

**HARTFORD**  
*Special*

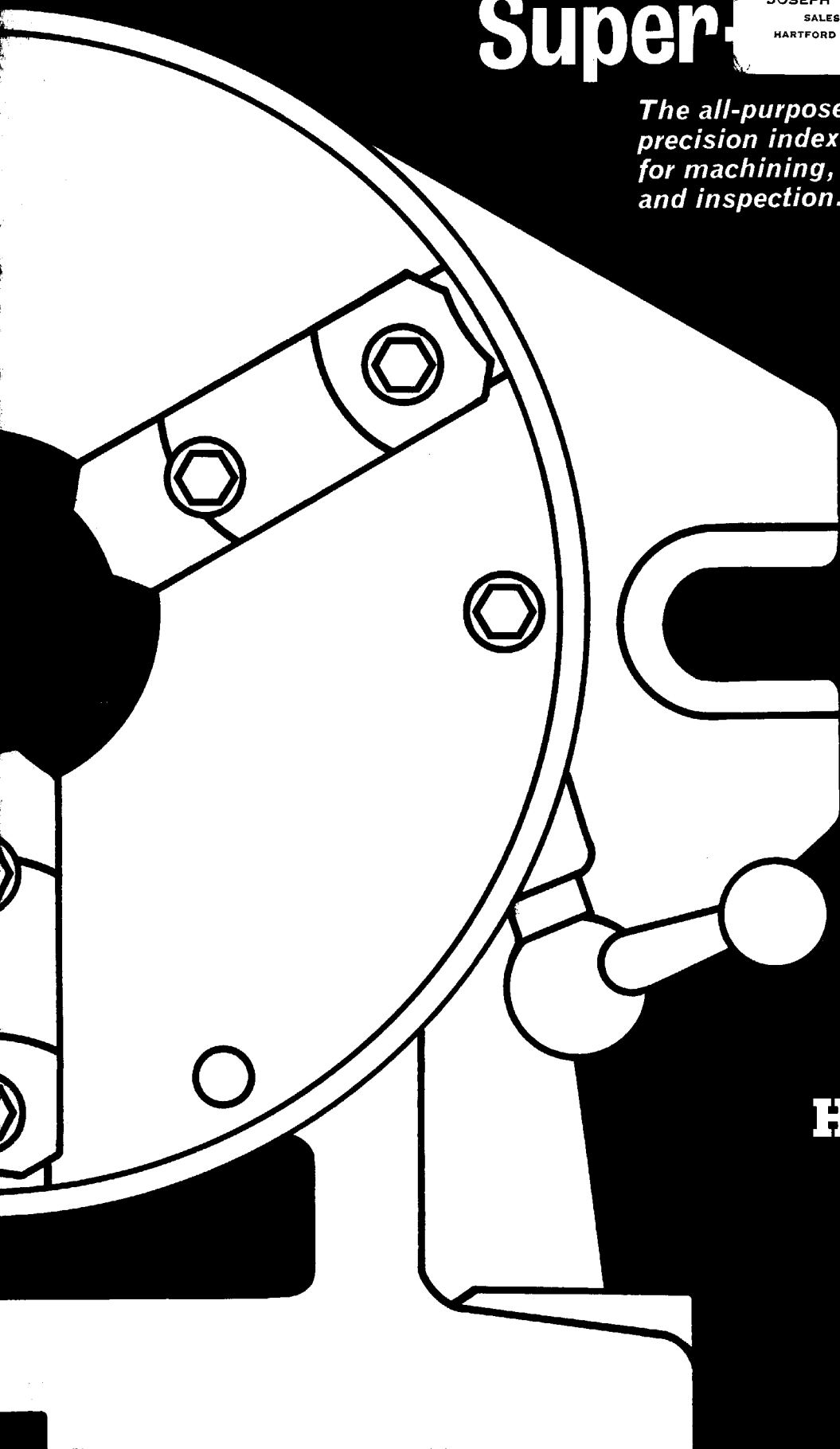
THE HARTFORD SPECIAL MACHINERY CO.  
COLLEGE HIGHWAY  
SIMSBURY, CONN. 06070

JOSEPH F. TOFFOLON  
SALES ENGINEER  
HARTFORD SUPER SPACERS

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TELEX 099-230

# Ha Super-

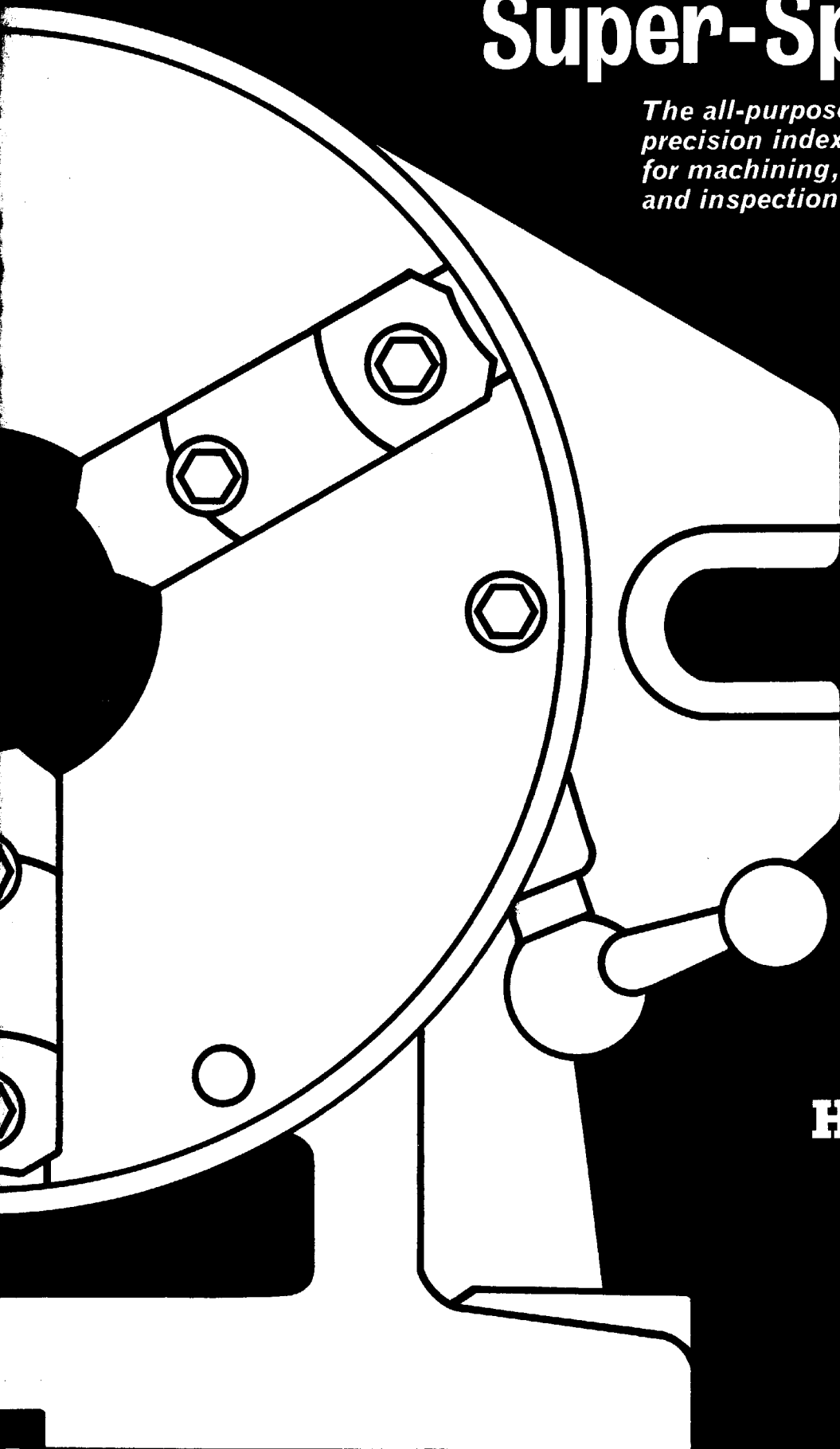
*The all-purpose  
precision indexing device  
for machining, layout  
and inspection.*



**HARTFORD**

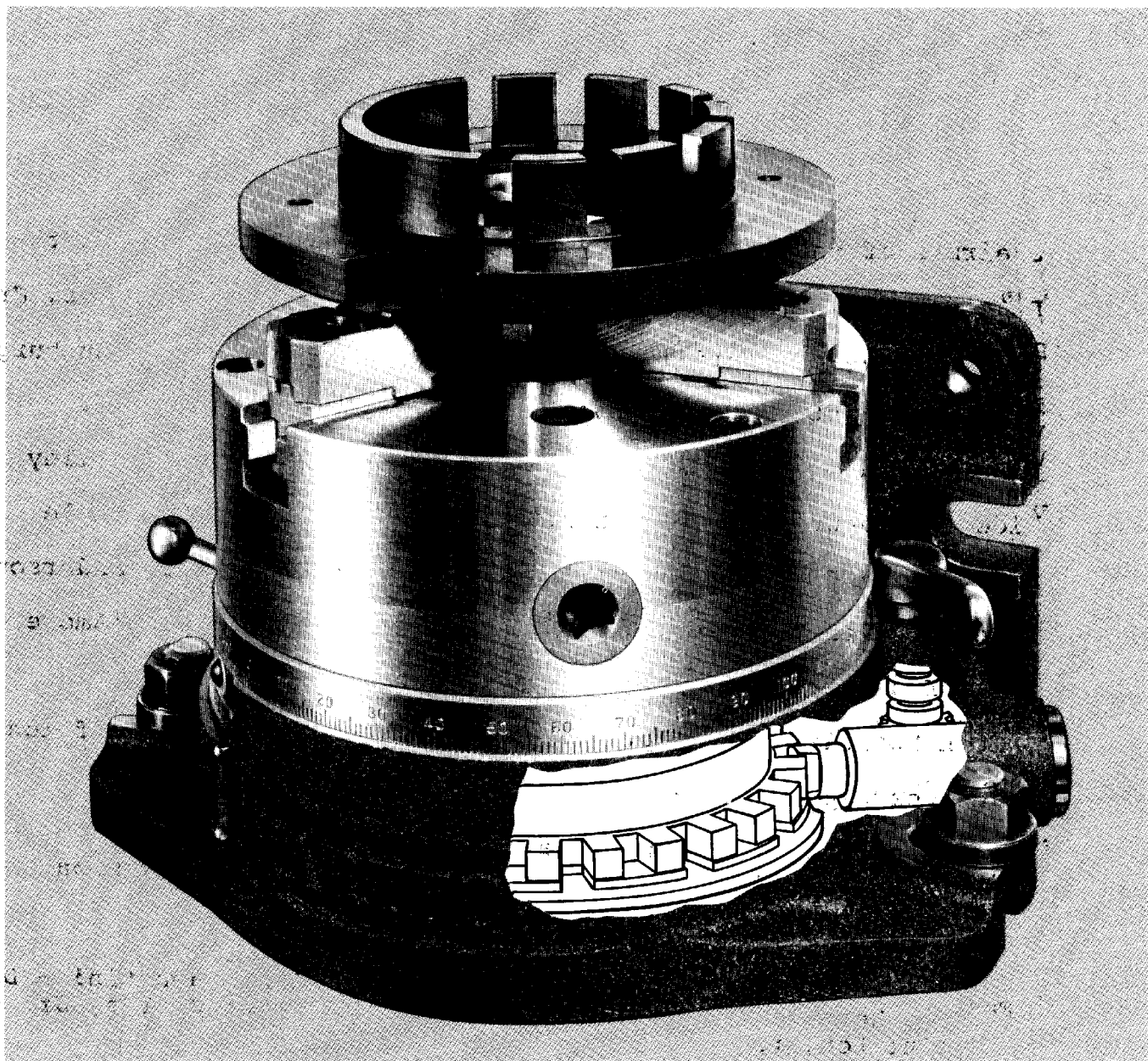
# Hartford Super-Spacers

*The all-purpose  
precision indexing device  
for machining, layout  
and inspection.*



**HARTFORD**

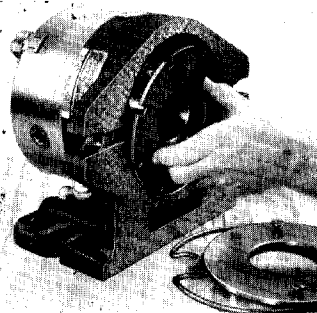
# Fastest way to index work manually



## No cranks, no readings, no counting revolutions

The Hartford Super-Spacer is a precise indexing device which is also extremely easy to set up and operate. Mounted in the base of the Super-Spacer is a master index plate. Inserted behind this index plate is an interchangeable mask plate which prevents an index plunger from engaging the notches except where required for desired divisions.

To index the workpiece, all the operator has to do is unclamp the turret from the base, disengage the index plunger and manually rotate the workpiece. The plunger automatically engages the first open notch.



The interchangeable mask plates, which can be switched in seconds, remove all possibility of error, insuring accurate spacing and rapid indexing.

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# More accurate than any imitation

We guarantee that the total indexing error on all *standard* Hartford Super-Spacers will be less than 40 seconds of arc, noncumulative—far more accurate than any imitation spacer. For example, if a 6" diameter part required a series of milled slots on the periphery, the standard Super-Spacer would index to within .0006" accuracy. Using selective components, we can guarantee to within 20 seconds.

## Better made for long-term accuracy

- Component parts are ground—not turned or milled—for finer tolerances.

- The class of fits are much closer than imitation spacers.

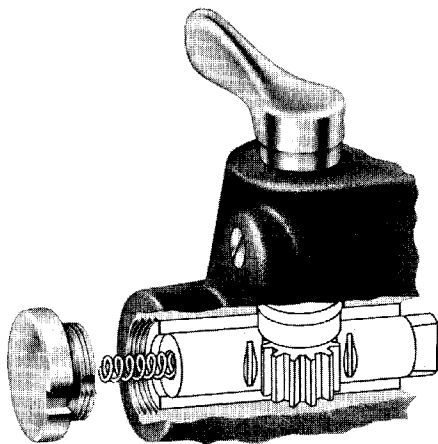
Minimum clearance between clamp shoes and master index plate is .0005". Maximum clearance is .0012". This fit is what prevents the whole unit from sagging when unclamped in horizontal position.

Fit between turret and base is such that runout does not exceed .0005". If there is slop between the turret and base, the turret could move even if indexing is done perfectly. The work piece would then move, throwing off the cut.

- Master index plates are hardened and ground on specially designed gear grinders.

- Heavy duty spring keeps index latch engaged in notch during machining. Weak latch spring in other devices makes index plunger susceptible to movement after engagement.

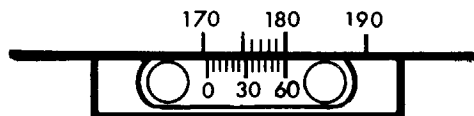
- No play or slop in the index latch assembly in contrast to copies. We hone both the O.D. of the bore and the I.D. of the bushing before assembly.



- Base keyway is no more than .0005" off centerline of turret. When using the Hartford Super-Spacer as a fixture, you can be sure that any cuts taken will be parallel and square. You can't be sure of this with imitation spacers where the keyway is off center.

