



## Process interlocking

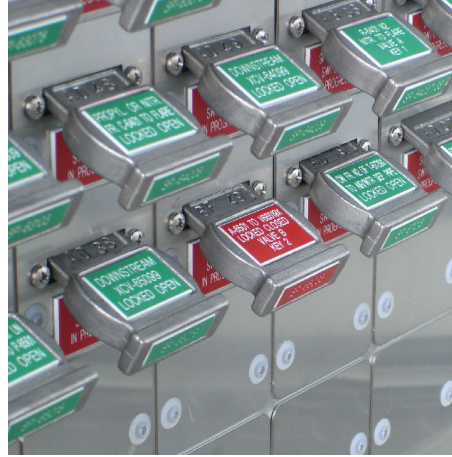
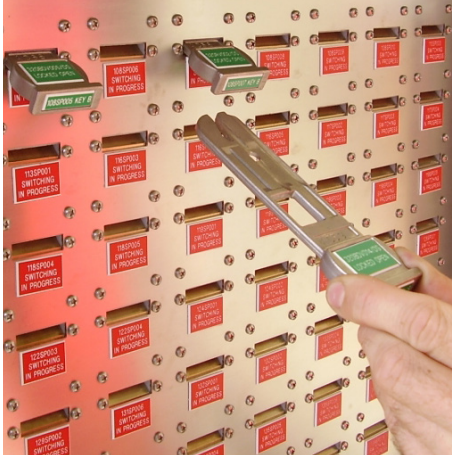
Mechanical interlocking prevents human error by guiding the operator through a predefined operating sequence. Interlocks are based on the principle of the exchange of unique keys, which only allow the right valves to be operated in the correct, predefined order.

## Key Cabinets

Netherlocks key cabinets enable tidy storage of starting keys for mechanical interlocks. The transparent, non-combustible door and diagonal key insertion create a clear visual status indication of all interlocked systems. Beside the conventional cabinet, Nether locks also offers electronic key cabinets, enabling enhanced communication and authorization.

Version date 22072014

[www.netherlocks.com](http://www.netherlocks.com)



## Compact Key Cabinet - CKC

- > Stores operating keys of interlocked systems
- > Dedicated, uniquely coded key positions
- > Tagplates in cabinet indicate system status when key is absent
- > Tagplates of inserted keys indicate system status due to diagonal key entry
- > Lockable, transparent door

Each key position is hard-coded so each interlocked system has a dedicated spot in the cabinet. Keys belonging to a specific interlock system can only be inserted in key position dedicated for that system.

The Compact Key Cabinet offers an immediate visual identification of the status of the valves and related systems.

The Compact Key Cabinet is available in different sizes and is wall mounted by standard. Pedestals in various sizes can be delivered as an option.





## Electronic Key Cabinet – EKC

Various electronic components are added to a key cabinet, in order to increase the communication and authorization possibilities. These options can be offered separately or combined.

- > Similar design as CKC
- > Uniquely coded key positions
- > Provides digital information about presence of keys, indicating valve position and system status.
- > Enables electronic authorization for key release, from PLC or DCS
- > Lights visually indicate whether keys can be taken from the cabinet

### Key detection

Sensors detect the presence of keys in the cabinet. This signal is forwarded to the DCS, providing information about the valve position and the status of the interlocked system.

The digital signal about key presence offers system status information to the DCS or SIS. This option also offers an alternative to conventional valve position indicators.

### Authorized key release

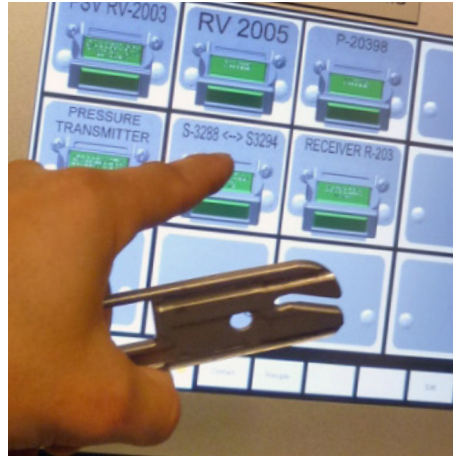
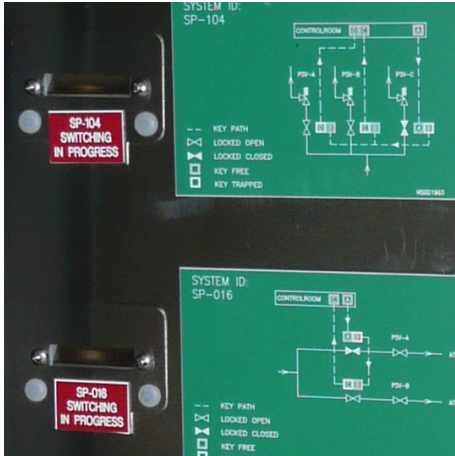
Solenoids trap the keys in the cabinet until they are authorized to release the keys. This authorization may be based on system parameters, such as pressure, MOV positions or simply by pushing a remote button.

### Visual operator guidance

Illuminated push buttons offer guidance to an operator. They illuminate only when a key is authorized to be released from the cabinet.

An EKC enables integration of a stand-alone interlocking system into the overall process control system (DCS) or process safety system (SIS). Thus both manual and automated process operations are part of one integral system for control and safety.





