



29-00048-1
x = 1.0625
y = .75



29-00189-1
x = 1.125
y = .8125



29-00512-0
x = 1.00
y = .56



29-00563-0
x = .88
y = .75



494
x = .88
y = .39



2580
x = .87
y = .56



29-00780-1
x = .625
y = .4375



489
x = .50
y = .46



557
x = .77
y = .65



3840
x = 1.00
y = .87



3180
x = 1.00
y = .91



548
x = .90
y = .85



507
x = .75
y = .98



542
x = .45
y = .54



543
x = .65
y = .75

All of our backlit knobs can be manufactured for night vision use. Our knobs meet NVIS "Green A" requirements.

x = outer diameter
y = height



228
x = .35
y = .51



688
x = .44
y = .78



489
x = .50
y = .46



432
x = .52
y = .72



1047
x = .90
y = 1.03



458
x = .69
y = .40



3214
x = .70
y = .50



352
x = .83
y = .64



2685
x = .90
y = .52



2066
x = 1.07
y = .83



3283
x = 1.26
y = .86



705
x = 1.33
y = 1.26



3680
x = 1.52
y = .86



2271538
A125
x = .82
y = .51

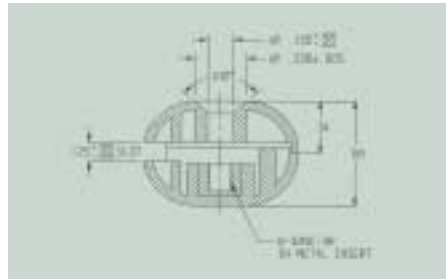
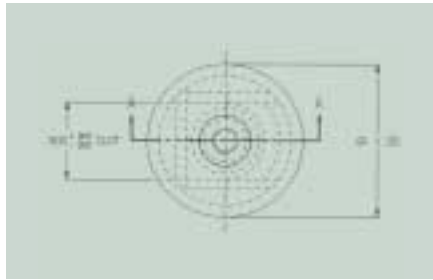


3081
x = .51
y = .77

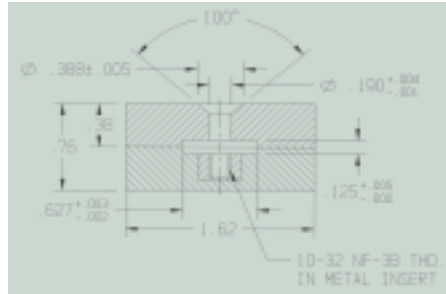
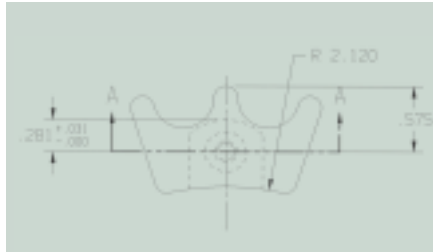
All of our backlighted knobs can be manufactured for night vision use. Our knobs meet NVIS "Green A" requirements.



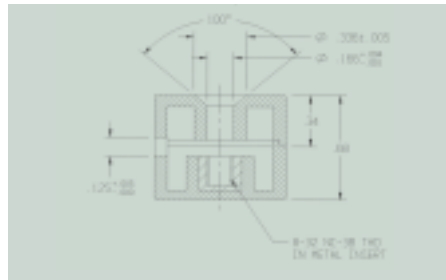
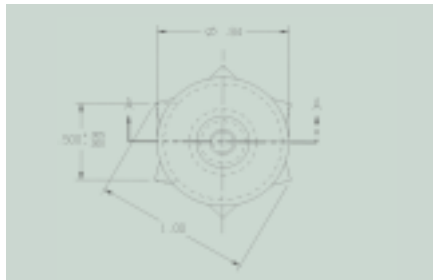
MS26517-2



MS26518-1



MS26519-2



Material and Specification Data

Body- Polycarbonate
Insert- Brass ½ hard per QQ-B-626
Color- Gray #36440/FED-STD-595

Lighted Handles- In accordance with MIL-STD-411 or MIL-C-81774
For details see procurement specification MIL-H-8810B.

