GENERAL SPECIFICATIONS

Electrical Capacity

Resistive Load:
HS13: 6A @ 125V AC, 3A @ 250V AC, or 5A @ 30V DC
HS16: 12A @ 125V AC or 6A @ 250V AC
TS: 6A @ 125/250V AC
PS: 30A @ 125/250V AC

Other Ratings

Contact Resistance: 10 milliohms maximum
Insulation Resistance: 200 megohms minimum @ 500V DC
Dielectric Strength: 1,500V AC minimum for 1 minute minimum
Mechanical Life:
HS: 15,000 operations minimum
TS: 30,000 operations minimum
PS: 10,000 operations minimum
Electrical Life:
HS: 7,500 operations minimum
TS: 10,000 operations minimum
PS: 5,000 operations minimum
Indexing: 30° for HS16, TS & PS; 45° for HS13
Contact Timing: Nonshorting HS13; Shorting & Nonshorting HS16; Nonshorting TS; Nonshorting PS
Range of Operating Torque:
HS16: 0.54 ~ 0.64Nm for first pole & 0.05Nm for each additional pole
HS13: 0.15 ~ 0.24Nm
TS: 0.09Nm for first pole & (0.07Nm x total number of poles) + 0.13Nm for additional poles
PS: 0.14Nm for each pole

Materials & Finishes

Knob: Phenolic resin
Shaft: HS13: brass; HS16, TS, & PS: brass with nickel plating
Bushing: HS13: brass; HS16, TS, & PS: brass with nickel plating
Case: Phenolic resin
Movable Contacts: HS13, HS16, & TS phosphor bronze; PS silver alloy
Stationary Contacts: HS13, HS16, & PS: brass with silver plating; TS: phosphor bronze
Terminals: HS: phosphor bronze; TS & PS: copper with silver plating

Environmental Data

Operating Temp Range: –10°C through +70°C (+14°F through +158°F)
Humidity: 90 ~ 98% humidity for 96 hours @ 40°C (104°F)
Vibration: 10 ~ 55 Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours
Shock: 50G (490m/s²) acceleration (tested in 3 right angled directions, with 3 shocks in each direction)

Installation

Mounting Torque: 2.94Nm (26 lb•in)
Maximum Panel Thickness: Shown with panel cutouts in following drawings
Soldering Time & Temperature: Manual Soldering (HS series only): See Profile A in Supplement section.

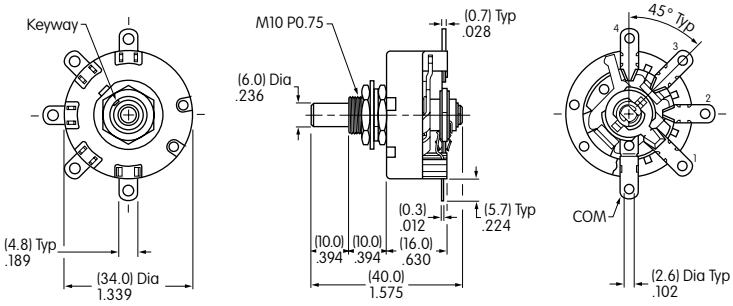
Standards & Certifications

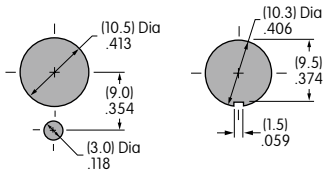
UL: **File No. E44145 - Recognized only when ordered with marking on switch.**
Add "/U" or "/CUL" to end of part number to order UL recognized switch.
HS16 models 1– through 6–pole are recognized at 12A @ 125V AC & 6A @ 250V AC
See Supplement section to find UL or cULus rating details.

6 AMP SINGLE POLE/NONSHORTING/45° INDEXING

Round Shaft	D-flat Shaft	Number of Positions	Stopper Settings	Number of Terminals *	Load Terminals	Schematics
HS13X	HS13X-D	2	Fixed	1 COM, 2 LOAD	1 & 2	HS13X
HS13Y	HS13Y-D	3	Fixed	1 COM, 3 LOAD	1, 2, & 3	HS13Y
HS13Z	HS13Z-D	4	Fixed	1 COM, 4 LOAD	1, 2, 3, & 4	HS13Z

Switch is viewed from shaft end and shown in position 1. Terminal numbers are not on switch. Standard Hardware shown on last page of this section.
* Wire harness & cable assemblies offered only in Americas.





