adjustable Finger Fixture, HF-300 Workholder, and KKN-720A Fingers used to fixture Valve Guide

Valve Guide ready for honing

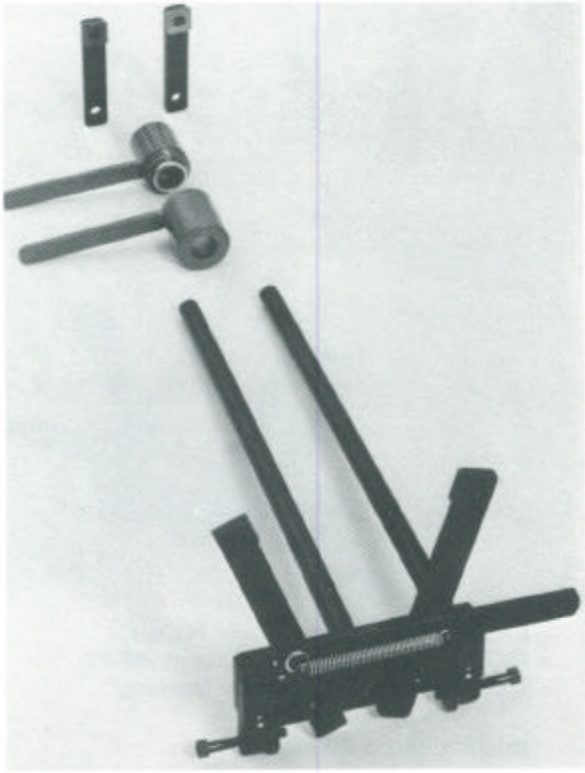




CASE HISTORY 10

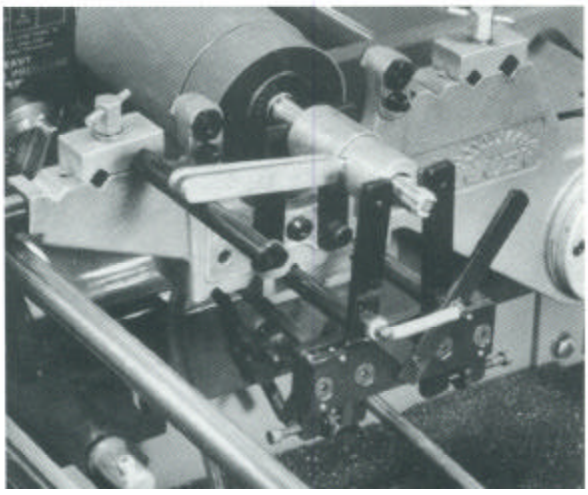
Hard Steel Outer Race

15.87 mm (.6250") I.D. x 10.16 mm (.400") long—open hole



KKN-600 Adjustable Finger Fixture, KKN-720A Fingers, and Customer-Made Pot Fixture used to fixture Outer Races

Outer Races ready for honing



"We get better parts from the Stroker with high school summer help than we did from the grinder with a skilled journeyman running it."

Specialty Bearing Manufacturer
California

When this customer switched from I.D. grinding to Power Honing, right away he improved finishes, eliminated heat checks, and got closer tolerances ...all with a brand new operator! His only question was, "Sunnen, what took you so long?"

Nature of Part: 15.87 mm (.6250") I.D. x 10.16 mm (.400") long—open hole

Material: 8620 Steel, 60 Rockwell "C" Scale

Stock Removal: .15 mm (.006")

Production Rate: 80-100 per hour (honed 9 at a time)

Previous Condition of Bore:

Drilled, reamed, and heat treated
Out-of-Round: .13 mm (.005")
Taper: .08 mm (.003")
Surface Finish: 1.60-3.13 μm (64-125 μin.) R_a

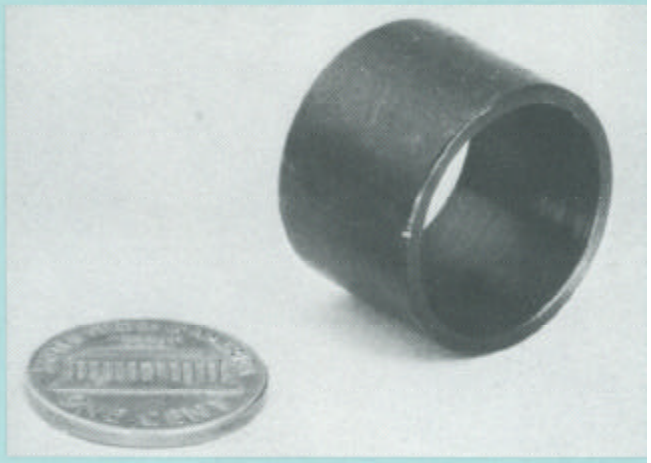
Tolerances Held:

Size: .015 mm (.0006")
Roundness: .010 mm (.0004")
Straightness: .010 mm (.0004")
Surface Finish: .40 μm (16 μin.) R_a
3.08 μm (123 μin.) R_m

CASE HISTORY 11

Tool Steel Bushing

19.09 mm (.7516") I.D. x 15.88 mm (.625") long—thinwall



"...did better than expected...300% increase in production is just great."

Honing Job Shop
Connecticut

Customer had a large quantity of these very hard bushings. It was not profitable to hone them manually at 70 seconds per part, so they weren't too happy with the job. But the great production increase they got by honing them in 25 seconds with the Sunnen Power Stroker changed all that.

Nature of Part: 19.09 mm (.7516") I.D. x 15.88 mm (.625") long—open hole, 1.59 mm (.063") wall

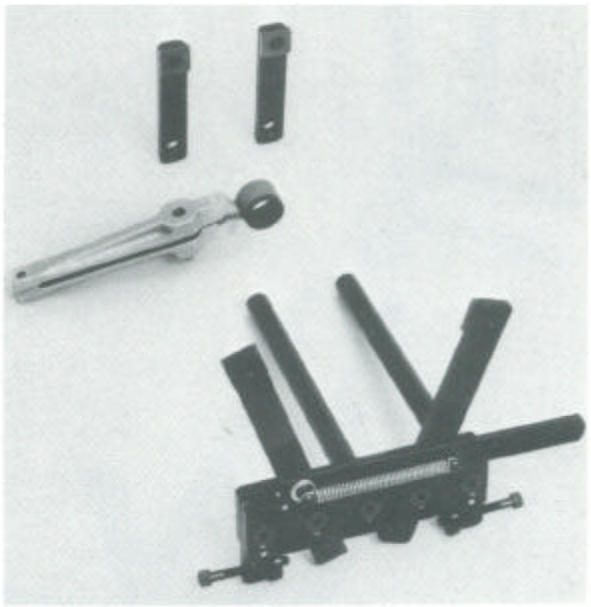
Material: Tool Steel, 62-67 Rockwell "C" Scale

Stock Removal: .038 mm (.0015")