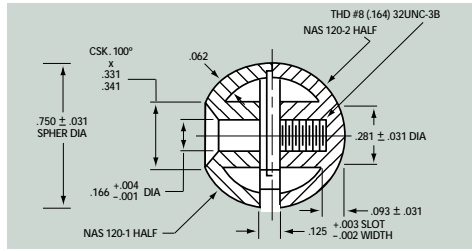
HANDLES, CONTROL, AIRCRAFT

Description	Diam. Width	MS Number
Throttle small	1.00"	MS26517-2
RPM large	1.62"	MS26518-1
Mixture small	1.00"	MS26519-2

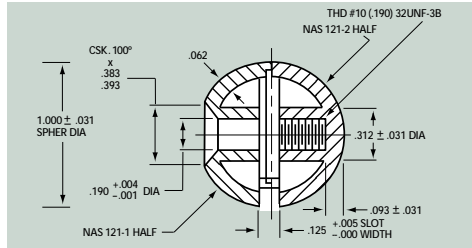




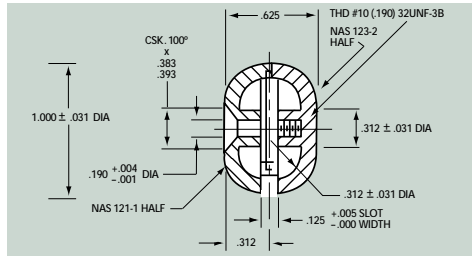
NAS120



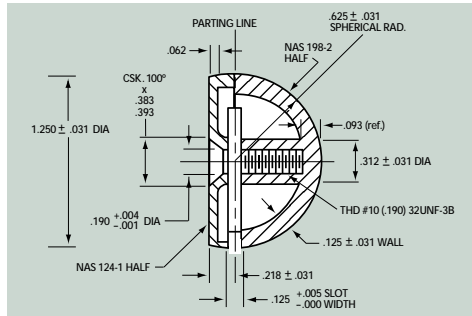
NAS121



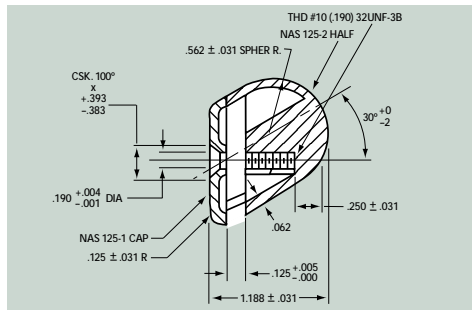
NAS123



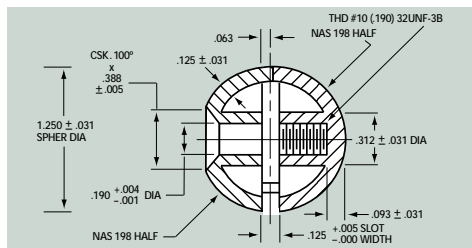
NAS124



NAS125



NAS198



Description	Style Number
Knob Control: 3/4" Spherical	NAS120
Knob Control: 1" Spherical	NAS121
Knob Control: 1" x 5/8" Oval	NAS123
Knob Control: 1 1/4" x 13/16" Horizontal	NAS124
Knob Control: 1 1/8" x 3/16" Angular Semi-Round	NAS125
Knob Control: 1 1/4" Spherical	NAS198

Colors

Color	Color Abbreviation	FED-STD-595 Color Number *
Blue	E	915
Yellow	Y	7972
Green	G	2905
Red	R	1838
Black	B	961
Light Gull Grey	L	36440
Orange	A	8567
White	W	7285
Purple	P	6075
Half Red & Half White	H	1838 (Red) 7285 (White)
Half Orange Yellow & Half Black	C	33538 (Orange Yellow) 37038 (Black)

*Tennessee Eastman Corp.

Materials

Thermoplastic synthetic resin or cellulose derivative with properties similar to FED SPEC L-P-349 Type I or II class or ASTM D707 Grade H2.

