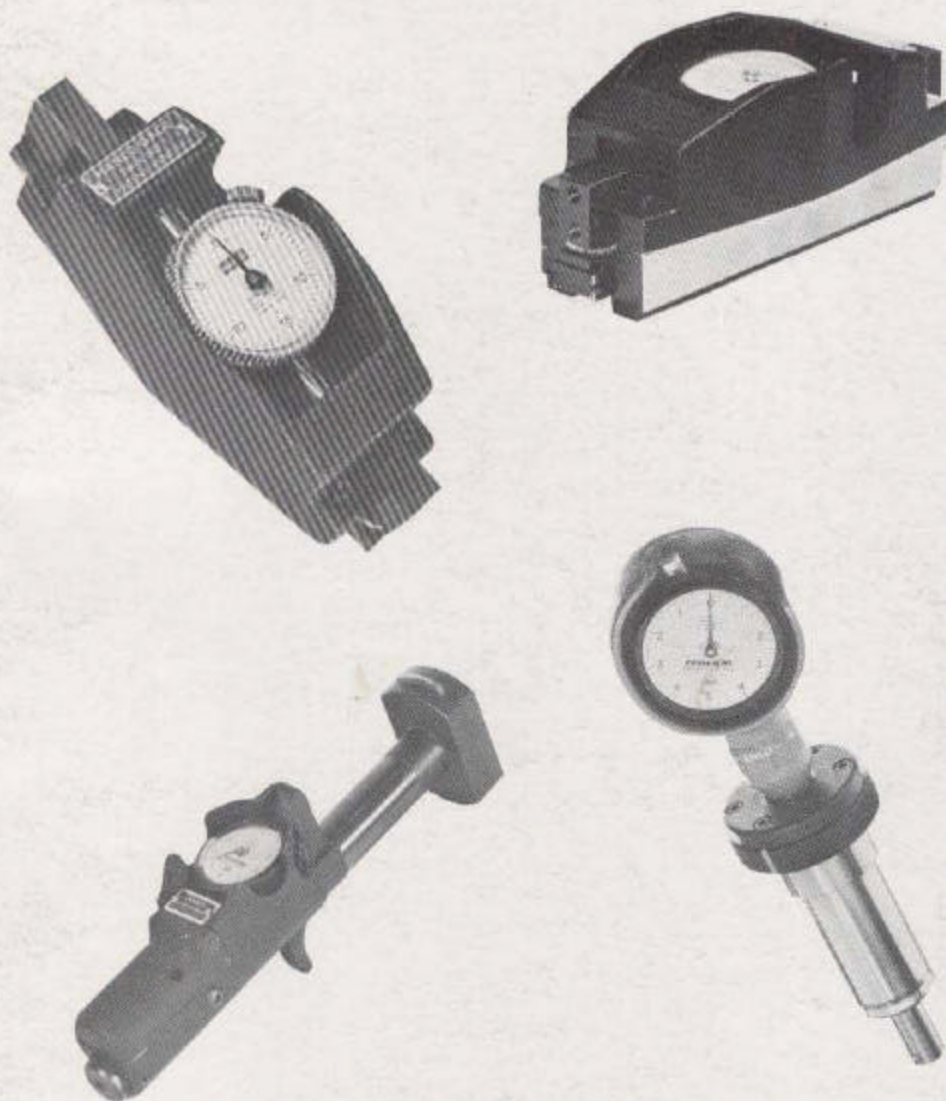


HANLO

INDICATOR
GAGE
ASSEMBLIES

CATALOG 82C



HANLO
GAGES

HANLO
GAGE & ENGINEERING CO.

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INTERNAL GROOVE GAGE



APPLICATIONS

CHECKING

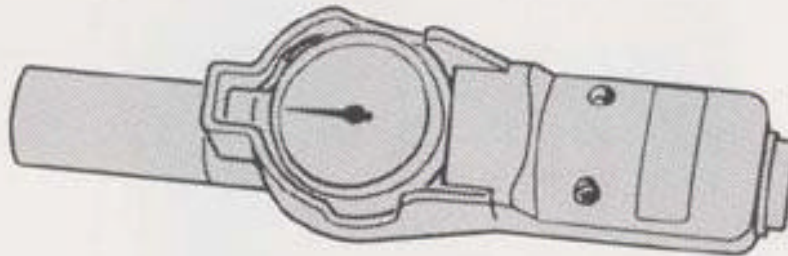
- Snap Ring Grooves
- "O" Ring Grooves
- Oil Grooves

ENGINEERING DATA

FEATURES

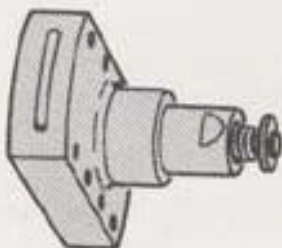
- Self Centralization
- Accurate Repeatability
- Interchangeability
- Internal Groove Diameter Gage Consists of Two Basic Assemblies

1. BODY



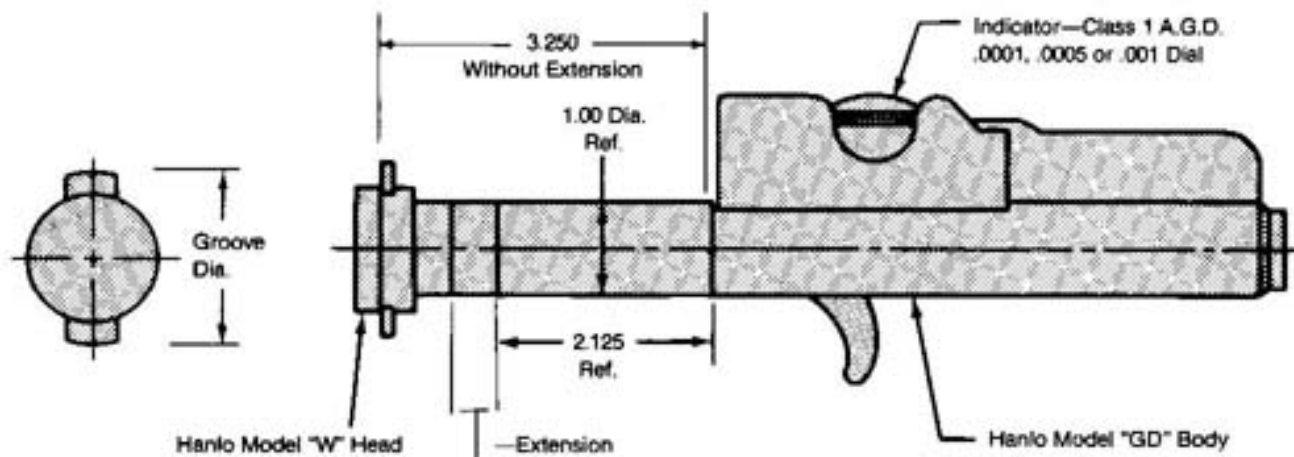
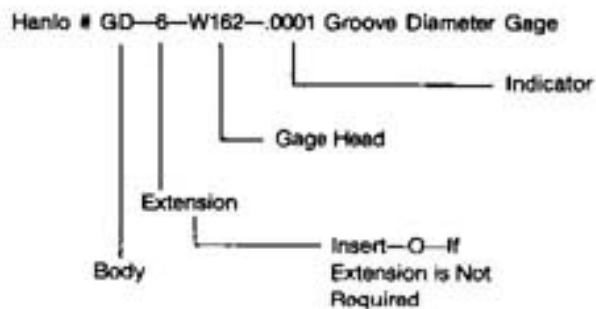
- A standard assembly including an A.G.D. Group I Indicator with .0005 graduations.
- Compact aluminum cast housing which forms the Gage Handle and Indicator Guard.
- Positive method of clamping dial indicator.
- Restricted indicator travel, within one revolution, assures against damage and misreading.
- Sturdy construction. All moving parts are fully enclosed and protected from dust and foreign materials.
- The universal body can be used for checking a wide range of groove diameters by interchanging gage heads.

2. GAGE HEAD



- Precision built to gage a specific groove diameter to part print dimensions.
- Self-centralization of gaging contacts eliminates errors.