Honing Time per Part: 25 seconds

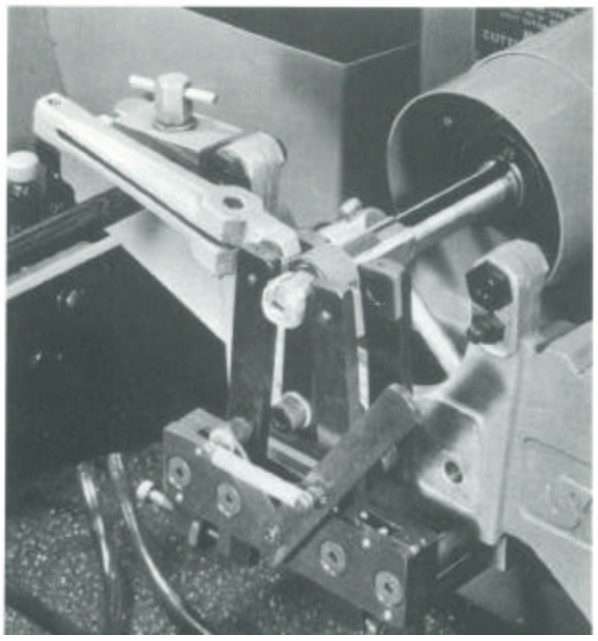
Previous Condition of Bore:
Honed, then Hardened

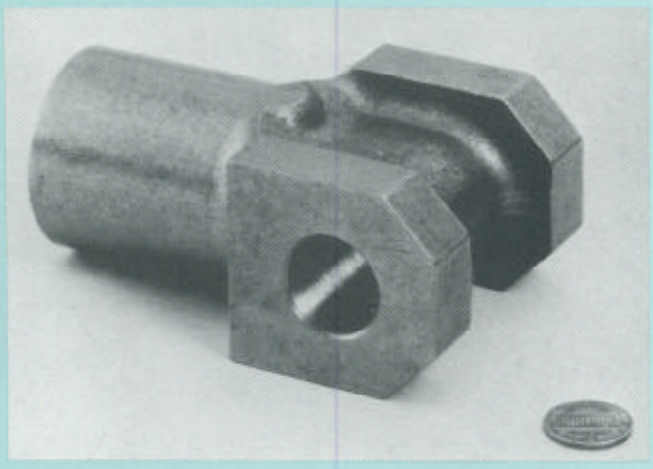
Tolerances Held:
Size: .008 mm (.0003")
Roundness: .003 mm (.0001")
Straightness: .003 mm (.0001")
Surface Finish: .25 μm (10 μin.) R_a
1.70 μm (68 μin.) R_m



KKN-600 Adjustable Finger Fixture, KKN-720A Fingers, and altered HF-75 Workholder used to fixture Bushing

Bushing ready for honing

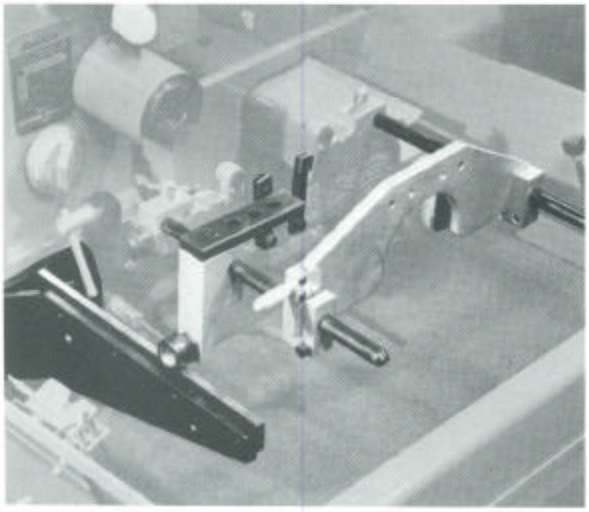




CASE HISTORY 12

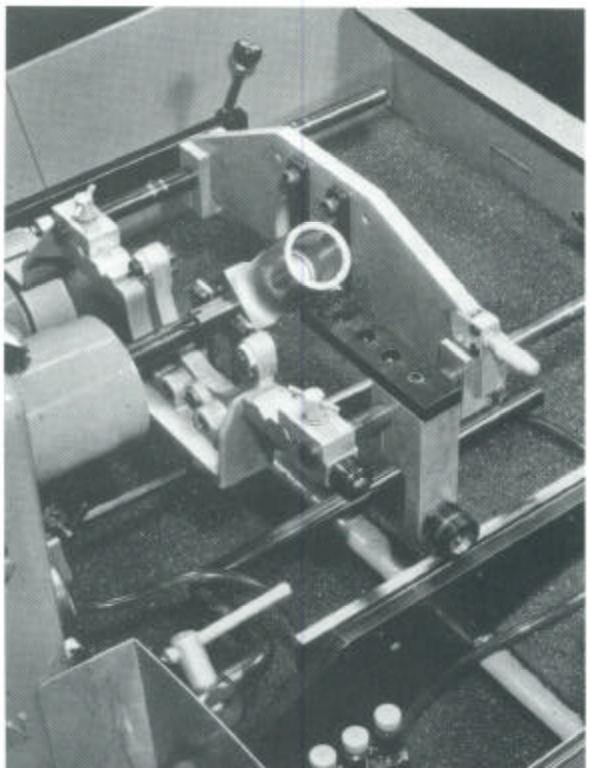
4130 Steel Trunnion

22.21 mm (.8743") I.D. x 72.77 mm (2.865") long—open hole



KKN-700 Universal Honing Fixture used to fixture Trunnion

Trunnion ready for honing



"This Sunnen Stroker is so good we just don't make any scrap anymore."

Honing Job Shop
New York

To quote this happy customer further: "It sure saves the operator from wearing out. And the first job almost paid for the cost of adding the Stroker. It used to take 5 minutes to hone this piece by hand; now it takes only 1 minute to remove .004" to .006" of stock on the Stroker. We leave a tenth or two for finishing by hand, which we do on the same machine merely by flipping the Stroker arm out of the way."