- Chuck is dowelled to the turret. Dowelling positions the chuck jaws precisely in relation to the zero notch in the master index plate.

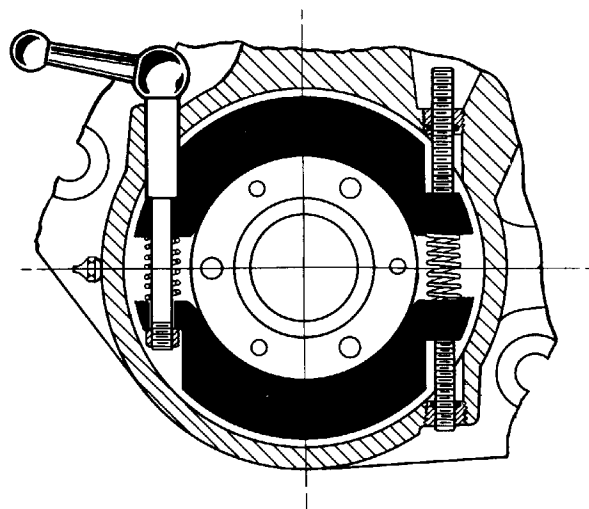
- Vernier marker plate is used instead of zero marker plate. This enables you to accurately position the chuck radially. This can't be done with a zero marker



## Superior Repeatability

The Hartford Super-Spacer's rugged, simple construction defies tolerance build up. In an automatic indexer, the many moving parts and different fits inevitably lead to a build up of tolerances. Air operated indexers or rotary tables simply can't be made with the same precision as a Super-Spacer.

## More holding power than rotary tables or automatics



Hartford Super-Spacers hold accuracy on even heavy cuts. Powerful clamp shoes, actuated by a simple handle, bind the turret solidly to the base during machining operations. This metal-to-metal fit makes the unit one homogenous mass of metal, removing all stress from the plunger and master index plate.

Rotary tables and air operated indexers have inherent clamping limitations because of their ball bearing construction—i.e., they can only be clamped radially, not axially.

## Often faster than automatic indexers

For many production runs, a Hartford Super-Spacer is faster than an automatic, particularly where the work has to be indexed 180° or more between operations. And, of course, a Super-Spacer sells for about one-fifth the cost of an automatic indexer of comparable quality and accuracy.

Hartford Super Spacers and accessories are guaranteed to be free of defects in workmanship and material for a period of one year.



# Versatility of Hartford Super-Spacers

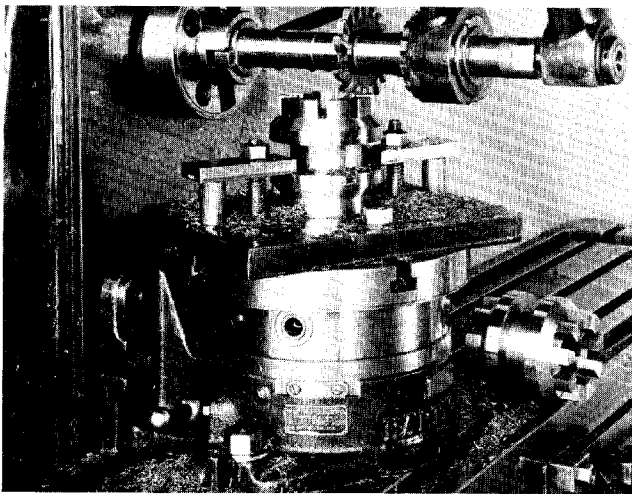
A Hartford Super-Spacer can be used again and again for many jobs... milling, drilling, boring, planing, grinding and inspection. In fact, a Super-Spacer can be used for any operation requiring spacing... from one-man layouts to positioning fixtures on 3-axis tape controlled machines.

The Super-Spacer's self-centering chuck provides ample holding means for most jobs. However, any type of chucking equipment or special holding fixtures can be readily adapted to the basic unit. This includes Cushman, Jacobs, Hardinge-

Sjogren, Buck, faceplates and fixtures. A full line of Hartford accessories are also available.

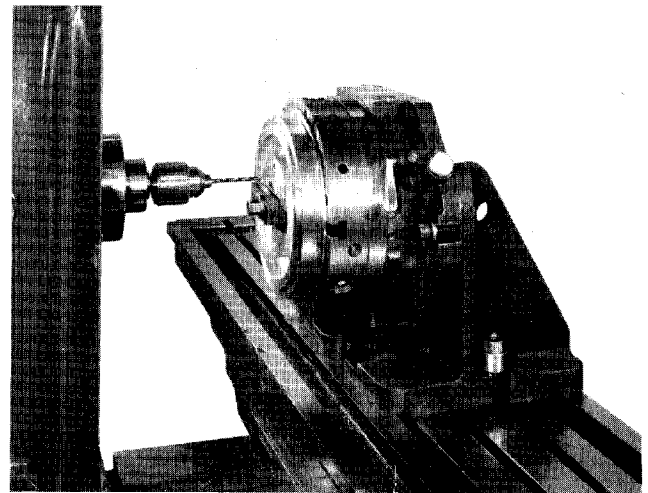
Super-Spacers can also be used as basis for special jigs and fixtures. Designing fixtures around Super-Spacers cuts engineering and manufacturing costs, saves time and reduces the cost per spacing, since new holding devices can be attached for different applications.

Below are just some of the ways Super-Spacers are being applied throughout the metalworking field.



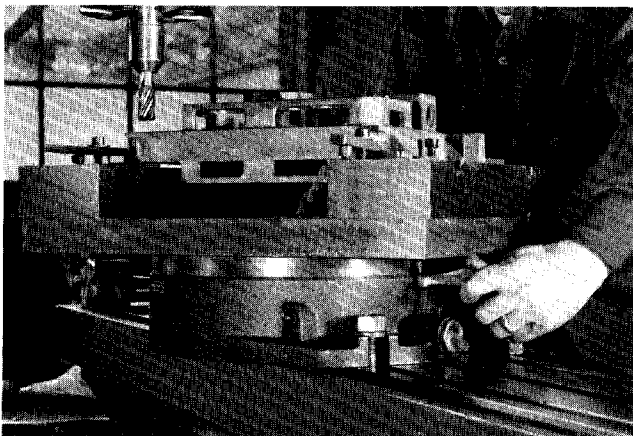
## MILLING

*8" Super-Spacer, equipped with faceplate and fixturing, holds workpiece for slot milling on horizontal mill. Accurate location of slots is achieved with one simple setup.*

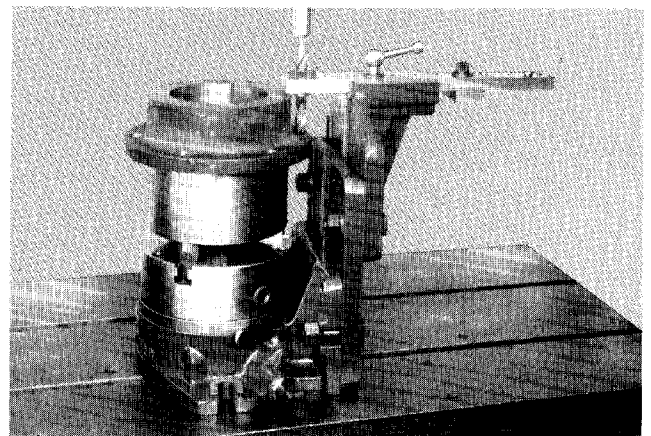


## DRILLING

*Standard 12" Super-Spacer with angle bracket and chuck used as faceplate for horizontal drilling.*

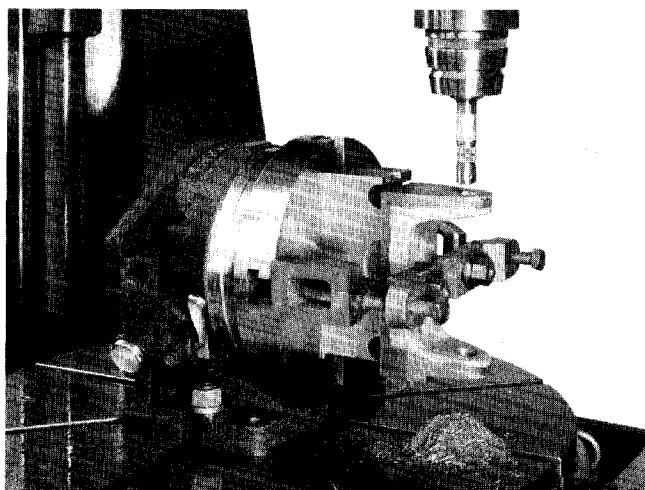


*12" Super-Spacer fixtured to hold complicated part for vertical milling. Basic 12" model can be precisely positioned into 48 divisions in one revolution.*



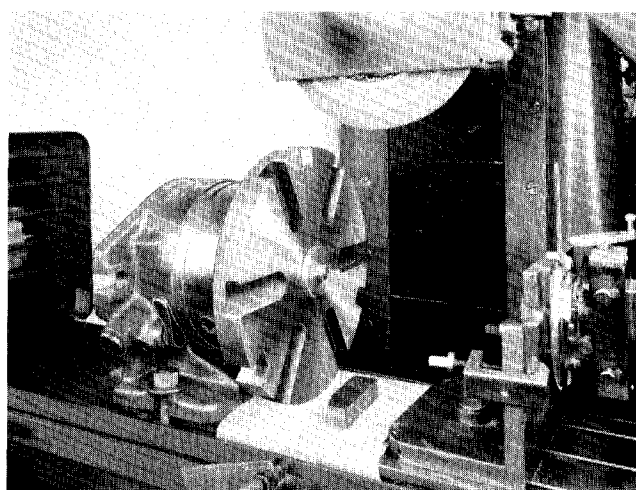
*8" Super-Spacer with standard drilling attachment (No. 1514) and drilling extension bracket (No. 1754) simplifies a potentially awkward vertical drilling job.*

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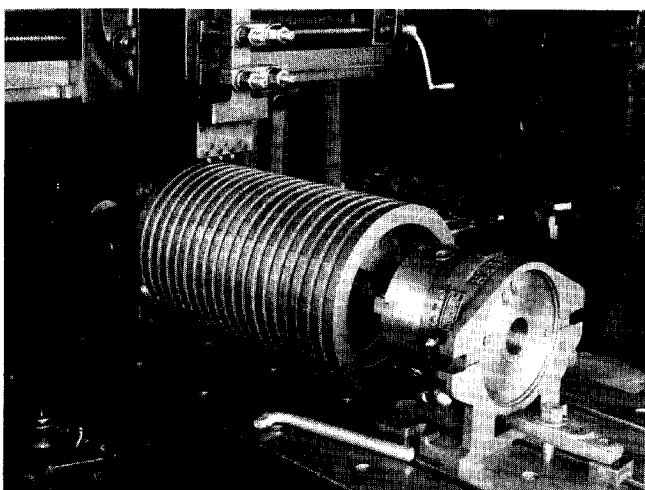
#### **BORING**

*8" Super-Spacer with faceplate and fixture for boring operation on jig-boring machine. Workpiece is indexed 180°. Result: Two holes directly in line.*



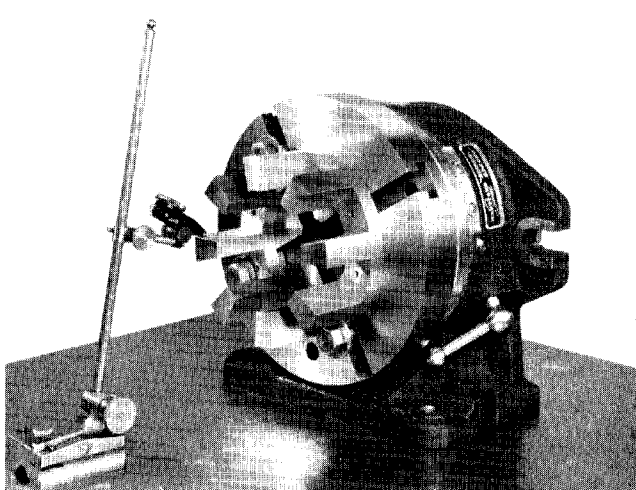
#### **GRINDING**

*8" Super-Spacer used to position plate during surface grinding operation on periphery.*



#### **PLANING**

*8" Super-Spacer with chuck and outboard support used to machine graducation lines on cast iron drums.*

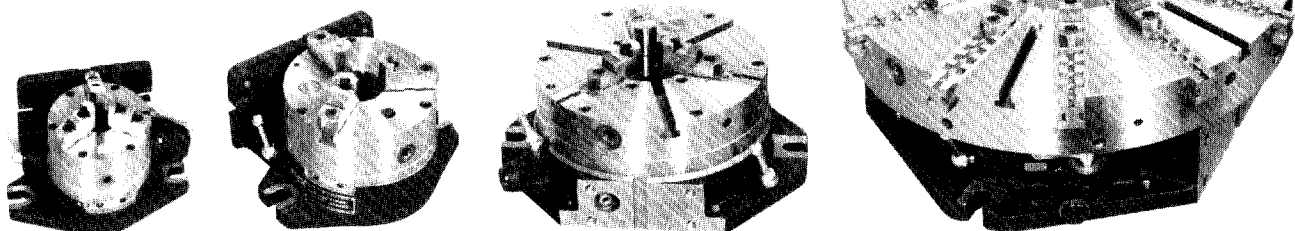


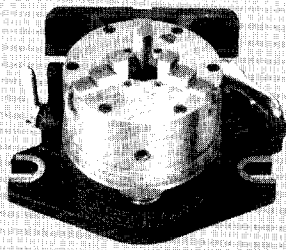
#### **INSPECTION**

*8" Super-Spacer with faceplate used to check slot spacing in inspection setup.*

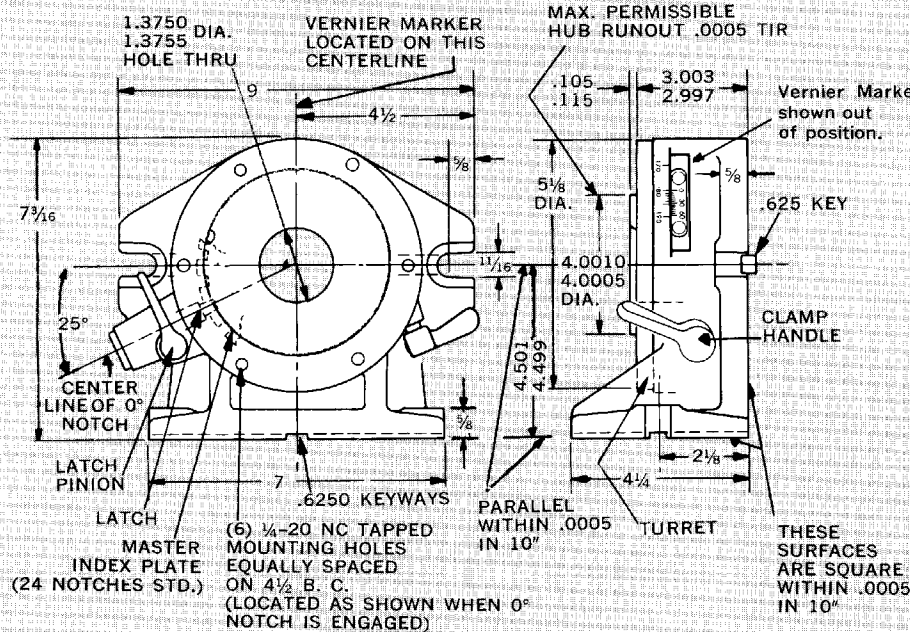
#### **FULL RANGE OF MODELS**

*Hartford Super-Spacers are available in four sizes—5", 8", 12" and 24"—offering wide application in nearly all spacing operations. Whichever model meets your requirements, you can be sure of consistently accurate, fool-proof indexing over many years of hard use.*





# 5" Hartford Super-Spacer



## SPECIFICATIONS

Maximum dimension to which the bore of the turret may be opened: 1.500 dia.

