

# Universal Limit Switch Box

## KEY FEATURES

Offers a wide range of signalling options in a zinc alloy fully enclosed corrosion resistant case available for direct mounting onto Kinetrol rotary actuators, or discrete mounting via an industry standard VDI/VDE interface onto any make of rotary actuator. Easy to wire and set up with real industrial-quality robustness. Internally fitted options include AS interface digital communication and a 4-20 mA 2-wire modulating angle retransmit circuit.

The range of switch and terminal arrangements includes 2 or 4 switches, extra connections allowing single point termination of wiring for limit switches and solenoid valves, ATEX approved Eexed (Category 2) explosion proof and Eexia intrinsically safe packages (Category 1). Integral sealed Clear Cone Monitor and red / green LED indicator options also give excellent external visual indication of position.

**COUPLING** – Made from strong plated steel with striker clamps in reinforced polymer, easily adjusted using a screwdriver. Kinetrol direct mount options employ female squares fitting onto a standard actuator, while the VDI-VDE interface option has a standard male drive interface and the Kinetrol discrete option has a simple male drive square. Special strikers with metal inserts are used with inductive proximity sensor options. The angle retransmit option uses a special coupling with a gear form on its outer diameter, which engages with a sprung gear on the pot shaft to give a backlash free drive.

**OPTIONAL ANGLE RETRANSMIT** – Integrated assembly comprising circuit, feedback pot and drive gear fits inside standard box. Loop powered 2-wire circuit passes 4 – 20 mA current proportional to 0-90° position of actuator. Powered by 14 to 30v DC supply. High quality servo-pot with ball bearings plus anti-backlash spring gives long life and high precision. Circuit has zero and span adjustments for easy ranging.

**OPTIONAL AS INTERFACE CIRCUIT** – Fits inside standard box to give control and monitoring by serial communication of up to 31 actuators (61 for certain applications). All power and communications for circuits and actuator solenoid valves can be carried via one 2-wire cable. See KF-496 for full details.

**LED INDICATORS** – Bright red and green LED inserts can be attached via four M3 screws to the standard conduit entries on the limit switch box, sealed on by integral O-rings. 110-240 v AC, 12-24 v DC and AS Interface compatible options are available, to give clear bright external signalling of actuator position.

**ENCLOSURE** – Made of robust epoxy-coated zinc alloy, with O-ring sealing. Low level joint line gives best access to connectors and adjustments. 2 or 4 conduit entry options are available, to cover all requirements with least weight and maximum simplicity.

**CLEAR CONE MONITOR** – Externally visible position indication shows open-shut status and/or angular position viewed from any angle above the lid – made of robust transparent polymer fully sealed onto the metal lid. A special option for extra chemical resistance is available.

