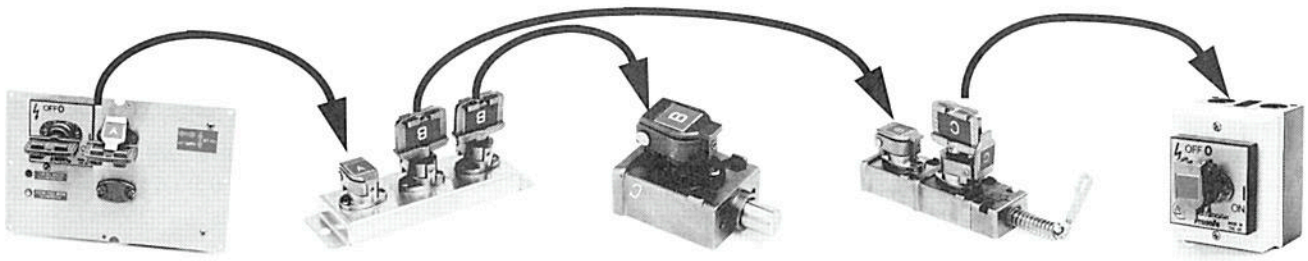
Illustrated Principles of Trapped Key Interlocking



A
ETU
Isolator with timed delay key release

A B B
KEX
Trapped key 'A' Locking off ETU, Release access door lock, key 'B'.

B
SBL
'B' key in to retract bolt from guard door.

B C
DAL
'B' key in then 'C' key out to open guard door.

C
RKS
To energize robot teach mode.

Sequence of Operation

1. The ETU isolator has two keys. One is a non removable key. The other key (a 'A' coded key) can be removed after a timed duration, which is set by a potentiometer inside the ETU isolator. Turn the non removable key to turn the hazardous machine motion off and start the timer. When the time expires, the Key Free LED turns ON. Remove the 'A' key.
2. Insert the 'A' key into the Key Exchange Unit (KEX) and turn it 90°.
3. Turn one of the 'B' keys 90° and remove it from the KEX. This traps the 'A' key in the KEX and prevents the restarting of the machine.
4. Insert the 'B' key into the Single-key Bolt Lock (SBL) and turn it 90° to gain partial body access to the machine.
5. Turn the second 'B' key 90° and remove it from the KEX. Removal of this key also traps the 'A' key in the KEX and prevents the restarting of the machine.
6. Insert the 'B' key into the Dual-key Access Lock (DAL) and turn it 90°.
7. Turn the 'C' key 90° and remove the 'C' key. Rotate the access handle to allow full body entry into the hazard zone.
8. Take the 'C' key into the hazard zone, insert it into the rotary key switch (RKS) and turn it 90° to send a signal to the machine control system, to allow the machine to operate in a slow or teach mode.
9. Reverse the process to return the machine to full operational mode.

Bill of Materials

Item	Quantity	Description	Catalogue Number
1	1	Single Key Time Delayed with an B Primary Key	**440T-MSTUE110A**
2	1	Key Exchange Unit, A Primary Key, Two B Secondary Keys Trapped (included)	**440T-MKEXE110A0B0B**
3	1	Single Bolt Lock, B Primary Key	**440T-MSBLE100B**
4	1	Dual Access Lock, B Primary Key, C Secondary Key Trapped (included)	**440T-MDALE100B0C**
5	1	Rotary Key Switch, C Primary Code Barrel	**440T-MRKSE100C**
6	1	A Key	**440T-AKEYE100A**

