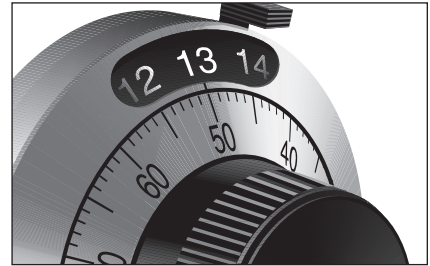


# Turns-Counting Dials



- I. Product Selection Guide .....131
- II. Dials
  - 46mm, 0-20 Turn Dials .....132
  - 22mm, 0-15 Turn Dials .....133, 134
  - 27mm, 0-10 Turn Dials .....135
  - 28mm, 0-10 Turn Dials .....135
  - 25.4mm, 0-30 Turn .....136



## Product Selection Guide

Specifications	H-46	H-22	H-506	CT-23	CT-26	H-490
Turns	0-20	0-15	0-15	0-10	0-10	0-30
Readout	Analog	Analog	Analog	Digital	Digital	Analog
Division/Turn	100	50	50	500	500	100
Brake	Yes	Yes	Yes	Yes	Yes	Yes
Diameter	46mm	22mm	22mm	27mm	28mm	25.4mm
Depth	25mm	24mm	25mm	31.5mm	31.5mm	
Weight	73	15	7	34	34	
Part Number/ Shaft Diameter	H-46-6A / 1/4" H-46-6M / 6mm	H-22-6A / 1/4" H-22-6M / 6mm H-22-3A / 1/8"	H-506-1/4 / 1/4" H-506-6M / 6mm	CT-23-6A / 1/4" CT-23-6M / 6mm	CT-26-6A / 1/4" CT-26-6M / 6mm	H-493-2 / 1/8" H-494-2 / 1/8" H-491-3 / 1/4" H-492-3 / 1/4" H-493-3 / 1/4" H-494-3 / 1/4" H-492-2 / 1/4"
Page No:	132	133	134	135	135	136

## POT/Dial Selection Guide

Specifications	H-46	H-22	H-506	CT-23	CT-26	H-490
3540S	X	X	X	X	X	X
3541H	X	X	X	X	X	X
3543S	X	X	X	X	X	X
3545S	X	X	X	X	X	X
3590S	X	X	X	X	X	X



## Features

- Large package size
- For use with precision potentiometers up to 20 turns
- Excellent readability
- Precision feel - no backlash
- Cast housing

## Applications

- Power supplies
- Sensors
- Medical
- Automation
- Test equipment

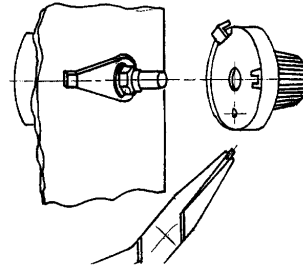
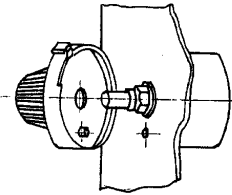
# H-46 Turns-Counting Dial

### Mechanical and Physical Characteristics

Number of Turns .....	0 to 20
Readability .....	Within 1/100 of a turn
Weight .....	.73 grams
Markings .....	Black on chrome background
Accepts Shaft Diameter .....	See below
Locking Brake .....	Yes

### Shaft and Bushing Requirements

Shaft Extension Beyond Panel .....	.689 in. (17.5mm) minimum 0.925 in. (23.5mm) maximum
Bushing Extension Beyond Panel .....	0.177 in. (4.5mm) maximum



### H-46 MOUNTING INSTRUCTIONS

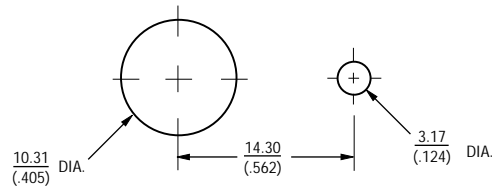
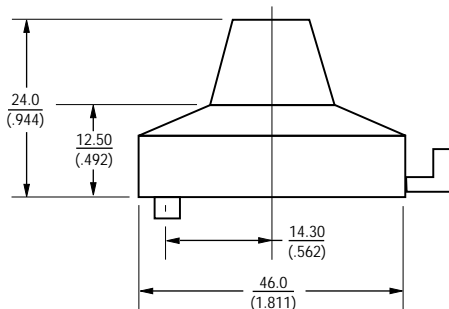
#### Using the existing Antirotation Lug

1. Drill 0.125 (3.2mm) diameter antirotation pin hole on vertical centerline 0.562 (14.3mm) below center of potentiometer mounting hole.
2. Mount potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
4. Loosen set screws in knob of dial. Set dial to "0.0" reading.
5. While holding outer ring of dial, position unit lightly against panel. Tighten knob set screws to potentiometer shaft.