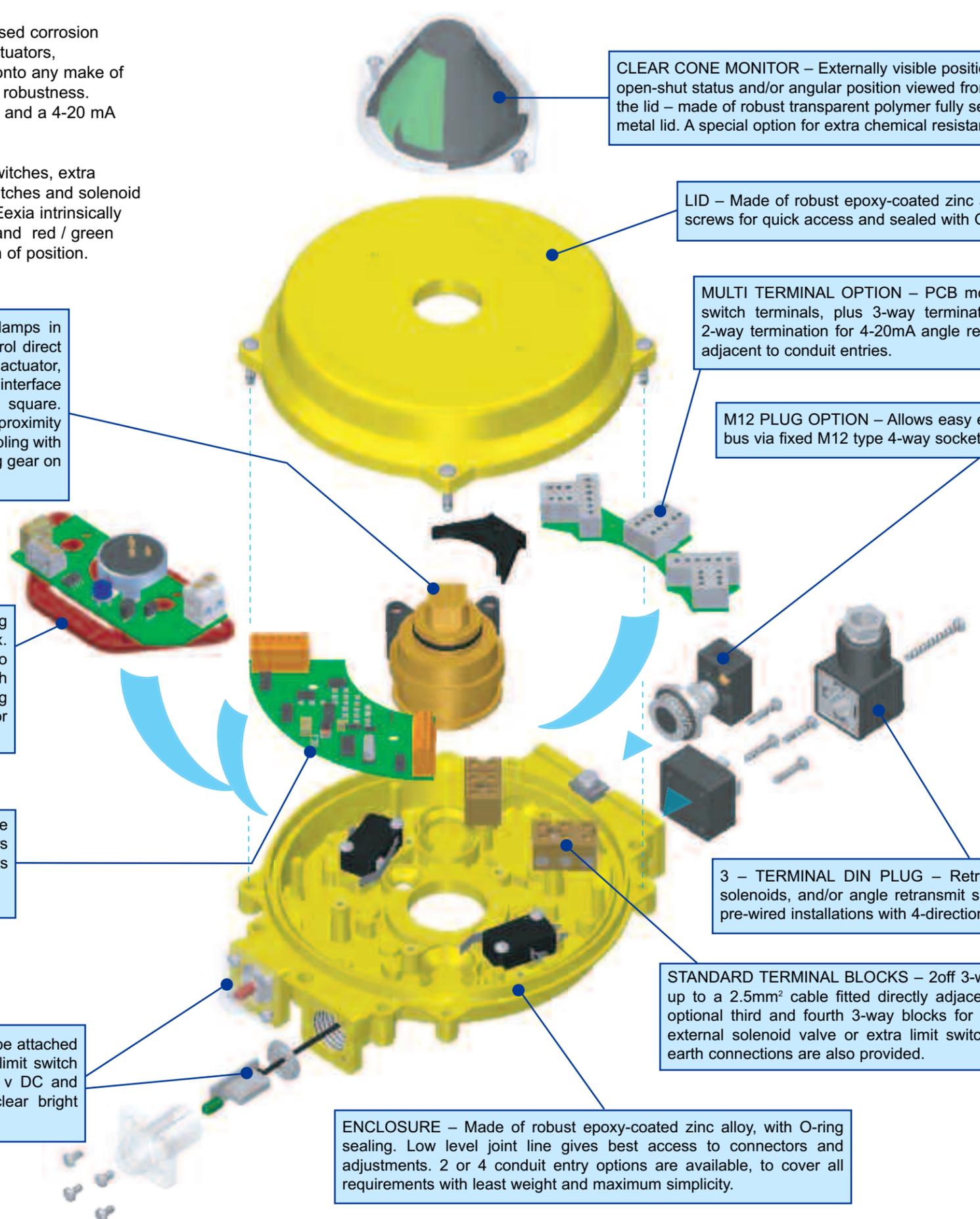
**LID** – Made of robust epoxy-coated zinc alloy, held on by four captive screws for quick access and sealed with O-ring.

**MULTI TERMINAL OPTION** – PCB mounted option gives 4 x 3 way switch terminals, plus 3-way termination for external solenoid and 2-way termination for 4-20mA angle retransmit wiring, all immediately adjacent to conduit entries.

**M12 PLUG OPTION** – Allows easy external connection of AS interface bus via fixed M12 type 4-way socket in conduit entry.

**3 – TERMINAL DIN PLUG** – Retrofittable option for limit switches solenoids, and/or angle retransmit signal allowing rapid connection of pre-wired installations with 4-direction adjustability.

**STANDARD TERMINAL BLOCKS** – 2off 3-way blocks accommodating up to a 2.5mm<sup>2</sup> cable fitted directly adjacent to conduit entries, plus optional third and fourth 3-way blocks for single point termination of external solenoid valve or extra limit switches. Internal and external earth connections are also provided.



- All units sealed to IP65 / NEMA 4X IP67 versions available.
- Robust corrosion resistant epoxy painted diecast zinc alloy box.
- Easy and accurate setting of switch position.
- Available for direct mounting to Kinetrol models 03 to 14, for minimum height.
- Quick access No special tools required.
- Discrete VDI/VDU (NAMUR) interface option for use with industry standard actuators.
- Two or four cable entries as standard to allow back wiring of solenoid valves.
- Many switch options available for general and hazardous areas.
- AS interface bus circuit option inside box reads up to 4 switch inputs, drives up to 2 solenoids powered by bus only. (see KF 496).
- Optional clear cone monitor available.
- Integral LED indicator lamps and angle retransmit circuit options are available.