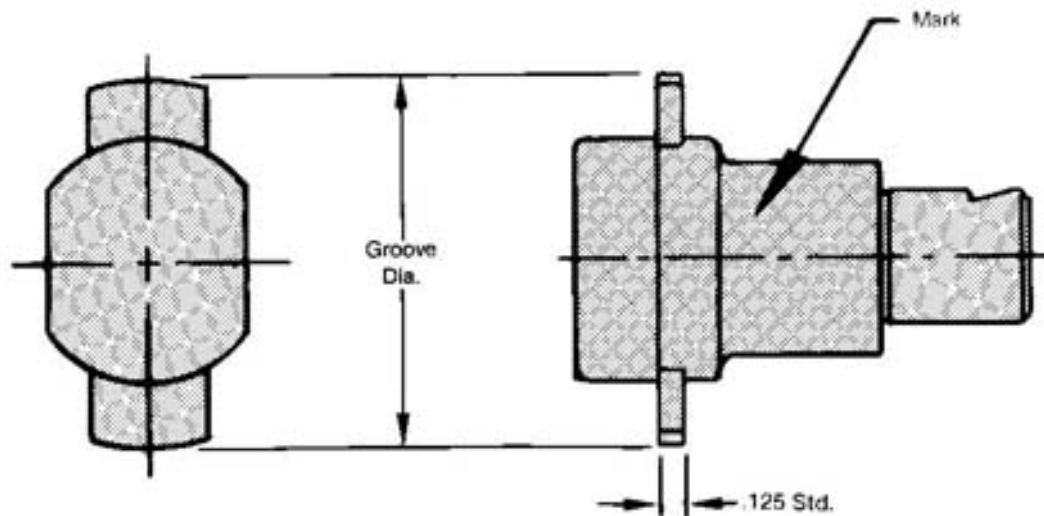
BODY SPECIFICATIONS



MODEL	LENGTH
EX-1	1/4"
EX-2	2"
EX-3	3"
EX-4	4"
EX-6	6"

Tracing Templates Available

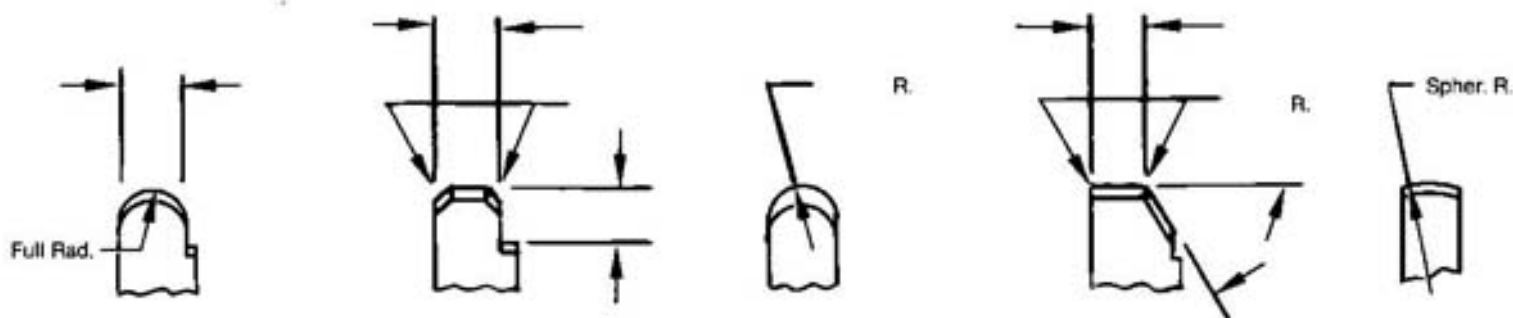
GAGE HEAD SPECIFICATIONS



Hanko Model "W" Head

Model No.	Groove Dia.		Min. Hole Dia.	Max. Travel on Dia.
	Min.	Max.		
W-50	.500	.750	.480	.188
W-62	.625	.875	.603	.188
W-75	.750	1.187	.730	.188
W-100	1.000	1.437	.980	.250
W-125	1.250	1.875	1.230	.375
W-162	1.625	2.250	1.605	.375
W-200	2.000	2.875	1.980	.375
W-262	2.625	3.750	2.605	.375
W-325	3.250	4.875	3.230	.375

GAGE BLADE VARIATIONS



Submit part print with request for quotation.

Groove diameters and depths other than listed quoted on request.

NOTE: Ring Master will be quoted as separate item.