Nature of Part: 22.21 mm (.8743") I.D. x 72.77 mm (2.865") long—open hole

Material: 4130 Steel Forging, 39-42 Rockwell "C" Scale

Stock Removal: .10 mm-.15 mm (.004"-.006")

Honing Time per Part: 1 minute

Previous Condition of Bore:

Gun Drilled
Out-of-Round: .013 mm (.0005")
Taper: .051 mm (.002")
Surface Finish: Unknown

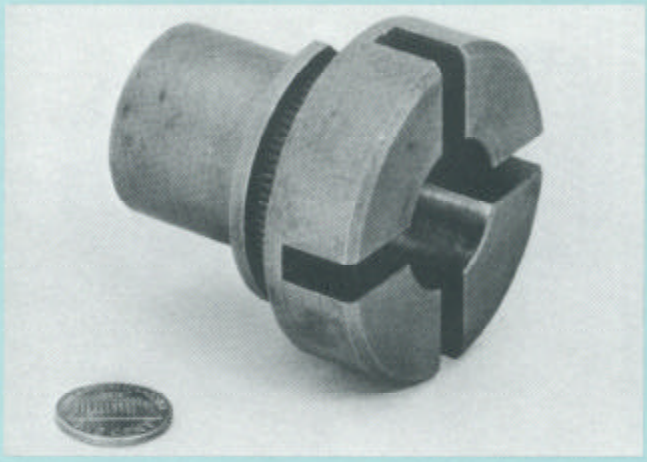
Tolerances Held:

Size: .008 mm (.0003")
Roundness: .003 mm (.0001")
Straightness: .003 mm (.0001")
Surface Finish: .40 μm (16 μin.) R_a
4.84 μm (193 μin.) R_m

CASE HISTORY 13

Hard Steel Snowmobile Coupling

24.97 mm (.9832") I.D. x 58.42 mm (2.3") long—open hole



"40% faster—floor-to-floor—than manually-stroked honing."

General Machine Shop
Ohio

This Wapakoneta, Ohio shop has made 20,000 of these snowmobile drive train couplings. With the manually-stroked Sunnen Hone, actual finish-honing time averaged 2¾ minutes per part—with their new Power-Stroked Hone, 1¼ minutes is the average—**less than half the hand honing time!**

Nature of Part: 24.97 mm (.9832") I.D. x 58.42 mm (2.3") long—open hole

Material: 1144L Steel, 50 Rockwell "C" Scale

Stock Removal: .13 mm (.005")

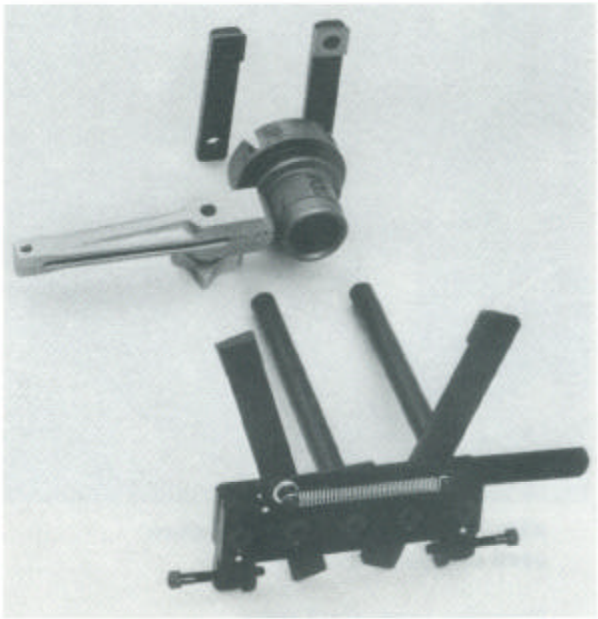
Honing Time per Part: 1¼ minutes

Previous Condition of Bore:

Bored, green honed, and heat treated
Out-of-Round: .025 mm (.001")
(Heat Treat Distortion)
Taper: .038 mm (.0015")
(Heat Treat Distortion)
Surface Finish: 1.25-2.13 μm (50-85 μin.) R_a
(Heat Treat Scale)

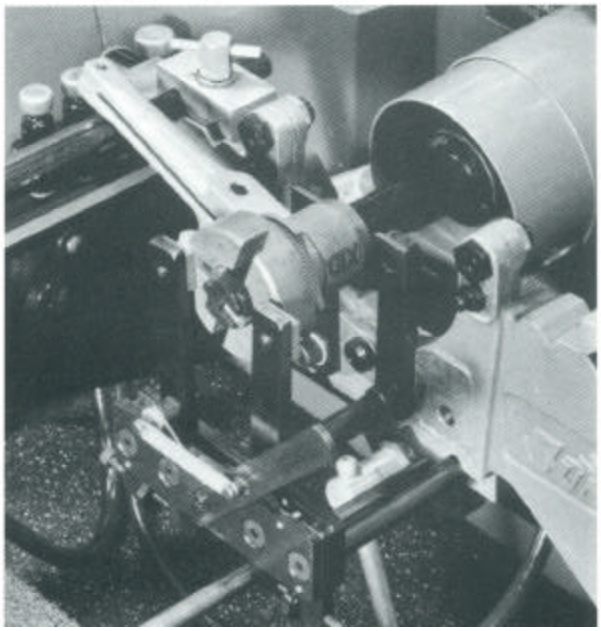
Tolerances Held:

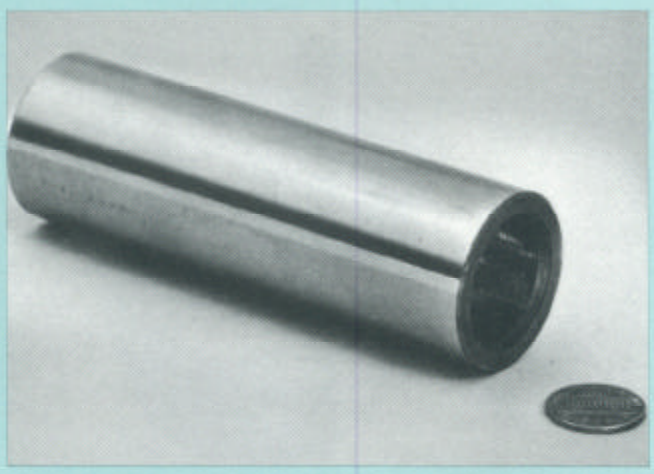
Size: .013 mm (.0005")
Roundness: .0006 mm (.000025")
Straightness: .005 mm (.0002")
Surface Finish: .25 μm (10 μin.) R_a
2.42 μm (97 μin.) R_m



KKN-600 Adjustable Finger Fixture, HF-75 Workholder, and KKN-720A Fingers used to fixture Coupling