Finish

Non-specular

Slot

.125 x .625 (exception: NAS120 is .502)
Tolerance: +.003 -.002

EXAMPLE: NAS120B125

Series	Style	Color Abbreviation	Standard Slot Width
NAS	120	Black #961	.125"

NAS _____ 125

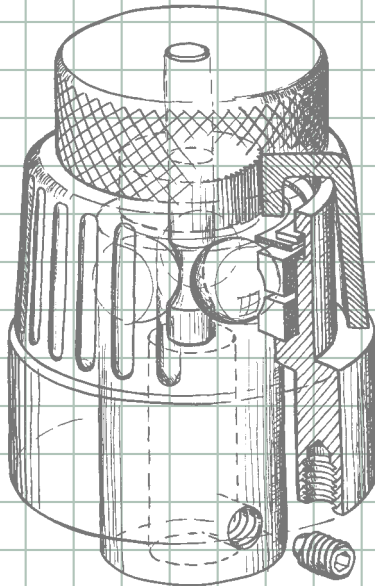
FILL IN STYLE AND COLOR TO COMPLETE



Mechanical Devices

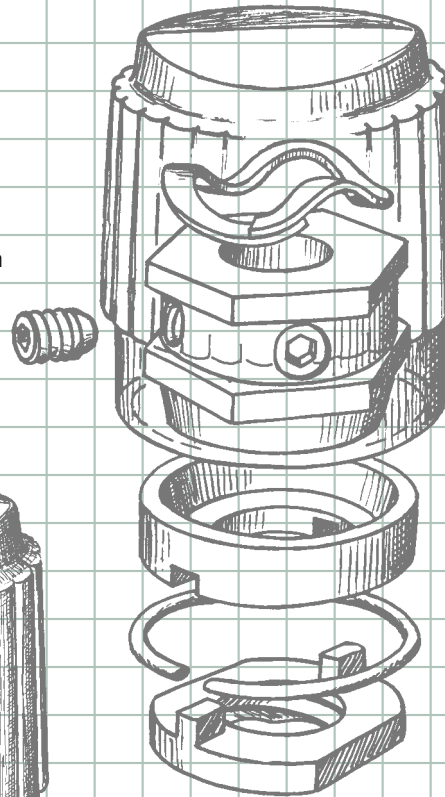
Index

Micro Vernier	20
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Push-to-Turn	22
Push-to-Turn	23
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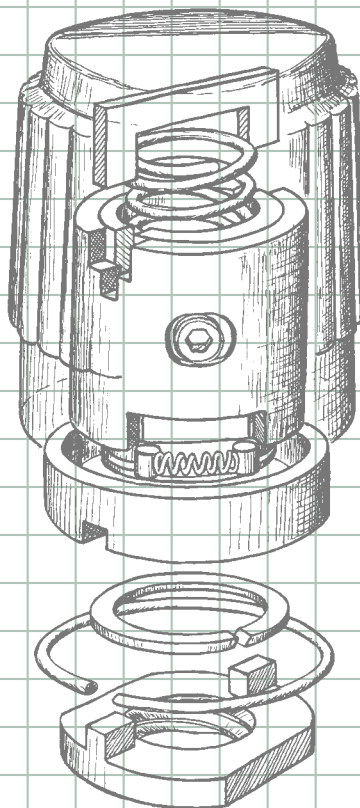
Micro Vernier

Provides input shaft reduction ratios for fine tuning through a zero backlash planetary friction drive mechanism offering a variety of standard ratios and mechanical interface options.



Push-to-Turn

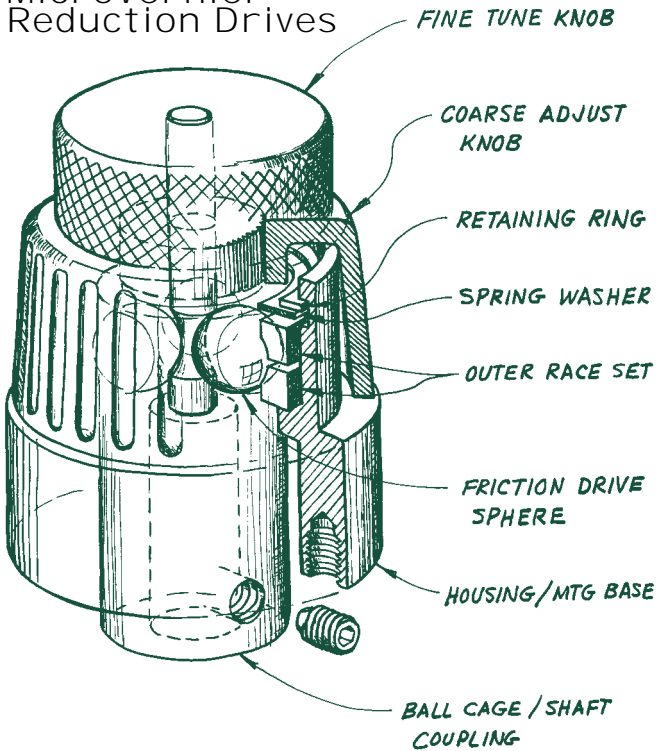
Settings remain secure against inadvertent movement, shock and vibration through a high-friction conical metallic clutch which releases cleanly when depressed and engages precisely upon release.



