SITEMA Expertise in Safety

English translation of German original

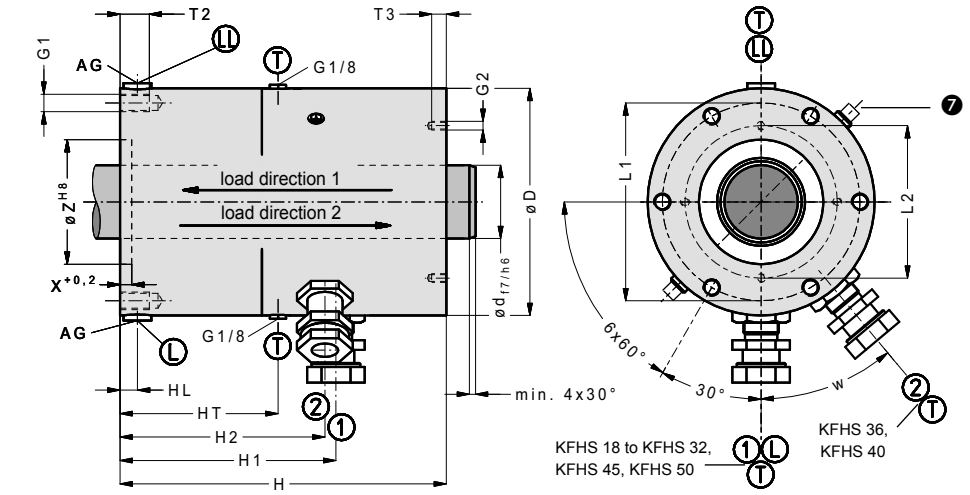
TI-F55-EN-01/2016

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 14037 Sicherheit geprüft tested safety

Rod diameter 18 mm – 50 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 pressure port L as well as the threaded holes G2 to pressure ports L/LL and ports T.

			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**	**w**	**Weight**
	(order no.)	*mm*	*kN*	*bar*	*mm*	*mm*	*mm*	*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 force 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, NOC), except KFHS 18 and KFHS 25: M 8 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 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 Spacers keep the Locking Unit released and need to be removed after installation.

SITEMA Expertise in Safety

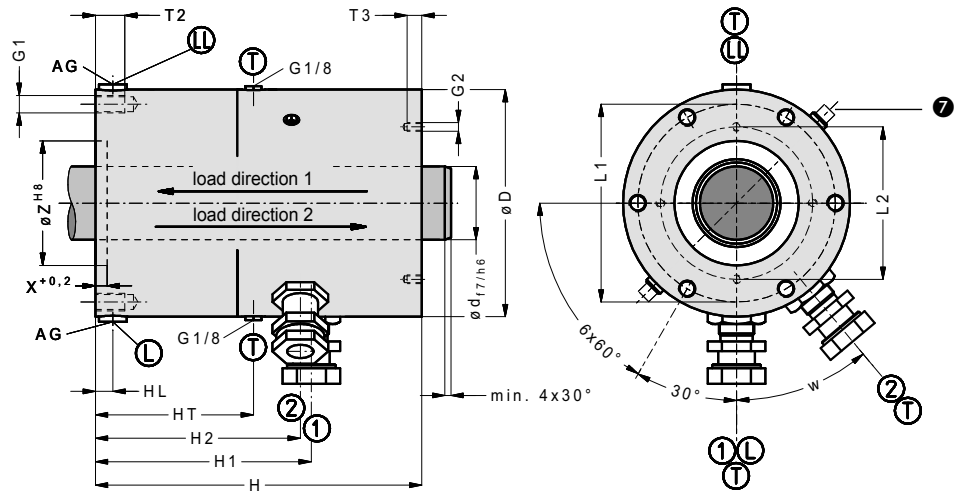
TI-F55-EN-01/2016

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 14037 Sicherheit geprüft tested safety

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.

			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**	**Weight**
	(order no.)	*mm*	*kN*	*bar*	*mm*	*mm*	*mm*	*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 force 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, NOC).