#### Using the Antirotation Device

1. Remove antirotation lug from dial by using pliers.
2. Mount potentiometer in panel with antirotation device nut (supplied with dial) and lockwasher (supplied with potentiometer).
3. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with the mechanical stop.
4. Loosen set screws in knob of dial. Set dial to "0.0" reading.
5. While holding outer ring of dial, position unit lightly against panel. Tighten knob set screws to potentiometer shaft.

### Dimensional Drawing

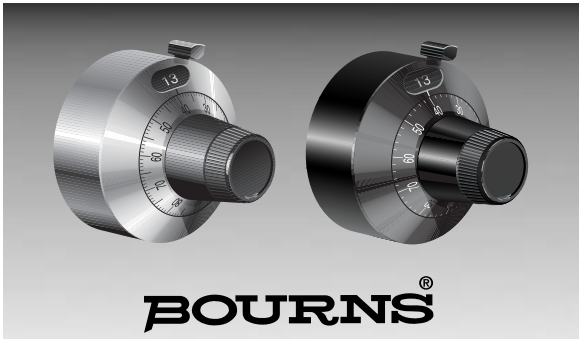


PANEL LAYOUT

### Shaft Diameter

Part Number	Accepts Shaft Diameter
H-46-6A	6.35mm (.250)
H-46-6M	6mm (.236)

Dimensions are  $\frac{\text{mm}}{\text{(inches)}}$



## Features

- No backlash
- Compact - requires minimal panel space (22.2mm diameter requirement)
- For use with precision potentiometers or other rotating devices, up to 15 turns
- Metal shaft
- High Force "Click Brake"
- Model H-22-6A available in two versions - black on chrome background or white on black background

## H-22 Turns-Counting Dial

### Mechanical and Physical Characteristics

Number of Turns .....	0 to 15
Dial Divisions .....	50 per turn
Readability - Over 10 Turns .....	2 parts in 1000
Torque With Brake Engaged .....	5 oz-in. (350 cm. gr.) minimum
Weight .....	15 grams
Markings .....	Black on chrome background*
Mechanical Life .....	10,000 cycles
Set Screws .....	1 included

### Shaft and Bushing Requirements

Shaft Extension Beyond Panel .....	0.712 in. minimum (18.1 mm)
	0.875 in. maximum (22.2 mm)
Bushing Extension Beyond Panel .....	0.375 in. maximum (9.53 mm)
Shaft Diameter .....	0.250 in. (6.35 mm)

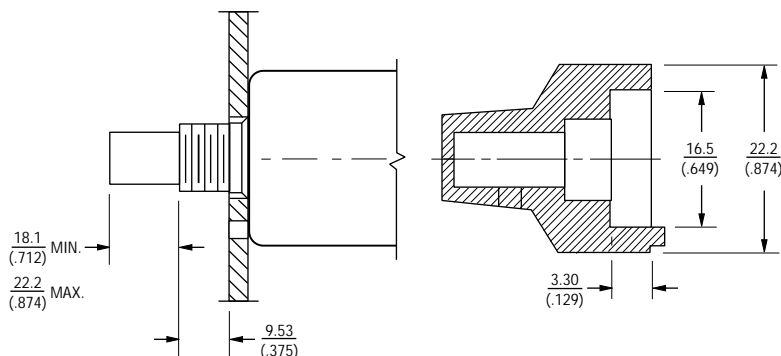
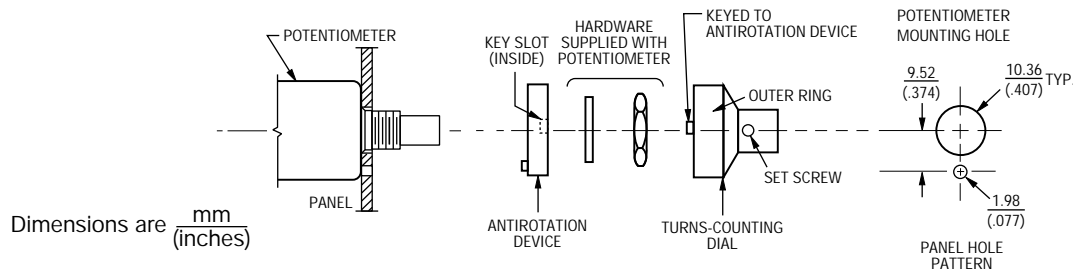
\*Model H-22-6A-B available in white on black background.