Coupling ready for honing

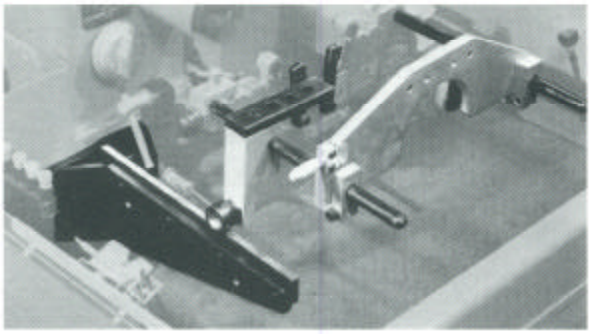


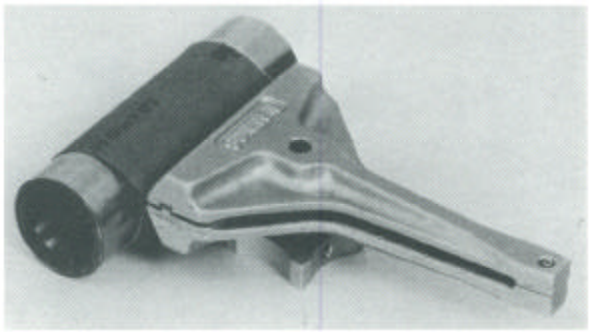


CASE HISTORY 14

Hard Steel Piston Wrist Pin

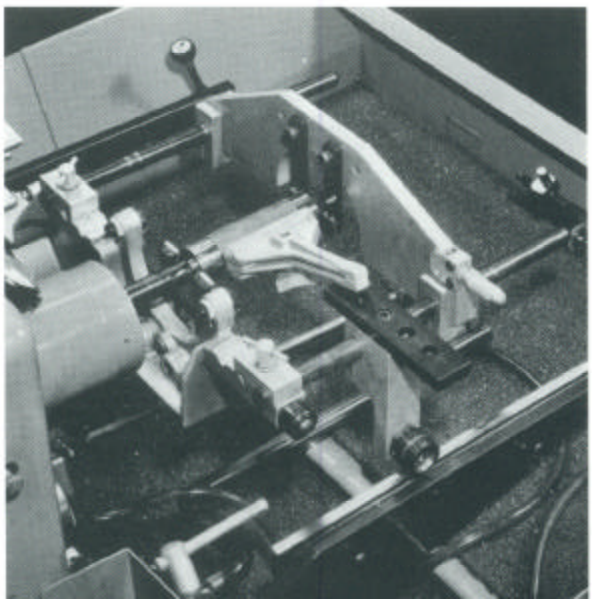
25.40 mm (1.0000") I.D. x 114.3 mm (4.50") long—open hole





KKN-700 Universal Honing Fixture and HF-300 Workholder used to fixture Wrist Pin

Wrist Pin ready for honing



"Bid the job to I.D. Grind and was losing money till we bought an MBC-1804."

Contract Manufacturer
Brussels, Belgium

They fought this job on an I.D. Grinder, but all they got for their trouble were tapered parts...and only 5 or 6 per hour at that. Switching to manual honing gave them 10 good parts per hour, but they still weren't making any money. Then they tried Power Stroking...got 50 good parts per hour. The operator is working less, making 5 times as many parts...and lots of profit. Everybody's happy.

Nature of Part: 25.40 mm (1.0000") I.D. x 114.3 mm (4.50") long—open hole

Material: Steel, 60 Rockwell "C" Scale

Stock Removal: .10 mm-.15 mm (.004"-.005")

Honing Time per Part: 45 seconds

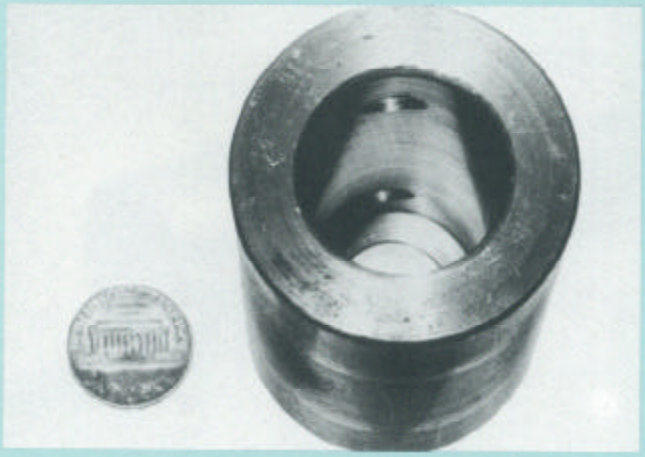
Previous Condition of Bore:
Broached before Heat Treat
Out-of-Round: .051 mm (.002")
(Heat Treat Distortion)
Taper: .013 mm (.0005")
Surface Finish: .63-.75 μm (25-30 μin.) R_a

Tolerances Held:
Size: .025 mm (.001")
Roundness: .013 mm (.0005")
Straightness: .013 mm (.0005")
Surface Finish: .40 μm (16 μin.) R_a
3.16 μm (126 μin.) R_m

CASE HISTORY 15

Steel Hydraulic Cylinder

25.40 mm (1.0000") I.D. x 101.6 mm (4") long—blind hole



" 'Ecstatic' isn't a word you'd expect a guy like me to use, but that's how we feel about Sunnen Power Honing."

Precision Machine Shop
Massachusetts

And no wonder! It was taking them 3 minutes to hone these cylinders manually. Now they rough them in 15 to 20 seconds on the Power Stroker, and finish in another 5 seconds by hand. Even with two operations, production has increased over 600%, with no sacrifice in quality. And the honing machine operator no longer bugs management about being transferred to another job.

Nature of Part: 25.40 mm (1.0000") I.D. x 101.6 mm (4") long—blind hole, cross-drilled

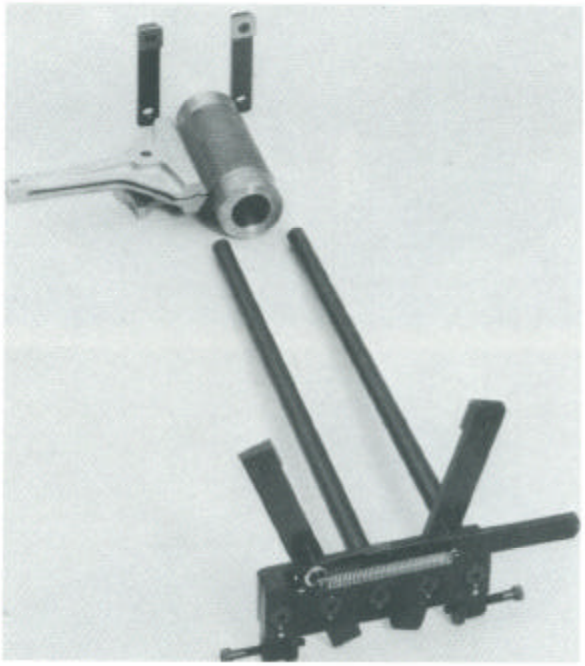
Material: C.D. Ledloy Steel

Stock Removal: .050 mm-.080 mm (.002"-.003")

Honing Time per Part:
Roughing—15-20 seconds (Power Stroking)
Finishing—5 seconds (Manual Stroking)

