Фиксаторы SITEMA серии KFHS

Технические характеристики

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Киргизия (996)312-96-26-47
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Россия (495)268-04-70
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Казахстан (772)734-952-31
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

www.sitema.nt-rt.ru || sqm@nt-rt.ru

Technical Data Sheet TI-F55
Locking Units series KFHS (with DGUV approval)

For a detailed functional description refer to *"Technical Information TI-F10"*.
Further important practical advice is given in *"Operating Manual BA-F55"*.

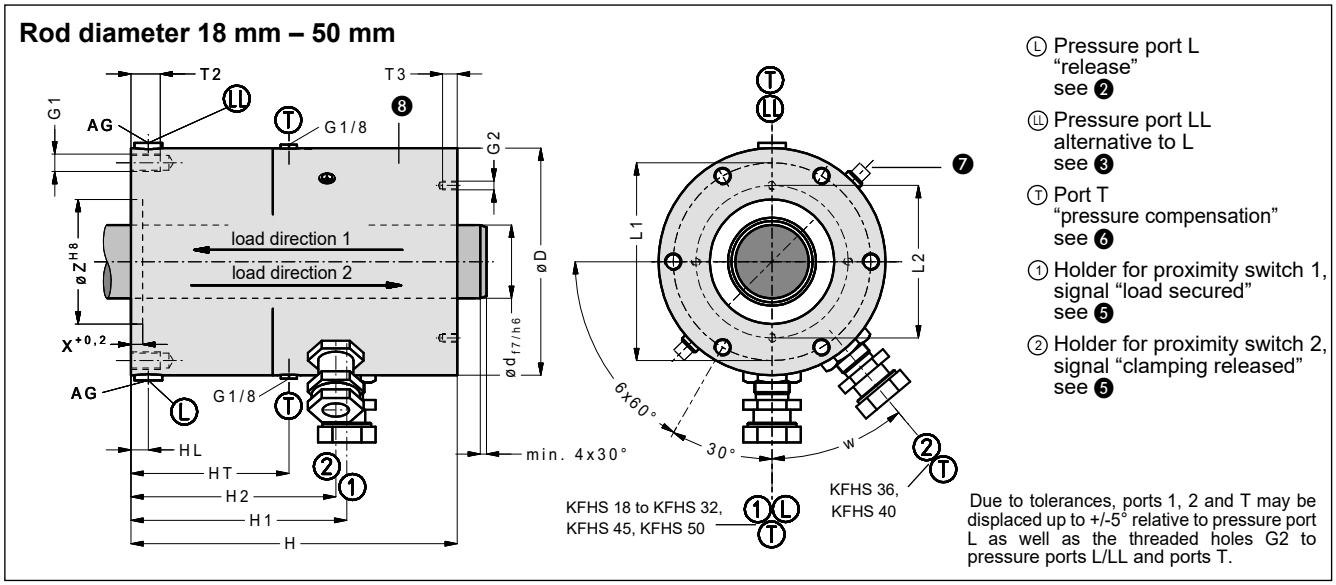


Fig. 1: Dimensions Locking Unit KFHS

Type	ID no.	d	M ❶	p ❷	D	H	L1	L2	T2	T3	G1	G2	Z	X	AG	V ❹	HL	H1	H2	HT	w	Wgt
	(order no.)	*mm*	*kN*	*bar*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*			*mm*	*mm*		*cm³*	*mm*	*mm*	*mm*	*mm*		*kg*
KFHS 18	KFHS 018 70	18	5	70	71	137	60	34	12	8	6xM6	4xM4	30	4	G1/8	6	29	105	98	68	45°	4
KFHS 25	KFHS 025 70	25	10	100	95	140	82	44	15	10	6xM8	4xM6	50	6	G1/8	11	19	89.5	83	62	35°	6
KFHS 28	KFHS 028 70	28	17	100	115	178	96	63	18	10	6xM10	4xM6	60	6	G1/4	18	20	118	112	94	30°	12
KFHS 32	KFHS 032 70	32	17	100																		
KFHS 36	KFHS 036 70	36	25	100	138	200	115	80	18	14	6xM10	4xM6	70	6	G1/4	28	19	109.5	119	96	30°	19
KFHS 40	KFHS 040 70	40	25	100																		
KFHS 45	KFHS 045 70	45	37.5	100	155	223	135	96	20	14	6xM12	4xM6	85	8	G1/4	39	20	147.5	140	108	30°	26
KFHS 50	KFHS 050 70	50	37.5	100																		

