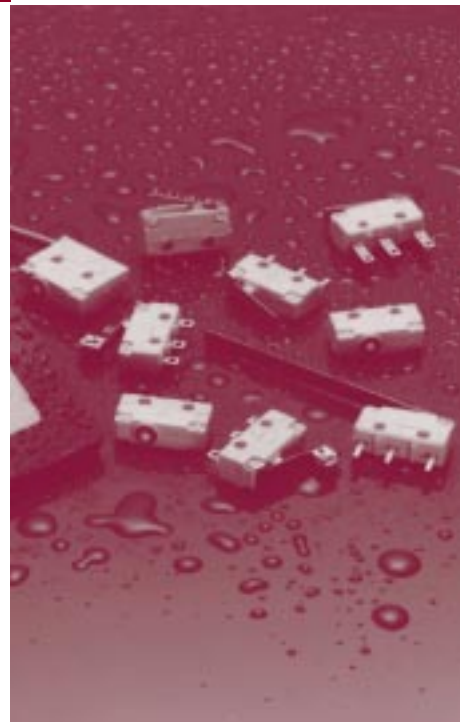
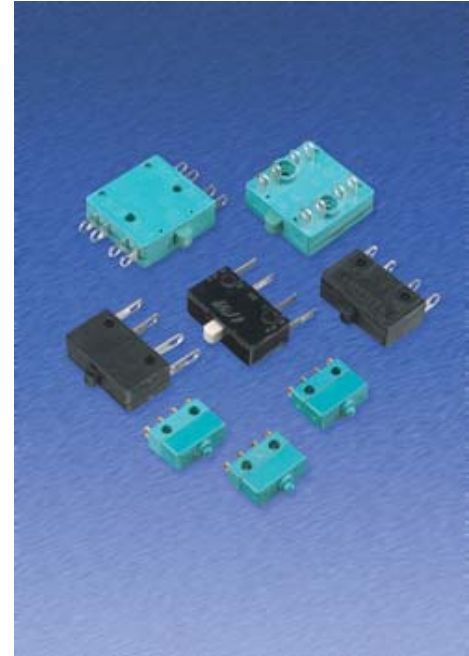


**SERIES 16, 18, 26 & 19N – MICROSWITCH RANGES**





## SERIES 16, 26 & 18 - MICROSWITCH

### SERIES 16 & 26 FEATURES

- Form Z contacts – to cover all switching requirements
- Snap action – for positive switching
- Solder terminals – for superior electrical contact
- Choice of contacts – gold and silver
- Choice of actuators – to fit many applications

### NON-STANDARD OPTIONS

- PCB and solder/faston terminals
- Other contact forms X, Y & C
- Custom brackets and levers
- Special operating forces

### SERIES 18 FEATURES

- Form Z contact – covers all switching requirements
- Snap action – uses high integrity butterfly action
- Solder terminals – for superior electrical contact
- Gold plated contacts and terminals – for all applications
- Diaphyll phalate body – wide temperature range
- Various actuators available – to assist in application

### NON-STANDARD OPTIONS

- PCB terminals
- Custom brackets and actuators

## Series 16 & 26 – Technical Information

### Description

The series 16 is a popular microswitch offering the unique self cleaning butterfly action. The centrally positioned actuating button offers the ability to mount easily into a pushbutton switch, something that ITW Switches has taken advantage of by incorporating the microswitch in our series 76-94 and flexibutton. The series comes with gold or silver contacts and solder terminals as standard. PCB, solder/faston terminals, choice of contact forms and custom brackets and actuators are available as non-standard options. A two pole version is available in the form of the series 26. Switches also have UL, CSA and MIL-Specification approvals according to the version.