## SPECIFICATION

**CASING** - Precision diecast zinc alloy.

**FINISH** - Epoxy stove enamel.

**SEALS** - Nitrile rubber 'O' ring seals.

**WEIGHT** - 1.4Kg.

### CABLE ENTRY OPTIONS -

M20 x 1.5 Conduit thread

1/2" 14 NPS Conduit Thread

4 Way plug DIN 43650A

(fits any of above)

4 Way M12 Connector

(M20 Conduit only)

### TEMPERATURE RANGE -

SWITCH OPTION	AMBIENT TEMPERATURE RANGE
004, 007	-40°C to +80°C
001, 002, 006, 008, 009	-20°C to +80°C
00E	-25°C to +80°C
005, 00N	-25°C to +70°C
003	-20°C to +70°C

High temperature seal optional available up to 100°C

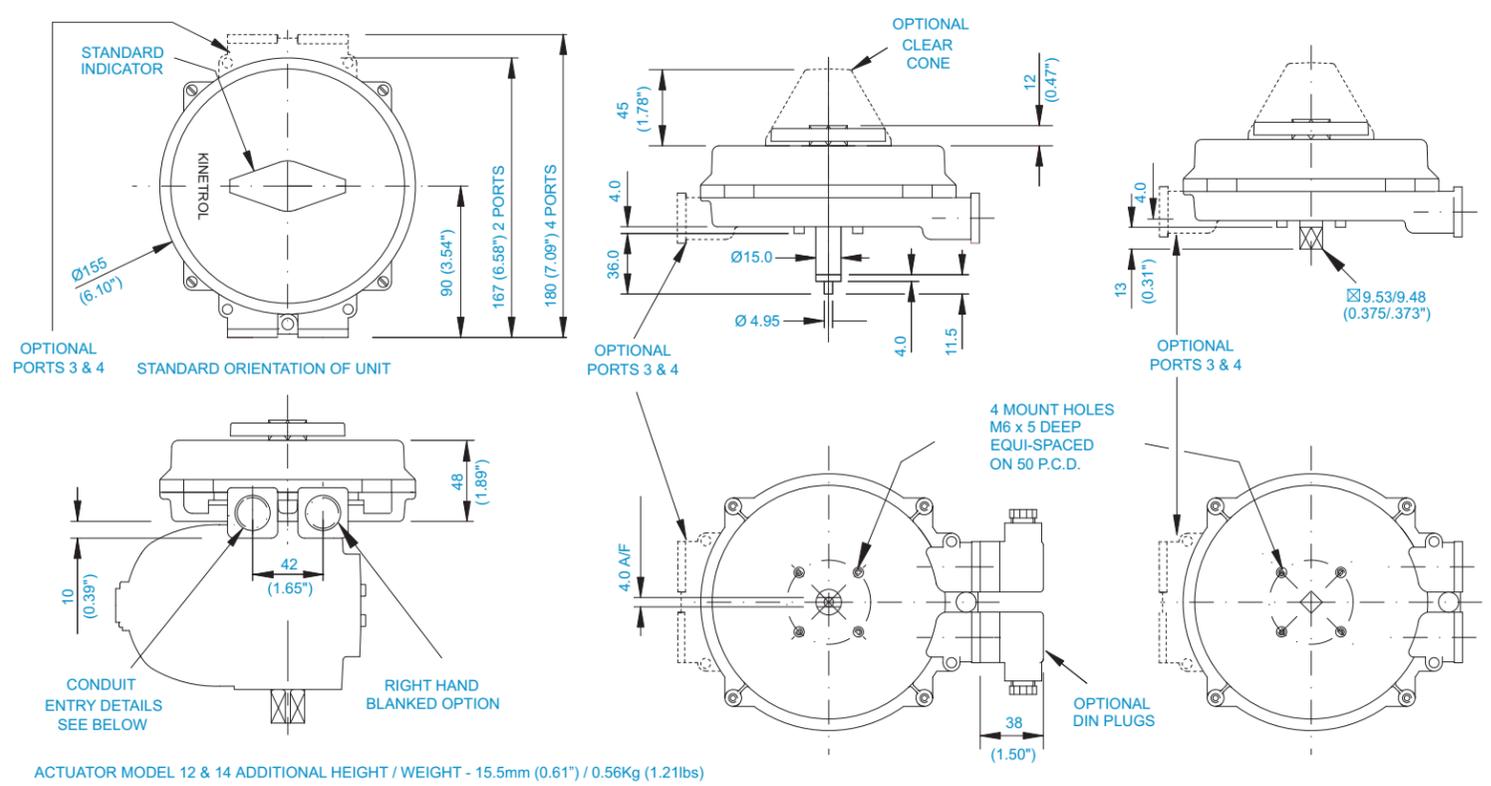
### LOAD RATINGS FOR STANDARD MICROSWITCHES MULTIPLICATION FACTORS

VOLTAGE	RESISTIVE LOAD
125 V ac	15 A
250 V ac	15 A
up to 12 V dc	15 A
up to 24 V dc	10 A
up to 48 V dc	3 A
up to 250 V dc	0.25 A

### FOR NON-RESISTIVE LOADS

Steady state tungsten lamp load - x 0.1  
 Steady state inductive load - x 0.2  
 Peak Inductive load - x 1.0

**DIMENSIONS**



ACTUATOR MODEL 12 & 14 ADDITIONAL HEIGHT / WEIGHT - 15.5mm (0.61") / 0.56Kg (1.21lbs)

*Direct Mount Option*      *Namur Discrete Mount Option*      *Kinetrol Discrete Mount Option*

**ORDERING CODES**

**STANDARD SWITCH OPTIONS**  
 0=CONTACT KINETROL FOR DETAILS  
 1=2x V3 i-SAFE PROXIMITY SENSORS ATEX  