Subject to modification without prior notice

❶ M is the admissible load the mass to be secured exerts on the Locking Unit KFHS. The holding (braking) force for dry or hydraulic-oil wetted rods is not less than 2 x M but will not exceed 4 x M.

❷ The pressure p is required to release the clamping. The admissible operating pressure is 160 bar.

❸ As supplied, pressure port LL is plugged by a plug screw. It may be used alternatively to pressure port L and is useful for filling / air-bleeding. We recommend connecting an auto-bleeder to the port which is not in use (not supplied in scope of delivery; available as option - see "*Technical Information TI-Z10*").

❹ Hydraulic operating volume

❺ Proximity switch holders are provided for standard inductive proximity switches (M12 x 1 nominal switching distance 2 mm, flush mountable, NO (normally open)), except KFHS 18 and KFHS 25: M8 x 1 with a nominal switching distance of 1.5 mm.

For easier service, the proximity switch holders have a depth stop and are pre-adjusted when delivered from the factory. The switches only need to be inserted to the stop and then clamped.

The proximity switches are <u>not</u> supplied in the standard scope of delivery, but are available as accessories.

❻ Internal volume changes during switching are compensated at ports T. An air filter is fitted to one of the ports T for "breathing". The other port T is closed by a plug screw. In a dry and clean factory environment, this offers sufficient protection against dust etc.

If, however, moisture or aggressive media are present, a pressureless hose instead of the filter must be installed to connect the Locking Unit KFHS with clean atmosphere (e.g. a clean pressureless container). The other port T must be sealed with a plug screw.

❼ Spacers keep the Locking Unit released and need to be removed after installation.

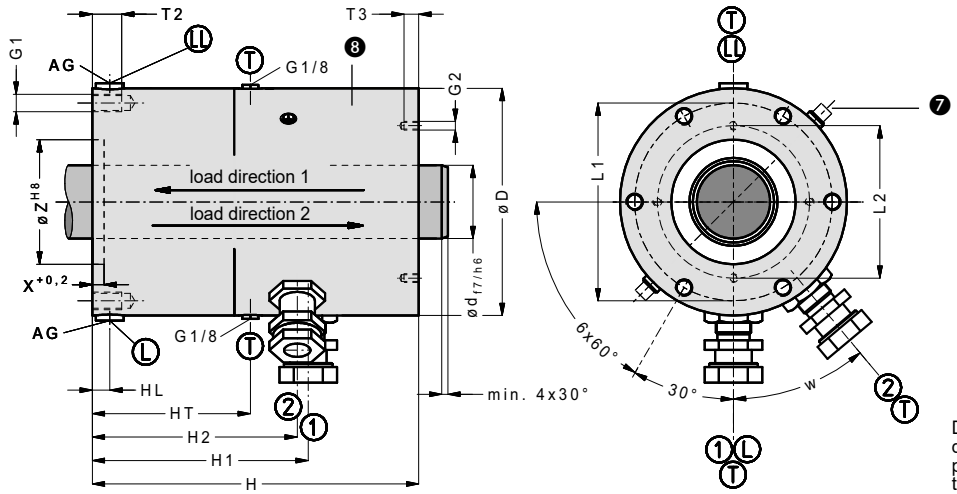
❽ The surface of the housing parts is ZnNi coated.

Technical Data Sheet TI-F55
Locking Units series KFHS (with DGUV approval)

For a detailed functional description refer to *"Technical Information TI-F10"*.
Further important practical advice is given in *"Operating Manual BA-F55"*.