Maximum turret pilot runout: .0005

Maximum turret face runout: .0005

Base keyways are on centerlines within .001

Increments of vernier scale for turret graduations: 5 minutes

Weight of basic unit: 25 lbs.

## 5" BASIC SUPER-SPACER 1450-1

### INDEXING

Standard maximum non-accumulative indexing error: 0° 0' 40" (equal to .00058 at 6" dia.)

Special maximum non-accumulative indexing error: 0° 0' 20" (equal to .00029 at 6" dia.)

Special 20 second accuracy units are available only with 24 notch master index plates.

Master index plate with 24 divisions and mask plates for 2, 3, 4, 6, 8 and 12 divisions are furnished as standard on all 5" model Spacers.

Special master index plates for the even spacing of 13 thru 23 divisions in place of the standard 24-division plate are available from stock.

Mask plates for use with the above special master index plates to obtain 5, 7, 9, 10 or 11 divisions are available from stock.

Maximum master index plate standard tooth spacing: 24

Maximum master index plate gear tooth spacing: 50 (the gear tooth plate is accurate within 2 1/2 minutes and requires a special latch).

Maximum weight Spacer will support without wear during index: 50 lbs.

Maximum torque Spacer will withstand (latch and clamp engaged): 5400 inch lbs. or 450 foot lbs.

Contact factory on requirements for uneven or odd division indexing.

All unmachined surfaces are black crackle finished.

## 5" SUPER-SPACER WITH CHUCK 1450-46

### 3-JAW CHUCK SPECIFICATIONS

Maximum chuck jaw runout: .003

Maximum chuck face runout: .003

Limitations of work when chucked on O.D.: 1/16 to 5/4 dia.

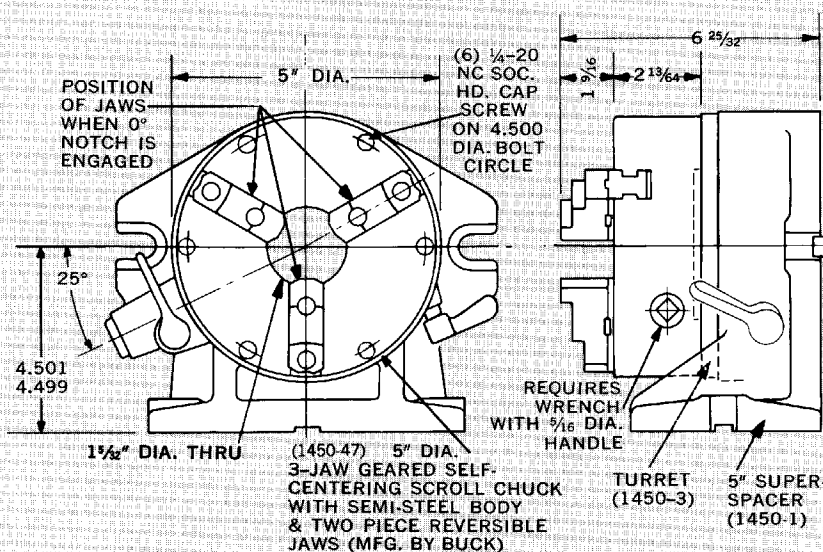
Limitations of work when chucked on I.D.: 1 1/2 to 4 1/2 dia.

Weight of 5" Super-Spacer and chuck: 35 lbs.

### OTHER CHUCKS ADAPTABLE TO THE 5" SUPER-SPACER

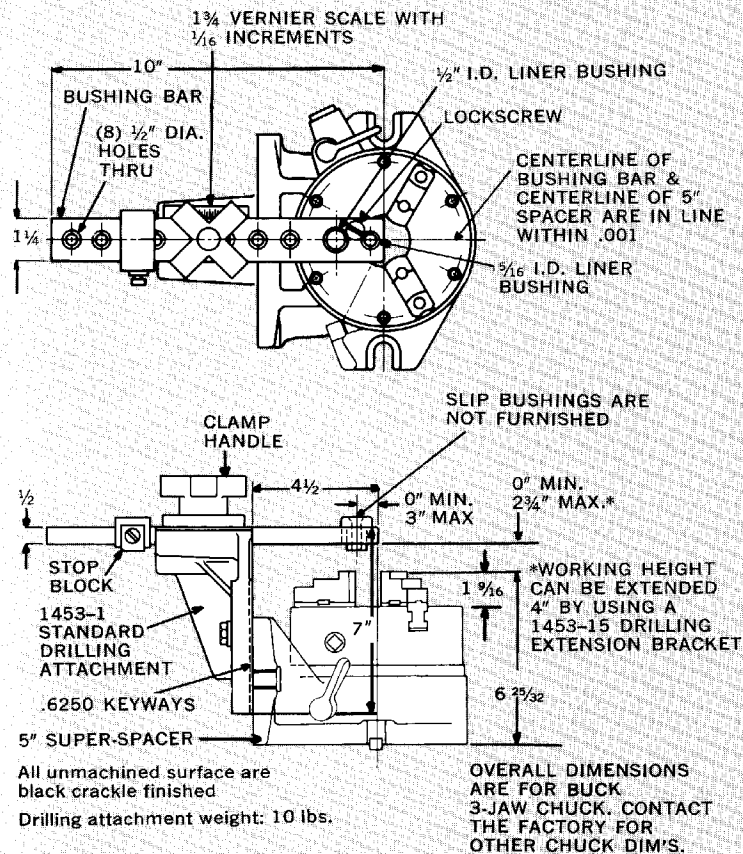
- Burnerd 3-jaw self centering
- Buck 3-jaw "Adjust-Tru" (.0005 max. runout)
- Buck 6-jaw self centering
- Buck 4-jaw independent
- Cushman 3-jaw self centering
- Cushman 3-jaw "Accra-Set" (.0005 max. runout)
- Cushman 4-jaw independent
- Brown & Sharpe magnetic
- Hardinge-Sjogren 5C collet
- Jacobs rubber flex collet

Contact the factory for delivery and special adapters for the above chucks.

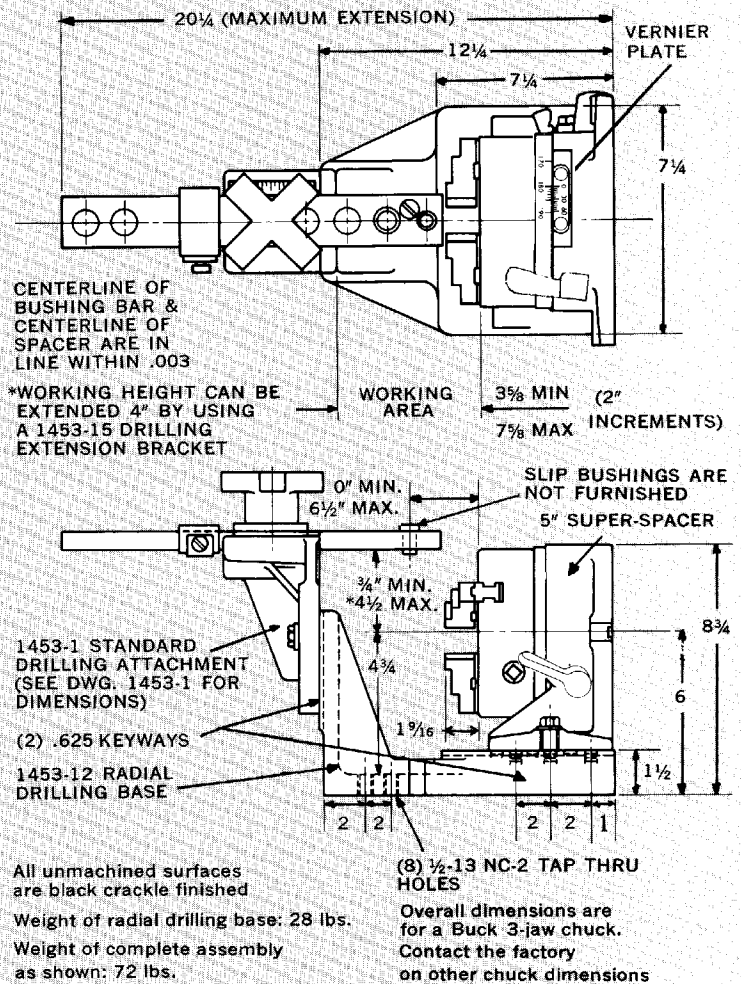


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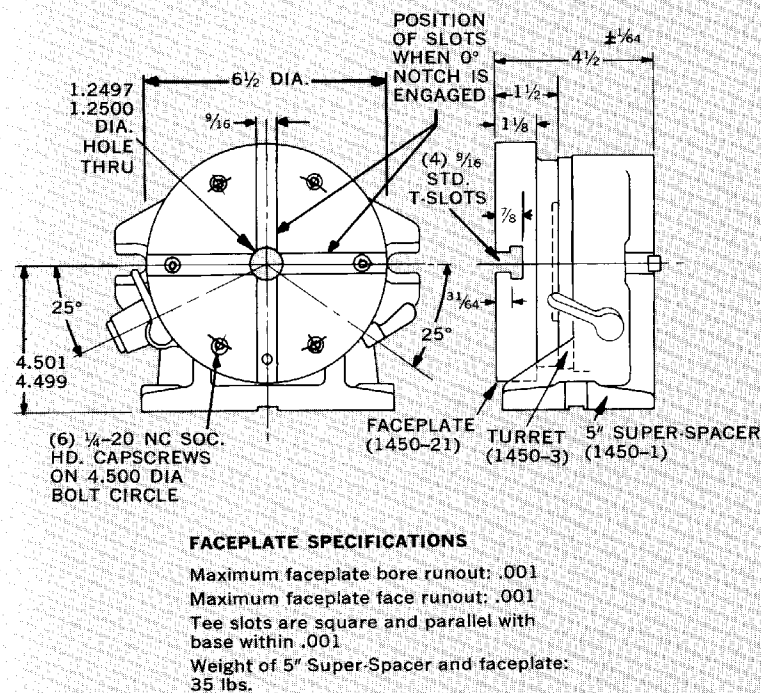
## STANDARD DRILLING ATTACHMENT 1453-1 WITH 5" SUPER-SPACER



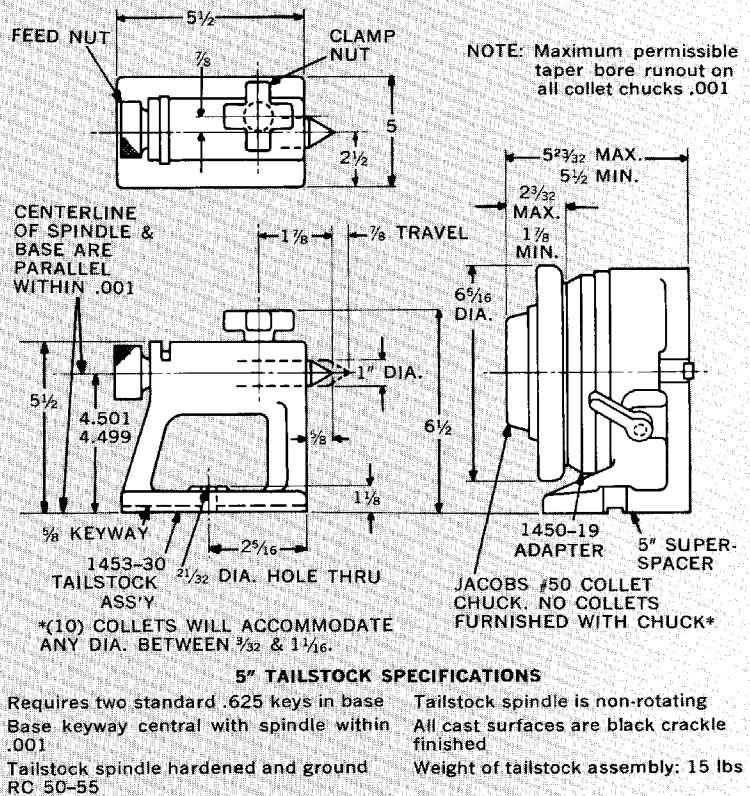
## RADIAL DRILLING ATTACHMENT 1453-12 WITH 5" SUPER-SPACER AND STANDARD DRILL ATTACHMENT 1453-1



## 5" SUPER-SPACER WITH FACEPLATE 1450-22



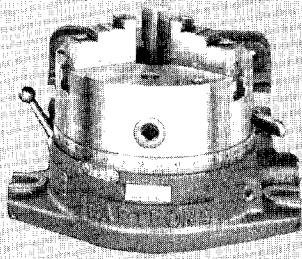
## 5" TAILSTOCK 1453-30 & SUPER-SPACER WITH COLLET CHUCK



All drawings and specifications in this brochure indicate standard dimensions and tolerances and are subject to change without notice.

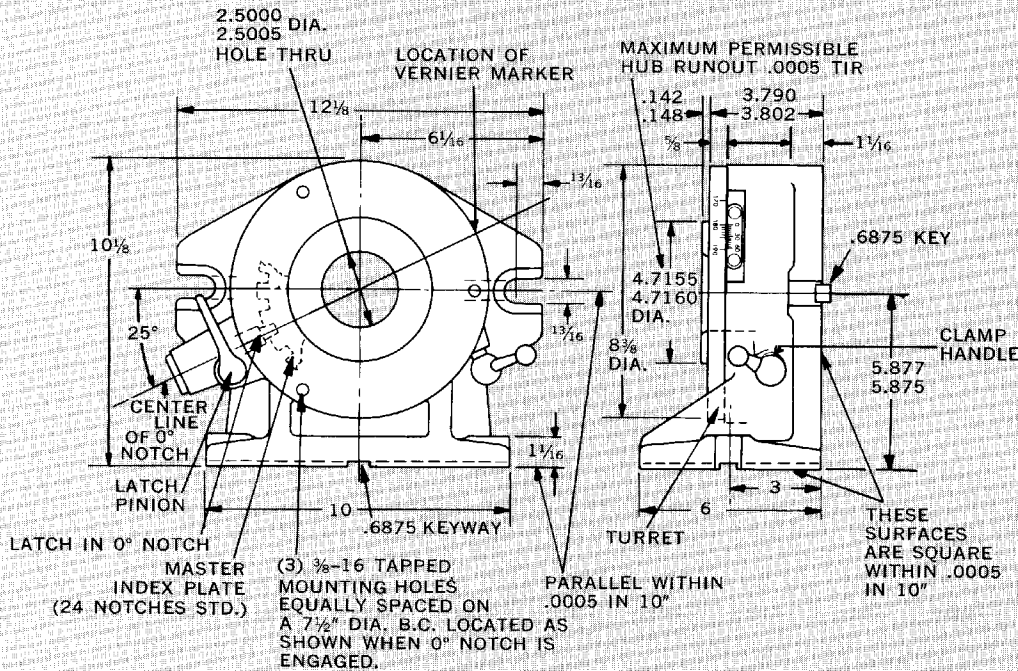
Contact the factory on special modifications.