Push-to-Turn

Knob design utilizes sprag type clutch mechanism offering security against shock, vibration and inadvertent change while providing ease of operation, accurate positioning and positive locking.

MicroVernier Reduction Drives



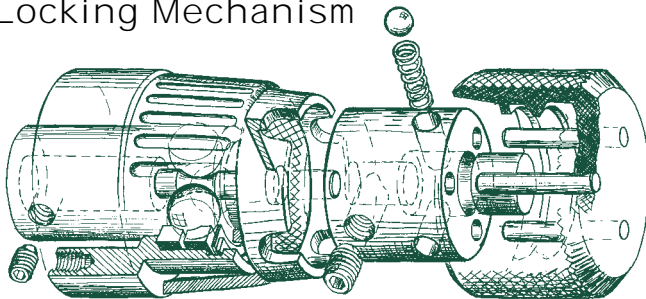
Indexing: Provides input shaft reduction ratios for fine tuning through a backlash planetary friction drive mechanism, offering a variety of standard ratios and mechanical interface options.

- Zero backlash
- Integral assembly
- Infinite resolution with absolute shaft registration
- Driving torque-10 inch-ounces
- Saves space behind the panel
- Simple installation, no special tools required
- Knob and component shaft rotate in the same direction
- As small as 1" diameter, front or rear mounting

MicroVernier Ratio	
"A" Vernier Drive 10:1 with "B" Direct Drive	1:1
"A" Vernier Drive 40:1 with "B" Direct Drive	4:1
"A" Vernier Drive 100:1 with "B" Direct Drive	10:1

Contact factory for detailed information regarding sizes, mounting, installation, and ratios, etc.

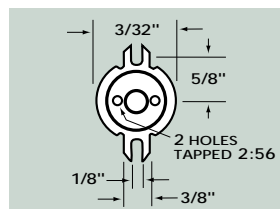
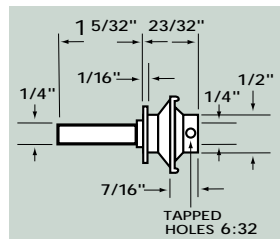
MicroVernier with Locking Mechanism



Locking MicroVernier is available with a friction lock mechanism to prevent inadvertent movement of the setting, integral to the unit.

Reduction Drive

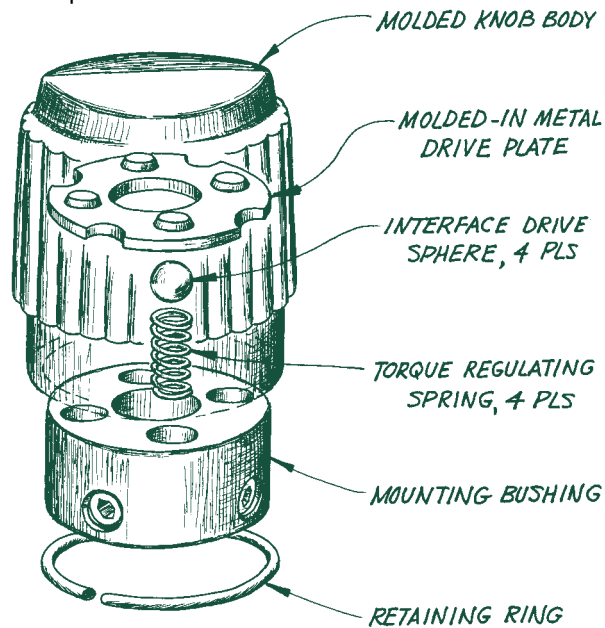
RDL61 Reduction Drive



The RDL61 Reduction Drive is a ball drive device with a 6:1 reduction ratio.