### Features

- Form Z contacts – to cover all switching requirements
- Snap action – for positive switching
- Solder terminals – for superior electrical contact
- Choice of contacts – gold and silver
- Choice of actuators – to fit many applications

### Non-Standard Options

- PCB and solder/faston terminals
- Other contact forms X, Y & C
- Custom brackets and levers
- Special operating forces

### Mechanical

Pretravel	1,27mm
Overtravel	0,15mm (min)
Movement differential	0,5mm (nominal)
Operating point	10,31mm ±0.40mm (series 16) 10,05mm ±0,35mm (series 26)
Life (min)	10 <sup>7</sup> cycles
Operating force	2,2N (series 16); 4,5N (series 26)

### Electrical

Current (max) silver contacts	10A resistive 250 VAC (series 16) 8A resistive 250 VAC (series 26)
Current (min) silver contacts	10mA resistive 5 VDC (series 16, 26)
Life (min)	100,000 cycles at 20°C 50,000 cycles at 70°C
Dielectric strength (min)	1 KVAC, 1minute
Insulation resistance (min)	1GΩ at 500 VDC
Contact resistance (max. initial)	25mΩ

### Environmental & Physical

Ingress protection	Equivalent to IP40
Shock (min)	50g
Temperature (ambient)	-55°C to +135°C

## Series 16 & 26 – Ordering Information

### Ordering Information

Part Number	Description
16-4044	10A, silver contacts, solder terminals through the bottom of the case
16-40441	5A, gold contacts, solder terminals through the bottom of the case
16-488051	10A, gold contacts, MIL-SPEC approved, solder terminals through the bottom of the case
16-104	10A, silver contacts, solder terminals through the side of the case
16-304	10A, silver contacts, solder terminals through the front of the case
26-804	2 pole, 8A, silver contacts, solder terminals through the side of the case
26-904	2 pole, 8A, silver contacts, solder terminals through the front of the case

Part Number	Actuators
76-1210/*	Standard leaf lever
76-1200/*	Standard roller lever

Substitute \* for switch part number to be fitted, e.g. 76-1200 fitted to 16-4044 = 76-1200/4044.

These are standard parts for this series. If you should require a non-standard option please contact the Sales Office.

### 2 Pole Version

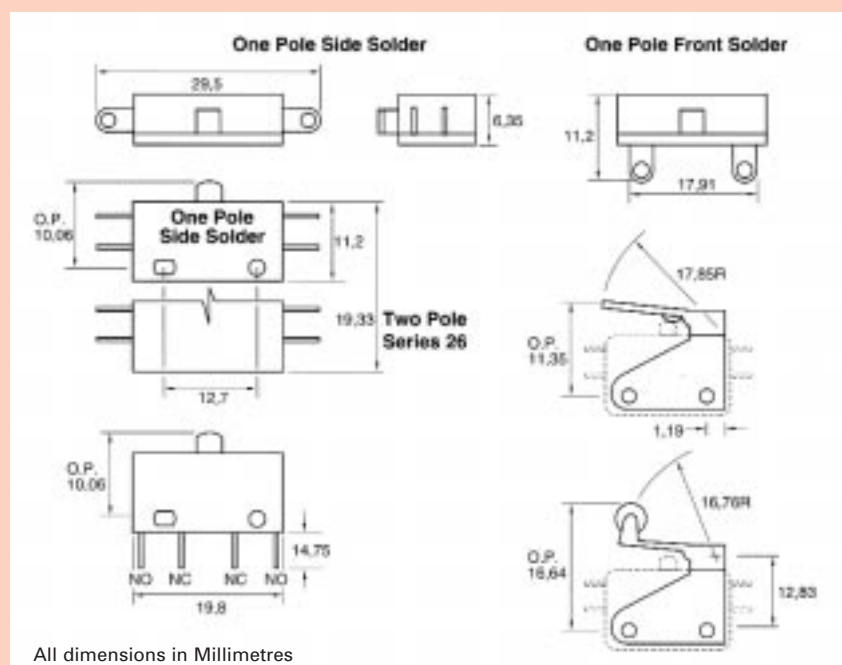
The 2 pole version is available in the form of the series 26. This has the same self cleaning butterfly action as the series 16, but has a higher operating force due to switching a number of poles. Applications for these include requirements for auxiliary back up switches for additional safety and the need for a switch with a high operating force to safeguard against accidental actuation. Similar to the series 16, the 26 can be used as the switching mechanism in the 76-94 pushbutton range.

### Actuation Information

There are a number of additional actuators including leaf, roller levers and pushbuttons that fit both series 16 and 26. If you require any of these actuators, please contact the Sales Office.