DGUV Test
HSM 19011
Sicherheit geprüft
tested safety
dguv.de/pruefzeichen

Rod diameter 56 mm – 60 mm



Ⓛ Pressure port L "release" see ❷
Ⓛⓛ Pressure port LL alternative to L see ❸
Ⓣ Port T "pressure compensation" see ❻
① Holder for proximity switch 1, signal "load secured" see ❺
② Holder for proximity switch 2, signal "clamping released" see ❺

Due to tolerances, ports 1, 2 and T may be displaced up to +/-5° relative to drawn position as well as the threaded holes G2 to pressure ports L/LL and T.

Fig. 2: Dimensions Locking Unit KFHS

			❶	❷												❹					
Type	**ID no.**	**d**	**M**	**p**	**D**	**H**	**L1**	**L2**	**T2**	**T3**	**G1**	**G2**	**Z**	**X**	**AG**	**V**	**HL**	**H1**	**H2**	**HT**	**Wgt**
	(order no.)	*mm*	*kN*	*bar*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*			*mm*	*mm*		*cm³*	*mm*	*mm*	*mm*	*mm*	*kg*
KFHS 56	KFHS 056 70	56	50	100	180	252	160	172	20	13	10x M12	4x M6	95	10	G1/4	47	22	151.5	144	105	40
KFHS 60	KFHS 060 70	60	50	100																	

Subject to modification without prior notice

❶ M is the admissible load the mass to be secured exerts on the Locking Unit KFHS. The holding (braking) force for dry or hydraulic-oil wetted rods is not less than 2 x M, but will not exceed 4 x M.

❷ The pressure p is required to release the clamping. The admissible operating pressure is 160 bar.

❸ As supplied, pressure port LL is plugged by a plug screw. It may be used alternatively to pressure port L and is useful for filling / air-bleeding. We recommend connecting an auto-bleeder to the port which is not in use (not supplied in scope of delivery; available as option - see "*Technical Information TI-Z10*").

❹ Hydraulic operating volume

❺ Proximity switch holders are provided for standard inductive proximity switches (M 12 x 1 nominal switching distance 2 mm, flush mountable, NO (normally open)).
For easier service, the proximity switch holders have a depth stop and are pre-adjusted when delivered from the factory.
The switches only need to be inserted to the stop and then clamped.
The proximity switches are <u>not</u> supplied in the standard scope of delivery, but are available as accessories.

❻ Internal volume changes during switching are compensated at ports T. An air filter is fitted to one of the ports T for "breathing". The other port T is closed by a plug screw. In a dry and clean factory environment, this offers sufficient protection against dust etc.
If, however, moisture or aggressive media are present, a pressureless hose instead of the filter must be installed to connect the Locking Unit KFHS with clean atmosphere (e.g. a clean pressureless container). The other port T must be sealed with a plug screw.

❼ Spacers keep the Locking Unit released and need to be removed after installation.

❽ The surface of the housing parts is ZnNi coated.

Technical Data Sheet TI-F55
Locking Units series KFHS (with DGUV approval)

For a detailed functional description refer to *"Technical Information TI-F10"*.
Further important practical advice is given in *"Operating Manual BA-F56"*.