- Dial flange is directly coupled to output shaft
- Provided with (2) 2:56 x 3/16 pan head slotted screws and (2) 6:32 x 1/8 set screws for mounting
- Working temperature range 0°C to 55°C
- Storage temperature range -40°C to 70°C
- Torque values: Output > 26 inch-oz.; Input > 3 inch-oz.



MS91528 Qualified
Slip Clutch Knob

Patent #4012966

Slip Clutch knob design utilizes a molded-in metal drive plate in conjunction with a spring loaded sphere mechanism which provides protection against over torquing and damage of the control/component.

- QPL approved for MS91528 styles
- Available sizes: .500, .700, .900, 1.250 and 1.750
- Series available: MS91528
- Available styles: Round, Pointer, Concentric, Tactile, Spinner and Bar Knobs (For dimensional information see MS91528 series, pages 32–35, in this catalog.)
- Clutch slip torques from:
 - 8 to 16 inch-ounces
 - 12 to 24 inch-ounces
 - 20 to 36 inch-ounces
 - 28 to 56 inch-ounces
 - 42 to 84 inch-ounces
 - 64 to 124 inch-ounces
- Slip torque based on size (diameter) of knob and style
- Special Slip Torque requirements are available
- Contact factory for information on your specific requirements

Some of the
Styles Available

Round



Skirted Round



Concentric



Dial



Spinner

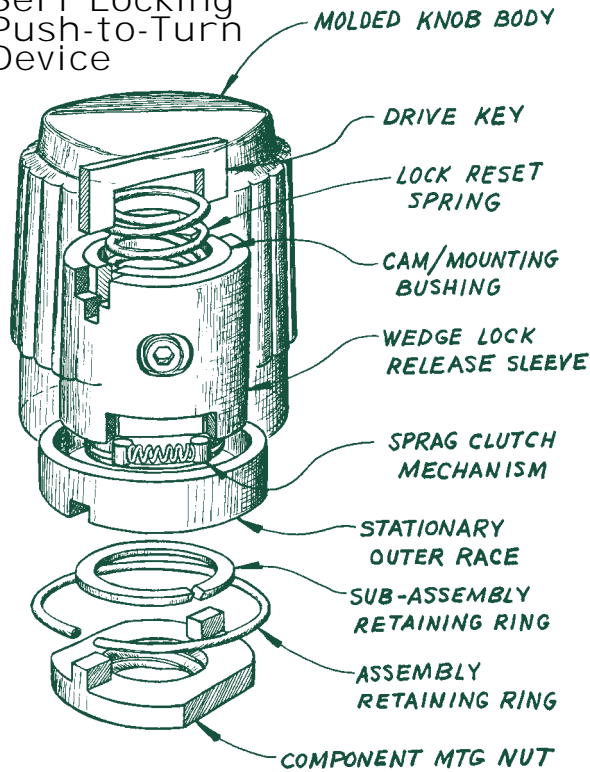


Cast Aluminum

Contact factory for other available styles.



.700 Diameter Self Locking Push-to-Turn Device

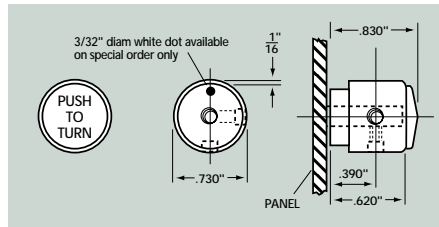


Push-to-Turn: Knob design utilizes sprag-type clutch mechanism offering security against shock, vibration and inadvertent change while providing ease of operation, accurate positioning and positive locking.