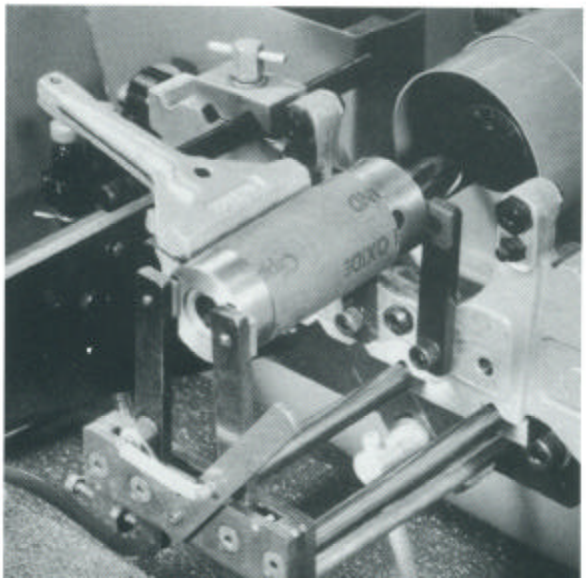
Previous Condition of Bore:
Bored

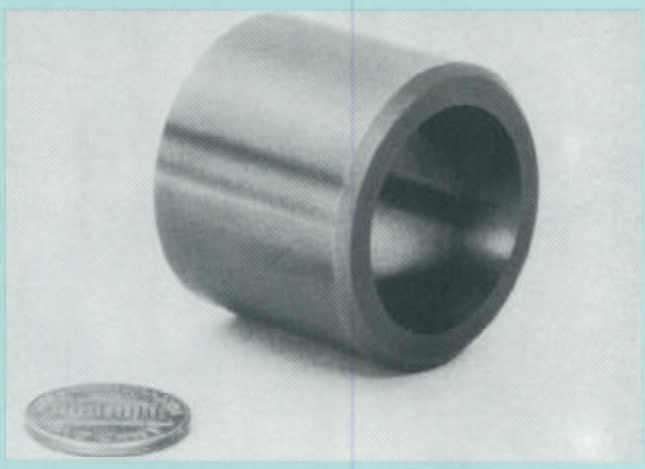
Tolerances Held:
Size: .013 mm (.0005")
Surface Finish: .20 μm (8 μin.) R_a
2.06 μm (82.4 μin.) R_m



KKN-600 Adjustable Finger Fixture, HF-300 Workholder, and KKN-720A Fingers used to fixture Cylinder

Hydraulic Cylinder ready for honing

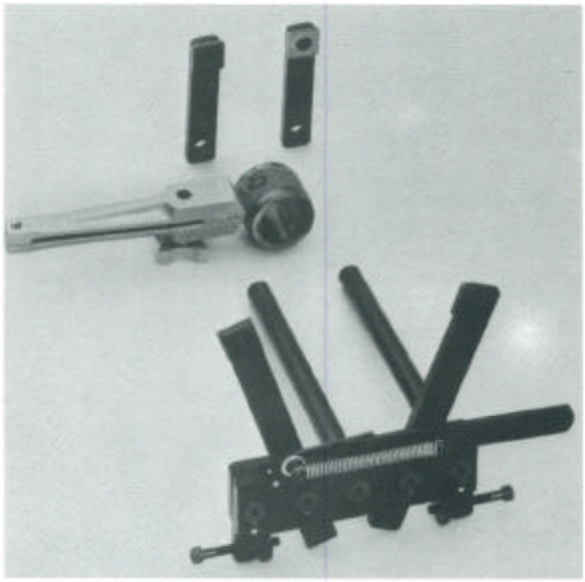




CASE HISTORY 16

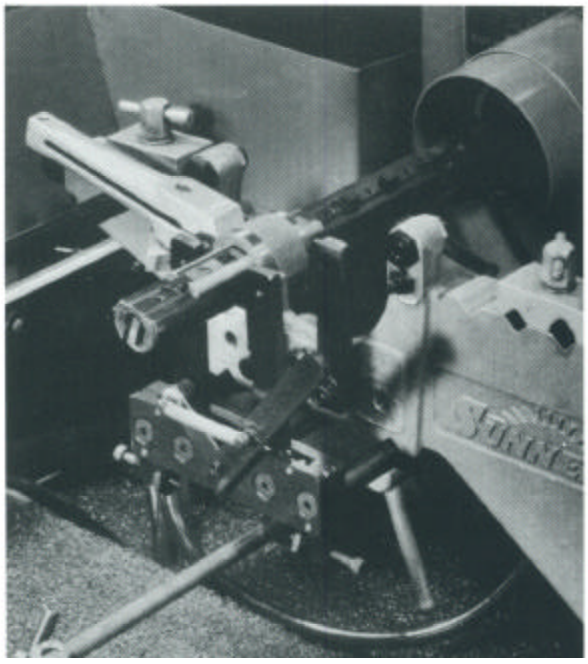
Carbide Bushing

26.97 mm (1.0620") I.D. x 30.96 mm (1.219") long—open hole



KKN-600 Adjustable Finger Fixture, KKN-720A Fingers, and HF-75 Workholder used to fixture Bushing

Bushing ready for honing



"Power Stroking is 3 times as fast as manual honing...and 6 times as fast as grinding."

Carbide Job Shop
Illinois

It used to take 45 minutes to grind this part. This was cut to 20 minutes when they switched to manual honing. And now...with Power Stroking...bore-sizing time is 6 to 8 minutes.

Nature of Part: 26.97 mm (1.0620") I.D. x 30.96 mm (1.219") long—open hole

Material: CD-25 Carbide

Stock Removal: .76 mm-1.02 mm (.030"-.040")

Stone Wear: .005 mm - .025 mm (.0002" - .001")

Honing Time per Part: 6-8 minutes

Previous Condition of Bore:

As Sintered
Out-of-Round: .025 mm-.229 mm (.001"-.009")
Taper: .025 mm-.229 mm (.001"-.009")

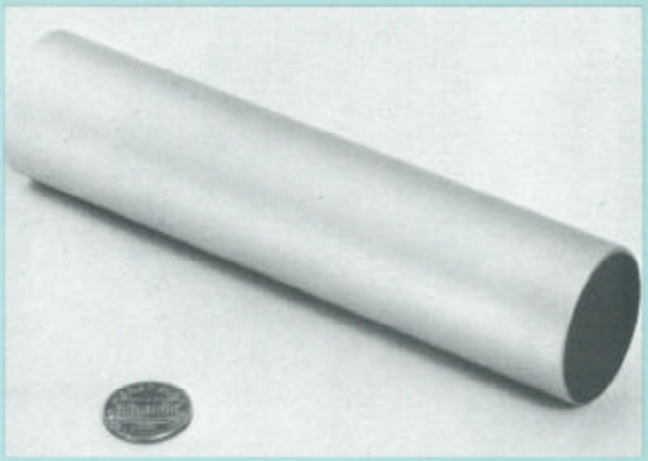
Tolerances Held:

Size: .005 mm (.0002")
Roundness: .0013 mm (.000050")
Straightness: .003 mm (.0001")

CASE HISTORY 17

Steel Lead Roll

27.99 mm (1.1020″) I.D. x 158.75 mm (6.25″) long—thinwall with grooves



"Better than twice as fast as hand honing."

Job Shop
North Carolina

We have to agree that this customer summed it up well in that one sentence. What more reason could anyone want to switch to Sunnen Power-Stroked Honing?