## Communication options

Key cabinets can be equipped with various options that offer information and guidance to the operator.

### Mimic panels

Resopal or stainless steel panels depicting typical sequence drawings. With these panels mounted in the key cabinet, operators can check the applicable operating sequence when they withdraw an operating key from the key cabinet.

### ISI Touch Screen

ISI stores all relevant information about your interlocks in one place. ISI can be installed in a stand alone cabinet, integrated in a key cabinet or panel mounted.

Push on one of the depicted start keys and retrieve detailed information about the respective system:

- > system name and location
- > operating sequence
- > P&ID

Additional information available:

- > Netherlocks contact details
- > general interlocking information and instructions





## CKC / EKC data sheet

### SPECIFICATIONS

Body	Door	Lock	Coating	Key position plate	Installation	Tagplates	IP rating	ATEX
Steel powder coated	Steel powder coated Security glass	3mm double bar lock	Epoxy-polyester powder (RAL 7035)	SS 304	Wall-mounting	Polymethyl methacrylate	IP66	Ex-i
Optional: SS 304 SS 316					Optional: Foot (15/60 cm)			

### KEY POSITIONS

#### Key position types

Standard

1 microswitch V5

1 microswitch V5 + 1 LED light 24V DC

1 microswitch V5 + 1 LED light 24V DC + 1 solenoid 24V DC

2 microswitches (V5 and SS)





**CKC CABINET SIZES**

Model	Max # keys	Size cabinet (mm)	Lay-out
CKC-8	8	300x300x150	4x2
CKC-12	12	300x300x150	4x3
CKC-18	18	400x300x200	6x3
CKC-32	32	500x400x200	8x4
CKC-50	50	600x400x200	10x5
CKC-72	72	700x500x250	12x6
CKC-112	112	800x600x250	14x8
CKC-165	165	1000x800x300	15x11
CKC-198	198	1000x800x300	18x11
CKC-252	252	1000x1000x300	18x14
CKC-308	308	1200x1200x300	22x14

**EKC CABINET SIZES**

Model	Max # keys	Size top cabinet (mm)	Size terminal housing cabinet (mm)	Lay-out
EKC-12	12	500x400x200	-	4x3
EKC-24	24	700x500x250	-	6x4
EKC-40	40	800x600x250	-	8x5
EKC-70	70	1000x800x300	-	10x7
EKC-105	105	1000x800x300	800x800x300	15x7
EKC-135	135	1000x1000x300	1000x800x300	15x9
EKC-162	162	1200x1000x300	1000x800x300	18x9
EKC-189	189	1400x1000x300	1000x800x300	21x9





### EKCS (SOLENOID) CABINET SIZES

Model	Max # keys	Size top cabinet (mm)	Size terminal housing cabinet (mm)	Lay-out
EKCS-9	9	600x400x200	-	3x3
EKCS-16	16	700x500x250	-	4x4
EKCS-25	25	800x600x250	-	5x5
EKCS-42	42	1000x800x300	-	6x7
EKCS-56	56	1000x800x300	800x800x300	8x7
EKCS-72	72	1000x1000x300	1000x800x300	8x9
EKCS-90	90	1200x1000x300	1000x800x300	10x9
EKCS-108	108	1400x1000x300	1000x800x300	12x9

### CERTIFICATION

#### Certificate

IP66 (single door)

IEC 62208 - International standard for electric power enclosures

UL508A and CAN CSA C22-2 no. 14 - Standards for industrial equipment and UL classification

Marine environment classification or approval or protection and resistance to vibrations, according to Lloyd's Register, Bureau Veritas - Marine division, Det Norske Veritas and Germanischer Lloyd

European directive no. 94/9/EC, EN60079-0 and -7, EN61241-0 and -1 - ATEX





### COATING PROPERTIES (GENERAL)

Property	
Coating type	<ul style="list-style-type: none"> <li>&gt; Thermosetting polyester resins based powder coating modified by epoxy resins and designed for decoration and to prevent corrosion</li> <li>&gt; Performance of this coating is superior to conventional epoxy powders in terms of colour stability, temperature resistance and weather resistance</li> <li>&gt; Grey RAL 7035, appearance: structured</li> </ul>
Physical properties	Temperature resistance –40 °C and 100 hours at +150 °C (colour: white)
Resistance to corrosion	Compliance with standard IEC 62208 for outdoor installations: 288 h of humid heat and 336 h of salt mist
Accelerated aging	Standard IEC 62208: 500h UV according to ISO 4892 (method A, adherence of the coating with minimum retention of 50% on the grid according to ISO 2409)
Fire behaviour	<ul style="list-style-type: none"> <li>&gt; Class M1 (self-extinguishing material)</li> <li>&gt; Class M0 (for coating on a metal base)</li> </ul>

### COATING PROPERTIES (MECHANICAL)\*

Property		
Bonding (scratching and adhesive tape)	ISO 2409	Class 1
Ericksen stamping	ISO 1520	≥ 7 mm
Direct impact resistance	ISO 6272	> 1 kg/70 cm
Indirect instance resistance	ISO 6272	> 1 kg/20 cm
Bending around conical mandrel	ISO 6860 - ASTM D 522-88	Maximum cracking of 70 mm, without the paint coming loose

\* Test conditions: steel samples with a thickness of 1 mm, degreasing using biodegradable surface-active agents, film thickness: 60 microns