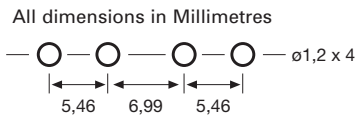
## Series 16 & 26 – Technical Information

### Contact Loading



### PCB Pin Layout

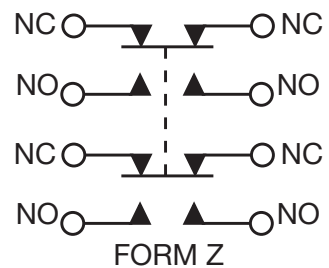
(viewed from either side)



### Circuit Form



Series 16



Series 26

### Application references for both Series 16 & 18

- Process control limit switching
- Aerospace applications
- Telecommunications
- Military control systems
- Elevator systems
- Missile systems

## Series 18 – Technical Data

### Description

The series 18 is ITW Switches' smallest microswitch. It is a single pole with a self cleaning 'butterfly' mechanism. This gives a high performance switch in terms of life and load ability, switching from logic loads to 8A max. The series comes in gold double break, snap action contacts with gold solder terminals as standard. PCB terminals and custom brackets and actuators are available as non-standard options. The terminals are inserts moulded into the base, this coupled with the lid being bonded to the base gives a totally sealed switch up to the button opening. Its small size, high performance and high temperature rating, provide a switch that is suitable for many demanding applications. The switch has UL and MIL-Specification approval according to version.

### Features

- Form Z contact – covers all switching requirements
- Snap action – uses high integrity butterfly action
- Solder terminals – for superior electrical contact
- Gold plated contacts and terminals – for all applications
- Diaphyll phalate body – wide temperature range
- Various actuators available – to assist in application

### Non-Standard Options

- PCB terminals
- Custom brackets and actuators

### Mechanical

Pretravel (max)	0,9mm
Overtravel (min)	0,1mm to 0,15mm
Movement differential (nom)	0,4mm
Operating point	8,13mm ±0,4mm
Life (min)	10 <sup>7</sup> cycles
Operating force (max)	2,2N

### Electrical

Current (max)	8A resistive 250 VAC (18-488051) 2A resistive 250 VAC (18-40421)
Current (min)	5mA resistive 5 VDC
Life (min)	1 <sup>5</sup> cycles
Dielectric strength (min)	1 KVAC, 1 minute
Insulation resistance (min)	1GΩ at 500 VDC
Contact resistance (initial)	25mΩ

### Environmental & Physical

Ingress protection	IP40
Shock	50g
Temperature rating	-55°C to +180°C

### Actuation Information

The series 18 microswitch is incorporated in the popular 78-2510 pushbutton switch. There are also a number of actuators designed to fit directly onto the microswitch. These include leaf, roller levers and pushbuttons.

If you have an application that requires an actuator with the series 18 microswitch then please contact the Sales Office.

# SERIES 16, 26 & 18 Microswitch

## Series 18 – Ordering Information

### Ordering Information

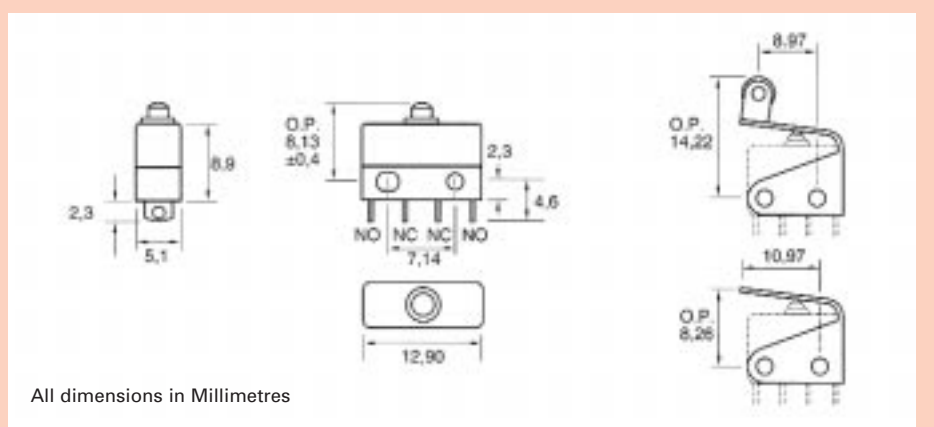
Part Number	Description
18-40421	2A, gold contacts, solder terminals through the bottom of the case
18-488051	8A, gold contact, MIL-SPEC approved, solder terminals through the bottom of the case

Part Number	Actuators
78-3000/*	Standard leaf lever
78-3100/*	Standard roller lever

Substitute \* for switch part number to be fitted, e.g. 78-3000 fitted to 18-40421 = 78-3000/40421.