Nature of Part: 27.99 mm (1.1020″) I.D. x 158.75 mm (6.25″) long—thinwall part, open hole with grooves

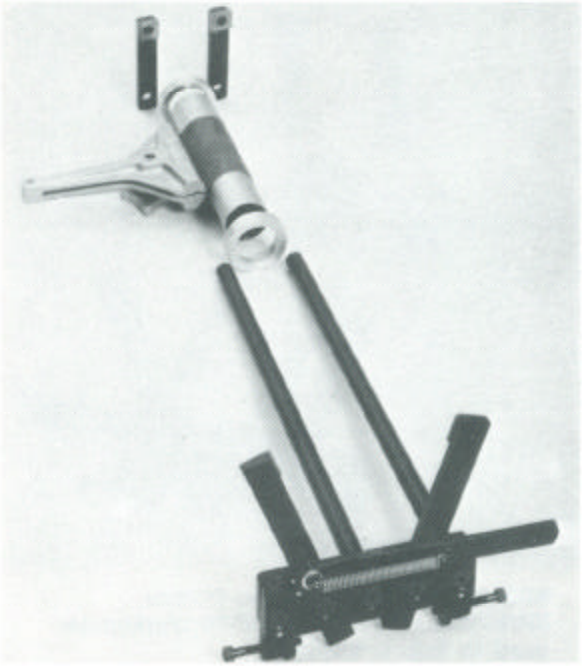
Material: C-1213 Steel, 156 Brinell

Stock Removal: .10 mm (.004″)

Honing Time per Part: 1 minute

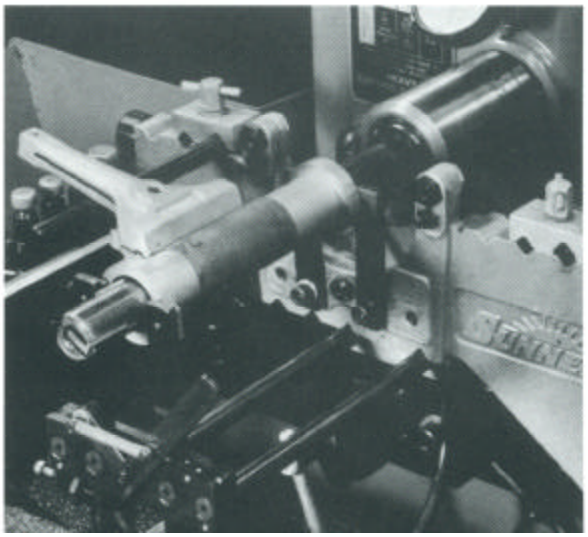
Previous Condition of Bore:
Reamed
Out-of-Round: .025 mm (.001″)
Taper: .025 mm (.001″)
Surface Finish: 6.25 μm (250 μin.) R_a

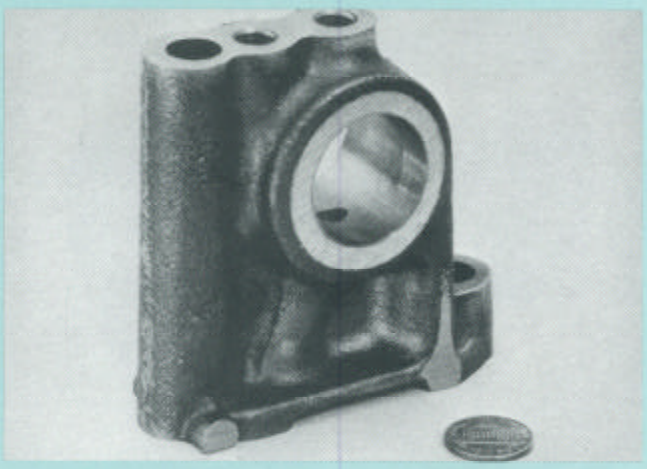
Tolerances Held:
Size: .008 mm (.0002″)
Roundness: .002 mm (.000050″)
Straightness: .004 mm (.0001″)
Surface Finish: .80 μm (32 μin.) R_a
10.00 μm (400 μin.) R_m



KKN-600 Adjustable Finger Fixture, KKN-720A Fingers, HF-300 Workholder, and Customer-Made End Caps used to fixture Lead Roll

Lead Roll ready for honing

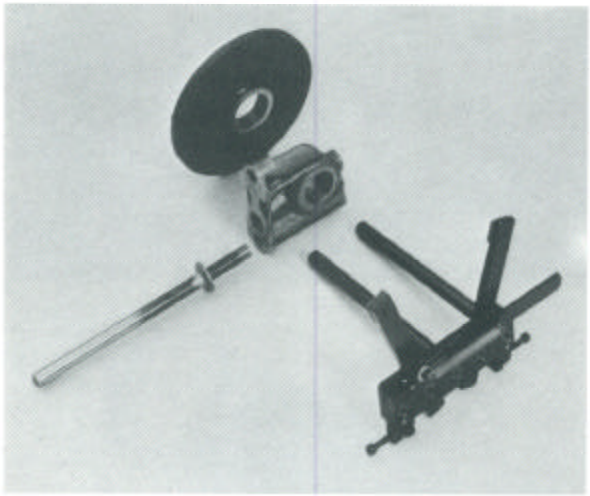




CASE HISTORY 18

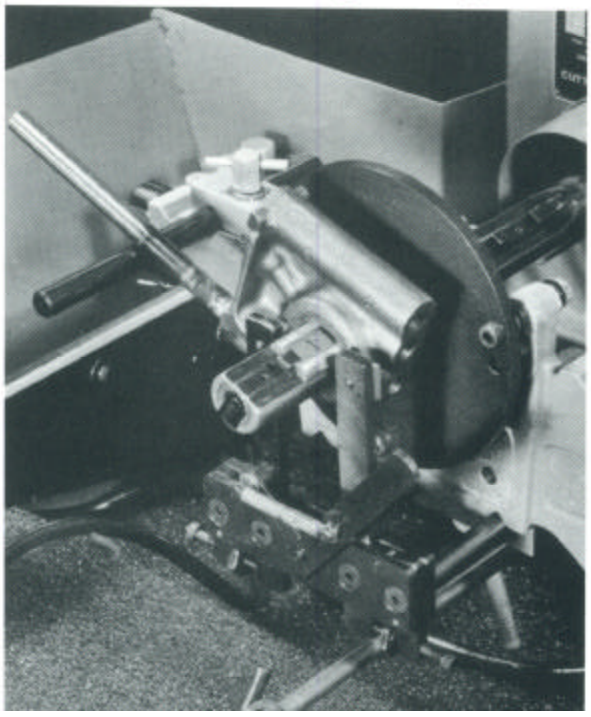
Malleable Iron Rocker Arm Bracket

28.58 mm (1.1250") I.D. x 28.58 mm (1.125") long—open hole



KKN-600 Adjustable Finger Fixture, KKN-209 Face Plate, and Customer-Made Torque Bar used to fixture Bracket

Rocker Arm Bracket ready for honing



"Since we have gone to Sunnen Power Honing, we have had our production jump over 10%, and our gaging time is down 50%. We no longer have any difficulty holding the bore diameter and roundness tolerances."