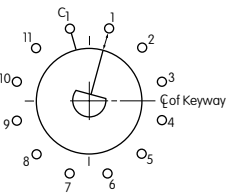
Maximum Effective Panel Thickness
With Locking Ring
.150" (3.8mm)
Without Locking Ring
.189" (4.8mm)



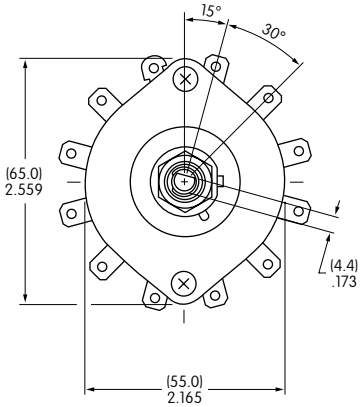
HS13X

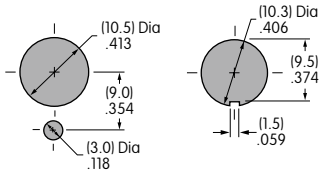
12 AMP/SHORTING & NONSHORTING/30° INDEXING

Knurled Shaft		D-flat Shaft		Pole	Number of Positions	Stopper Settings	Number of Terminals *	Schematic
Nonshorting	Shorting	Nonshorting	Shorting					
HS16-1	HS16-1S	HS16-1N	HS16-1SN	1P	2-11	2, 3, 4 . . . 11	1 COM, 11 LOAD	
HS16-2	HS16-2S	HS16-2N	HS16-2SN	2P	2-11	2, 3, 4 . . . 11	2 COM, 22 LOAD	
HS16-3	HS16-3S	HS16-3N	HS16-3SN	3P	2-11	2, 3, 4 . . . 11	3 COM, 33 LOAD	
HS16-4	HS16-4S	HS16-4N	HS16-4SN	4P	2-11	2, 3, 4 . . . 11	4 COM, 44 LOAD	
HS16-5	HS16-5S	HS16-5N	HS16-5SN	5P	2-11	2, 3, 4 . . . 11	5 COM, 55 LOAD	
HS16-6	HS16-6S	HS16-6N	HS16-6SN	6P	2-11	2, 3, 4 . . . 11	6 COM, 66 LOAD	

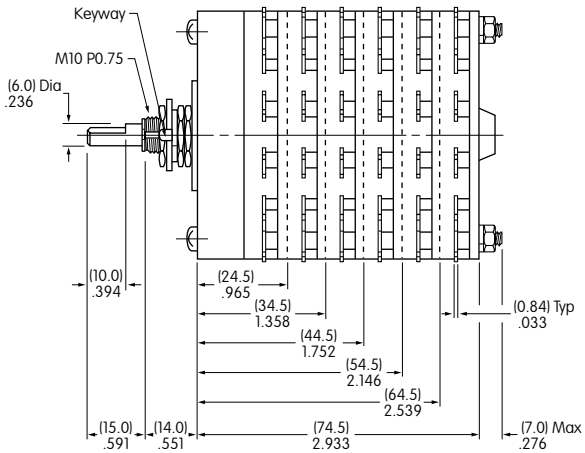


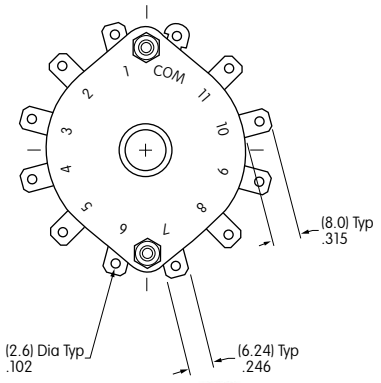
Switch is viewed from shaft end and shown in position 1. Terminal numbers are not on switch. Standard Hardware shown on last page of this section.
* Wire harness & cable assemblies offered only in Americas.