 2=2x PNEUMATIC SWITCHES ATEX  
 3=2x SWITCHES EExe II T6 CERTIFIED ATEX  
 4=2x V3 SPDT SWITCHES\*  
 5=2x 20-250Vac PROX. SENSORS\*  
 6=2x10-60Vdc PROX.SENSORS\*  
 7=4x V3 SPDT SWITCHES\*  
 8=2x SLOTTED PROX SENSORS\*  
 9=2x V3 SPDT i-SAFE (GOLD PLATED) ATEX  
 A=4x CODE 1 SENSORS 7.5-30Vdc\*  
 B=4x CODE 5 SENSORS\*  
 C=4x CODE 6 SENSORS\*  
 D=4x CODE 9 SWITCHES\*  
 E=2x V3 20-140Vac / 10-140Vdc INDUCTIVE SENSORS\*  
 F=4x CODE E SENSORS\*  
 N=2x 10-30Vdc PNP 3 WIRE PROX. SENSORS\*

**B=WITH ASI BUS \* (See KF-496)**  
**C=ASI EXTENDED ADDRESSING, OUTPUTS DISABLED\***  
**D=ASI EXTENDED ADDRESSING, OUTPUTS ENABLED\***  
**E=ASI EXTENDED ADDRESSING, OUTPUTS ENABLED, SEPERATE POWER SUPPLY\***  
**U=WITHOUT ELECTRONICS**  
**R=WITH ANGLE RETRANSMIT\***  
**P=WITH POTENTIOMETER\***

**0=NO ACTUATOR**  
**1=ACTUATOR**

**4=M20 (ISO)**  
**7=1/2" NPS**

**SPRING OPTIONS**  
 0=NO SPRING  
 2=CW SPRING  
 3=ACW SPRING

**0=NO ANGLE RETRANSMIT**  
**1= ANGLE RETRANSMIT CW\***  
**2= ANGLE RETRANSMIT ACW\***

**0=DIRECT MOUNT UNIT**  
**1=DISCRETE UNIT WITH KINETROL SQUARE**  
**2=DISCRETE UNIT WITH NAMUR INTERFACE**  
**3=DISCRETE UNIT WITH KINETROL SQ.+HI TEMP SEALS**  
**4=DISCRETE UNIT WITH NAMUR INTERFACE+HI TEMP SEALS**  
**5=DIRECT MOUNT BOX+HI TEMP SEALS**