TWIX INDICATOR GAGE

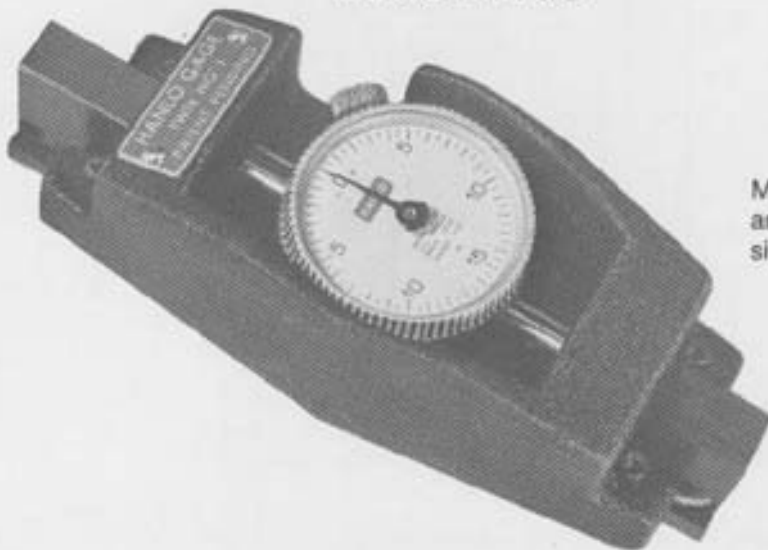
**Two
Way
Internal
Xternal**

ENGINEERING DATA

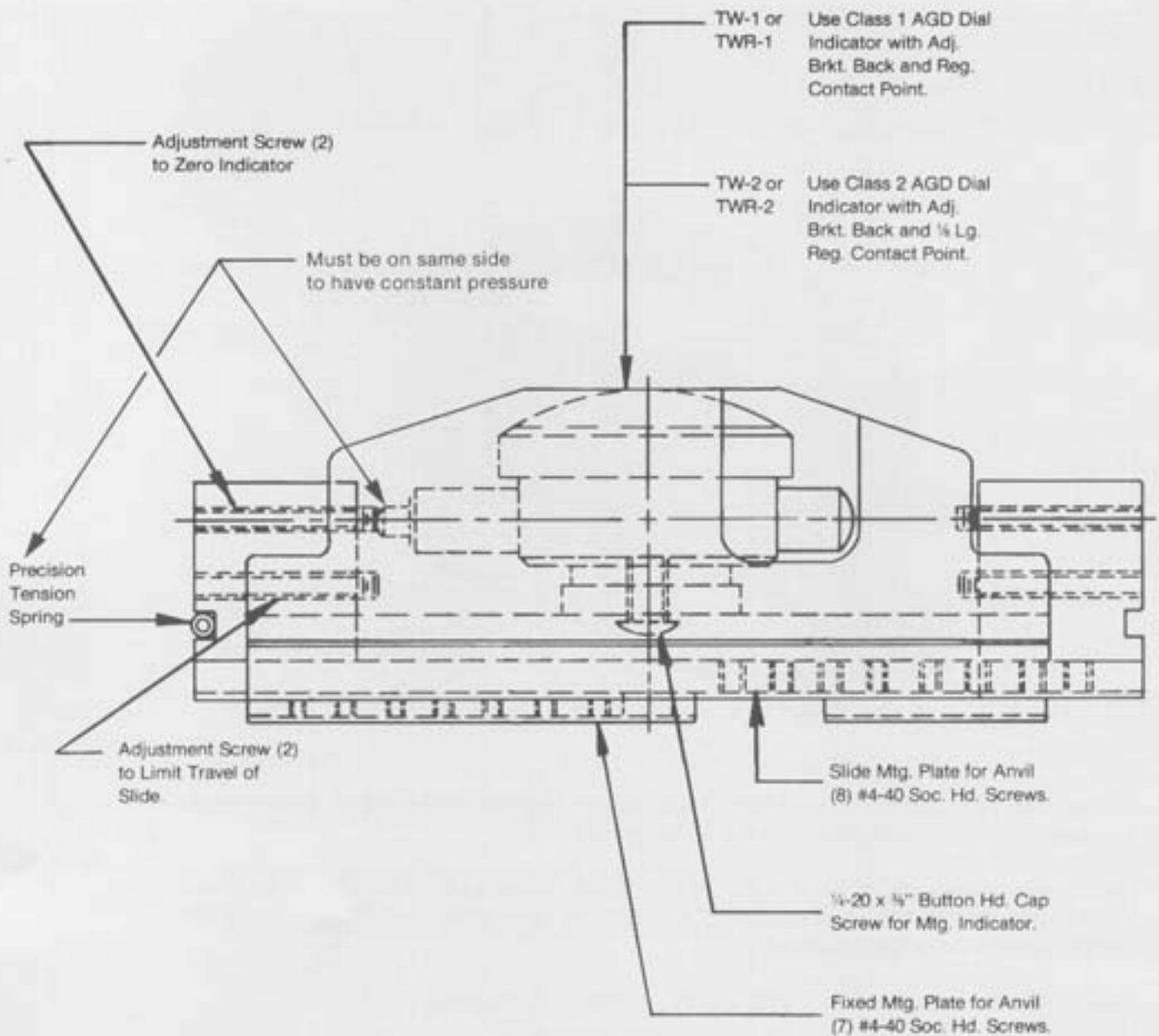
FEATURES

- Quick directional spring change-over from internal to external gaging.
- Double use of gaging fingers for adaptability to internal and external gaging.
- A symmetrically balanced unit.
- Ease of setting stop screws to eliminate over-travel and damage to the indicator.
- Minimum amount of loose details when making change-overs.
- Unit may be adapted to handle an air probe or an electronic transducer.
- Guard gives the indicator complete protection.
- Especially adaptable for shallow diameter inspection.

Models TW-1 & 2

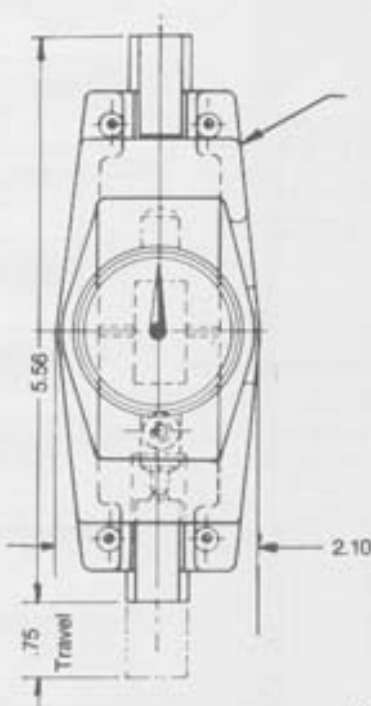
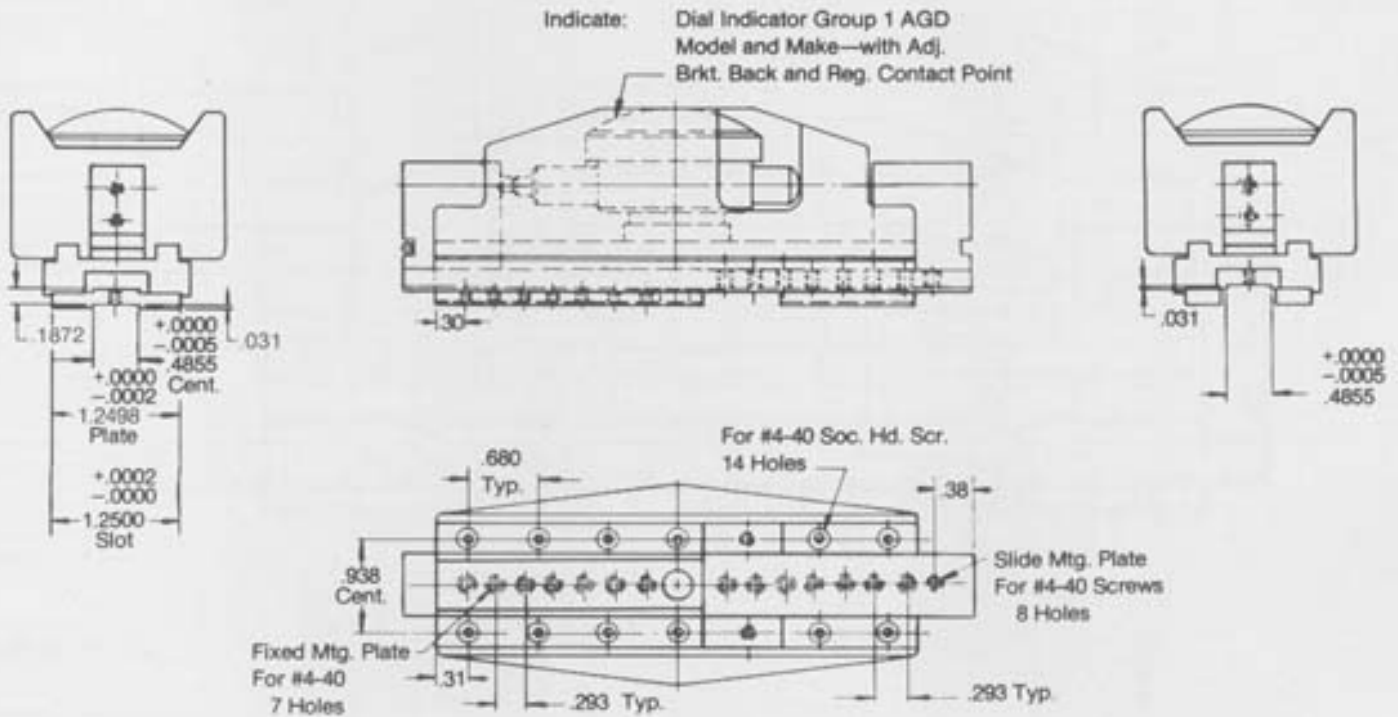


Models TW-1 & 2 have a gib style slide and are used in most shallow checking situations.

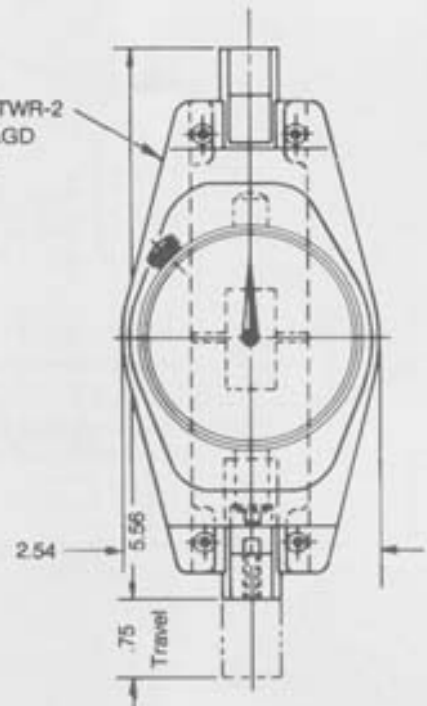


NOTE: The basic unit as shown can be used for Internal or External Gaging as follows—

1. Remove Indicator and Guard.
2. Switch Precision Spring to the opposite Slide Block.
3. Rotate Guard and Indicator 180° from the Original Position and insert screws.
4. Install Anvils and Set two Adjustment Screws to Zero the Indicator and to Limit the Travel of the Slide.



TW-1 or TWR-1
Class 1 AGD
Indicator



TW-2 or TWR-2
Class 2 AGD
Indicator

NOTE: All dimensions on the TW-1 and TW-2 or TWR-1 and TWR-2 are identical except for the size of the indicators and the indicator guards.

NOTE: All views shown 1/2 scale.