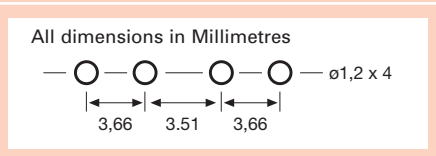
These are the standard parts for this series. If you should require a non-standard option please contact the Sales Office.

### Product Drawings

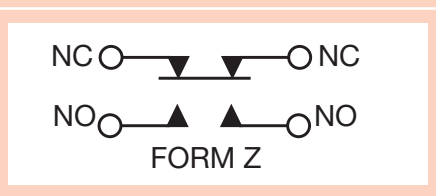


### PCB Pin Layout

(viewed from either side)

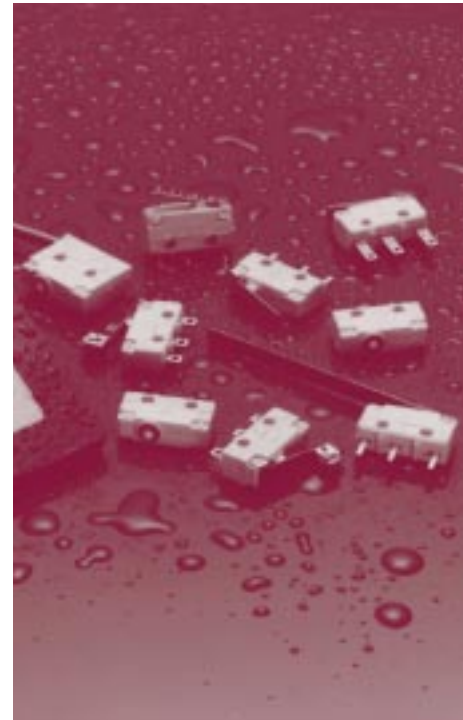


### Circuit Form



### Further Information

For further information on our complete range of switch products, please contact the Sales Office.



## SERIES 19N – MICROSWITCH

### FEATURES

- Insert moulded terminals
  - fully sealed base
- Fully sealed version
  - to IP67
- Wide temperature range –
  - 40°C to +125°C
- Choice of actuators as standard
- Approved product
  - BEAB
- Soldering Information
  - 350° max. for 3 seconds
- Non flammable switch
  - UL94-VO rated

### NON-STANDARD OPTIONS

- Leaf lever available in variable lengths (see ordering information)
- Custom levers/brackets
- Multiple pole 'ganged' versions



## Technical Information

### Series 19N

The miniature microswitch (the standard V4 size) has been designed in line with similar competitive products, but because of automation, offers consistent high quality levels for volume applications, at no extra cost. The switch mechanism used is the well proven spring and blade method, and is offered in a choice of operating forces.

Other standard options include gold or silver contacts; PCB, solder or QC terminals, and integral wire lead versions. All versions have a fully sealed base right up to the bottom opening. In addition, sealed button versions are totally environmentally sealed.

### Mechanical

Overtravel	0,2mm (min) depress to case
Movement differential	0,1mm reference
Mechanical life	10,000,000 cycles
Operating force	See ordering information

### Electrical (at 125°C)

#### Current (max) for silver contact versions (Inductive rating 0,6 PF)

Low operating force:	Standard operating force:
250V a.c. Resistive 2A	250V a.c. Resistive 5A
250V a.c. Inductive 1A	250V a.c. Inductive 1A
28V d.c. Resistive 2,5A	28V d.c. Resistive 3A
28V d.c. Inductive 1A	28V d.c. Inductive 1A

All gold contact versions: 100mA 28 VDC Resistive

#### Current (min)

All silver contact versions	10mA 5V d.c. Resistive
All gold contact versions	1mA 5V d.c. Resistive
Life (nominal) – full load	100,000 cycles
Dielectric strength	1000V a.c.
Insulation resistance	1GΩ
Contact resistance (initial)	20mΩ (max) silver, 50mΩ (max) gold
Contact bounce	5ms (max), 1ms per individual pulse