Manufacturing and Production Jobbing Shop Pennsylvania

Roller burnishing was being used to finish these bores, but holding tolerances was proving to be difficult. Variations in hardness could cause straightness, roundness, and size to vary accordingly. Sunnen Power Honing solved these problems, plus speeding production by allowing the operator to gage one part while another was being honed.

Nature of Part: 28.58 mm (1.1250") I.D. x 28.58 mm (1.125") long—open hole

Material: Pearlitic Malleable Iron, 163-207 Brinell

Stock Removal: .033 mm (.0013")

Production Rate: 103 per hour

Previous Condition of Bore:

Bored
Out-of-Round: .0076 mm (.0003")
Taper: .005 mm (.0002")
Surface Finish: 1.58-1.88 μm (63-75 μin.) R_a

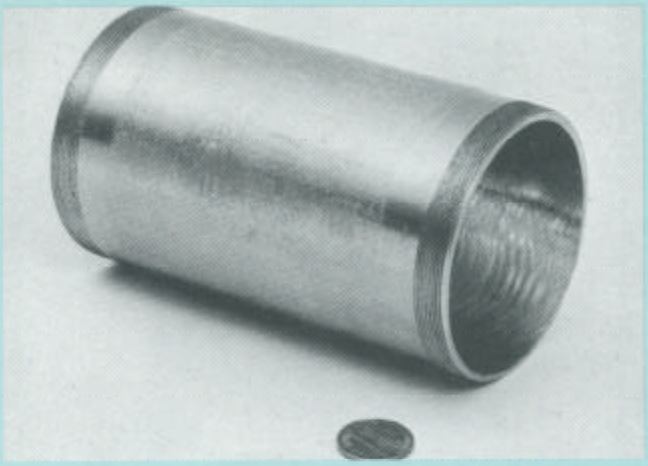
Tolerances Held:

Size: .005 mm (.0002")
Roundness: .003 mm (.0001")
Straightness: .003 mm (.0001")
Surface Finish: .85 μm (34 μin.) R_a
10.2 μm (408 μin.) R_m

CASE HISTORY 19

Stainless Steel Cylinder

63.50 mm (2.5000") I.D. x 127.00 mm (5") long—thinwall



"Since we have gotten our new Sunnen Power Stroker we have eliminated our backup problem at the honing machine. Production has increased by at least 50%. We are using less-skilled operators and the quality has improved. Tapered bores aren't a problem anymore."

Instrument Manufacturer
Maryland

A method was needed to finish 316 Stainless Steel Tubing to .013 mm (.0005") roundness and straightness with a .25 μm (10 μin.) R_a finish. The customer had been manual honing...but operator fatigue was a problem and the quality of the finished part varied with different operators.

Nature of Part: 63.50 mm (2.5000") I.D. x 127.00 mm (5") long—open hole—3.18 mm (.125") wall

Material: 316 Stainless Steel Welded Tubing

Stock Removal: .08 mm-.13 mm (.003"-.005")

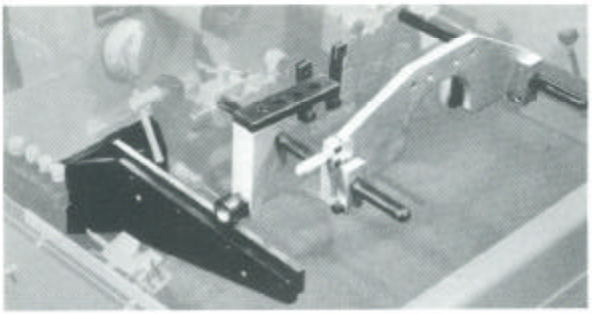
Honing Time: 8 pieces per hour (roughing and finishing)

Previous Condition of Bore:

Bored
Out-of-Round: .025 mm (.001")
Taper: .025 mm (.001")
Surface Finish: 1.25-1.88 μm (50-75 μin.) R_a

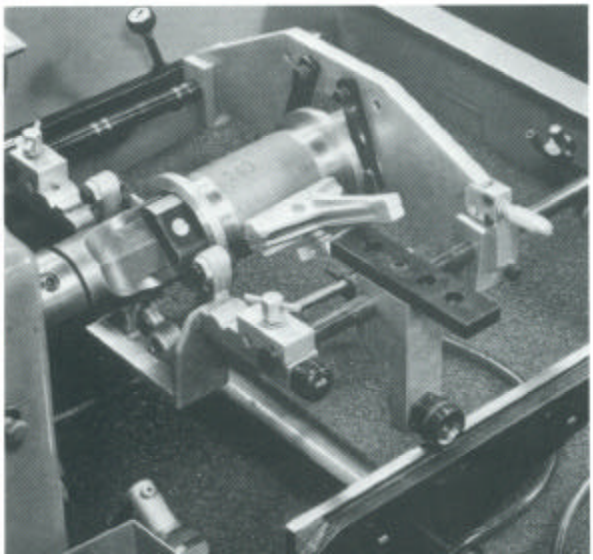
Tolerances Held:

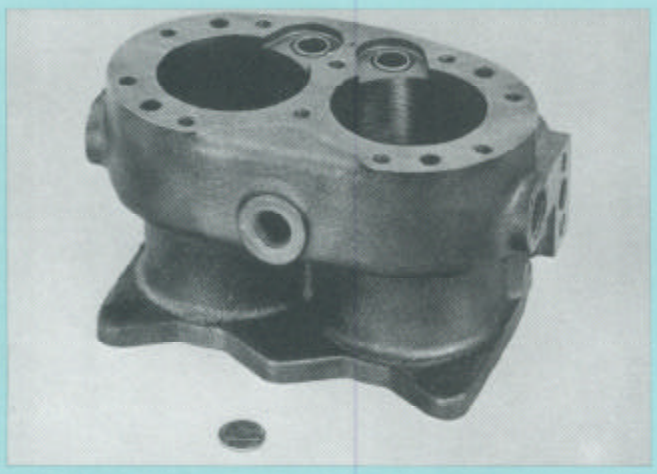
Size: .013 mm (.0005")
Roundness: .005 mm (.0002")
Straightness: .005 mm (.0002")
Surface Finish: .25 μm (10 μin.) R_a
3.25 μm (130 μin.) R_m



KKN-700 Universal Honing Fixture, HF-300 Workholder, and two loose-fitting End Caps used to fixture Cylinder