APPLICATIONS

Fig. 1

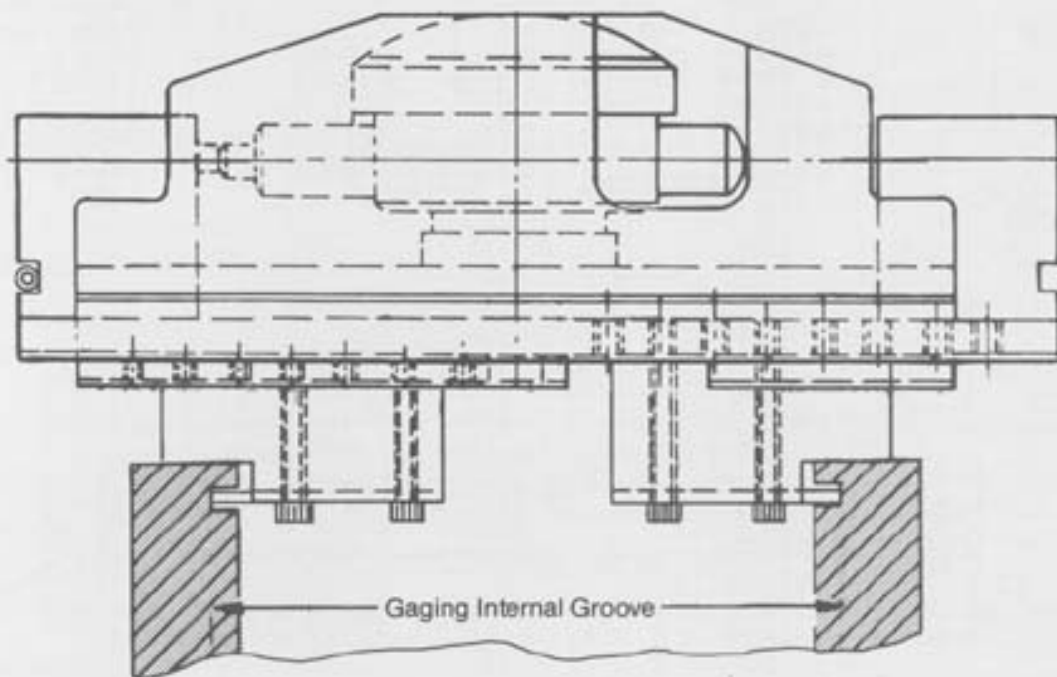


Fig. 2

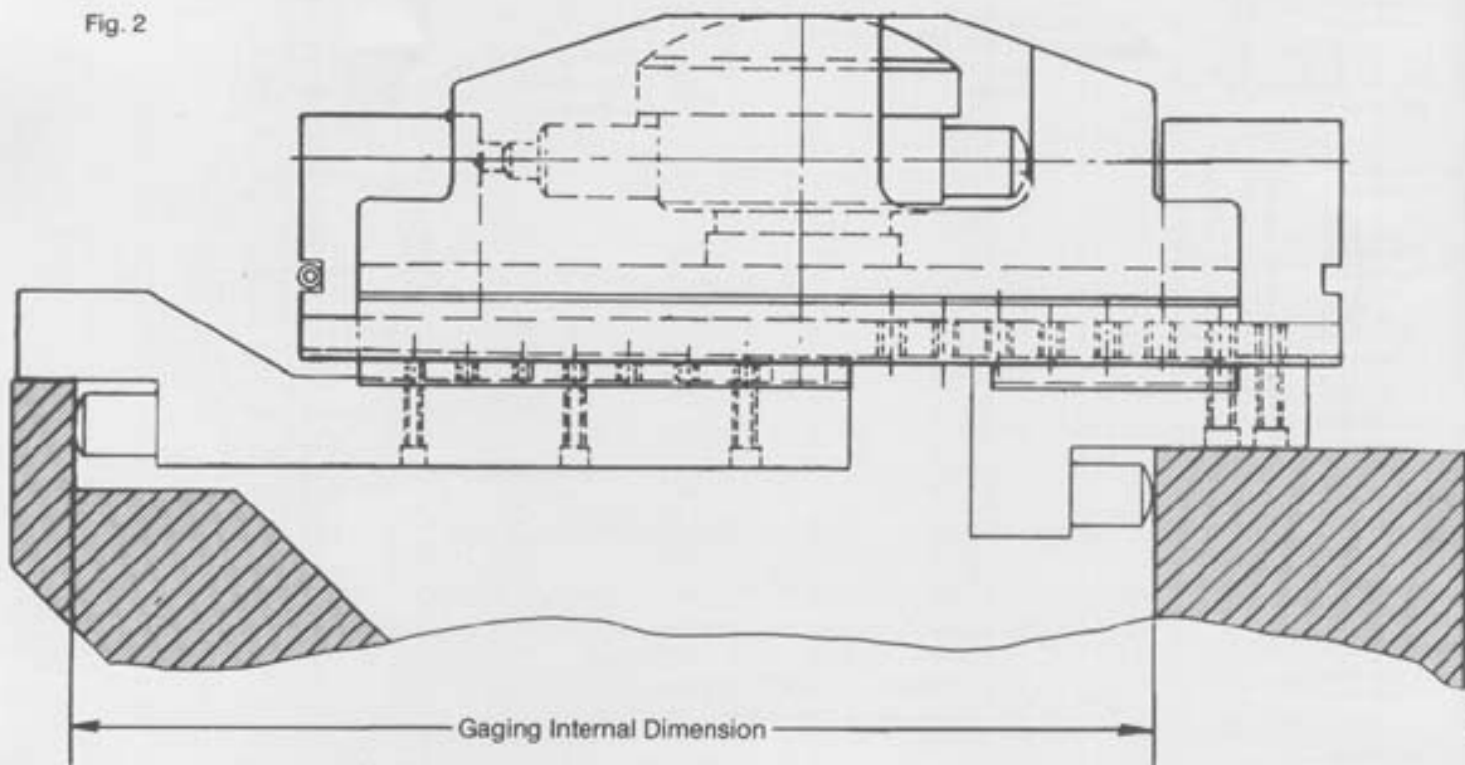


Fig. 3

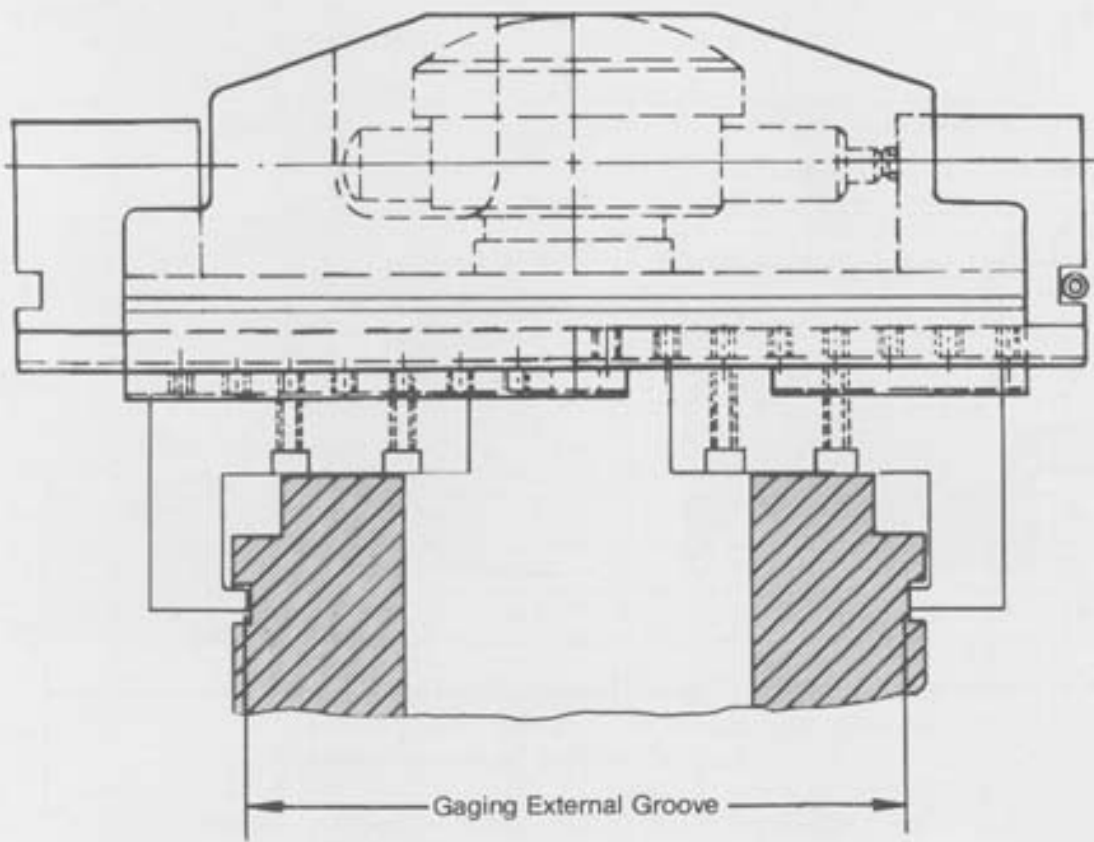