### Environmental & Physical

Ingress protection	
– with unsealed button	IP40
– with sealed button	IP67
Temperature	-40°C to +125°C
Button material	Polyester
Body Material	Nylon 46
Contacts	
– silver versions	Silver nickel alloy
– gold versions	5 microns of gold on copper/nickel
Terminals	
– solder & PCB versions	Tin plated brass
– QC versions	Brass

### Approvals



## Technical Information

## Ordering Information

### Sealed Variants

This variant is available in two versions, fully sealed and top sealed. The top seal incorporates a rubber seal around the button to stop the ingress of contaminants through this area. If the switch is to be activated by a cam, it would be advisable to do this via a lever, as using a cam directly onto the button can cause damage to the diaphragm seal.

The fully sealed version has the top seal and also has integral leads 'potted' onto the terminals. This version is rated at 125°C. There is also a derated version, to 105°C, available. This has the advantage of being lower cost than the standard version. If you should require more information on this version please contact the Sales Office.

### Mounting Information

#### PCB Terminal version

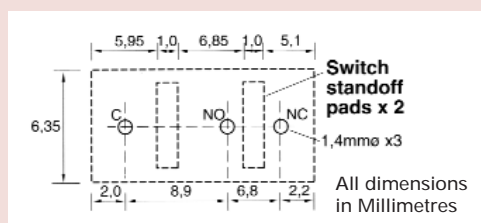
This version mounts directly onto a PCB which has been drilled as illustrated. To ensure a tight fit in the PCB during handling and flow soldering operations, the switch can be inserted into the PCB, and then the terminals may be splayed by 30° in an alternate fashion. The terminals have an in-line rectangular cross section to facilitate this, and to eliminate the reduction of creepage distances in the fitted application.

#### Solder, QC and flying lead versions

These versions have two mounting holes that accept M2,5 screws (with anti-vibration washers if relevant) tightened to a maximum torque of 0,3Nm. One of the mounting holes is slotted, to allow for a tolerance between the screw centres of  $\pm 0,15$ mm. If the switch is being mounted onto a metal surface, a separating insulator is recommended on the solder and QC versions, to ensure bare wires cannot make electrical contact.

### PCB Layout

(viewed from either side)



### Terminal Style

Solder	4
PCB	5
QC	6
Integral wire leads	7

### Contact Material

Silver	0
Gold	1

### Button Op/Release Force

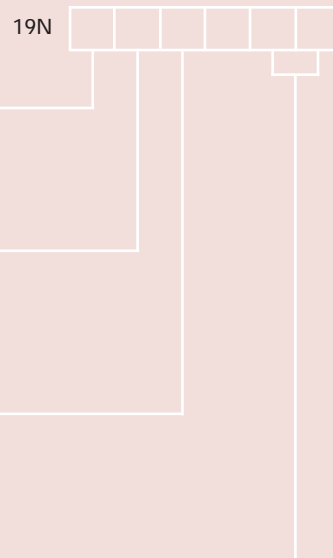
	Op force	Rel force	
Unsealed button	0,5N	0,07N	1
Sealed button	2,0N	0,27N	2
Unsealed button	1,5N	0,27N	3

### Auxiliary Actuator Fitted

None fitted	(leave blank)
Standard leaf lever	L18
Standard roller lever	R15

### Note

\* L18 represents that this lever is 18mm long (see product drawing). Non standard leaf lever lengths are available in 1mm increments from 18mm to 63mm. You may specify required lever length from between 18mm to 63mm as a non standard option. If required, please reference the Sales Office.