### FEATURES

- For use with precision potentiometers or other rotating devices up to 15 turns
- Excellent legibility - black marking on chrome background
- High quality, rugged construction, hardchrome housing, metal-to-metal setscrew threads
- No backlash - mounted directly to potentiometer shaft
- Compact - requires only 7/8" (22.2) diameter panel space
- High force, positive brake

### H-22 MOUNTING INSTRUCTIONS

1. Insert potentiometer in panel.
2. Install anti-rotation device using hardware supplied with potentiometer.
3. Turn potentiometer shaft counterclockwise to minimum resistance or voltage ratio.
4. Set the Model H-22 dial to "0.0" and brake on.
5. Insert the Model H-22 dial on the potentiometer shaft lightly against the panel.
6. Tighten set screw to potentiometer shaft



### Shaft Diameter

Part Number	Accepts Shaft Diameter
H-22-6A	6.35mm (.250)
H-22-6M	6mm
H-22-3A	3.17mm (.124)



## Features

- Compact, requires only 22.7mm diameter panel space
- No backlash
- For use with precision potentiometers or other rotating devices up to 15 turns
- Plastic shaft

**BOURNS®**

## H-506 Turns-Counting Dial

### Mechanical and Physical Characteristics

Number of Turns .....	0 to 15
Dial Divisions .....	.50 per turn
Readability - Over 10 Turns .....	2 parts in 1000
Torque With Brake Engaged .....	7.0 oz-in. (5.0 Ncm) minimum
Weight .....	7 grams
Markings .....	White on black background
Set Screws .....	2 screws 120° apart

### Shaft and Bushing Requirements

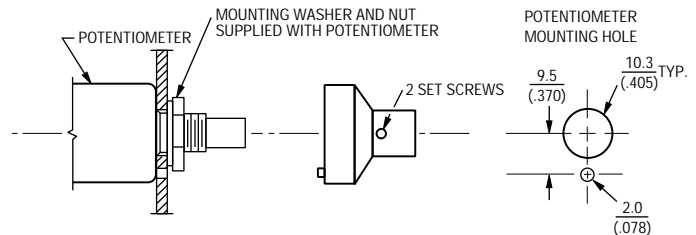
Shaft Extension Beyond Panel .....	0.6890 in. minimum (17.5 mm)
	0.8858 in. maximum (22.5 mm)
Bushing Extension Beyond Panel .....	0.3937 in. maximum (10 mm)

### FEATURES

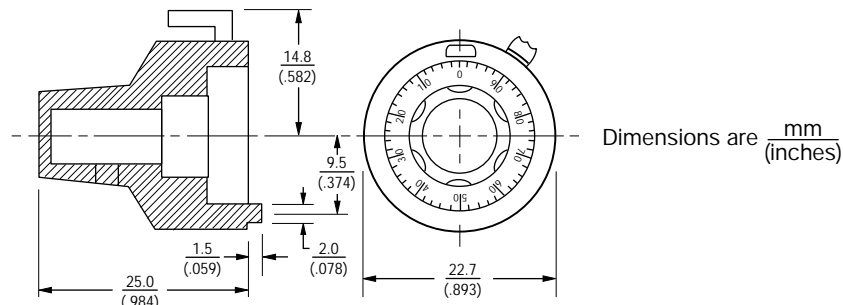
- For use with precision potentiometers or other rotating devices up to 15 turns
- Excellent legibility - white marking on black background
- High quality, rugged construction
- Two set screws
- No backlash
- High force, positive brake
- Compact - requires only .9" (22.86mm) diameter panel space
- Standard models to fit 1/4" and 6mm diameter shafts

### H-506 MOUNTING INSTRUCTIONS

1. Drill .0787 (2.0) diameter anti-rotation pin hole on vertical centerline, .375 (9.5mm) below center of potentiometer mounting hole.
2. Mount potentiometer in panel with nut and lockwasher supplied with the potentiometer.
3. Turn potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio. This is not necessarily identical with mechanical stop.
4. Loosen set screws in knob of dial. Set dial to "0.0" reading.
5. While holding outer ring of dial, position unit lightly against panel. Tighten knob set screws to potentiometer shaft.