Fig. 4

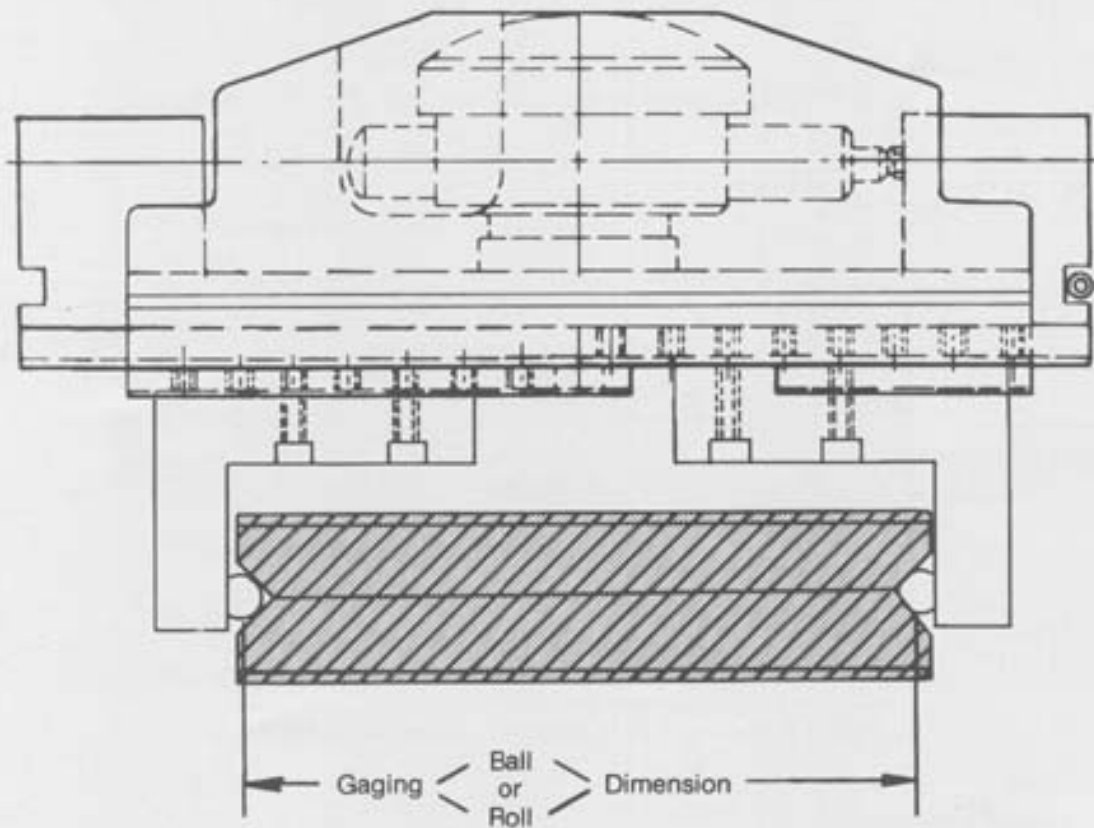


Fig. 5

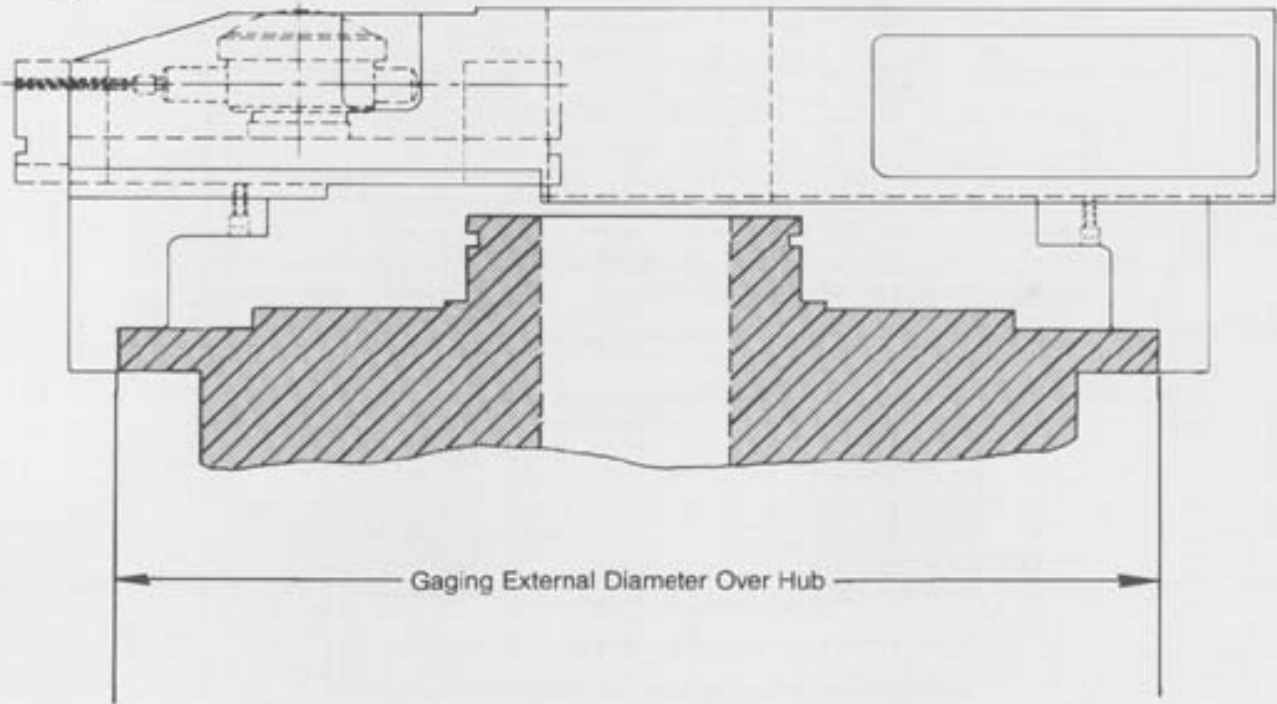
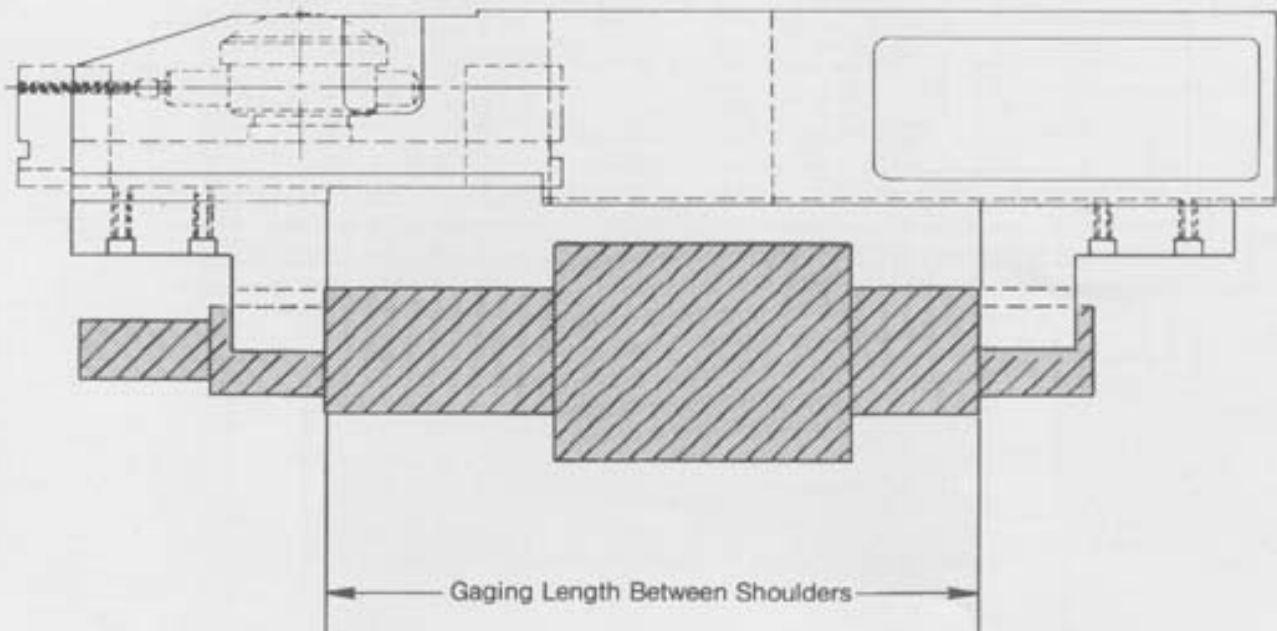