Cylinder ready for honing

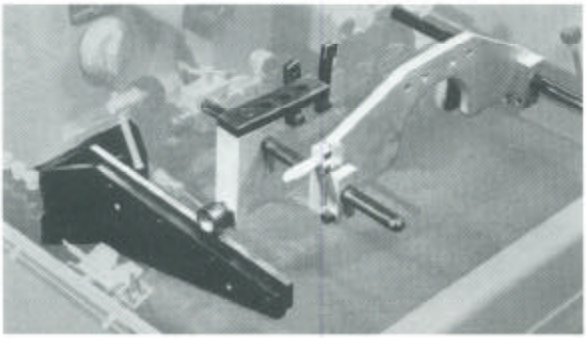


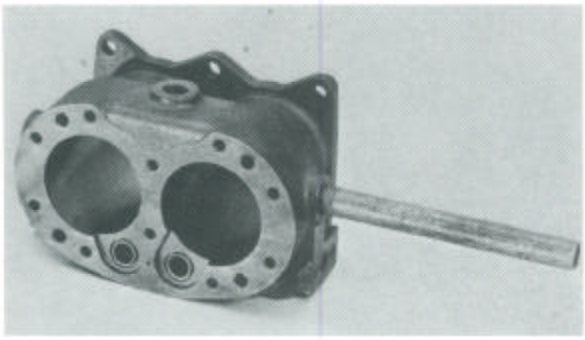


CASE HISTORY 20

Cast Iron Compressor Block

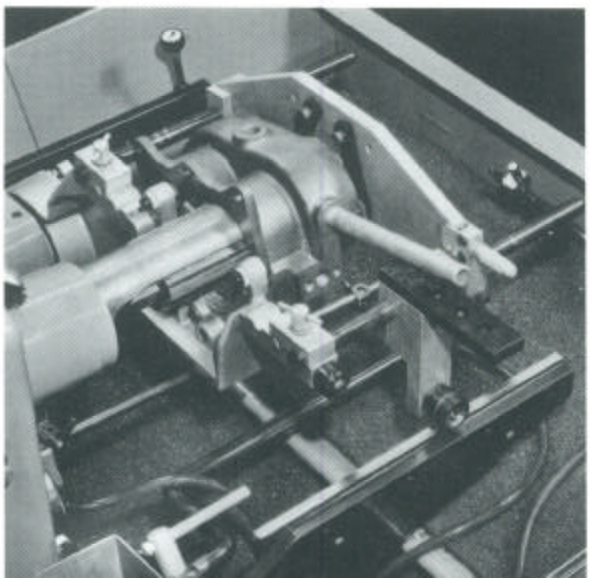
64.52 mm (2.5400") I.D. x 101.6 mm (4") long—heavy 4.4 kg (10 lbs.)





KKN-700 Universal Honing Fixture and Customer-Made Threaded Pipe used to absorb honing torque

Compressor Block ready for honing



"Entire honing operation was a breeze...and with a new man on the hone!"

Diesel Parts Rebuilder
California

These worn compressor blocks have tapered holes. They are resized to the next .25 mm (.010") increment oversize, but sometimes the taper is so bad that .51 mm (.020"), .76 mm (.030"), or even 1.02 mm (.040") stock must be removed. Stroke length is 19.1 mm (.75") longer than normal to help remove taper. Otherwise, they follow the book, watch the honing dial, and stand back while automatic stroking does the job.

Nature of Part: 64.52 mm (2.5400") I.D. x 101.6 mm (4") long—2 open holes

Weight of Part: 4.4 kg (10 lbs.)

Material: Cast Iron

Stock Removal: .25 mm (.010"), .51 mm (.020"), .76 mm (.030"), 1.02 mm (.040")—as required to remove wear marks

Honing Time per Bore: 5 minutes [.51 mm (.020") stock removal]

Previous Condition of Bore:

Used (tapered)
Out-of-Round: .13 mm (.005")
Taper: .23 mm (.009") or more
Surface Finish: Worn

Tolerances Held:

Size: .013 mm (.0005")
Roundness: .005 mm (.0002")
Straightness: .008 mm (.0003")
Surface Finish: .80 μm (32 μin.) R_a
6.52 μm (260 μin.) R_m

CASE HISTORY 21

Hard Steel Roller

65.09 mm (2.5625") I.D. x 28.58 mm (1.125") long— open hole

"Sunnen Power Stroking made money for us on this part."

General Machine Shop
Missouri

Many shops who bid on this job figured on grinding the bore. One shop didn't. They couldn't...they didn't have the proper grinder nor the money to buy one. So they bid the job figuring on honing the bore with a $3000 Sunnen Power Stroker. They got the job ...bought the Stroker...now they're doing this job and many others that they wouldn't even have been able to bid on before...and doing them as quickly and as easily as they could with a grinder costing 5 times as much.

Nature of Part: 65.09 mm (2.5625") I.D. x 28.58 mm (1.125") long— open hole

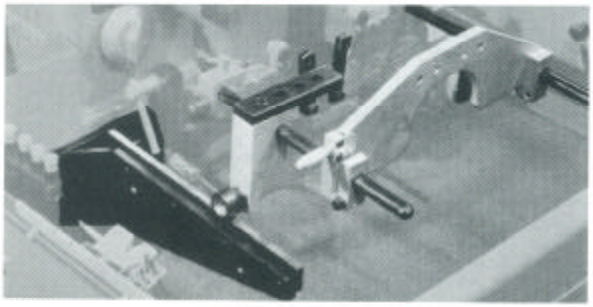
Material: Steel, Case Hardened to 58 Rockwell "C" Scale

Stock Removal: .08 mm (.003") ideal—up to .23 mm (.009") actual because of heat treat distortion

Honing Time per Part: 30 seconds to 2½ minutes (honed 2 at a time)

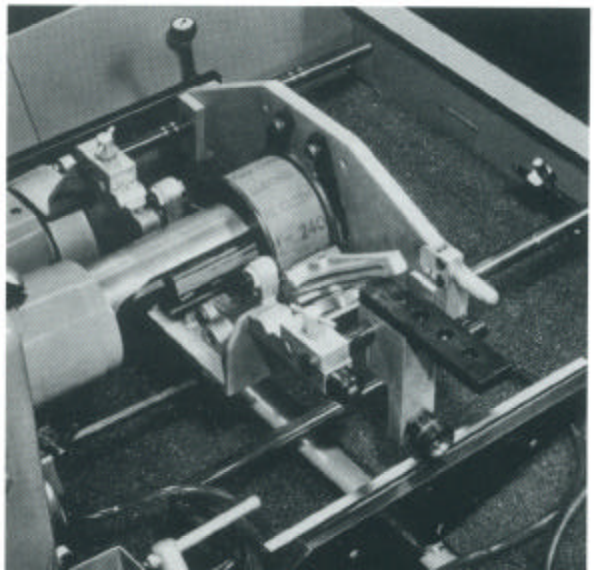
Previous Condition of Bore:
Bored and Heat Treated

Tolerances Held:
Size: .018 mm (.0007")
Surface Finish: Not important



KKN-700 Universal Honing Fixture and HF-200 Workholder used to fixture Roller

Roller ready for honing



Every part shown in this booklet was honed on a Sunnen Power-Stroked Automatic Honing Machine. For more information on these versatile machines, send for Brochure XMBC-5010.

SUNNEN PRODUCTS COMPANY
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