- Positive lock of control setting
- Ease of setting: one-hand operation
- Locked in the unengaged mode
- Infinite setting's locks positively on release
- Prevents movement from shock or vibration or accidental movement
- Zero backlash
- Must be fully depressed before movement
- Mounting hardware supplied with knob
- Designed for our MS91528 style series
- Engineered to meet military specifications

Part Number						TO COMPLETE PART NUMBER		
	A Diam. max.	B Height ±.030	C Shaft min.	D Set Screw	E Dial Diam. max.	Style	Shaft Hole	Finish
PT70	.730	.830	.62	.390	—	2	1	None
	.730	.950	.62	.390	1.150	3	2	G
						3NP		

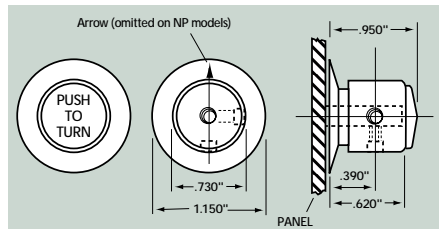
Round Ring Skirt



ORDERING GUIDE FOR DESIGNER SERIES

Cap Design and Diameter	Style	Shaft Hole Diameter	Finish (Black)
Indicate Part Number from Tables Above	2- Ring Skirt 3- Dial w. Arrow 3NP- Dial No Arrow	1- 1/8" Round 2- 1/4" Round	None- Gloss G-Matte

Round Dial Skirted



EXAMPLE: PT70-3NP-1G

Cap Design Series	Style Dial-No Arrow	Shaft Hole .125"	Finish Matte
PT70-	3NP-	1	G

Installation Instructions

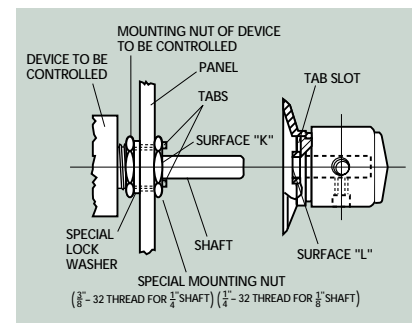
Use the special lockwasher for mounting behind the panel and the special mounting nut with tabs for mounting in front of the panel as shown in drawing at left.*

When attaching the control knob to the shaft, engage the tabs in the tabs slot. Surface "L", in the control knob, and Surface "K", on the special mounting nut must be mounted flush against each other.

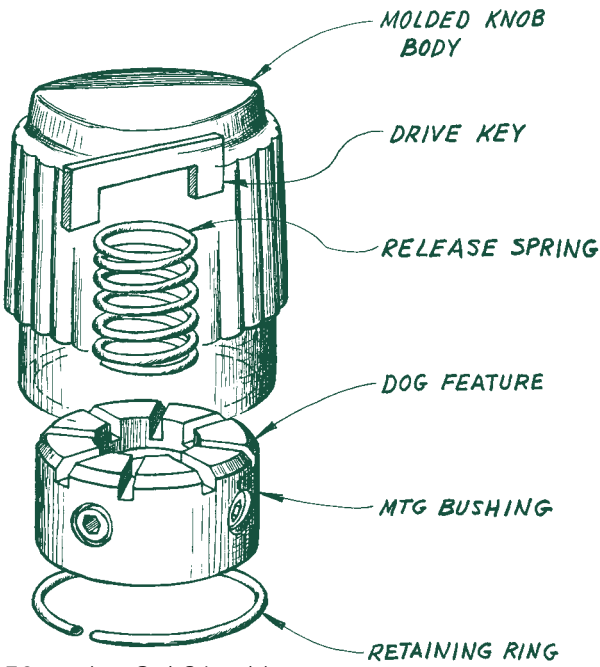
CAUTION: DO NOT REMOVE SET SCREWS. On ring skirted knobs, screws loosened out of tapped holes may fall into assembly. On dial skirted knobs, disassembled screws would allow outer shell to dis-engage from knob assembly. Loosen set screws enough to permit entry of shaft into shaft hole. Secure tightly.

Knob is now in LOCKED position. In order to rotate it, the knob must be fully depressed. This UNLOCKS it permitting free rotation of the shaft. RELEASE again to LOCK.

* If necessary, use the mounting nut of the device to be controlled as a checknut behind special lockwasher to orient threaded bushing flush with special mounting nut at Surface K.