Fig. 6



ORDERING

ROLL MODEL	STANDARD MODEL	INDICATOR	I.D. MIN.—MAX.	O.D. MIN.—MAX.
TWR- 1	TW- 1	A.G.D. Class 1	1" — 6"	0" — 8"
TWR- 2	TW- 2	A.G.D. Class 2	1" — 6"	0" — 8"
TWR-12	TW-12	A.G.D. Class 2	6" — 12"	8" — 14"
TWR-18	TW-18	A.G.D. Class 2	12" — 18"	14" — 20"
TWR-24	TW-24	A.G.D. Class 2	18" — 24"	20" — 26"
TWR-30	TW-30	A.G.D. Class 2	24" — 30"	26" — 32"
TWR-36	TW-36	A.G.D. Class 2	30" — 36"	32" — 38"

NOTE: The above minimum and maximum sizes are to be used only as a guide. Final layout of the gage will determine exactly what basic gage is to be used.

NOTE: We recommend use of Roll Twix when gaging anvils exceed 2".

Please specify the following with purchase order or request for quote.

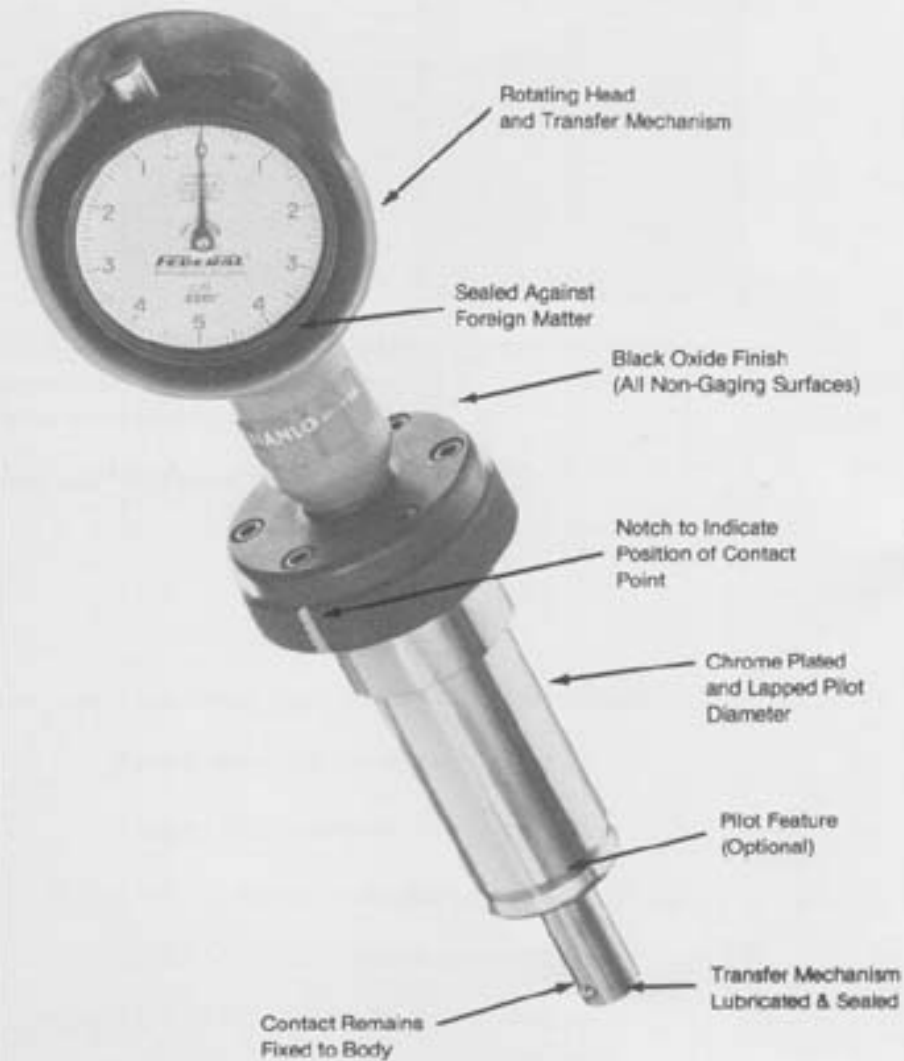
- (1) Internal or external type measurement.
- (2) Diameter or dimension to be gaged.
- (3) Gaging point on workpiece.
- (4) Tolerance on dimension to be gaged.
- (5) Make of indicator to be furnished with gage.
- (6) Reference points for locating gage.
- (7) Special contacts on gage required.
- (8) Special rest buttons or pads.
- (9) Special clearances to be incorporated in gage.
- (10) Blue print or sketch of workpiece to be furnished if possible.

Tracing Templates Available



HOLE LOCATION AND CONCENTRICITY GAGES

FEATURES:



Indicator Housing Styles



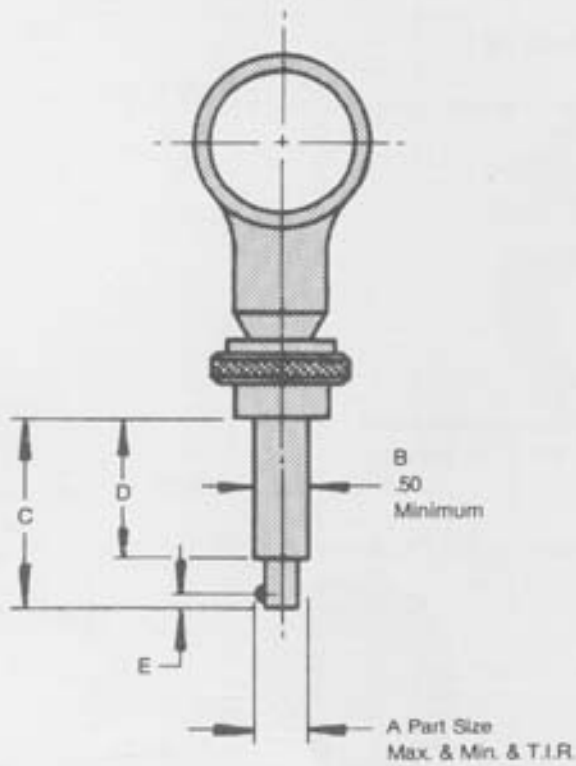
New Model HM-M available for Federal Maxums.