Maximum Effective Panel Thickness
With Locking Ring
.189" (4.8mm)
Without Locking Ring
.228" (5.8mm)





- On each deck of multipole devices common and load terminals are in the same positions as shown in the schematic above.
- Switch is viewed from the shaft end and shown in position 1.
- Terminal numbers are on the switch bottom. Stopper positions are molded on the top of the switch.
- Standard Hardware shown on last page of this section.

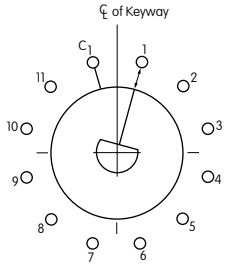


HS16-2N

6 AMP/NONSHORTING/ADJUSTABLE STOP/30° INDEXING

Model	Pole	Number of Positions	Stopper Settings	Number of Terminals	Shaft Type
TS1N	1P	2-11	2, 3, 4 . . . 11	1 COM, 11 LOAD	D Flat
TS2N	2P	2-11	2, 3, 4 . . . 11	2 COM, 22 LOAD	D Flat
TS3N	3P	2-11	2, 3, 4 . . . 11	3 COM, 33 LOAD	D Flat
TS4N	4P	2-11	2, 3, 4 . . . 11	4 COM, 44 LOAD	D Flat
TS5N	5P	2-11	2, 3, 4 . . . 11	5 COM, 55 LOAD	D Flat

Schematic



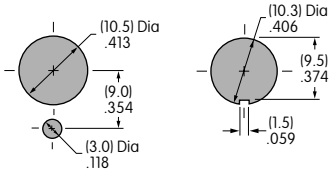
On each deck of multipole devices common & load terminals are in the same positions as shown in this schematic.

Switch is viewed from the shaft end and shown in position 1.

Terminal numbers are on the switch bottom. Stopper positions are molded on the top of the switch.

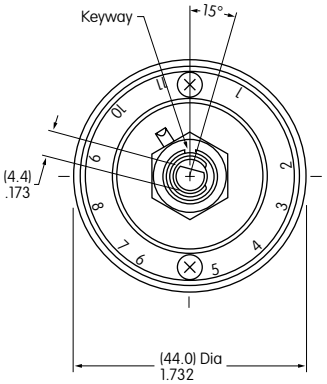
• Standard Hardware shown on last page of this section.

Panel Cutouts

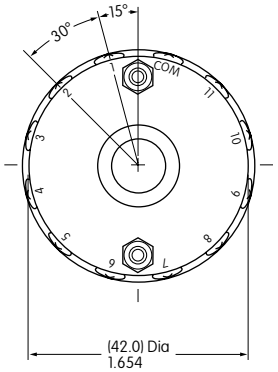


Maximum Effective Panel Thickness
With Locking Ring
.189" (4.8mm)
Without Locking Ring
.228" (5.8mm)