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

SITEMA Expertise in Safety

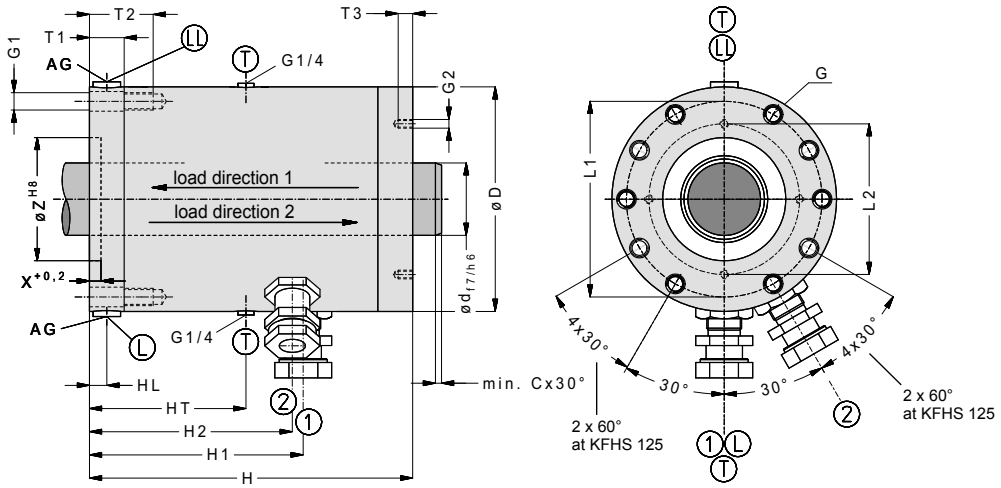
TI-F55-EN-01/2016

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"*.

DGUV Test HSM 14037 Sicherheit geprüft tested safety

Rod diameter 70 mm – 125 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

				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**	**Weight**
	(order no.)	*mm*	*mm*	*kN*	*bar*	*mm*	*mm*	*mm*	*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 force 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, NOC).

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.

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.

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

Viscous lubricants and grease may reduce the holding force.

Required risk assessment

It must be ensured that the dimensions and arrangement of a SITEMA Locking Unit KFHS used in safety-relevant applications meet the requirements of the risk evaluation DIN EN ISO 12100:2011 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 12*).

Pressure fluid

Hydraulic oil (HLP) in accordance with DIN 51524-2:2006 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 may not be lubricated with grease.

Make sure the base material of the rod is of adequate strength. Ensure that there is no risk of pressurized rods being kinked.

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”.