### Dimensional Drawings



### Shaft Diameter

Part Number	Accepts Shaft Diameter
H-506-1/4	6.35mm (.250)
H-506-6M	6mm (.236)



## Features

■ High force, positive brake

- 27mm and 28mm diameter
- 10 turns
- No backlash - mounted directly to potentiometer shaft
- For use with precision potentiometers or other rotating devices up to 10 turns

## CT-23/CT-26 Turns-Counting Dial

### Mechanical and Physical Characteristics

Number of Turns.....	0 to 10
Readability .....	Within 1/500 of a turn
Weight .....	.34 grams
Markings.....	White on black background
Accepts Shaft Diameter.....	See below
Locking Brake.....	Positive, friction

### Shaft and Bushing Requirements

Shaft Extension Beyond Face of Locator Plate.....	.11.05mm minimum 16.25mm maximum
Bushing Extension Beyond Face of Locator Plate.....	4.00mm maximum

### FEATURES

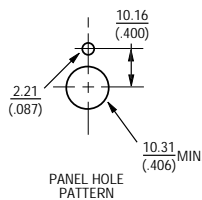
- For use with precision potentiometers or other rotating devices up to 10 turns
- Simplified mounting
- High quality, rugged construction throughout
- No backlash - mounted directly to potentiometer shaft
- White digits on black counter wheels for maximum readability
- High force, positive brake

Bourns® Model CT-23, front of panel mounting, digital turns-counting dial saves valuable internal space. Highly accurate, it will enhance the man/machine interface of any control panel. Easy to read white on black numerals provide excellent legibility and accurate readings within 1/500 of a turn.

Bourns® Model CT-26 recessed mounting digital turns-counting dial, counterpart to the Bourns Model CT-23, provides a lower panel profile. The design simplifies installation requiring only one panel hole. The CT-26 maintains the same high level of symmetry, legibility and accuracy of its counterpart.

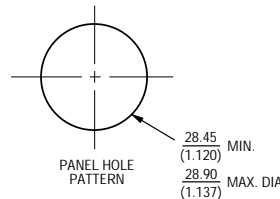
### CT-23 MOUNTING INSTRUCTIONS

1. Drill or punch panel. See suggested hole pattern below.
2. Insert potentiometer in panel.
3. Mount potentiometer in panel with nut and lockwasher supplied with the potentiometer.
4. Turn the potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio (not necessarily at the end of travel).
5. Loosen setscrew in knob with allen wrench. Set the dial readout to "000."
6. Slip the dial carefully over the potentiometer shaft. Tighten the setscrew without causing movement of the dial readout or potentiometer shaft.

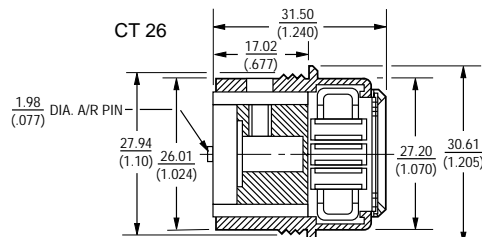
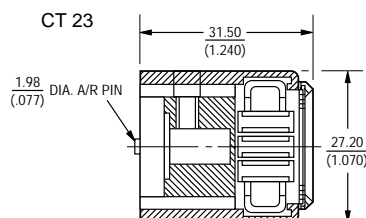


### CT-26 MOUNTING INSTRUCTIONS

1. Drill or punch panel. See suggested hole pattern below.
2. Insert turns-counting dial in panel cutout and secure with mounting nut.
3. Secure locator plate to potentiometer bushing using two hex nuts.
4. Turn the potentiometer shaft counterclockwise to obtain minimum resistance or voltage ratio (not necessarily at the end of travel).
5. Loosen setscrew in turns-counting dial with allen wrench. Set the dial readout to "000."
6. Slip the potentiometer shaft into the turns-counting dial, insuring that the notch in the locator plate is over the pin at the rear of the dial. Tighten the setscrew without causing movement of the dial readout or potentiometer shaft.