Top

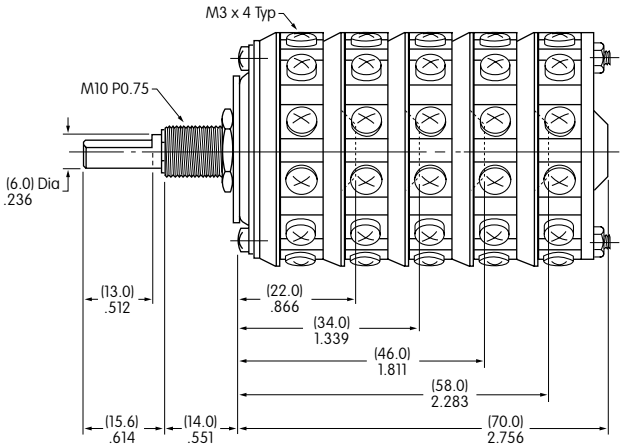


Bottom

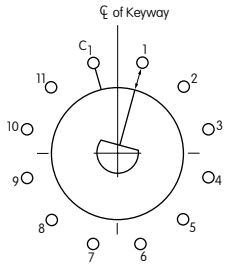




TS5N



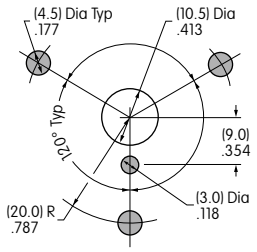
30 AMP/NONSHORTING/ADJUSTABLE STOP/30° INDEXING

Knurled Shaft	D Flat Shaft	Pole	Number of Positions	Stopper Settings	Number of Terminals	Schematic
PS1	PS1N	1P	2-11	2, 3, 4 . . . 11	1 COM, 11 LOAD	
PS2	PS2N	2P	2-11	2, 3, 4 . . . 11	2 COM, 22 LOAD	
PS3	PS3N	3P	2-11	2, 3, 4 . . . 11	3 COM, 33 LOAD	
PS4	PS4N	4P	2-11	2, 3, 4 . . . 11	4 COM, 44 LOAD	
PS5	PS5N	5P	2-11	2, 3, 4 . . . 11	5 COM, 55 LOAD	

On each deck of multipole devices common & load terminals are in the same positions as shown in this schematic. Switch is viewed from the shaft end and shown in position 1. Terminal numbers are on switch bottom. Stopper positions are molded on the top of the switch.

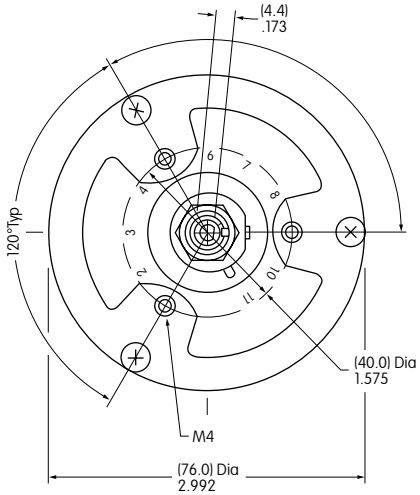
- Standard Hardware shown on last page of this section.

Panel Cutout

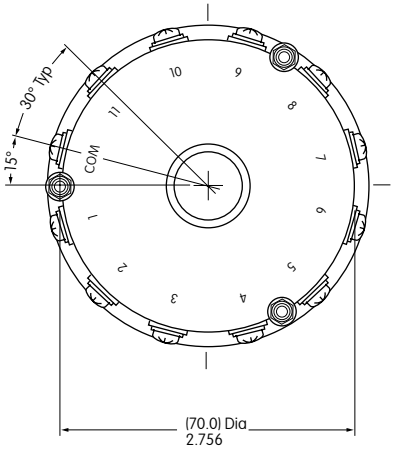


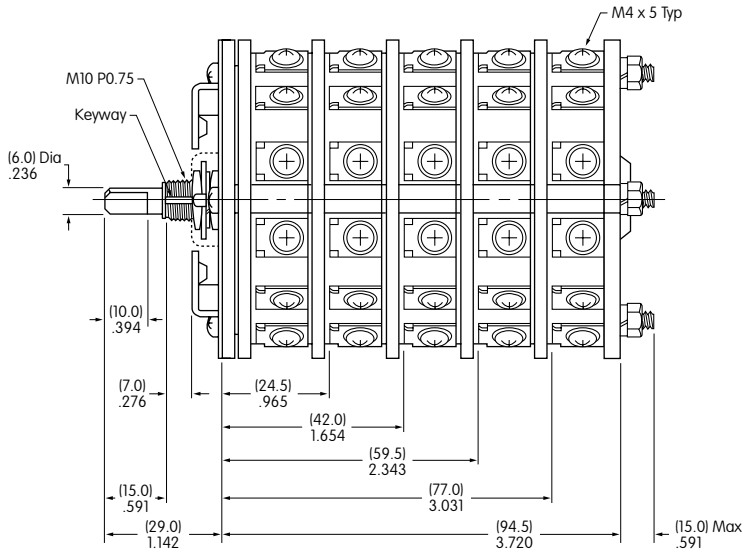
Maximum Effective Panel Thickness
Without Locking Ring
.189" (4.8mm)

Top



Bottom





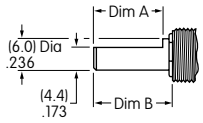


PS4N

SHAFT TYPES

D Flat Shaft

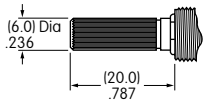
For use with
AT431 and AT432



Dimension A		Dimension B	
For TS	(13.0) .512	For TS	(15.6) .614
For HS or PS	(10.0) .394	For HS or PS	(15.0) .591