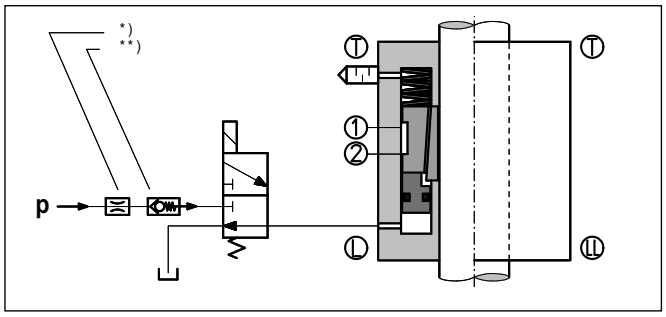


Fig. 4: Schematic diagram of hydraulic circuit

* 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

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

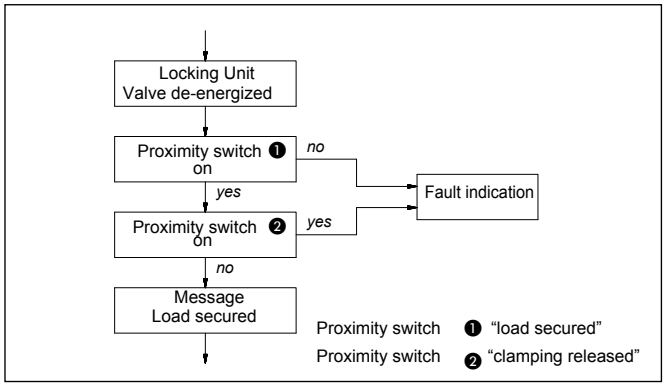


Fig. 5: Secure load

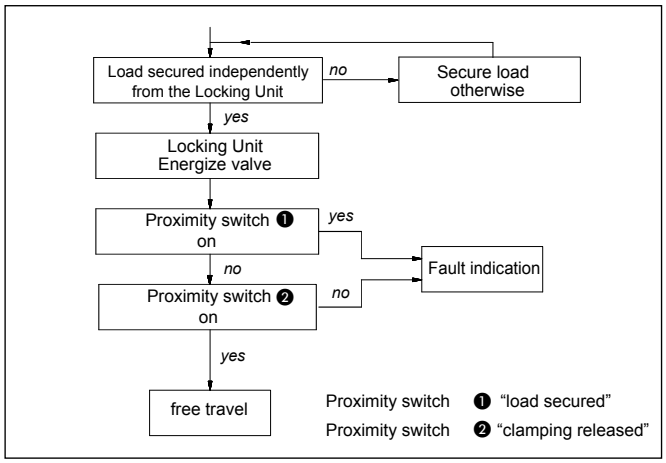


Fig. 6: Release load

Monitoring by proximity switches

Proximity switch 1 “load secured” indicates the secure state and is used to authorize entrance to the danger area. 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.

Regular performance tests

The Locking Unit KFHS must be functionally checked at regular intervals. Regular checking is the only way to ensure that the unit 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.

Approval of SITEMA Locking Units KFHS for use as mechanical restraint devices in hydraulic presses

The European Standard DIN EN 693 Machine tools - Safety - Hydraulic presses ascertains the following facts:

“On presses with an opening stroke length of more than 500 mm and a depth of table of more than 800 mm, the [restraint] device shall be permanently fixed and integrated with the press.”

The following document approves that SITEMA Locking Units KFHS can be used **as a mechanical restraint device** (German: Hochhalteeinrichtung) in this sense.

Certificate number: **HSM 14 037**

for Locking Units **series KFH** with accessories

see pages 7 to 9

This certificate is only valid over a specific period. After this time a new certificate will be issued.

The first certificate was issued in 2011.

On the following pages, you find an English translation followed by the German original.

DGUV Test
Prüf- und Zertifizierungsstelle
Hebezeuge, Sicherheitskomponenten
und Maschinen
Fachbereich Holz und Metall

Certificate
No. **HSM 14 037**
dated **22.07.2014**

DGUV Test Certificate

Name and address of the certificate holder (client):	**SITEMA GmbH & Co. KG** G.-Braun-Straße 13 76187 Karlsruhe
Product description:	**Locking Unit**
Type:	Series KFH, KFH/X
Testing principle:	GS-HSM-02 “Mechanical restraint devices”, 02/2012
Related test report:	No. 041/2010, dated 30.06.2011
Further particulars:	Intended use: installation in injection moulding machines conforming to DIN EN 201, presses conforming to DIN EN 289, mechanical presses conforming to DIN EN 692, hydraulic presses conforming to DIN EN 693 or in hydraulic folding presses conforming to DIN EN 12622 (for clamping away from the rest position) Remarks: see appendix Renewal of previous certificate HSM 11037, dated 26.05.2014

The tested model conforms to the requirements stated in § 3 Section 1 of the Product Safety Act. The tested model therefore conforms to the applicable provisions of the **EC Machinery Directive** 2006/42/EC.
The certificate holder is authorized to attach the DGUV Test mark shown overleaf to products conforming to the tested model, with the addenda quoted under 'Remarks' where appropriate.
This certificate will become invalid at the latest on: **25.05.2019**
The Testing and Certification Order of August 2012 makes additional rulings about validity, extensions of validity and other conditions.