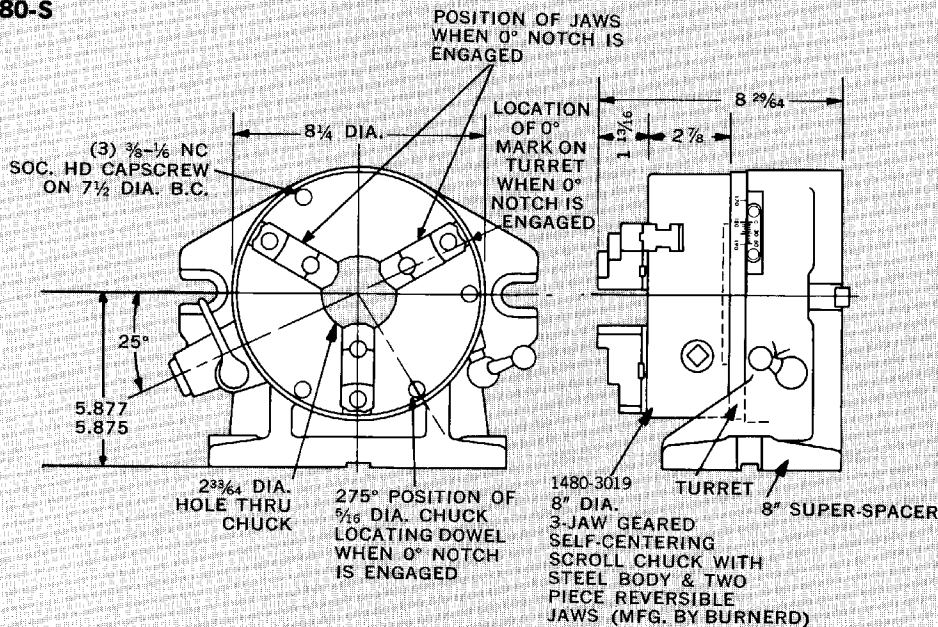


# 8" Hartford Super-Spacer

## 8" BASIC SUPER-SPACER 4144-S



## 8" SUPER-SPACER WITH CHUCK 1480-S



### MOUNTING CHUCK ON SUPERSPACER

The chuck is already drilled and counter-bored for the three socket head cap screws. It will only be necessary to dowel it in position. Line up the 0° mark on the turret with the 0° mark on the vernier. Bolt the chuck to the turret with the dowel

hole positioned at 275° using the chuck dowel hole as a guide, drill 1 1/4" dia. approx. 7/16" deep into the Super-Spacer turret. **CAUTION:** Do not drill thru into the base. Ream with 5/8" dia. reamer. Clean out chips. Insert dowel pin.

### INDEXING

Standard maximum non-accumulative indexing error: 0° 0' 40" (equal to .00097 at 10" dia.).

Special maximum non-accumulative indexing error: 0° 0' 20" (equal to .00049 at 10" dia.).

Special maximum non-accumulative indexing error (available on 24 notch MIP only): 0° 0' 10" (equal to .00025 at 10" dia.).

24-notch master index plate and mask plates with 2, 3, 4, 6, 8 & 12 divisions are furnished as standard on all 8" Super-Spacers.

Special master index plates for the even spacing of 16 thru 36 divisions in place of the standard 24-notch master plate are available from stock.

Special mask plates for use with special master plates to obtain 1 thru 18 divisions are available from stock.

Maximum master index plate standard tooth configuration spacing: 36 divisions

Maximum master index plate reduced tooth configuration spacing 40 divisions—requires a special latch.

Maximum master index plate spacing for milled gear tooth configuration (within 2 1/2 minute accuracy) 41 to 80 divisions—requires special latch and cannot be used with mask plates.

Maximum weight Spacer will support during index without wear: 125 lbs.

Maximum torque Spacer will withstand (latch & clamp engaged): 20,000 inch lbs. or 1666 foot lbs.

Contact the factory on requirements for uneven or odd division indexing.

### SPECIFICATIONS

Maximum dimension to which the bore of the turret may be enlarged: 2.750 dia.

Maximum turret pilot runout: .0005.

Maximum turret face runout: .0005.

Base keyways on centerlines within .001.

Increments of vernier marker: 5 min.

All unmachined surfaces are black crackle finished.

Weight of basic 8" Super-Spacer: 67 lbs.

### 3-JAW CHUCK SPECIFICATIONS

Maximum chuck jaw runout: .003

Maximum chuck face runout: .003

Maximum runout of chuck bore: .003

Work limitations when chucked on O.D.: 1/4" to 8 1/4" dia.

Work limitations when chucked on I.D.: 2 3/8" to 7 1/4" dia.

Weight of 8" Super-Spacer & chuck: 100 lbs.

### OTHER CHUCKS ADAPTABLE TO THE 8" SUPER-SPACER

- Buck 3-jaw "Adjust-Tru" with master & top reversible jaws and adapter
- Cushman 3-jaw steel body chuck with master & top reversible jaws
- Buck 6-jaw "Adjust-Tru" with inside & outside jaws (one piece)
- Buck 3-jaw "Adjust-Tru" with master & reversible top jaws
- Cushman 3-jaw "Accra-Set" with inside & outside jaws (one piece)
- Cushman 6-jaw "Accra-Set" with inside & outside jaws (one piece)
- Cushman 3-jaw "Accra-Set" with master and reversible top jaws
- Cushman 6-jaw "Accra-Set" with master and reversible top jaws
- Cushman 4-jaw self-centering with master & reversible top jaws
- Cushman 4-jaw independent with inside & outside jaws (one piece)
- Hardinge-Sjogren collet (see dwg. 1483-3) Jacobs 96F1 collet

**Note:** Buck "Adjust-Tru" and Cushman "Accra-Set" chucks are self centering & adjustable to limit jaw runout to .0005 TIR

Contact the factory for delivery and special adapter requirements for the above chucks



Overall dimensions are for a Burnerd 3-jaw chuck. Contact the factory for other chuck dimensions.

**Drilling attachment weight: 40 lbs.**



## FACEPLATE SPECIFICATIONS

Maximum faceplate bore  
runout: .001  
Maximum faceplate face  
runout: .001  
Tee slots are square & paral-  
lel with base within .001  
Weight of faceplate: 38 lbs.  
Weight of faceplate &  
Super-Spacer: 105 lbs.



Weight of radial drilling base: 80 lbs.  
Weight of complete assembly  
as shown: 220 lbs.

surfaces are black  
crackle finished.



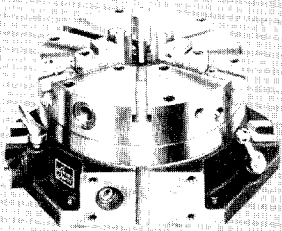
HARDINGE-SJOGREN PLAIN  
BACK COLLET CHUCK

## 8" TAILSTOCK SPECIFICATIONS

Base keyway is central with spindle within .001  
Base requires two standard 687 keys  
All cast surfaces are black crackle finished  
Tailstock assembly weight: 35 lbs

**Contact the factory on special modifications.**





# 12" Hartford Super-Spacer

## 12" SUPER-SPACER BASIC ASSEMBLY 1412A4

### INDEXING

Standard maximum non-accumulative indexing error: 0° 0' 40" (equal to .00155 at 16" dia.).

Special maximum non-accumulative indexing error: 0° 0' 20" (equal to .00078 at 16" dia.).

Special maximum non-accumulative indexing error: 0° 0' 10" (equal to .00039 at 16" dia.).

NOTE: 10 second accuracy can only be supplied with 48-notch master index plates.

48-notch master index plate, and mask plates with 2, 3, 4, 6, 8, 12, 16 and 24 divisions are furnished as standard equipment on all 12" Super-Spacers.

Special master index plates for the even spacing of 28 thru 54 divisions in place of the standard 48-notch master plate are available from stock.

Special mask plates for use with special master plates to obtain 5 thru 27 divisions are available from stock.

Maximum master index plate standard tooth configuration spacing: 54 divisions.

Maximum master index plate reduced tooth configuration spacing: 60 divisions—requires special latch.

Maximum master index plate spacing for milled gear tooth configuration (within 2½ min. accuracy) 61 to 123 divisions—requires special latch and cannot be used with mask plates.

Maximum weight Spacer will support during index without wear: 400 lbs.

Maximum torque Spacer will withstand (latch and clamp engaged): 30,000 inch lbs. or 2500 foot lbs.

Contact the factory on requirements for uneven or odd division indexing.

### SPECIFICATIONS

Maximum dimension to which the bore of the turret may be enlarged: 5.125 dia.

Maximum turret pilot runout: .0005.

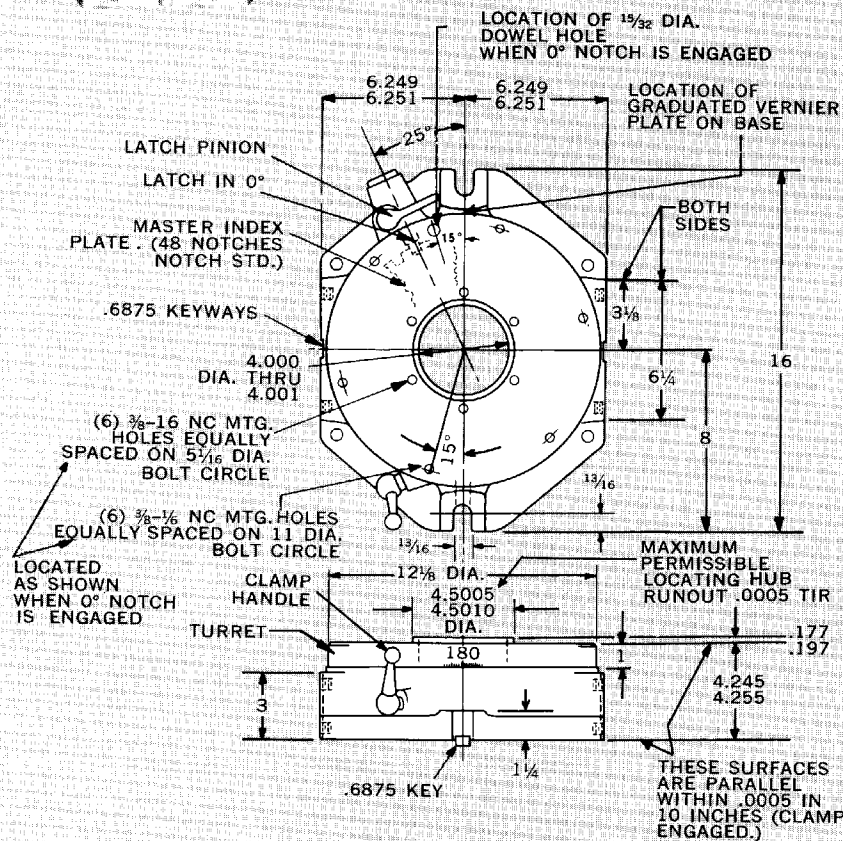
Maximum turret face runout: .0005.

Base keyways on centerlines within .001.

Increments of vernier marker plate: 5 minutes.

All unmachined surfaces are black crackle finished.

Weight of basic 12" Super-Spacer: 111 lbs.



## 12" SUPER-SPACER WITH COMBINATION 3-JAW CHUCK & FACEPLATE 1412B1

### SPECIFICATIONS

#### 3-Jaw Chuck Specifications:

Maximum chuck jaw runout: .003

Maximum chuck face runout: .003

Maximum chuck bore runout: .003

Limitations of work when chucked on O.D. ½" to 12½" dia.

Limitations of work when chucked on I.D. 1½" to 11¼" dia.

Weight of 12" Spacer & chuck: 173 lbs

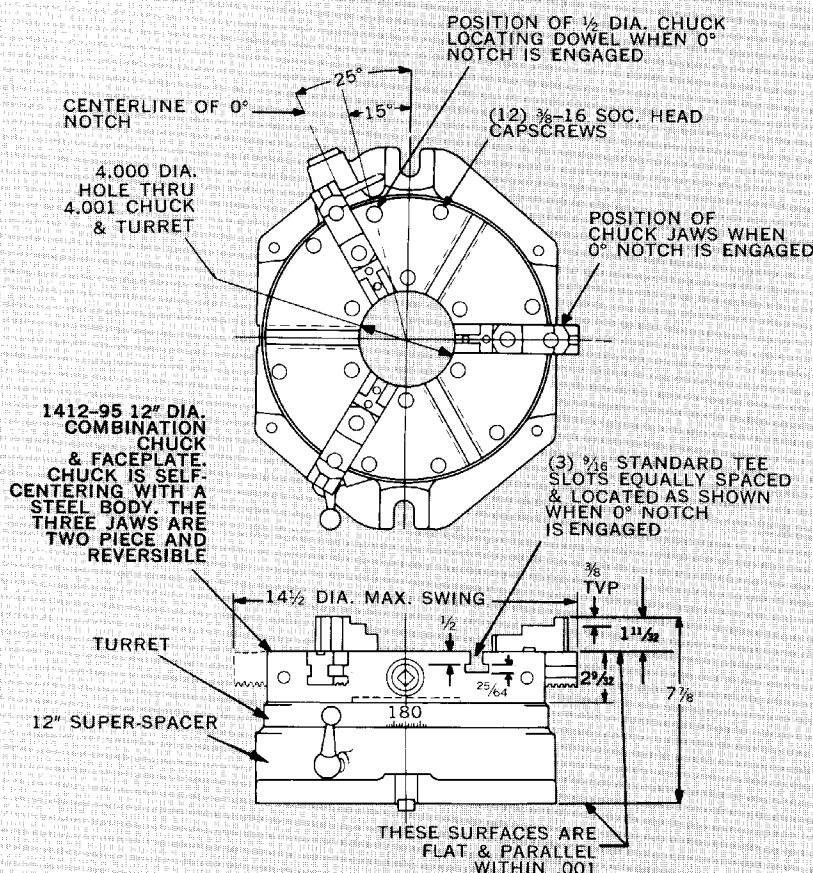
#### MOUNTING CHUCK ON SUPER-SPACER

The chuck is already drilled and counterbored for the 12 socket head capscrews. It will only be necessary to dowel it in position. Line up the 0° mark on the turret with the 0° mark on the vernier. Bolt the chuck to the turret with the dowel hole located at 15° approximately in line with the 15/32 dia. hole in the turret. With the chuck securely fastened, drill 3/16" dia. thru the chuck and no more than ¾" into the turret. **CAUTION:** do not drill thru into the base. Ream the chuck and turret with a ½" dia. reamer. Clean out chips and insert a ½" dia. x 2" dowel. Note: Prior to drilling a small amount of paper may be pushed to the bottom of the 15/32" dia. hole in the turret to keep chips out. The paper and chips can be removed by forcing air through an adjacent screw hole.