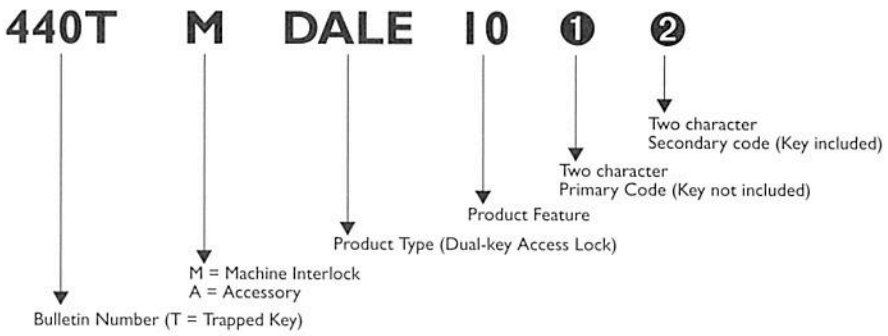
Note: Primary keys must be ordered separately, when not provided for by a previous sequential trapped key.
In the example above, only one primary key must be ordered separately. The remaining primary keys are provided by a previous sequential secondary (trapped) key.

Code Selection

Ordering Prosafe trapped key products requires codes to be included in the catalogue number.

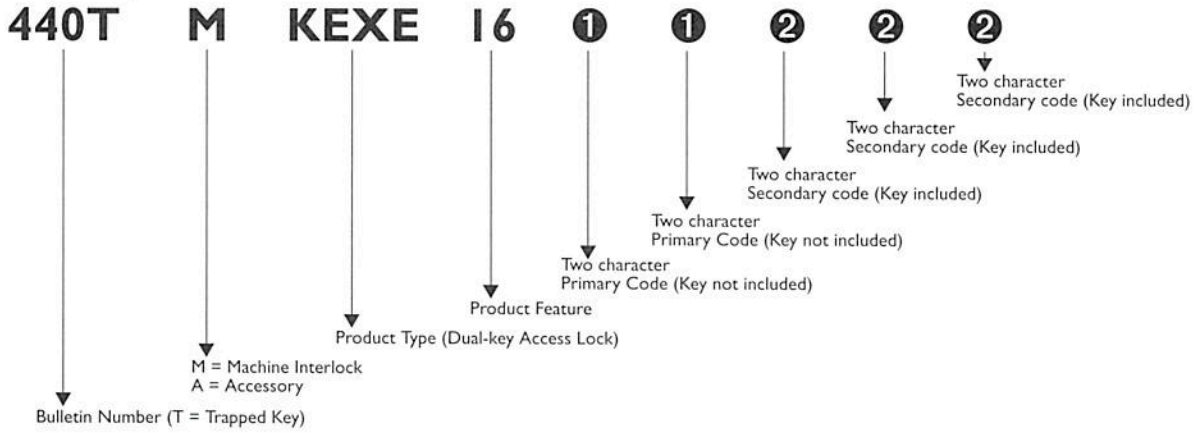
- The codes are added to the end of the catalogue number.
- Each code must be two characters in length.
- Single letter codes must be preceded by a 0 (zero).
- The first code(s) is the primary code and the last code(s), if necessary, are the secondary code(s).
- Primary codes do not include the key. The key must be ordered separately or must come from a previous operation.
- Secondary codes come complete with a key, as the key is trapped in the code barrel.
- Use the table on page 5-7 to select and track codes.

Ordering Example 1:



Order catalogue number 440TMDALE100A0B to get a Dual key Access Lock with an "A" primary code and a "B" secondary code, with a "B" key included.

Ordering Example #2:



Order catalogue number 440TMKEXE160A0B0C0C0C to get a key exchange unit with "A" and "B" primary codes and three "C" secondary codes. The "A "and "B" keys are not included. The three "C" keys, which are trapped in the secondary code barrels, are included.

The Prosafe Advantage

Stainless steel construction.