Push-to-Turn Knob



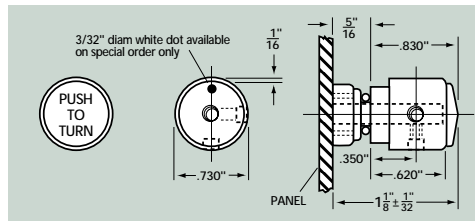
70 series Self Locking Push-to-Turn Device

Push-to-Turn: Knob turns freely until depressed. A positive dog-style coupling transmits rotary motions disengaging automatically when released.

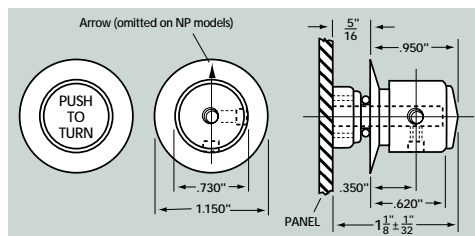
- Resists shock, vibration, or accidental movement
- Must be fully depressed to set
- Positive locking with infinite resolutions — zero backlash
- Ease of setting; one-hand operation
- Designed for MS91528 and EH71 style knobs
- Free to rotate in unengaged mode
- Not recommended for use with calibration marking

Part Number						TO COMPLETE PART NUMBER		
	A Diam.	B Height	C Shaft	D Set Screw	E Dial Diam.	Style	Shaft Hole	Finish
PTE70	.730	.830	.620	.425	—	2	1	None
	.730	.950	.620	.460	1.150	3NP	2	G

Round Ring Skirt



Round Dial Skirted



ORDERING GUIDE FOR DESIGNER SERIES

Cap Design and Diameter	Style	Shaft Hole Diameter	Finish (Black)
Indicate Part Number from Tables Above	2- Ring Skirt 3- Dial w. Pointer 3NP- Dial No Pointer	1- 1/8" Round 2- 1/4" Round	None- Gloss G- Matte

To order special colors contact our factory.

EXAMPLE: PTE70-3NP-1G

Cap Design	Style	Shaft Hole	Color
Series	Dial-No Pointer	.125"	Matte Black
PTE70-	3NP-	1	G

Installation Instructions

Potentiometer

Remove nut supplied — it will not be required.*

Use the lockwasher supplied and make sure it is placed on the threaded portion of the shank of the potentiometer, so as to be against the back surface of the panel as the shaft is fed through the clearance hold in the panel.

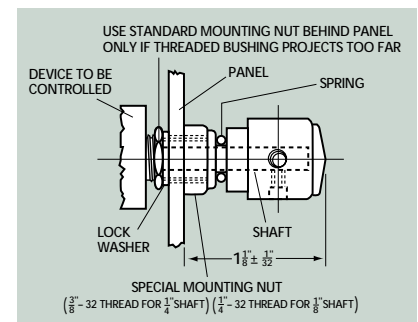
Mount the shaft lock by sliding the unit down over the shaft, plastic nut portion facing the end of the shaft, so as to engage the external threaded part of the potentiometer with the internal threaded insert in the shaft lock. (Shaft lock supplied with unit.)

Knob

Place spring, supplied, on potentiometer shaft section protruding beyond shaft lock.

Place knob on shaft and depress knob until it is seated with spring compressed. Use a #4-40 setscrew wrench (key) to tighten exposed setscrew until knob insert is firmly assembled to shaft.

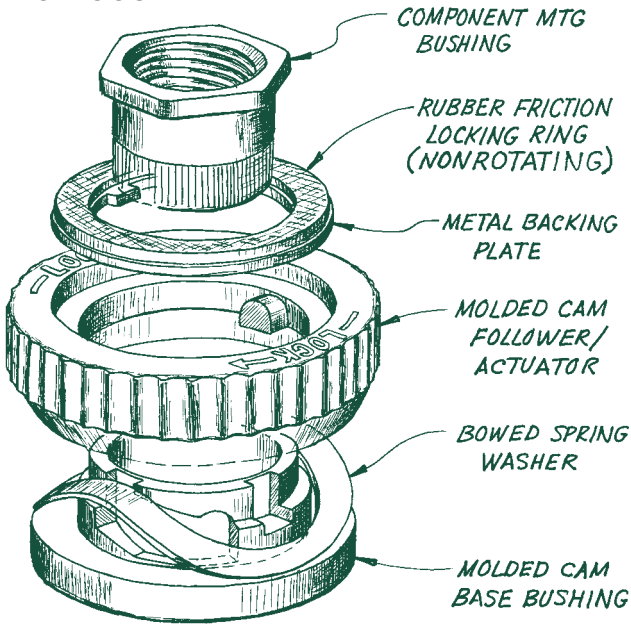
Release knob to free engagement. Rotate knob 90° (ninety degrees) and depress knob to locate second setscrew. Hold knob in this position. Tighten this setscrew to complete the assembly to insert to shaft. Release knob. Unit is now properly assembled.