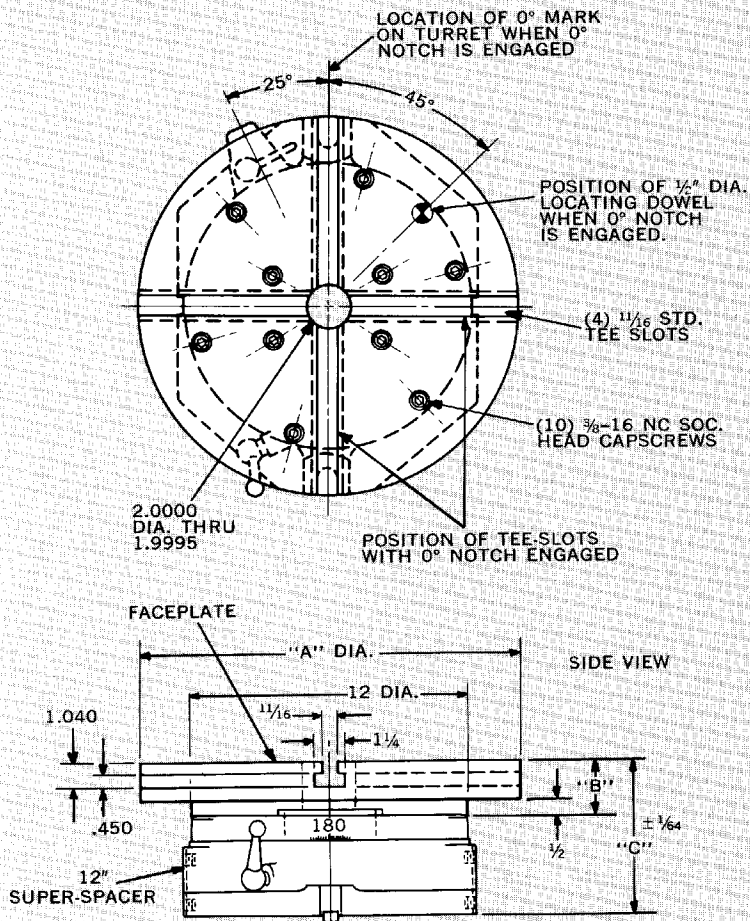
#### OTHER CHUCKS ADAPTABLE TO THE 12" SUPER-SPACER

- Cushman 4-jaw independent with one-piece solid jaws.
- Cushman 4-jaw independent with master & reversible top jaws.
- Buck 3-jaw "Adjust-Tru" with master jaws only.
- Buck 3-jaw "Adjust-Tru" with one piece solid inside & outside jaws.
- Buck 3-jaw "Adjust-Tru" with master & reversible top jaws.
- Buck 6-jaw "Adjust-Tru" with master jaws only.
- Buck 6-jaw "Adjust-Tru" with one piece solid inside & outside jaws.

NOTE: Buck "Adjust-Tru" chucks are self-centering & adjust-able to limit jaw runout to .0005.



**12" SUPER-SPACER  
WITH FACEPLATE  
1412-40 • 1412-57**



## FACEPLATE SPECIFICATIONS

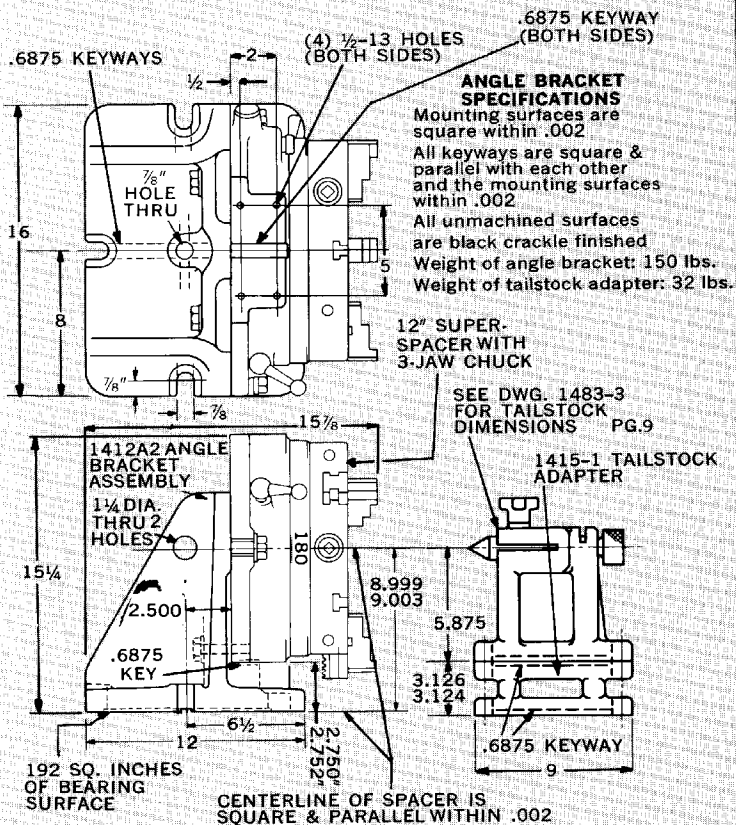
Maximum faceplate bore runout: .001  
Maximum faceplate face runout: .001  
Tee slots are square & parallel with base within .001  
Weight of 1412-40 faceplate: 55 lbs.  
Weight of 1412-40 faceplate & Spacer: 166 lbs.  
Weight of 1412-57 faceplate: 120 lbs.  
Weight of 1412-57 faceplate & Spacer: 231 lbs.

### Mounting Faceplate on Super-Spacer

The faceplate is already drilled and counterbored for the cap screws. It will only be necessary to dowel it in position. Line up the 0° mark on the turret with the 0° mark on the vernier. Lightly bolt the faceplate to the turret with the dowel hole positioned at 45°. Indicate the faceplate T-slots to be square and parallel with the base within .001. Square the hole and drill bolts. Using the faceplate as a guide, drill  $\frac{3}{16}$ " dia. drill thru the turret into the base. Ream faceplate & turret with a  $\frac{1}{2}$ " dia. reamer. Clean out chips and insert  $\frac{1}{8}$ " x 2" dowel pin.

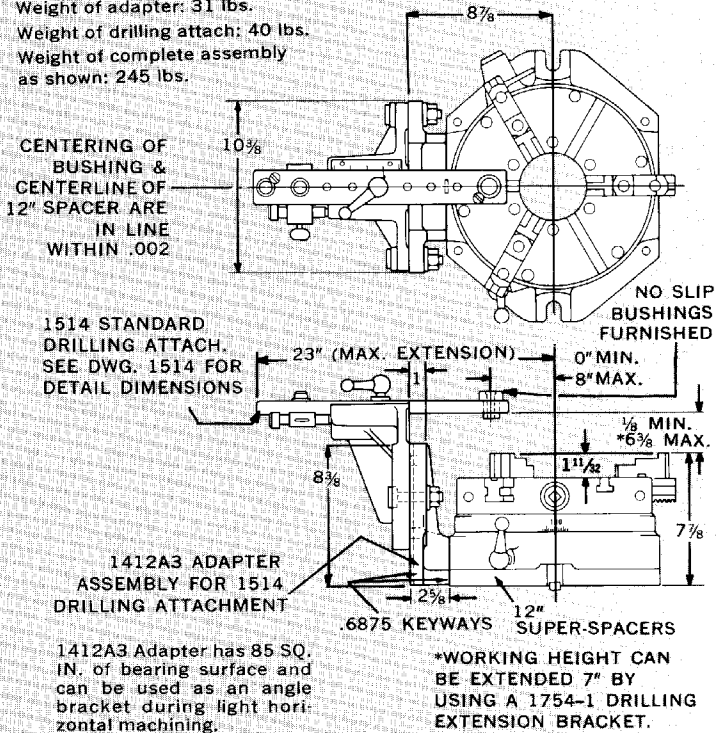
FACEPLATE	DIAMETER		
	"A"	"B"	"C"
1412-40	12	1 $\frac{7}{8}$	6 $\frac{1}{8}$
1412-57	16	2 $\frac{1}{8}$	6 $\frac{3}{8}$

**12" ANGLE BRACKET ASSEMBLY 1412A2 WITH  
TAILSTOCK ADAPTER, 1415-1, TAILSTOCK  
& 12" SUPER-SPACER**



**ADAPTER 1412A3 FOR DRILLING  
ATTACHMENT 1514 & 12" SUPER-  
SPACER WITH CHUCK**

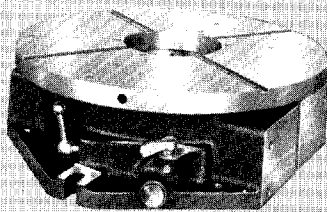
All unmachined surfaces are black crackle finished.  
Weight of adapter: 31 lbs.  
Weight of drilling attach: 40 lbs.  
Weight of complete assembly as shown: 245 lbs.



All drawings and specifications in this brochure indicate standard dimensions and tolerances and are subject to change without notice.

**Contact the factory on special modifications.**





# 24" Hartford Super-Spacer

(18)  $\frac{1}{2}$ "-13 NC TAPPED HOLES  $\frac{1}{8}$ " DEEP ON THE BASIS OF (6) EQUALLY SPACED ON 8" DIA. 14" DIA. & 20" DIA. BOLT CIRCLES.

ALL KEYWAYS ARE .6875-.6870 WIDE. .16 DEEP & ARE ON SUPER-SPACER CENTERLINES WITHIN .001

CLAMP HANDLE

LATCH PINION

LATCH IN 0° NOTCH

MASTER INDEX PLATE, 72 NOTCHES STD.

OPTIONAL 5C100714 LOCATING PLUG IS NOT FURNISHED WITH BASIC ASSEMBLY (MAX. PERMISSIBLE RUNOUT OF PLUG .0005)

(4)  $\frac{3}{8}$ "-11 NC TAP x  $1\frac{1}{2}$ " DEEP HOLES (EACH SIDE)

BASE

TURRET

LOCATION OF TURRET KEYWAYS WHEN 0° NOTCH IS ENGAGED

END PADS ARE PARALLEL WITH EACH OTHER WITHIN .001

9.751  
9.749

9.751  
9.749

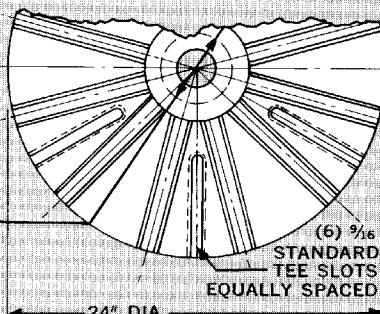
(4)  $\frac{1}{16}$ " DIA. HOLE  $1\frac{1}{4}$ " DEEP EQUALLY SPACED

CLAMP ADJUSTING SCREW

THESE SURFACES ARE PARALLEL WITHIN .001 IN 10 INCHES (CLAMP ENGAGED)

.6875 KEYWAYS

## 12-JAW CHUCK 3603 & 1424-S 24" SUPER-SPACER



$\frac{7}{16}$ " DIA. THRU CHUCK  
7.0005  
DIA. THRU TURRET  
7.0000

(6)  $\frac{1}{16}$ " STANDARD TEE SLOTS EQUALLY SPACED

24" DIA.

NOTE:

THE 24" BASIC SUPER SPACER MUST BE MODIFIED PRIOR TO INSTALLATION OF THE CHUCK. CONTACT THE FACTORY FOR INSTRUCTIONS.

24" MAX. DIA.  
10" MIN. DIA.  
21" MAX. DIA.  
8" MIN. DIA.  
20" MAX. DIA.  
7" MIN. DIA.

26" MAX. SWING  
25" MAX. DIA.  
12" MIN. DIA.  
22" MAX. DIA.  
9" MIN. DIA.  
20" MAX. DIA.  
7" MIN. DIA.

(4) EQUALLY SPACED "ACCRA-SET" CENTERING SCREWS.

#3603 24" DIA. COMBINATION CHUCK & FACE PLATE. CHUCK IS AN "ACCRA-SET" SELF CENTERING WITH A LOW PROFILE STEEL BODY. THE (12) JAWS ARE TWO PIECE REVERSIBLE. (MFG. BY CUSHMAN)

NOTE: "ACCRA-SET" CHUCK CAN BE ADJUSTED FOR A MAX. JAW RUNOUT OF .0005

TURRET  
24" SUPER-SPACER

Maximum chuck face runout: .001  
Maximum chuck bore runout: .001  
Weight of 24" dia. chuck: 295 lbs.  
Weight of Spacer and chuck: 700 lbs.

## 24" SUPER-SPACER BASIC ASSEMBLY 1424-S

Standard maximum non-accumulative indexing error: 0° 0' 40" (equal to .0023 at 24" dia.)

Special maximum non-accumulative indexing error: 0° 0' 20" (equal to .0013 at 24" dia.)

Special 20 second accuracy units are available only with standard 72 notch master index plate.

72-notch master index plate and one mask plate of any increment divisible into 72 (customer to specify number of mask plate divisions) are furnished as standard equipment on all 24" Super-Spacers.

Special master index plates for the even spacing of 55 thru 80 divisions in place of the standard 72-notch master plate are available.

Special mask plates for use with special master plates to obtain 2 thru 80 divisions are available.

Maximum master index plate standard tooth configuration spacing: 80 divisions.

Maximum spacing on master index plate with reduced tooth configuration: 96 notches

Maximum master index plate spacing for milled gear tooth configuration within 2½ minute accuracy: 97 to 176 divisions. Requires special latch and cannot be used with mask plates.

Maximum weight Spacer will support during index without wear: 3,000 lbs.

Maximum torque Spacer will withstand (latch and clamp engaged) 48,000 inch lbs. or 4,000 foot lbs.

Force required to start rotation of turret: 35 ft. lbs. max.

Force required to continue rotation of turret: 30 to 35 ft. lbs.

Contact the factory on requirements for uneven or odd division indexing

## SPECIFICATIONS

Maximum dimension to which the bore of the turret may be enlarged: 9.750 dia.

Maximum turret bore runout: .0002

Maximum turret face runout: .0002

Squareness of sides of base with bottom surface: .001 in 5 inches

Parallelism between base keyway and turret keyway: .002

All unmachined surfaces are black crackle finished.

Weight of basic 24" Super-Spacer: 407 lbs.

NOTE: The precision ball bearing supporting the turret has been thoroughly lubricated at the factory. Under normal conditions it will not require servicing. However, if lubrication is warranted, use only Shell Darina EP-2 grease.