ENGINEERING DATA

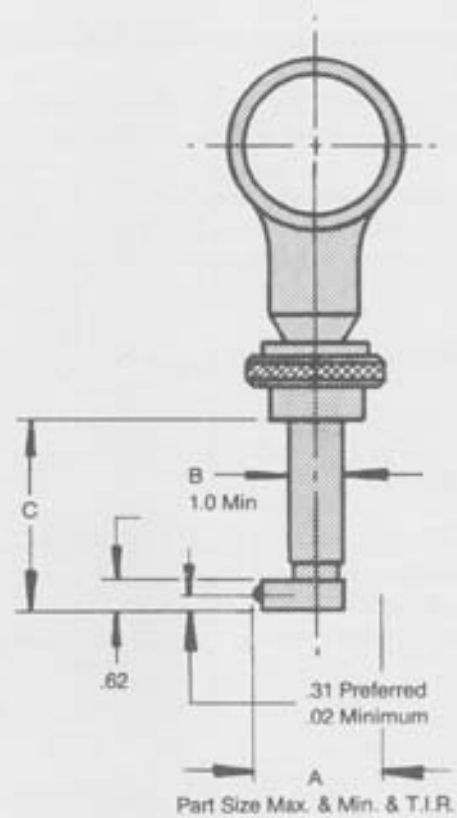
Model I

Top Piloting Style
May be used with all HM Ind. Housings



Model II

Larger Bore Model
For Bore 1.50 and up



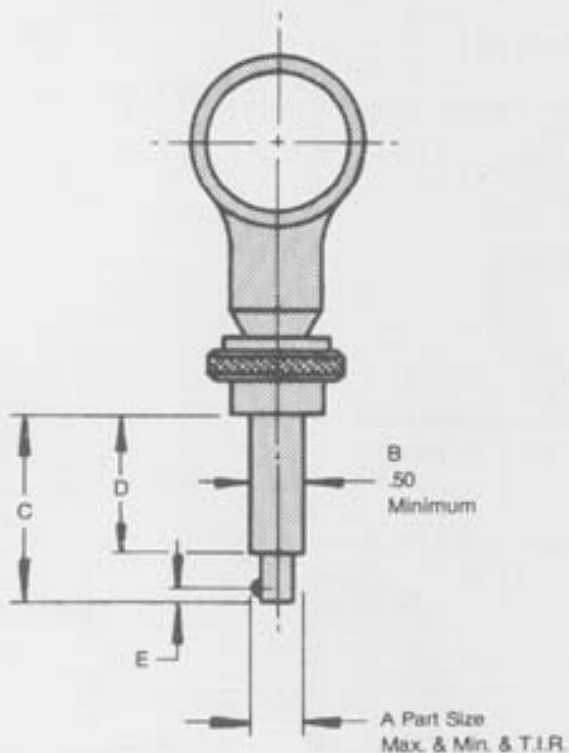
RANGE CHART FOR MODELS I, II & III

A		B		E
PART MIN.	SIZE MAX.	TOTAL GAGING RANGE ON DIA.	MIN. PILOT DIA. MODEL III ONLY	DISTANCE FROM CONTACT TO END
.187	.234	.020	—	.125
.234	.265	.025	—	.150
.265	.312	.032	—	.150
.312	.422	.040	.375	.150
.422	.656	.060	.437	.187
.562	.968	.080	.468	.200
.672	1.250	.100	.500	.215
.800	1.625	.125	.530	.234
.921	1.750	.125	.560	.250
1.00	4.125	.040	.406	.187
1.00	5.000	.060	.437	.220
1.00	5.625	.080	.500	.220
1.00	7.000	.125	.560	.265

ENGINEERING DATA

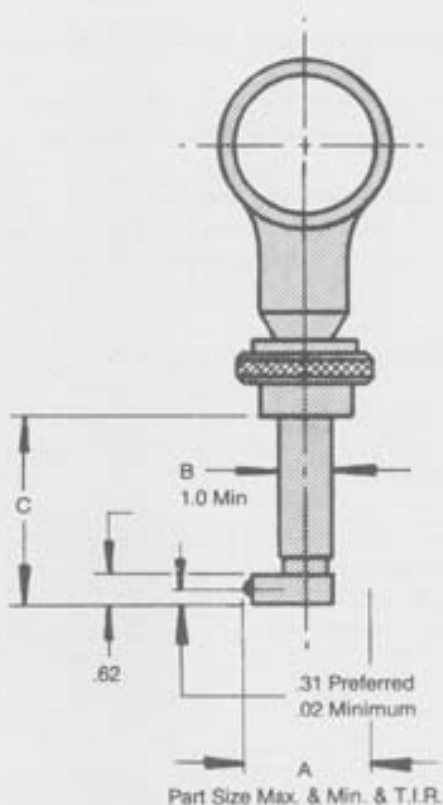
Model I

Top Piloting Style
May be used with all HM Ind. Housings



Model II

Larger Bore Model
For Bore 1.50 and up

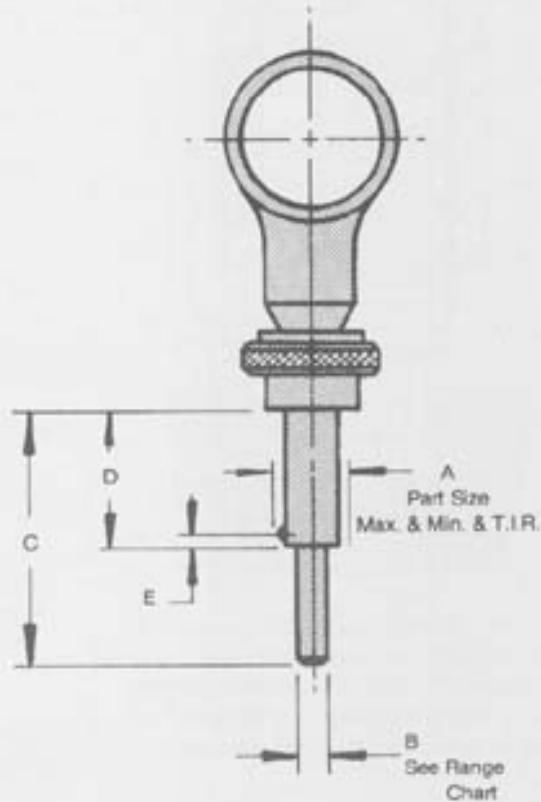


RANGE CHART FOR MODELS I, II & III

A		B		E
PART MIN.	SIZE MAX.	TOTAL GAGING RANGE ON DIA.	MIN. PILOT DIA. MODEL III ONLY	DISTANCE FROM CONTACT TO END
.187	.234	.020	—	.125
.234	.265	.025	—	.150
.265	.312	.032	—	.150
.312	.422	.040	.375	.150
.422	.656	.060	.437	.187
.562	.968	.080	.468	.200
.672	1.250	.100	.500	.215
.800	1.625	.125	.530	.234
.921	1.750	.125	.560	.250
1.00	4.125	.040	.406	.187
1.00	5.000	.060	.437	.220
1.00	5.625	.080	.500	.220
1.00	7.000	.125	.560	.265

Model III

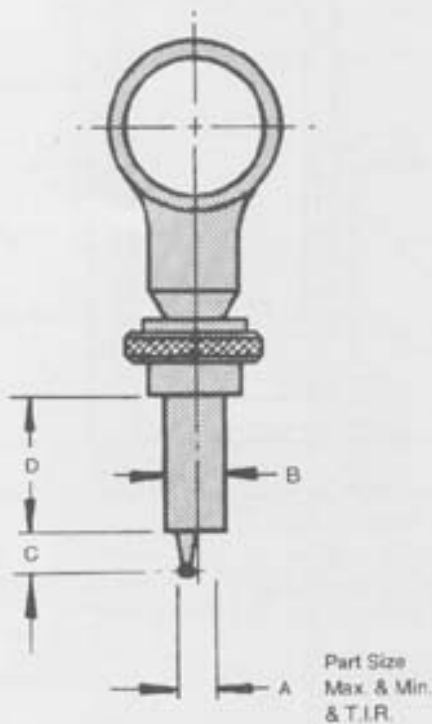
Bottom Piloting Model
May be used with all HM Ind. Housings



MODEL NO.	GRADUATION	RANGE	BALANCE DIAL	
B2I	.0001	.025	0-5-0	Use With Hanlo Model HM-1
B2O	.00025	.025	0-5-0	
B3K	.00025	.050	0-10-0	
B3Q	.0005	.050	0-10-0	
B3W	.001	.050	0-10-0	
B5M	.0005	.075	0-15-0	
B6K	.0005	.100	0-20-0	
B7I	.0005	.125	0-25-0	
B7O	.001	.125	0-25-0	
C1/2K	.00005	.010	0-2-0	
C1K	.0001	.020	0-4-0	
C2I	.0001	.025	0-5-0	
C2Q	.00025	.025	0-5-0	
C3K	.00025	.050	0-10-0	
C3Q	.0005	.050	0-10-0	
C3W	.001	.050	0-10-0	
C5M	.0005	.075	0-15-0	
C6K	.0005	.100	0-20-0	
C6Q	.001	.100	0-20-0	
C7I	.0005	.125	0-25-0	Model HM-H
C7O	.001	.125	0-25-0	
J1K	.0001	.008	0-4-0	
J6K	.0005	.040	0-20-0	
J8I	.001	.100	0-50-0	

Model IV

For Holes Less Than .187 in Dia.