Rod diameter 70 mm – 125 mm

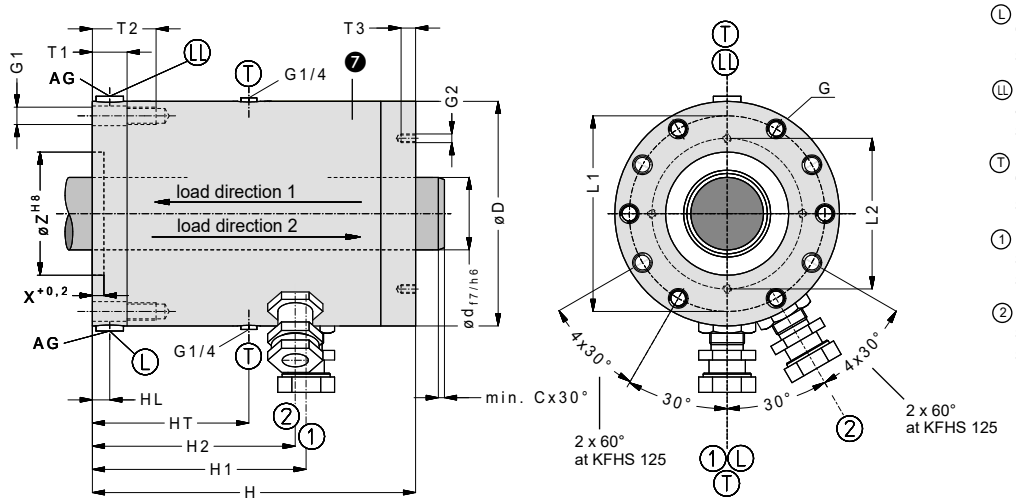


Fig. 3: Dimensions Locking Unit KFHS

				❶	❷												❹					
Type	**ID no.**	**d**	**C**	**M**	**p**	**D**	**H**	**L1**	**L2**	**T1**	**T2**	**T3**	**G1**	**G2**	**Z**	**X**	**AG**	**V**	**HL**	**H1**	**H2**	**HT**	**Wgt**
	(order no.)	*mm*	*mm*	*kN*	*bar*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*			*mm*	*mm*		*cm³*	*mm*	*mm*	*mm*	*mm*	*kg*
KFHS 70	KFHS 070 70	70	4	75	100	225	315	195	160	26	56	16	10x M16	4x M8	110	10	G1/4	68	13	192	185	236	80
KFHS 80	KFHS 080 70	80	4	75	100																		
KFHS 90	KFHS 090 70	90	5	125	130	260	393	225	175	30	65	20	10x M20	4xM 10	125	10	G3/8	95	15	221	214	283	127
KFHS 100	KFHS 100 70	100	5	125	130																		
KFHS 125	KFHS 125 70	125	5	165	100	350	416	300	250	40	90	20	6x M30	4x M12	230	10	G3/8	150	24	244.5	235	336	240

Subject to modification without prior notice

❶ M is the admissible load the mass to be secured exerts on the Locking Unit KFHS. The holding (braking) force for dry or hydraulic-oil wetted rods is not less than 2 x M but will not exceed 4 x M.

❷ The pressure p is required to release the clamping. The admissible operating pressure is 160 bar.

❸ As supplied, pressure port LL is plugged by a plug screw. It may be used alternatively to pressure port L and is useful for filling / air-bleeding. We recommend connecting an auto-bleeder to the port which is not in use (not supplied in scope of delivery; available as option - see "*Technical Information TI-Z10*").

❹ Hydraulic operating volume

❺ Proximity switch holders are provided for standard inductive proximity switches (M12 x 1 nominal switching distance 2 mm, flush mountable, NO (normally open)).
For easier service, the proximity switch holders have a depth stop and are pre-adjusted when delivered from the factory.
The switches only need to be inserted to the stop and then clamped.
The proximity switches are not supplied in the standard scope of delivery, but are available as accessories.

❻ Internal volume changes during switching are compensated at ports T. An air filter is fitted to one of the ports T for "breathing". The other port T is closed by a plug screw. In a dry and clean factory environment, this offers sufficient protection against dust etc.
If, however, moisture or aggressive media are present, a pressureless hose instead of the filter must be installed to connect the Locking Unit KFHS with clean atmosphere (e.g. a clean pressureless container). The other port T must be sealed with a plug screw.

❼ The surface of the housing parts is ZnNi coated.

Purpose

The Locking Unit KFHS is designed to hold static loads.

For this static holding, the Locking Unit KFHS is certified according to the testing principle GS-HSM-02 of the DGUV (see *pages 6-9)*.

Axial play

The admissible load (M) is held free from axial play in load direction 1 and 2.

Operating conditions

The Locking Unit KFHS is designed to operate in normal clean and dry workshop atmosphere.

Operation in other environmental conditions is possible if at least port T is connected to a clean and dry atmosphere (e.g. tank). In case of heavy soiling conditions (grinding dust, chips, other liquids, etc.), please contact SITEMA.

Viscous lubricants and grease may reduce the holding force.

The permitted surface temperature is -20°C to +60°C.