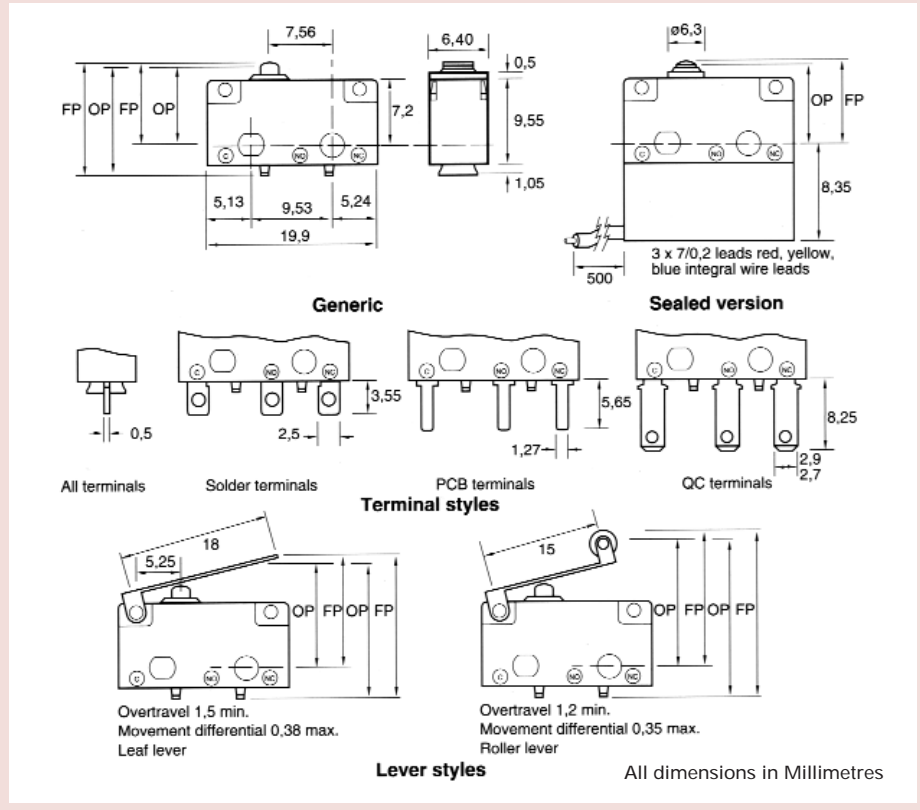
# SERIES 19N Microswitch

## Technical Information

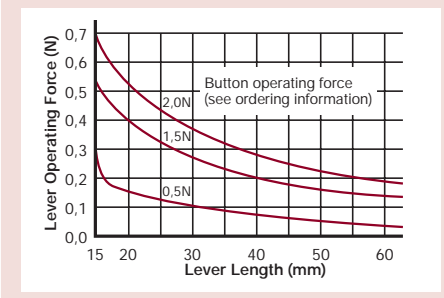
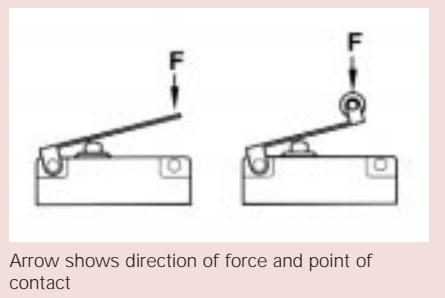
### Product Dimensions

#### Button/lever positions

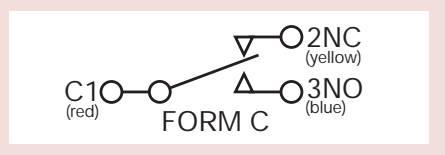
<b>Free position (F.P)</b>	
Standard switch to mounting holes	9,14 max
Standard switch to PCB	12,35 max
Sealed switch to mounting holes	9,35 max
Leaf lever to mounting holes	12,50 max
Leaf lever to PCB	15,70 max
Roller lever to mounting holes	17,20 max
Roller lever to PCB	20,40 max
<b>Operating point (O.P)</b>	
Standard switch to mounting holes	8,40 ±0,40
Standard switch to PCB	11,60 ±0,40
Sealed switch to mounting holes	8,50 ±0,40
Leaf lever to mounting holes	10,15 ±1,37
Leaf lever to PCB	13,38 ±1,37
Roller lever to mounting holes	15,50 ±1,14
Roller lever to PCB	18,25 ±1,14



### Circuit Form



### Application References



- Telephone handsets
- Automotive controls
- Joysticks
- Security/anti-tamper uses
- Small motor limit switches
- Business machines
- Thermostat and sensor controls

### Further Information

For further information on our complete range of switch products, visit our website - [www.itwswitchcon.com](http://www.itwswitchcon.com) or contact our Sales Office.



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