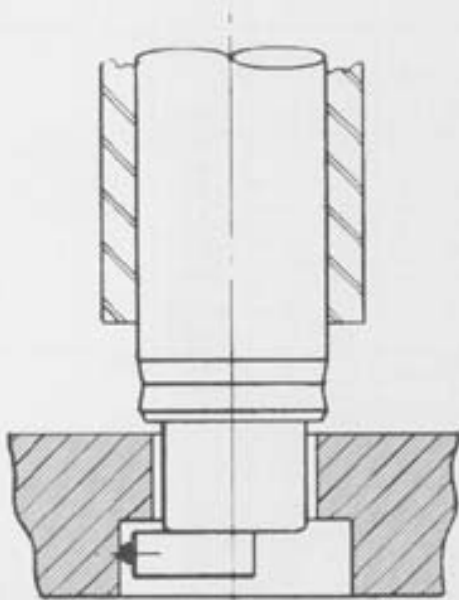


MODEL IV ONLY

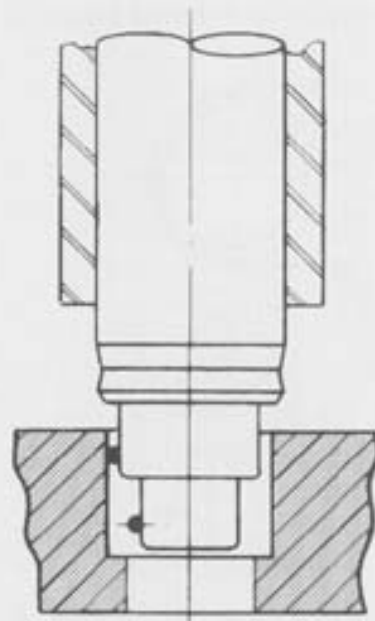
A	B	C	MAX. RANGE
.078 156	7/16	.100/.150	.015
.078 203	1/2	.100/.200	.020
.078 203	9/16	.100/.250	.025
.078 250	5/8	.100/.350	.025

Tracing Templates Available

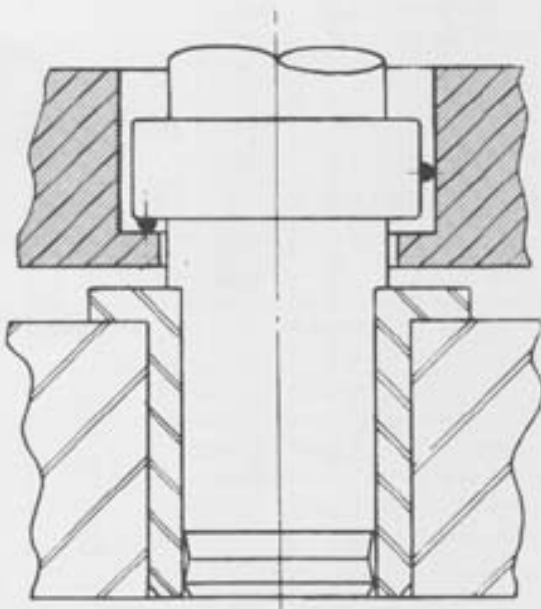
APPLICATIONS



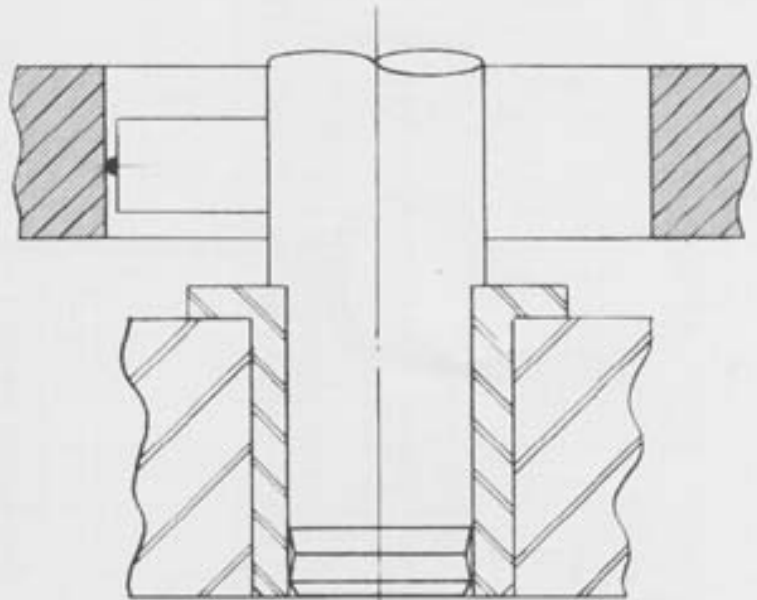
This is another example of an eccentrically mounted contact which checks location of a larger bore after entering through smaller bore.



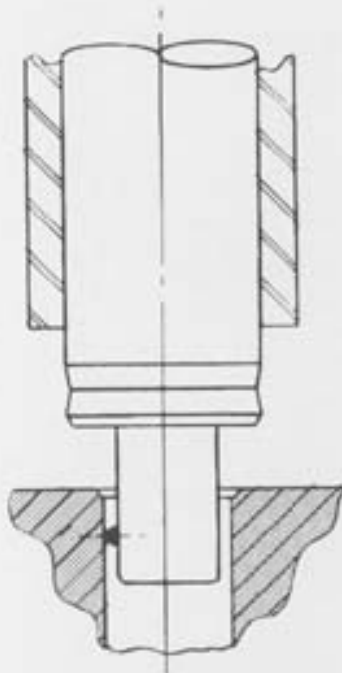
This top piloting unit can be used to check location of two bores with one gage. Spacer is used between collar and bushing head to check top bore. When spacer is removed, gage checks bottom bore.



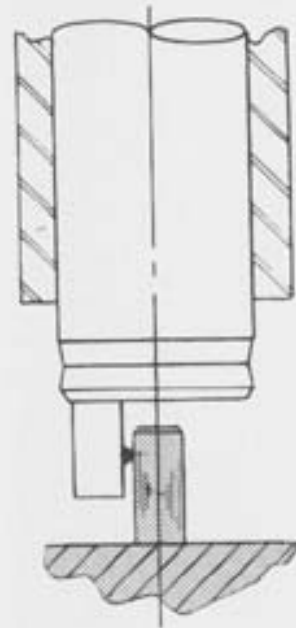
This bottom piloting unit checks hole location with spacer between collar and head of bushing. When spacer is removed, face is checked for squareness.



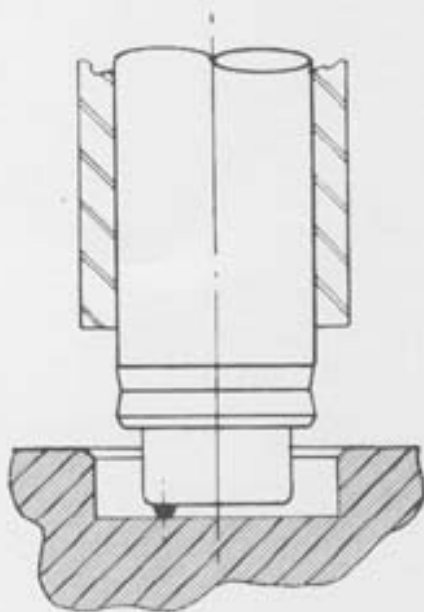
This bottom piloting unit checks hole location of large diameters. An appendage is welded to pilot diameter and houses mechanism. This adaption keeps weight and size to a minimum.



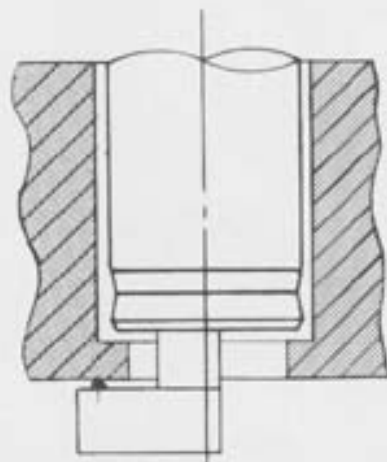
Typical top pilot unit to check hole location.



Typical top pilot unit to check dowel location.



Unit stops on collar against pilot bushing and sweeps bore face to check squareness.



This unit demonstrates an eccentric contact arrangement which enters through a small bore to check squareness with a reverse contact.

ENGINEERING & MANUFACTURING

FIXED LIMIT GAGES

INDICATOR GAGE COMPONENTS

INDICATOR GAGE ASSEMBLIES

FIXTURE GAGE COMPONENTS

ELECTRONIC GAGES

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