**0=2X3 CONNECTION TERMINAL BLOCKS**  
**4=3X3 CONNECTION TERMINAL BLOCKS**  
**5=4X3 CONNECTION TERMINAL BLOCKS**  
**6= MULTI-TERMINAL PCB (5x3 + 1x2)\***

**M=CLEAR CONE MONITOR - STANDARD \***  
**R=CLEAR CONE MONITOR - EXTRA CHEMICAL RESISTANCE \***  
**ATEX MONITOR AVAILABLE CONTACT KINETROL FOR DETAILS**

**0=NO LED FITTED**  
**1=2 LED'S RED + GREEN 240 / 110 V ac\***  
**2=2 LED'S RED + GREEN 12 / 24 V dc\***  
**3=2 LED'S RED + GREEN WITH ASI BUS\***

**1=2 ENTRIES - 2 TRANSIT PLUGS**  
**2=2 ENTRIES - 1 TRANSIT, 1 BLANKED (R.H.)**  
**3=2 ENTRIES - DIN PLUGS \***  
**4=2 ENTRIES - DIN PLUG, 1 BLANKED (R.H.) \***  
**5=4 ENTRIES - 4 TRANSIT PLUGS \***  
**6=4 ENTRIES - 3 TRANSIT, 1 BLANKED (R.H.) \***  
**7=4 ENTRIES - 4 DIN PLUGS\***  
**8=4 ENTRIES - 3 DIN PLUGS, 1 BLANKED (L.H.)\***  
**9=4 ENTRIES - 2 DIN PLUGS, 1 BLANKED (L.H.), 1 TRANSIT\***

**PLUG OPTIONS FOR ASI INTERFACE\***  
**A=M12 PLUG FOR ASI INTERFACE & TRANSIT (RH)**  
**B=M12 PLUG, M12 SOCKET WITH ASI CABLE CLAMP & TRANSIT (RH)**  
**C=M12 PLUG FOR ASI INTERFACE & BLANK (RH)**  
**D=M12 PLUG, M12 SOCKET WITH ASI CABLE CLAMP & BLANK (RH)**  
 Unless otherwise specified M12 plug will always be connected on the left side port

**EXAMPLES:**  
 054 - 001U001000 = 05 ULS BOX WITH 2 X V3 i-SAFE PROXIMITY SENSORS, 2 TRANSIT PLUGS & 2 X 3 WAY TERMINALS - ATEX APPROVED  
 054 - 001R011000 = 05 ULS BOX WITH 2 X V3 i-SAFE PROXIMITY SENSORS, 2 TRANSIT PLUGS & 2 X 3 WAY TERMINALS, AR CW - NOT APPROVED  
 074 - 004R022000 = 07 ULS BOX WITH 2 X V3 SPDT SWITCHES + 1 TRANSIT & 1 BLANKING PLUG & ANGLE RETRANSMIT ACW - NOT APPROVED  
 074 - 004U001200 = 07 ULS BOX WITH 2 X V3 SPDT SWITCHES + 2 TRANSIT PLUGS + LED'S RED / GREEN 12 / 24 V dc - NOT APPROVED  
 074 - 009C001000 = 07 ULS BOX WITH 2 X V3 i-SAFE MECH.SWITCHES G / PLATED, ASI WITH EXTENDED ADDRESSING OUTPUTS DISABLED + 2 TRANSIT PLUGS - NOT APPROVED  
 094-124B00A00M = 09 SPRING RETURN ACTUATOR & ULS BOX WITH 2 X V3 SPDT SWITCHES + STANDARD ASI & ASI TERMINALS + M12 PLUG +TRANSIT PLUG + CLEAR CONE MONITOR - NOT APPROVED  
 074 - 009B001300 = 07 ULS BOX WITH 2 X V3 i-SAFE MECH.SWITCHES G / PLATED, STANDARD ASI + 2 TRANSIT PLUGS & ASI TERMINALS + 2 LED'S RED & GREEN - NOT APPROVED

Further switch options are available upon request - contact Kinetrol for details

# KINETROL



**The Universal Limit Switch Box**