Required risk assessment

It must be ensured that the dimensions and arrangement of a Locking Unit KFHS used in safety-relevant applications meet the requirements of the risk evaluation EN ISO 12100:2010 and also comply with any further standards and regulations applicable for the intended use. The Locking Unit KFHS alone principally cannot form a complete safety solution. It is however suitable to be part of such a solution. Furthermore, all attachments and fixations have to be dimensioned correspondingly. This is generally the duty of the system manufacturer and the user.

Choosing the right type

The data tables show the admissible load (M) of the various types. The value of M must be higher than the maximum static axial load acting on the rod.

According to the requirements of the Safety Authorities, the holding force of the Locking Unit KFHS is not less than 2 x M.

Please pay special attention to the remarks in the Appendix to the DGUV certificate (see *page 9*).

Pressure fluid

Hydraulic oil (HLP) in accordance with DIN 51524-2:2017 must be used as pressure fluid. Please consult SITEMA before using any other fluids.

Mounting information KFHS 18 to KFHS 60

As supplied, the Locking Unit KFHS (rod diameter 18 mm to 60 mm) is blocked in its released state and can be slid over and fixed to the clamping rod easily. After mounting, the transportation spacers must be removed. Please refer to the operating manual for further information.

Design and attachment of the rod

The Locking Unit KFHS will operate correctly only if the rod has a suitable surface:

- ISO tolerance field f7 or h6
- induction hardened min. HRC 56, surface hardening depth:
  ø up to 30 mm: min. 1 mm
  ø over 30 mm: min. 1.5 mm
- surface roughness: Rz = 1 to 4 µm (Ra 0.15 - 0.3 µm)
- protection against corrosion, e.g. hard chromium plating: 20 ±10 µm, 800 – 1 000 HV
- lead-in chamfer, rounded:
  ø 18 mm up to ø 80 mm: min. 4 x 30 °
  ø over 80 mm up to ø 180 mm: min. 5 x 30 °
  ø over 180 mm up to ø 380 mm: min. 7 x 30 °

Often, the following standard rods fulfill the above mentioned requirements and can then be used:

- piston rods (ISO tolerance field f7), hard chrome plated
- rods for linear ball bearings (ISO tolerance field h6)

The rod must not be lubricated with grease.

The actual holding force of the Locking Unit KFHS is higher than the **admissible load (M)** indicated in the data sheets and drawings but will not be higher than four times this value. Therefore, all **fixation elements** carrying the load (rod, its attachment, etc.) have to be dimensioned for at least **4 x M**.

Please note that at dynamic loads (e.g. when braking), the full holding force (4 x M) can occur.

In case of overload, the rod will slip. This does normally not cause any damage to the rod or the clamping unit.

Generally, the basic rod material needs to have sufficient yield strength. In the case of compression-loaded rods, sufficient buckling resistance must be assured.

Control

In most applications, an actuation as suggested in the drawing below is used.

During every operational cycle, the 3/2-way valve is actuated electrically and releases the Locking Unit KFHS. In all other operational conditions including power failure, emergency stop etc., the Locking Unit KFHS engages and holds the rod or brakes the load. Likewise, the load is secured when the pressure line breaks.

To prevent possible problems, the rod shall not be driven unless proximity switch 2 indicates the signal “clamping released”.

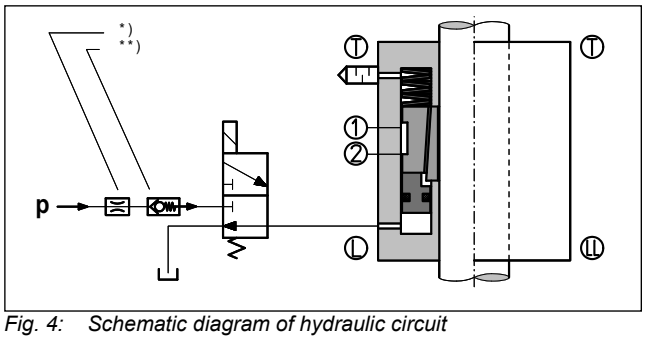


Fig. 4: Schematic diagram of hydraulic circuit

* In case impact noises due to excess pressure are audible when pressurizing the Locking Unit KFHS, these can be suppressed by means of a flow control valve in the p-line.