Key Coding

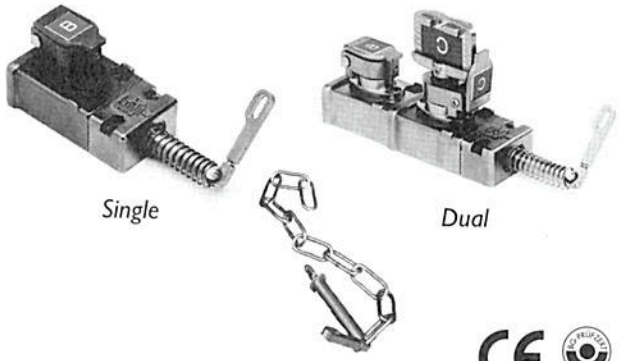
Below is an example reference guide that is useful in selecting and tracking codes. Start down the 0A column as the lower codes (typically 0A to ZA) are stocked. The chart continues on to ZZ. Note that there only 25 letters used—Q is not used.

Codes are ordered with upper case letters. Labels with two letter codes will show the first letter in upper case and the second letter in lower case.

	Code	Application & Date	Code	Application & Date	Code	Appli & Da
Start Down	0A	granulator machine #472 24/3/01	Aa		Ab	
	0B		Ba		Bb	
	0C		Ca		Cb	
	0D	ine 67	Da		Db	

	Code	Application & date	Code	Application & date	Code	Application & date	Code	Application & date	Code	Application & date	Code	Application & date	Code	Application & date
Start Down	0A		Aa		Ab		Ac		Ad		Ae		Af	
	0B		Ba		Bb		Bc		Bd		Be		Bf	
	0C		Ca		Cb		Cc		Cd		Ce		Cf	
	0D		Da		Db		Dc		Dd		De		Df	
	0E		Ea		Eb		Ec		Ed		Ee		Ef	
	0F		Fa		Fb		Fc		Fd		Fe		Ff	
	0G		Ga		Gb		Gc		Gd		Ge		Gf	
	0H		Ha		Hb		Hc		Hd		He		Hf	
	0I		Ia		Ib		Ic		Id		Ie		If	
	0J		Ja		Jb		Jc		Jd		Je		Jf	
	0K		Ka		Kb		Kc		Kd		Ke		Kf	
	0L		La		Lb		Lc		Ld		Le		Lf	
	0M		Ma		Mb		Mc		Md		Me		Mf	
	0N		Na		Nb		Nc		Nd		Ne		Nf	
	0O		Oa		Ob		Oc		Od		Oe		Of	
	0P		Pa		Pb		Pc		Pd		Pe		Pf	
	0R		Ra		Rb		Rc		Rd		Re		Rf	
	0S		Sa		Sb		Sc		Sd		Se		Sf	
	0T		Ta		Tb		Tc		Td		Te		Tf	
	0U		Ua		Ub		Uc		Ud		Ue		Uf	
	0V		Va		Vb		Vc		Vd		Ve		Vf	
	0W		Wa		Wb		Wc		Wd		We		Wf	
	0X		Xa		Xb		Xc		Xd		Xe		Xf	
	0Y		Ya		Yb		Yc		Yd		Ye		Yf	
	0Z		Za		Zb		Zc		Zd		Ze		Zf	

Access/Chain Interlocks



BIA 974016

Specifications

Standards	EN292-1&2, EN1088, ISO12100-1&2, ISO14119, AS4024.1
Category	Cat. 1 per EN 954-1 (ISO 13849-1) Suitable for Cat. 2, 3, or 4 systems
Approvals	BG, CE marked for all applicable directives, and C-Tick not required
Misalignment	+/-10mm (0.39in)
Max. Shear Force to Key	15.1kN (3398lbs)
Max. Torque to Key	14Nm (124lb•in)
Operating Temperature	-40°C to +200°C (-40°F to +392°F)
Humidity	95% RH
Material	316L stainless steel
Mounting	
SAL and SCL	2 or 4 x M5 Counterbored from Top or 2 or 4 x M5 from Underside with Nuts
DAL and DCL	4 or 6 x M5 Counterbored from Top or 4 or 6 x M5 from Underside with Nuts
Weight	
SAL and SCL	0.8kg (1.8lbs)
DAL and DCL	1.35kg (3lbs)
Mechanical Life	100,000

Description

The access interlocks are designed to allow access to hazardous areas when an appropriate key is inserted into the interlock. These access interlocks are manufactured in 316L stainless steel to provide rugged, industrial grade method of helping prevent access through gates. They are actuated by either a lever or a rod which is connected to chain.