Knurled Shaft

Not for use with
AT431 or AT432

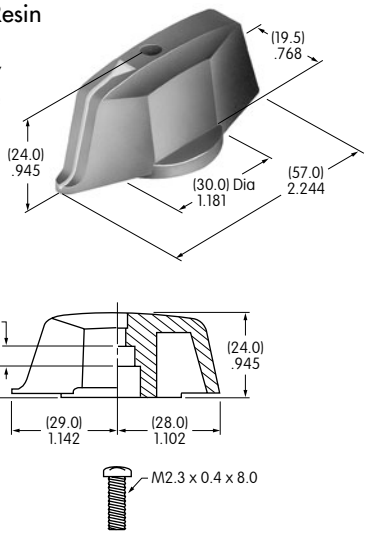


OPTIONAL KNOBS FOR D FLAT SHAFTS

AT431
Large Knob

Phenolic Resin

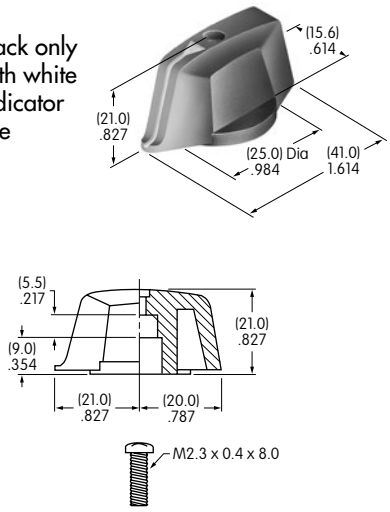
Black only with white indicator line



AT432
Small Knob

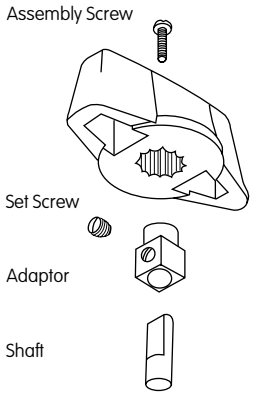
Phenolic Resin

Black only with white indicator line



Knob Orientation

The rotary knobs used on the D-flat shafts can be oriented on the switch to suit the customer's particular front panel needs simply by sliding the knob over the square adaptor at the preferred orientation.



STOPPER SETTING

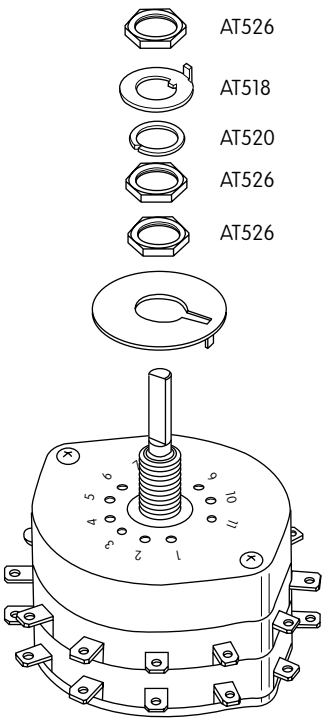
For HS16, TS, & PS Models

The HS16, TS, and PS switches are supplied with the stopper plate set for the maximum number of positions allowed for that model. Prior to installation, the desired stopper setting should be made:

1. Be sure the shaft is turned counterclockwise to the extreme left. If the shaft is not turned counterclockwise to the extreme left, proper setting cannot be achieved.
2. Loosen the nut far enough to allow raising the stopper plate for resetting.
3. Insert the stopper in the numbered hole for the desired stopper setting. Satisfactory switch functioning cannot be assured if the stopper plate is not properly positioned.
4. Tighten the nut firmly against the stopped plate.

Standard Hardware Supplied with HS, TS, and PS:

AT526 Hex Mounting Nut (quantity 3)
AT518 Locking Ring (quantity 1)
AT520 Split Lockwasher (quantity 1)
Use of mounting supports on PS is optional; screws are not provided.



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ООО «НИОКР СИТЕМС»
Москва, 125362, Россия, ул. Вишневая, д. 9, к. 1, Блок 104 а и 104 в

Телефон: 8 (495) 268-14-82
Email: n@nsistems.ru

ИНН: 7735154786
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