** In case the pressure is not sufficiently constant (e.g. pressure drop at the beginning of a downward stroke), we recommend a check valve in the p-connection of the valve.

⚠ WARNING!
Risk due to slowed discharge of pressure medium!
Slowed discharge of the pressure medium may cause a dangerous situation. The clamping then only locks with a time delay.

- Make sure that the discharge of the pressure medium from pressure port L is **not** impaired by any additional components.
- Route all connection lines without any kinks.
- If there is any danger of kinking, take appropriate precautions (protective tube, thicker hose, etc.).

If a particular quick response time of the Locking Unit KFHS is required, the following preconditions must be met:

- short line distances
- fast valve response times
- appropriate control
- large valve and line cross-sections

Monitoring by proximity switches

Proximity switch 1 “load secured” indicates the secure state and is used to authorize entrance to the danger area.
Proximity switch 2 “clamping released” is used to activate the downward movement of the drive.

For an automatic detection of failures, both signals are compared. In case both switches indicate the same state - apart from a short overlapping period - a malfunction is present.

Proposal for the logic integration of the Locking Unit KFHS in the machine control system

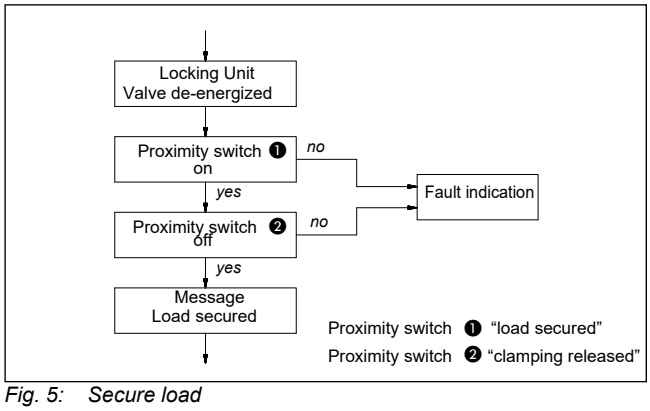


Fig. 5: Secure load

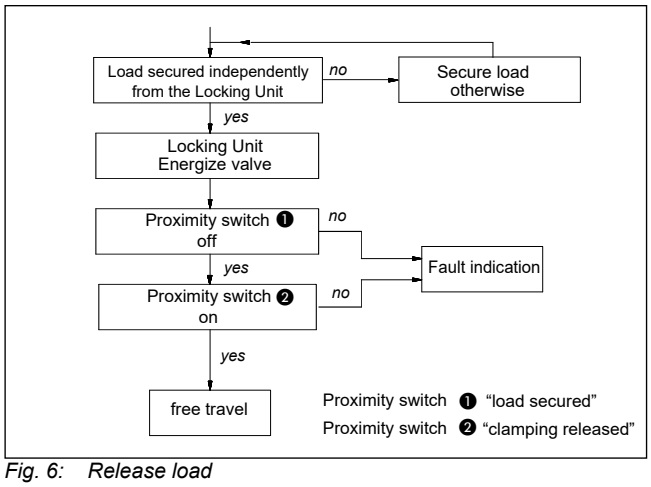


Fig. 6: Release load

Regular performance tests

The Locking Unit KFHS must be functionally checked at regular intervals. Regular checking is the only way to ensure that the Locking Unit KFHS will operate safely in the long run.

Please see the *operating manual* for further details.

Maintenance

The maintenance of SITEMA Locking Units KFHS is limited to the prescribed regular functional check.

Should the Locking Units KFHS cease to comply with the required characteristics, the aforementioned safety of working with the machine or system is no longer given. In this case the Locking Units KFHS must be removed immediately and professionally repaired by SITEMA.

Locking Units KFHS are safety devices. Any repair or refurbishing must be carried out by SITEMA.
SITEMA cannot take any responsibility for repairs by another party.

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Киргизия (996)312-96-26-47
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Россия (495)268-04-70
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Казахстан (772)734-952-31
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

www.sitema.nt-rt.ru || sqm@nt-rt.ru