One advantage of the access interlocks is that there is no need to run power wires to the gate. Power is disconnected by a trapped key rotary switch on a control panel and the key is then hand-carried to the gate by the operator.

The Single key Access interlock (SAL) and Single-key Chain lock (SCL) are designed to be used to access hazardous areas where partial body exposure is required. If two keys are needed for partial body access, select the dual-key access interlock (DAL) or dual-key chain lock (DCL) with both keys trapped.

When whole body access is needed, the DAL or DCL, with one key trapped and one key free should be used. The secondary key serves the function of a personnel key. The DAL and DCL allow the operator to carry the personnel key into the hazardous area. When the operator returns from the hazardous area and returns the personnel key to the DAL or DCL, the locking sequence can be reversed and the process restarted.

Features

- 316L Stainless steel construction
- Single and dual key units
- Direct drive operation
- Fitted with tamper resistant screws
- Stainless steel dust cap as standard
- Replaceable code barrel assembly

The Prosafe Advantage

Stainless steel construction.

Product Selection

Operation	Actuator	Key Condition	Catalogue Number
Single Key	Lever	Key trapped to release lever	440T-MSALE10❶
	Chain	Key trapped to release chain	440T-MSCLE10❶
Dual Key	Lever	Primary key trapped, secondary key free to release lever	440T-MDALE10❶❷
		Both keys trapped to release lever	440T-MDALE11❶❶
	Chain	Primary key trapped, secondary key free to release chain	440T-MDCLE10❶❷
		Both keys trapped to release chain	440T-MDCLE11❶❶

❶ Substitute the desired primary code for this symbol (key not included). See page 5-6 for code selection.
❷ Substitute the desired secondary code for this symbol (key included). See page 5-6 for code selection.

Accessories

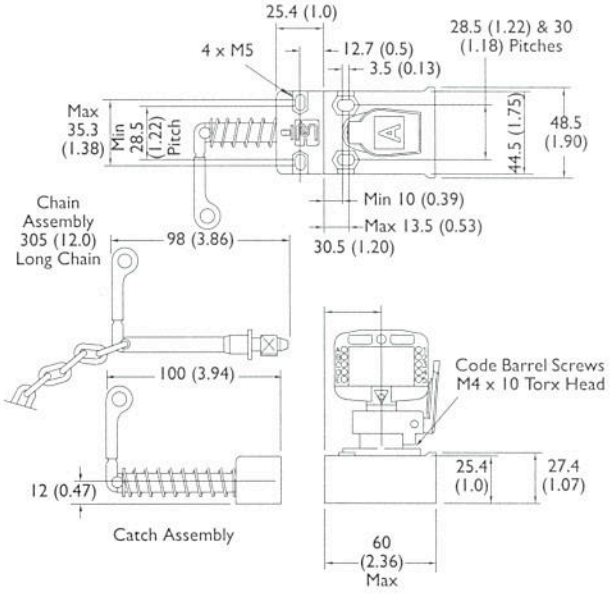
Description	Page Number	Catalogue Number
Replacement Key	5-33	440T-AKEYE10⊗
Replacement Code Barrel		440T-ASCBE14❶
Replacement Dust Cap		440T-ASFC10⊗
Replacement Spare Block Catch	—	440T-ACAD10
Replacement Spare Chain Catch	—	440T-ACHA10

❶ Substitute the desired primary code for this symbol (key not included). See page 5-6 for code selection.
⊗ Substitute the desired code for this symbol. See page 5-6 for code selection.

Approximate Dimensions

Dimensions are not intended to be used for installation purposes.

Single Key Access Interlock



Dual Key Access Interlock