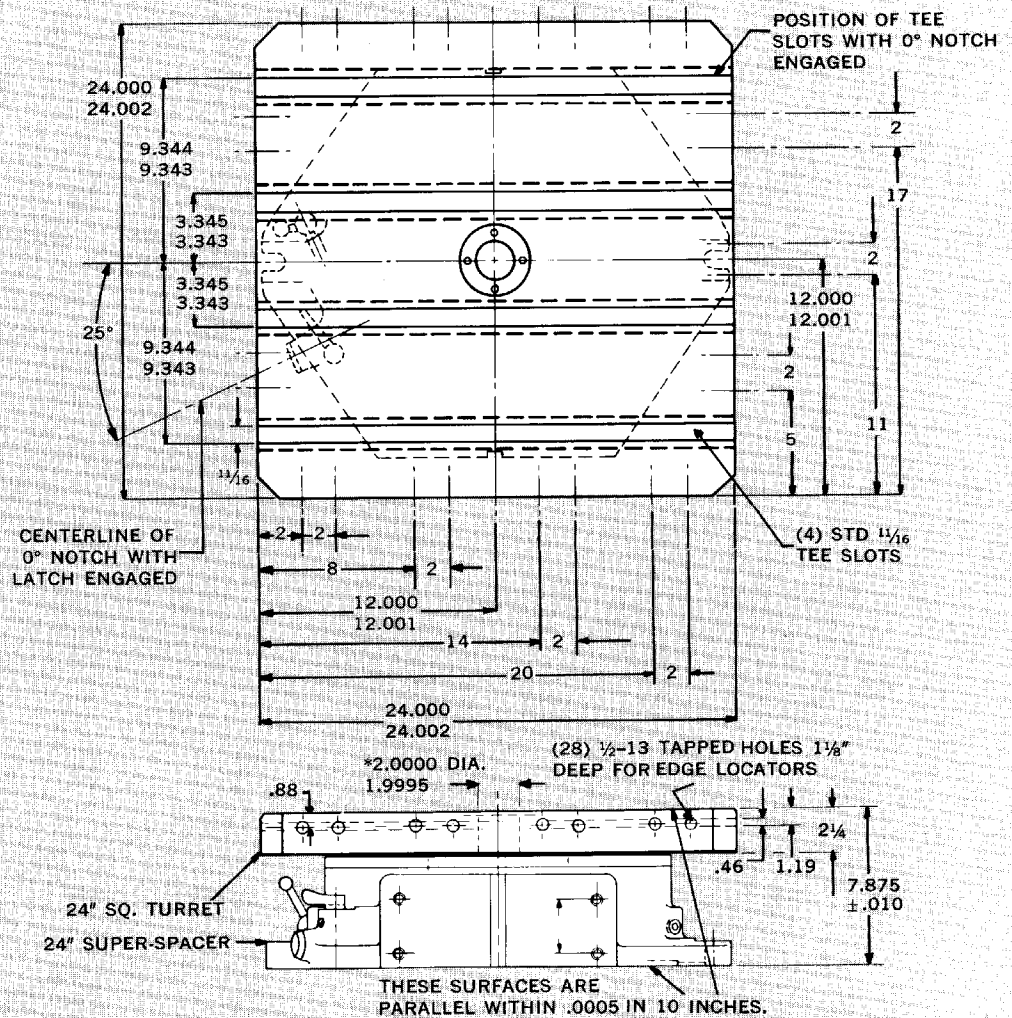
## 24" SQUARE TEE SLOTTED INDEXING TABLE 1424-57

### SPECIFICATIONS

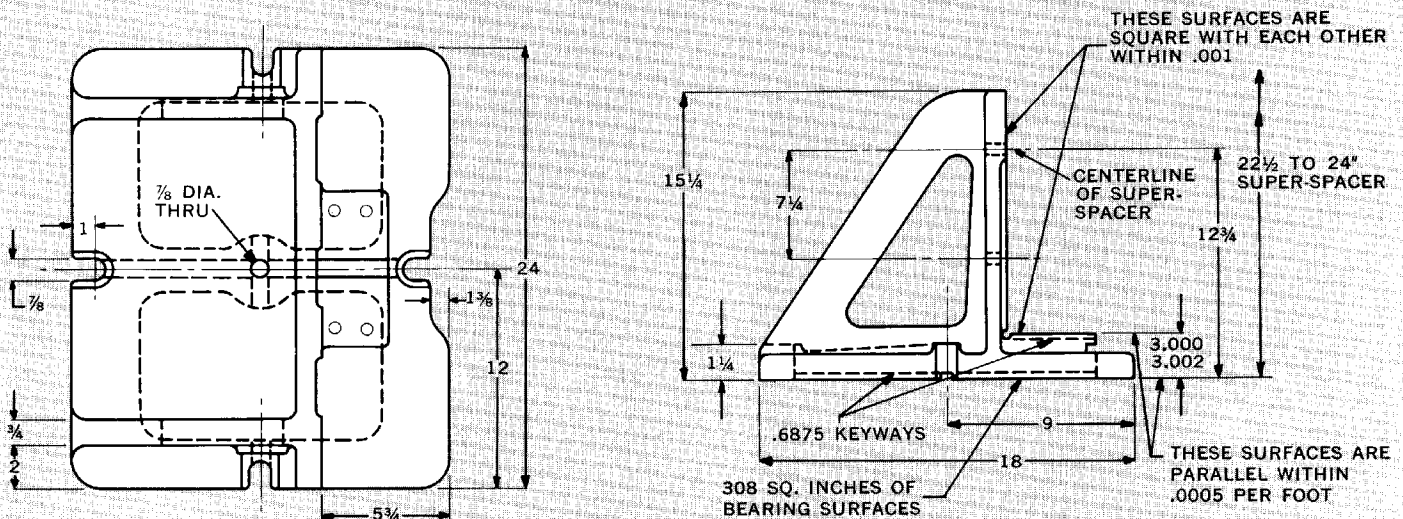
\*Maximum runout of turret bore: .0005  
Tee slots and sides of turret are square and parallel with each other within .0005 in 10 inches.

Maximum runout of turret face: .0005  
Weight of Super-Spacer with square turret: 707 lbs.

Tee slots and sides are square and parallel with base keyways within .001 TIR.  
This unit cannot be used with angle bracket 1424-2 without modification.  
For indexing specifications, see description of basic 1424-S assembly on page 12.



## ANGLE BRACKET ASSEMBLY 1424-2 FOR 24" SUPER-SPACER



### SPECIFICATIONS

All keyways are square and parallel with each other within .002

All unmachined surfaces are black crackle finished

Weight of angle bracket: 200 lbs.

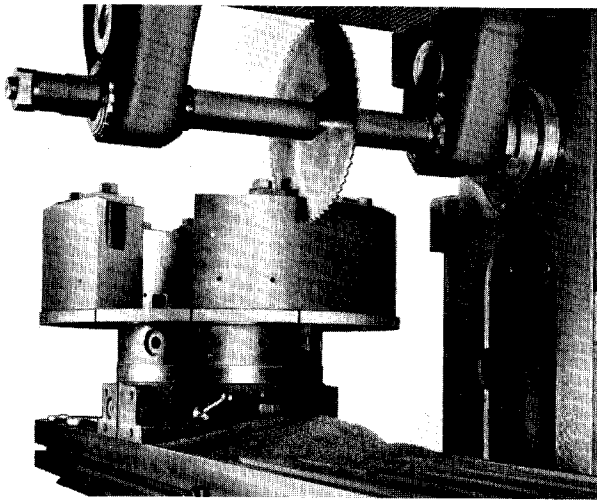
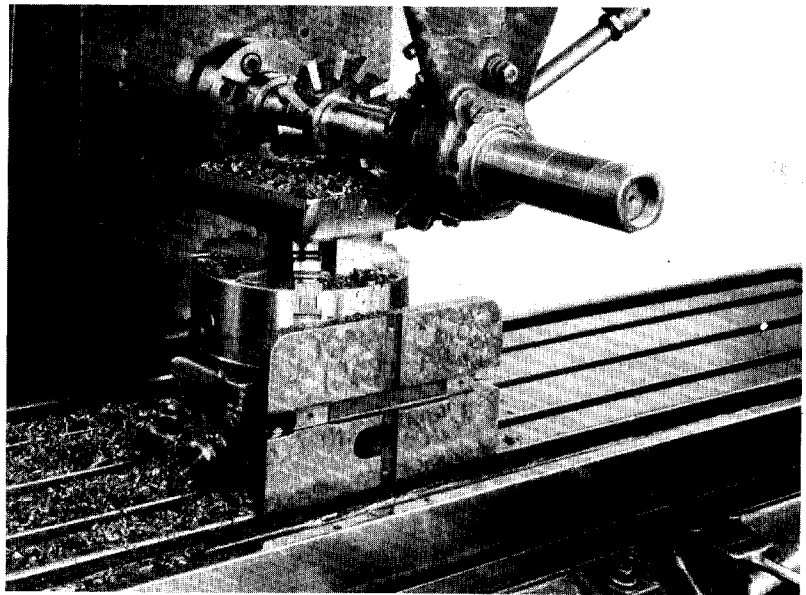
Weight of angle bracket and basic 24" Super-Spacer: 607 lbs.

All drawings and specifications in this brochure indicate standard dimensions and tolerances and are subject to change without notice.

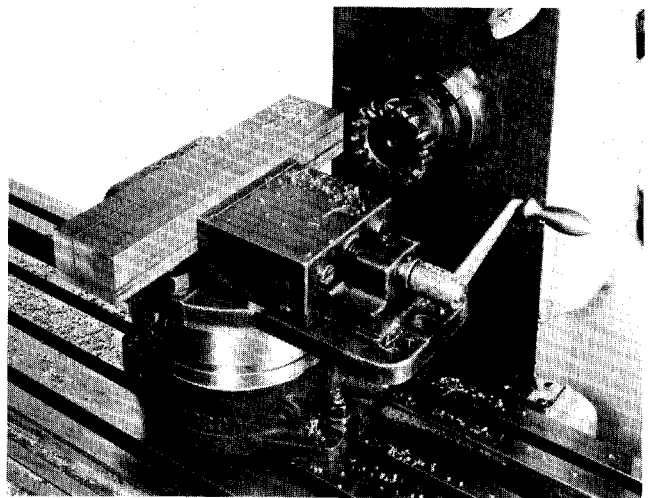
Contact the factory on special modifications.

# Wide range of applications

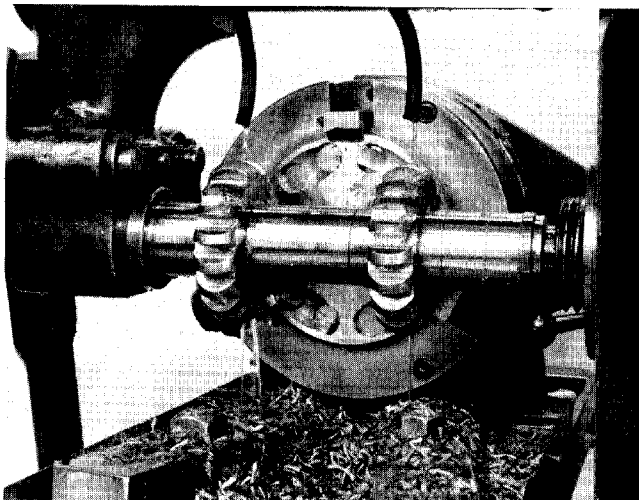
**Absolutely Square—**  
*Standard 8" Super-Spacer  
used to hold workpiece rigidly  
during two heavy cuts  
on horizontal mill.*



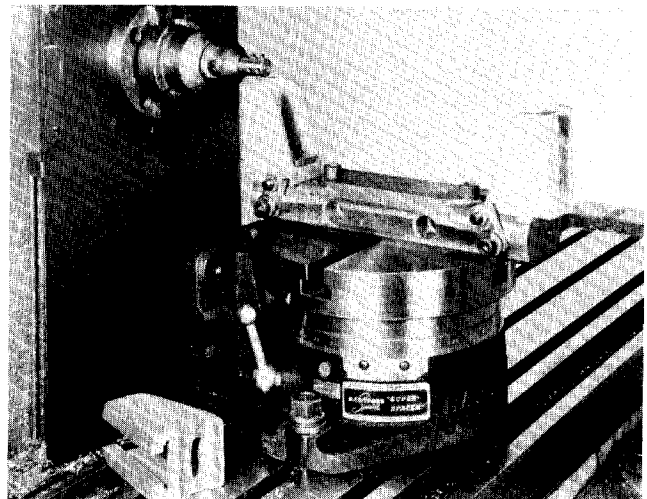
**Large Overhang—12" Super-Spacer with chuck** used to saw segments out of a round casting on milling machine. Fixture is mounted onto the chuck face with jaws removed.



**Hard to Hold—Standard milling machine vise and 8" Super-Spacer** combine forces to solve tricky work holding problem.

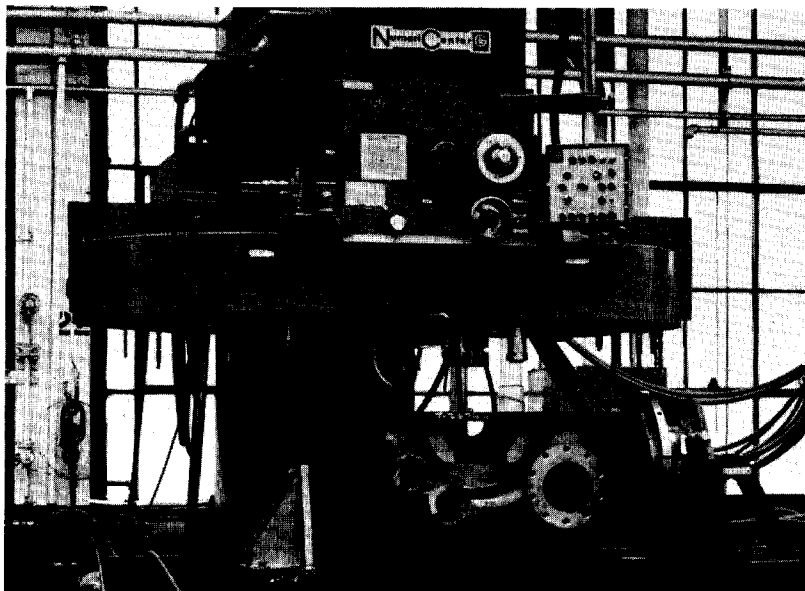


**Massive Cut—Double hobbing cut** doesn't faze 8" Super-Spacer.



**Nonstop Production—8" Super-Spacer with faceplate and fixturing** on production setup. One part is loaded while the other is being machined. When cut is completed, fixtures are just indexed 180°.