### Dimensional Drawings



### Shaft Diameter

Part Number	Accepts Shaft Diameter
CT-23-6A	6.35mm (.250)
CT-23-6M	6mm
CT-26-6A	6.35mm (.250)
CT-26-6M	6mm

Dimensions are  $\frac{\text{mm}}{\text{(inches)}}$



## Features

- No backlash - mounted directly to potentiometer shaft
- For use with precision potentiometers or other rotating devices up to 30 turns
- Compact size - requires only 25.4mm diameter panel space
- Available with or without brake

# H-490 Turns-Counting Dial

### Mechanical and Physical Characteristics

Number of Turns.....	0 to 30
Dial Divisions.....	100 per turn
Readability - Over 10 Turns.....	1 part in 1000
Torque With Brake Engaged.....	5 oz-in. minimum
Weight.....	Approximately 1/4 oz.
Markings.....	White on black background
Set Screws.....	2 screws 120° apart

### Environmental Characteristics

Operating Temperature Range.....	-15°C to +85°C
Mechanical Life.....	10,000 cycles
Set Screw Tightening Torque.....	2 in-lbs. minimum

### Shaft and Bushing Requirements

Shaft Extension Beyond Panel.....	15.75mm minimum 21.21mm maximum
Bushing Extension Beyond Panel.....	9.02mm maximum

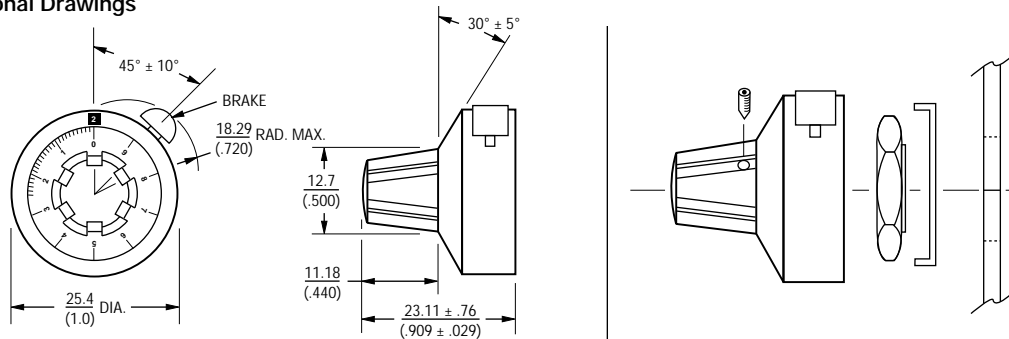
### FEATURES

- For use with precision potentiometers or other rotating devices up to 30 turns
- Readability - 1 part in 1000 for ten turns
- Simplified mounting - no special panel holes required
- Compact - requires only 25.4mm diameter panel space
- No backlash - mounted directly to potentiometer shaft
- Standard models available for 2.38mm, 3.18mm and 6.35mm diameter shafts
- Excellent legibility - white marking on black background
- Two set screws - standard on all models
- Available with or without brake

### H-490 MOUNTING INSTRUCTIONS

1. Discard standard mounting nut and lockwasher supplied with the potentiometer; they will not be used.
2. Insert potentiometer in panel.
3. Using parts supplied with dial, position anti-rotation washer against panel. Tangs of washer should stick out from panel.
4. Install mounting nut supplied with dial. Be sure:
  - a. Shoulder on nut engages hold of anti rotation washer.
  - b. Tangs of anti-rotation washer are aligned vertically. This positions the turns-counting window properly.
5. Turn potentiometer shaft counterclockwise to minimum resistance or voltage ratio. This is not necessarily at the end of travel.
6. Loosen set screw in knob of dial assembly. Set dial to "0.00" reading. Slip dial assembly over end of potentiometer shaft.
7. Holding outer ring of dial assembly, engage locating tangs on anti-rotation washer in notches on dial assembly.
8. While holding outer ring, position unit lightly against panel. Uniformly tighten knob set screws to potentiometer shaft with furnished hex wrench.

### Dimensional Drawings



Dimensions are  $\frac{\text{mm}}{\text{(inches)}}$

Part Number	Fits Shaft Diameter	Fits Bushing Size	Brake	Body Finish
H-493-2	3.18mm	6.35mm-32UNEF-2A	No	Black
H-494-2	3.18mm	6.35mm-32UNEF-2A	Yes	Black
H-491-3	6.35mm	9.53mm-32UNEF-2A	No	Clear
H-492-3	6.35mm	9.53mm-32UNEF-2A	Yes	Clear
H-493-3	6.35mm	9.53mm-32UNEF-2A	No	Black
H-494-3	6.35mm	9.53mm-32UNEF-2A	Yes	Black
H-492-2	3.18mm	6.35mm-32UNEF-2A	Yes	Clear