*When mounting special nut, it is sometimes advisable to mount the standard mounting nut behind the panel if the control's threaded bushing projects too far.



Knob Locking Devices

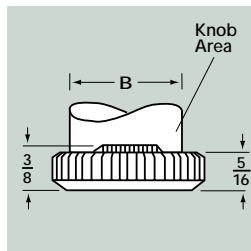


Knob Locks are positive friction locking devices for holding precise or critical control settings under conditions of shock and vibration. They are also useful where there is danger of accidental jarring or manual contact. Special splash-proof versions feature molded rubber inserts which prevent water leakage down into the control and also serve as dust seals.

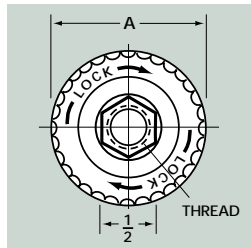
- Positive friction locking system
- Resists shock, vibration, or accidental movement
- Tested under salt spray, humidity, and temperature conditions
- Occupies minimum panel space
- Used with standard off-the-shelf control knobs, .700, .900 and 1.250 diameter knobs
- No special mounting hardware or tools required
- Special water and dust-tight models available
- Made of highest quality materials
- Available in three sizes in either mirror or matte finish



Standard



Spl ash Proof



Part Number

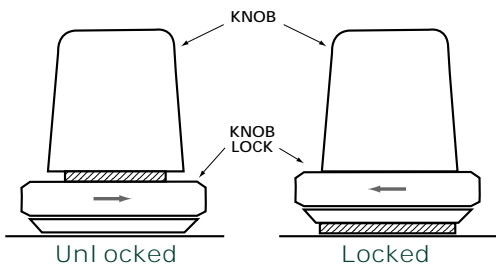
	MS91528	Type	Finish	Overall Diam. A	Overall Diam. B	Thread	
.700 Diam. Knob							
	KL701	Standard	Mirror	1"	.721	3/8-32	
	KL701G	1CC2B	Standard	Matte	1"	.721	3/8-32
	KL702	Standard	Mirror	1"	.721	1/4-32	
	KL702G	1CC2G	Standard	Matte	1"	.721	1/4-32
	KL703	Splash Proof	Mirror	1"	.721	3/8-32	
	KL703G	1DD2B	Splash Proof	Matte	1"	.721	3/8-32
.900 Diam. Knob							
	KL901	Standard	Mirror	1-5/16"	.928	3/8-32	
	KL901G	2CC2B	Standard	Matte	1-5/16"	.928	3/8-32
	KL902	Splash Proof	Mirror	1-5/16"	.928	3/8-32	
	KL902G	2DD2B	Splash Proof	Matte	1-5/16"	.928	3/8-32
1.250 Diam. Knob							
	KL1251	Standard	Mirror	1-5/8"	1.269	3/8-32	
	KL1251G	3CC2B	Standard	Matte	1-5/8"	1.269	3/8-32
	KL1252	Splash Proof	Mirror	1-5/8"	1.269	3/8-32	
	KL1252G	3DD2B	Splash Proof	Matte	1-5/8"	1.269	3/8-32

The above MS91528 designations are for reference only. Series of knobs used in conjunction with knob lock are MS91528, EH71 and Contemporary.



Style KL701 .700 Diam. Knob Style KL901 .900 Diam. Knob Style KL1251 1.25 Diam. Knob

Operation & Installation



An eighth turn of the fluted skirt locks the control knob by forcing a rubber bushing against its lower surface. A critical control setting is not affected. An eighth turn to the left frees the knob to rotate freely. Used primarily with potentiometers and similar variable controls, knob locks mount directly to threaded control bushings replacing the nuts and lock washers usually supplied.