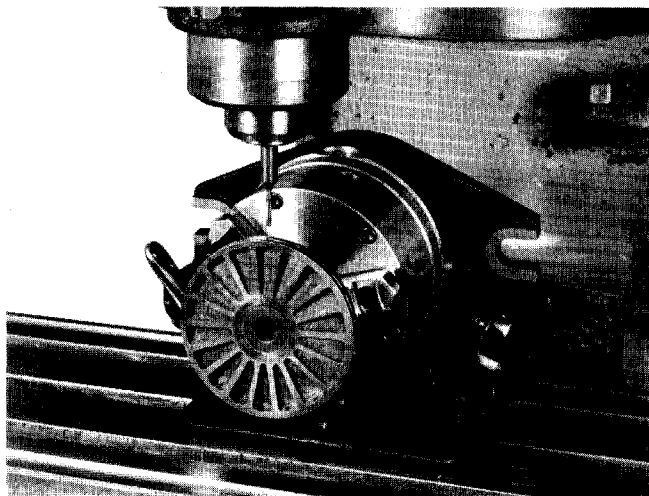
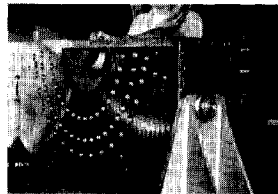




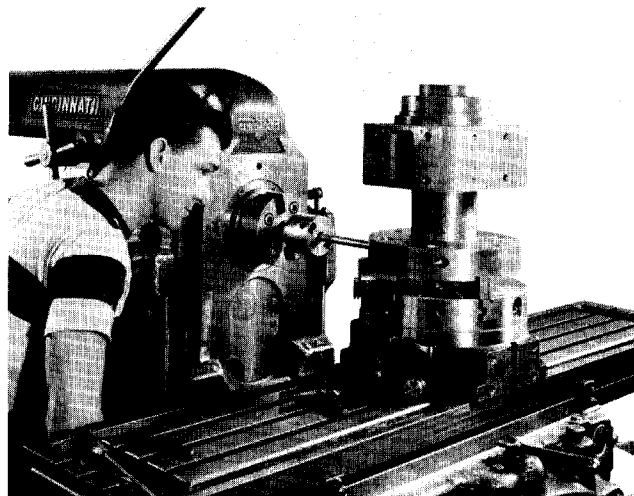
#### **N/C Machining—**

*24" Super-Spacer with angle bracket is used to index large casting on N/C multiple-spindle drilling and boring machine. Part is mounted in a trunnion fixture between Super-Spacer and outboard support. The 24" Super-Spacer will support up to 2,000 lbs. in this type of setup.*

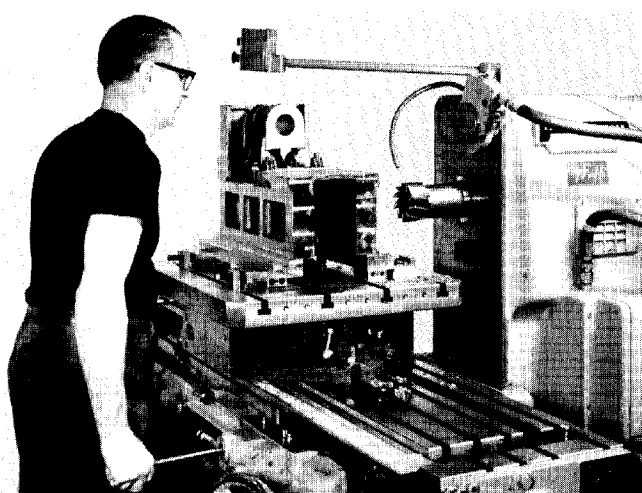
*As seen from the rear of the machine, the operator accurately lines up the fixture in the first drilling position.*



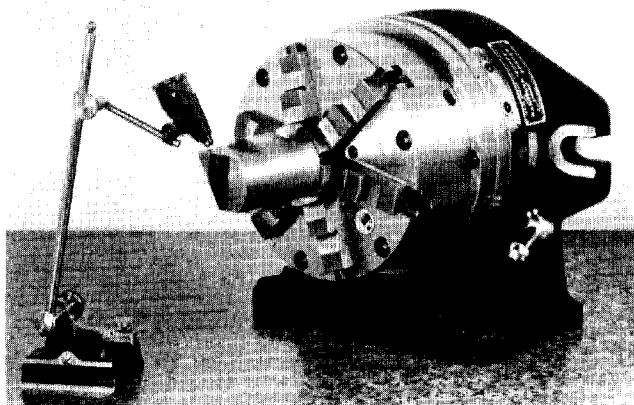
**Accurately Spaced**—5" Super-Spacer accurately locates 20 holes in periphery of workpiece within .0005" of true position.



**Fool Proof Indexing**—12" Super-Spacer with chuck is used to avoid costly indexing mistakes during a deep hole boring operation on expensive workpiece.



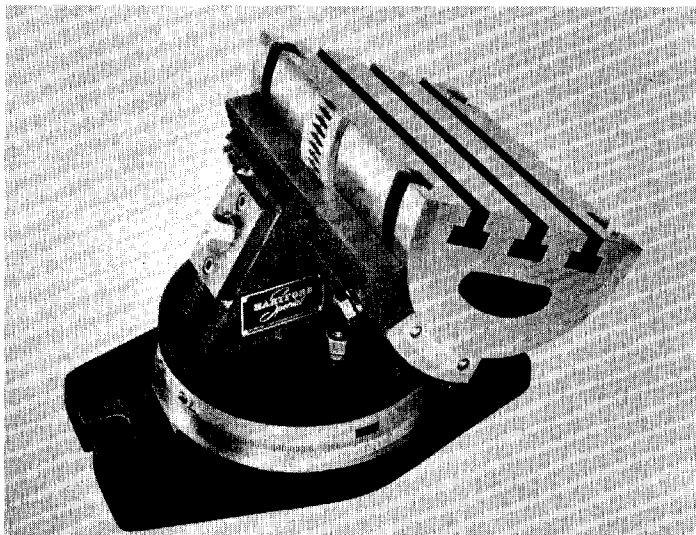
**Big Parts**—24" square indexing table enables operator to machine four sides of a workpiece without changing setup.



**No Runout**—Versatile 8" Super-Spacer with Buck 6-jaw Adjust-True chuck that holds jaw runout to a maximum of .0005 TIR.

# Hartford Super Table

## MODEL 810

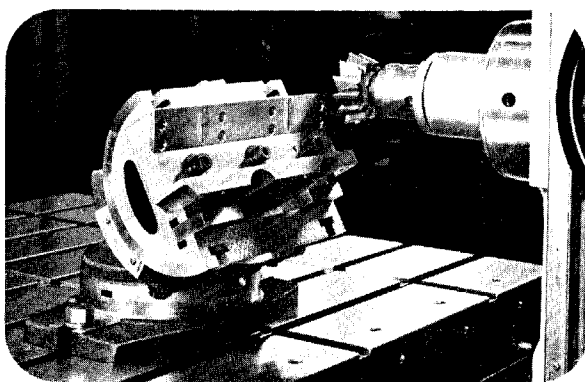
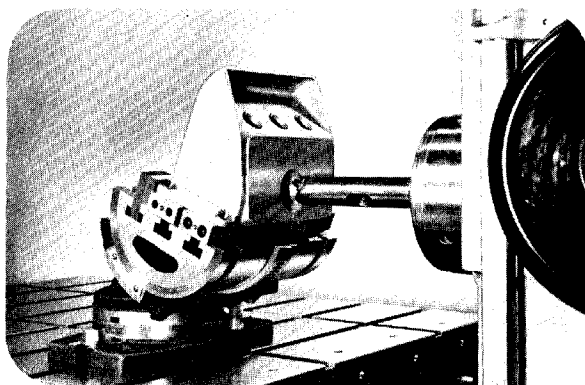
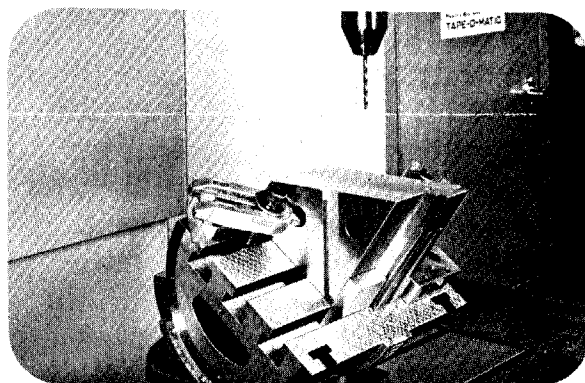
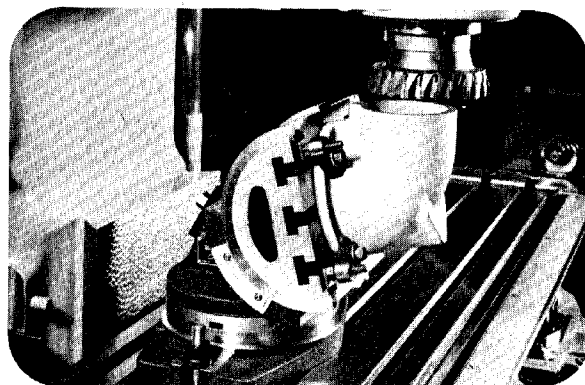


### FEATURES

- Work table rotates in 110° arc, then locks for rigidity.
- Saddle rotates 360° on base, vernier insures accurate positioning.
- Table and key-slotted saddle can be removed from rotary base and mounted directly to machine table, if special applications make this desirable. This will reduce height by 1.875".
- Single wrench fits all nuts and worm wheel and is removable for safety during machining.
- Made of precision machined high strength castings.
- Durable black crackle finish withstands shop use.

### SPECIFICATIONS

Base.....	8 $\frac{5}{8}$ " wide x 13" long
Table.....	8" wide x 10" long
Height—Horizontal Position.....	7 $\frac{5}{8}$ "
Table Graduations.....	110° (in 5 minute increments)
Base Graduations.....	360° (in 5 minute increments)
Size of T-slots.....	.625"
Weight.....	112#



**THE HARTFORD SPECIAL MACHINERY CO. ■ COLLEGE HIGHWAY, SIMSBURY, CONN. 06070**

BRANCH OFFICES IN LOS ANGELES, CHICAGO, DETROIT

Telephone (203) 658-7601

Telex 099230

Cable Address: Special

\*A registered Trade Mark of the Hartford Special Machinery Co.

# HARTFORD SUPER TABLE PRICE LIST

MODEL NO.	DESCRIPTION	SELLING PRICE
810	HARTFORD Super Table..... (RoTilt) 8 x 10 Working Table on Swivel Base Black Crackle Finish Includes Wrench for Clamping * * *	\$ 815.00

NOTE:

DATE @  
TOP



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THE HARTFORD SPECIAL MACHINERY COMPANY  
Simsbury, Connecticut, U.S.A.

# THE HARTFORD SPECIAL MACHINERY CO.

SIMSBURY, CONNECTICUT 06070

Founded 1912



## GENERAL INFORMATION

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President	- Ernest W. Smith, Jr.
Executive Vice President	- Harvey L. Spaunburg, Jr.
Vice President - International	- James J. Jones
Vice President - Sales	- William S. Reiley
Vice President - Manufacturing	- H. Clinton Noble
Secretary - Treasurer	- Edward J. Sanderson
General Sales Manager	- Robert A. D'Amore
Sales Engineer -	
Work Positioning Equip.	- Joseph F. Toffolon
Sales Correspondents -	
Work Positioning Equip. Line:	
Super Spacers	- Helen A. Monson
Super Tables	
Fastener Equipment Line:	
Thread Rollers	- John Lamantini - Domestic
Cold Headers	James J. Lee, Jr. - Foreign
Point Formers	

## BRANCH OFFICE - FASTENER EQUIPMENT LINE

THE HARTFORD SPECIAL MACHINERY COMPANY  
22 South Washington Street  
Park Ridge, Illinois 60068

Phone: (312) 692-4194

H. Andersen

Manufacturers of: Work Positioning Equipment:  
                    Super Spacers - Super Tables  
Fastener Equipment:  
                    Cold Headers - Thread Rollers - Point Formers

TELEPHONE 203 658-7601

TELEX 099230

CABLE ADDRESS: SPECIAL

12/28/72



The Hartford Super-Spacer is a very accurate, rugged and versatile manually operated indexing device that can be used on any machining operation requiring foolproof and consistent spacing. The operator is not required to turn a crank, make a reading or count the number of crankwheel revolutions. On all standard units, we guarantee that the maximum indexing error will be less than 40 seconds of arc noncumulative. Therefore, if individual readings were taken for each notch on the Master Index Plate, all readings would fall within a 40 second band. The Super-Spacer can be used as a basis for jigs and fixtures. Designing indexing fixtures around the basic unit reduces your cost per spacing operation since new holding devices can be attached for different applications.

Four models - 5", 8", 12", 24" - are available along with a full line of accessories, including tailstocks and drilling attachments.

THE HARTFORD SPECIAL MACHINERY COMPANY  
College Highway, Simsbury, Connecticut 06070

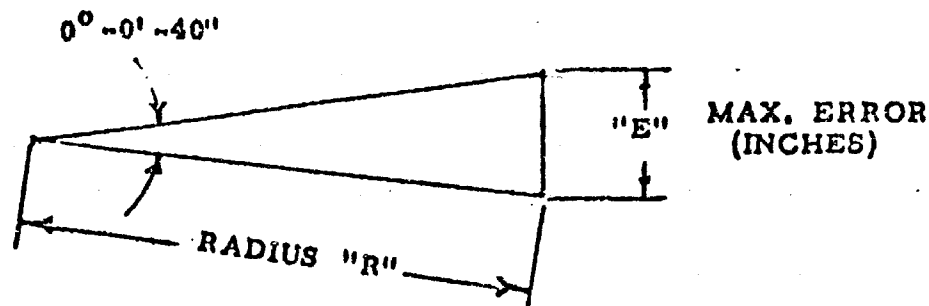


5"

SUBJECT..... INDEX ERROR OF 8", 12" AND 24"  
 ..... SUPER-SPACER .....



NO.....  
 Revised 6-28-60  
 DATE..... BY..... RDM



"R"	"E"
1"	.00019"
2"	.00039"
3"	.00058"
4"	.00078"
5"	.00097"
6"	.00116"
7"	.00136"
8"	.00155"
9"	.00175"
10"	.00194"
11"	.00213"
12"	.00233"

The statement that a Super-Spacer is "within 0°-0'-40" of arc accuracy" means that all readings will fall within a 40 second band. The table above expresses this maximum error in terms of various radius distances from the axis of the Super-Spacer.

#### 20-SECOND ACCURACY

On request, and at extra cost, 8" and 12" Super-Spacers can be selected at assembly for greater accuracy, and will be guaranteed to be within 0°-0'-20" of arc, non-cumulative.

EFFECTIVE JULY 1, 1971

# **5" SUPER-SPACER ASSEMBLY PRICE LIST**

MODEL NO.	DESCRIPTION	SELLING PRICE
1450-1	SUPER-SPACER ASSEMBLY—BASIC Includes 24 Notch Master Index Plate and set of Mask Plates for 2-3-4-6-8-12 divisions.....	\$ 540.00
1450-22	SUPER-SPACER ASSEMBLY WITH FACEPLATE Includes 1450-1 Basic Assembly and 6½" diameter Face Plate with tee slots.....	665.00
1450-46	SUPER-SPACER ASSEMBLY WITH STANDARD CHUCK Includes 1450-1 Basic Assembly and 5" 3-Jaw Self Cen- tering Scroll Chuck with Master and Top Reversible Jaws	680.00
1450-21	FACE PLATE: 6½" diameter plate with tee slots.....	125.00
1450-47	5" THREE-JAW CHUCK, Semi-Steel Body Scroll Chuck with two piece jaws.....	140.00
1453-1	STANDARD DRILLING ATTACHMENT FOR DRILLING holes parallel with axis of work, less A.S.A. Standard slip bush- ings.....	240.00
1453-12	RADIAL DRILLING ATTACHMENT for drilling holes at right angles to axis of work. To be used in combination with 1453-1 Standard Drilling Attachment.....	235.00
1453-15	DRILLING EXTENSION BRACKET for use with 1453-1 Standard Drilling Attachment. Extends working height from top of chuck jaws by 4 inches.....	105.00
1453-30	TAIL STOCK ASSEMBLY for use with any 5" Super-Spacer assembly. Contains hardened and ground screw-fed spindle.....	180.00
	SPECIAL INDEXING ACCURACY: Total indexing error within 20 seconds of arc, non- cumulative.....	54.00*
	*Add to price of Basic 1450-1 Assembly	

**NOTE:** Contact factory for prices on your special chucking requirements.

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**Simsbury, Connecticut, U.S.A.**

EFFECTIVE JULY 1, 1971

### 5" SUPER-SPACER INDEX AND MASK PLATES

PART NO.	DESCRIPTION	SELLING PRICE
1450-4	STANDARD MASTER INDEX PLATE, 24-NOTCHES.....	\$ 100.00
1450-40	SPECIAL MASTER INDEX PLATES EVEN-SPACINGS Ground for total indexing error within 40-seconds of arc, noncumulative; 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23 Notches.....	150.00
	SPECIAL GEAR TOOTH MASTER INDEX PLATES—(Max. 50-Notch) (Milled for plus or minus 2½ minutes accuracy).....	Price on Request
1450-4BL	SEMI-FINISHED MASTER INDEX PLATE, Soft, no notches..	18.50
1450-5	STANDARD MASK PLATE—2-Notches.....	7.25
1450-6	STANDARD MASK PLATE—3-Notches.....	7.25
1450-7	STANDARD MASK PLATE—4-Notches.....	7.25
1450-8	STANDARD MASK PLATE—6-Notches.....	7.25
1450-9	STANDARD MASK PLATE—8-Notches.....	7.25
1450-10	STANDARD MASK PLATE—12-Notches.....	7.25
1450-41	SPECIAL MASK PLATES EVEN-SPACINGS 5, 7, 9, 10 and 11 Notches.....	25.50

### PARTS PRICE LIST 1450-1 SUPER-SPACER ASSEMBLY—BASIC

PART NO.	DESCRIPTION	PRICE EACH
1450-2	Base.....	\$ 155.00
1450-3	Turret.....	75.00
1450-11	Cover.....	2.00
1450-12	Clamp.....	20.00
1450-13	Nut (Holds in Master Index Plate).....	35.00
1450-14	Retaining Spring.....	2.75
1450-15	Clamp Screw.....	9.75
1450-16	Clamp Handle.....	10.00
1450-17	Clamping Wedge.....	7.25
1450-44	Vernier Plate.....	7.25
1453-40	Wrench (For removing Nut 1450-13).....	6.75
1424-19	Latch.....	26.25
1480-10	Latch Bushing.....	46.00
1480-11	Latch Cover.....	9.00
1480-12	Latch Pinion.....	25.00
1480-21	Latch Pinion Lockscrew.....	.85
1480-22	Latch Spring.....	.85

# **8" SUPER-SPACER ASSEMBLY PRICE LIST**

MODEL NO.	DESCRIPTION	SELLING PRICE
<b>4144-S</b>	SUPER-SPACER ASSEMBLY—BASIC Includes 24-notch Master Index Plate and set of Mask Plates for 2-3-4-6-8-12 divisions.....	\$ 625.00
<b>1627-S</b>	SUPER-SPACER ASSEMBLY WITH FACEPLATE Includes Assembly 4144-S and 9½" Face Plate with tee slots.....	790.00
<b>1480-BK</b>	STANDARD SUPER-SPACER ASSEMBLY WITH SCROLL CHUCK includes Assembly 4144-S, and 8" dia. 3-jaw self-centering chuck with Master Jaws and Top Reversible Jaws.....	875.00
<b>1480-AT</b>	SUPER SPACER ASSEMBLY WITH SCROLL CHUCK Includes Assembly 4144-S and 8" dia. 3-jaw self-centering chuck with Master Jaws and Top Reversible Jaws and adjustable feature to limit jaw runout to .0005 TIR.....  Any of the following Faceplate and Chucks may be added to the 4144-S BASIC SUPER-SPACER ASSEMBLY to determine the complete unit price.	990.00
<b>1480-40</b>	FACE PLATE: 9½" dia. plate with tee slots.....	165.00
<b>1480-69</b>	STANDARD 8" DIAMETER THREE-JAW SELF-CENTERING CHUCK with Master Jaws and Top Reversible Jaws.....	250.00
<b>1480-68</b>	8" DIAMETER THREE-JAW, "ADJUST-TRU" CHUCK WITH Master and Top Reversible Jaws.....	365.00
<b>1483-3</b>	TAILSTOCK ASSEMBLY for use with any 8" Super-Spacer Assembly. Contains Hardened and Ground Screw-Fed Spindle.....	225.00
<b>1514</b>	STANDARD DRILLING ATTACHMENT for drilling holes parallel with axis of work less A.S.A. Standard slip bushings.....	350.00
<b>1514-13</b>	RADIAL DRILLING ATTACHMENT for drilling holes at right angles to axis of work. To be used in combination with 1514 Standard Drilling Attachment.....	275.00
<b>1754-1SA</b>	DRILLING EXTENSION BRACKET for use with 1514 Standard Drilling Attachment. Extends working height from top of chuck jaws by 7 inches.....	120.00
	SPECIAL INDEXING ACCURACY: Total indexing error within 20 seconds of arc, non-cumulative.....	62.50*
	Total indexing error within 10 seconds of arc, non-cumulative.....	125.00*
	*Add to price of Basic 4144-S Assembly.	

**NOTE:** Contact factory for prices on your special chucking requirements.

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EFFECTIVE JULY 1, 1971

### 8" SUPER-SPACER INDEX AND MASK PLATES

MODEL NO.	DESCRIPTION	PRICE EACH
	Any of the following parts may be added to or deducted from any 8" Assembly to determine price of special requirements.	
1480-3	STANDARD MASTER INDEX PLATE, 24-NOTCHES.....	\$ 105.00
1480-3S	SPECIAL MASTER INDEX PLATES	
	A.) EVEN SPACINGS—Ground for total indexing error within 40-seconds of arc, noncumulative; 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, and 36 notches.....	155.00
	B.) UNEVEN SPACINGS:	
	(1) Milled for plus or minus 2½ minutes accuracy..	260.00
	(2) Ground for plus or minus 20-seconds accuracy. Price on Request	
	C.) GEAR TOOTH-EVEN SPACING—(Max. 80 notches)	
	(1) Milled for plus or minus 2½ minutes accuracy..	260.00
	Note: Gear Tooth Index Plates do not use mask plates; special latch required.	
	(2) GEAR TOOTH LATCH.....	105.00
1480-3BL	SEMI-FINISHED MASTER INDEX PLATE: soft, no notches..	25.00
1480-14	STANDARD MASK PLATES: 2, 3, 4, 6, 8, 12 notches.....	15.25
1480-14S	SPECIAL MASK PLATES:	
	A.) EVEN SPACINGS: 1, 5, 7, 9, 10, 11, 13, 14, 15, 16, 17, 18 notches.....	31.50
	B.) ODD SPACING.....	105.00
1480-14B	C.) BLANK—NO NOTCHES.....	10.00

### PARTS PRICE LIST 4144-S SUPER-SPACER ASSEMBLY—BASIC

PART NO.	DESCRIPTION	PRICE EACH
1480-1SA	Base.....	\$ 270.00
1480-2	Turret.....	125.00
1480-4	Clamp Shoe (2 Required).....	26.25
1480-5	1480-SA Clamp Screw	23.50
1480-6		
1480-8	Clamp Screw Handle.....	11.75
1480-9	Clamp Screw Nut.....	25.50
1480-10	Latch.....	46.00
1480-11	Latch Bushing.....	9.00
1480-12	Latch Cover.....	25.00
1480-15SA	Latch Pinion.....	9.00
1480-16	Cover and Knob Sub-Assembly 5C106124.....	2.00
1480-17	Key (2 Required).....	3.75
1480-21	Zero Plate.....	.85
1480-22	Latch Pinion Lockscrew.....	.85
1480-23	Latch Spring.....	3.10
1480-24	Lock Nut (2 Required).....	.85
1480-25	Clamp Shoe Spring (2 Required).....	5.75
	Retaining Spring.....	

# **12" SUPER-SPACER ASSEMBLY PRICE LIST**

MODEL NO.	DESCRIPTION	SELLING PRICE
<b>1412A4</b>	SUPER-SPACER ASSEMBLY—BASIC Includes 48-notch Master Index Plate and Set of Mask Plates for 2-3-4-6-8-12-16-24 divisions.....	\$1,065.00
<b>1412A7</b>	SUPER-SPACER ASSEMBLY WITH FACEPLATE Includes Assembly 1412A4 and 12" Face Plate with tee slots and mounting holes.....	1,305.00
<b>1412A1</b>	SUPER-SPACER ASSEMBLY WITH COMBINATION SELF- CENTERING CHUCK AND FACEPLATE Includes Assembly 1412A4 and steel body, 12" dia. 3-jaw self-centering chuck with tee slots; Master Jaws and Top Reversible Jaws.....	1,750.00
<b>1412A2</b>	ANGLE BRACKET ASSEMBLY Includes key and screws for mounting assembly 1412A4, 1412A7 and 1412A1 with axis in a horizontal plane.....	330.00
<b>1412A3</b>	ADAPTER for mounting #1514 Standard Drilling Attachment on assembly 1412A4, 1412A7 and 1412A1. Includes key and screws.....	175.00
<b>1415-1</b>	TAILSTOCK ADAPTER for use with 1483-3 Tailstock Assembly. Includes keys and screws.....	90.00
<b>1415-2</b>	TAILSTOCK ASSEMBLY for use with any 12" Super-Spacer Assembly. Includes 1483-3 Tailstock mounted to 1415-1 Tailstock Adapter.....	315.00
<b>1415-3</b>	RADIAL DRILLING ATTACHMENT for drilling holes at right angles to axis of work. To be used in combination with 1514 Standard Drilling Attachment.....	695.00
<b>1514</b>	STANDARD DRILLING ATTACHMENT for drilling holes parallel with axis of work less A.S.A. standard slip bush- ings..... Any of the following may be added to the 1412A4 BASIC SUPER-SPACER ASSEMBLY to determine the complete unit price.	350.00
<b>1412-40</b>	FACEPLATE: 12" dia. plate with tee slots and mounting holes	240.00
<b>1412-57</b>	FACEPLATE: 16" dia. plate with tee slots and mounting holes	330.00
<b>1412-6</b>	STANDARD 12" DIA. COMBINATION THREE-JAW SELF- CENTERING CHUCK AND FACE PLATE with tee slots and Master Jaws and Top Reversible Jaws.....	685.00
	SPECIAL INDEXING ACCURACY: Total indexing error within 20 seconds of arc, non- cumulative.....	106.50*
	Total indexing error within 10 seconds of arc, non- cumulative.....	213.00*

\*Add to price of Basic 1412A4 Assembly.

**NOTE:** Contact factory for prices on your special chucking requirements.

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EFFECTIVE JULY 1, 1971

### 12" SUPER-SPACER INDEX AND MASK PLATES

MODEL NO.	DESCRIPTION	PRICE EACH
	Any of the following parts may be added to or deducted from any 12" Assembly to determine price of special requirements.	
1412-148	STANDARD MASTER INDEX PLATE, 48 notches.....	\$ 200.00
1412A-10	SPECIAL MASTER INDEX PLATES	
	A.) EVEN SPACINGS—Ground for total indexing error within 40-seconds of arc, noncumulative; 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 49, 50, 51, 52, 53, 54 notches.....	410.00
	B.) UNEVEN SPACINGS:	
	(1) Milled for plus or minus 2½ minutes accuracy..	440.00
	(2) Ground for plus or minus 20-seconds accuracy. Price on Request	
	C.) GEAR TOOTH—Even Spacing (Max. 123 notches)	
	(1) Milled for plus or minus 2½ minutes accuracy..	440.00
	Note: Gear Tooth Index Plates do not use mask plates; special latch required.	
	(2) GEAR TOOTH LATCH.....	115.00
1412-1000BL	SEMI-FINISHED MASTER INDEX PLATE: soft, no notches..	85.00
1412-200	STANDARD MASK PLATES: 2, 3, 4, 6, 8, 12, 16, 24 notches	45.00
1412A-20	SPECIAL MASK PLATES:	
	A.) EVEN SPACINGS: 5, 7, 9, 10, 11, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27 notches.....	100.00
	B.) ODD SPACINGS.....	115.00
1412-200BL	C.) BLANK—NO NOTCHES.....	26.75

### PARTS PRICE LIST 1412A-4 SUPER-SPACER ASSEMBLY—BASIC

PART NO.	DESCRIPTION	PRICE EACH
1412-1	Base.....	\$ 390.00
1412-2	Turret.....	235.00
1412-3 and 4	Clamp Shoes (2 Required).....	48.75
1412-5SA	Clamp Screw and 1480-6 Handle.....	25.10
1412-7SA	Cover and Cover Plate Studs.....	15.75
1412-8	Retaining Spring.....	10.75
1412-9	Mask Plate Cleat (1412-7015).....	2.55
1412-10	Clamp Shoe Spring.....	1.95
1412-12	Zero Plate.....	5.25

**NOTE:** For 1480 Series Parts, see 8" Super-Spacer Parts Price List.

## 24" SUPER-SPACER PRICE LIST

MODEL NO.	DESCRIPTION	SELLING PRICE
1424-S	SUPER-SPACER ASSEMBLY—BASIC Includes 22" Faceplate with keyways. 72 Notch Master Index Plate and one Mask Plate for any increment divisible into 72-Notch Index Plate.....	\$4,150.00
1424-57	24" SUPER-SPACER with square T-slotted turret.....	4,600.00
	SPECIAL INDEXING ACCURACY: Total indexing error within 20 seconds of arc, non-cumulative..... Add to Basic 1424-S Assembly.	415.00
1424-2	ANGLE BRACKET ASSEMBLY For mounting assembly 1424-S with axis in horizontal plane.....	695.00
1424-3S	SPECIAL MASTER INDEX PLATES: A.) EVEN SPACINGS—Ground for total indexing error within 40-seconds of arc, noncumulative; 55, 56, 57, 58, 59, 60, 62, 64, 65, 66, 67, 68, 69, 72, 74, 76, 78, 80 Notches..... B.) ODD SPACINGS: (1) Milled for plus or minus 2½ minutes accuracy.. (2) Ground for plus or minus 20 seconds accuracy. Price on Request C.) GEAR TOOTH—EVEN SPACING (Max. 176 Notches): (1) Milled for plus or minus 2½ minutes accuracy.. Note: Gear Tooth Index Plates do not use Mask Plates; special latch required. (2) GEAR TOOTH LATCH.....	520.00   520.00 Price on Request 520.00  115.00
1424-14S	SPECIAL MASK PLATES: A.) EVEN SPACING: 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 37, 38, 39 and 40 Notches..... B.) ODD SPACINGS..... C.) BLANK.....	115.00 130.00 45.00
1424-53	TURRET PLUG.....	170.00

**NOTE:** Contact factory for chucking equipment.

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