.....
(Dipl.-Ing. Berthold Heinke)

Telephone:/Fax: +49 (0)211 8224-827 / 0211 8224 - 866
E-Mail: pz-hsm.fbhm@bghm.de

Rear of the DGUV Test Certificate HSM 14037

DGUV Test Certificate

A P P E N D I X
to test certificate no. HSM 14037, dated 22.07.2014
(subsitutes the former Appendix)

DGUV Test
Prüf- und Zertifizierungsstelle
Hebezeuge, Sicherheitskomponenten
und Maschinen
Fachbereich Holz und Metall

Name and address of certificate holder:	SITEMA GmbH & Co. KG G.-Braun-Straße 13 76187 Karlsruhe
Product description:	**Locking Unit** Series KFH, KFH/X

Remarks:

- The manufacturer of the machine must install the restraining device according to the manufacturer's specifications and the requirements of the applicable product standards DIN EN 201, DIN EN 289, DIN EN 692, DIN EN 693 or DIN EN 12622.
- The manufacturer of the machine must take precautions in the control system which inhibit a release of the load before the load is secured.
- The manufacturer of the machine must either select the restraining device so that in the new condition at least 1.5 times the weight of the (actual) load can be supported in the worst case, and provide an automatic device to test for holding force at a sufficiently high frequency or select the restraining device so that in the new condition at least twice the weight of the load can be supported in the worst case.
- If the manufacturer of the machine does not provide an automatic device to test for holding force, he must specify in his operating instructions a deadline for the holding force test which depends on the utilization of the machine and the requirement rate for the restraining device, within which time the holding force will not decline unacceptably.
- Test loading: 1.5 times the weight of the (actual) load in the worst case.
- If the manufacturer of the machine does not provide an automatic device to test for holding force, he must implement a solution whereby the holding force can be checked while the restraining device is installed and describe the performance of the holding force test in the operating instructions for the machine.
- The manufacturer of the machine must install the rod which is clamped by the Locking Unit so that it is protected from the influence of high-viscosity lubricants or separating agents.
- The manufacturer of the machine must ensure that the outflow of the Locking Unit's pilot valve is pressureless.

Renewal of previous certificate HSM 11037, dated 26.05.2014

Düsseldorf, 22.07.2014

(Dipl.-Ing. Heinke)

DGUV Test
Prüf- und Zertifizierungsstelle
Hebezeuge, Sicherheitskomponenten
und Maschinen
Fachbereich Holz und Metall

Bescheinigung
Nr. **HSM 14037**
vom 22.07.2014

DGUV Test Prüfbescheinigung

Name und Anschrift des Bescheinigungsinhabers: (Auftraggeber)	SITEMA GmbH & Co. KG G.-Braun-Straße 13 76187 Karlsruhe
Produktbezeichnung:	**Feststelleinheit**
Typ:	Baureihen KFH, KFH/X
Prüfgrundlage:	GS-HSM-02 "Mechanische Hochhalteeinrichtungen", 02/2012
Zugehöriger Prüfbericht:	Nr. 041/2010 vom 30.06.2011
Weitere Angaben:	Bestimmungsgemäße Verwendung: Einbau in Spritzgießmaschinen nach DIN EN 201, Pressen nach DIN EN 289, mechanische Pressen nach DIN EN 692, hydraulische Pressen nach DIN EN 693 oder hydraulische Gesenkbiegepressen nach DIN EN 12622 (zum Klemmen aus dem Stillstand heraus) Bemerkungen: s. Anlage Folgebescheinigung zu HSM 11037 vom 26.05.2014.

Das geprüfte Baumuster stimmt mit den in § 3 Absatz 1 des Produktsicherheitsgesetzes genannten Anforderungen überein. Das Baumuster entspricht somit auch den einschlägigen Bestimmungen der Richtlinie 2006/42/EG **(Maschinen)**. Der Bescheinigungsinhaber ist berechtigt, das umseitig abgebildete DGUV Test-Zeichen an den mit dem geprüften Baumuster übereinstimmenden Produkten anzubringen, sofern zutreffend mit dem oben genannten Zeichenzusatz.
Diese Bescheinigung einschließlich der Berechtigung zur Anbringung des DGUV Test-Zeichens ist gültig bis: **25.05.2019**
Weiteres über die Gültigkeit, eine Gültigkeitsverlängerung und andere Bedingungen regelt die Prüf- und Zertifizierungsordnung vom August 2012.

Dipl.-Ing. Berthold Heinke
Stv. Leiter der Prüf- und Zertifizierungsstelle

PZB09M
A 02.13
Postadresse: Kreuzstraße 45 / 40210 Düsseldorf
Telefon:/Fax: +49 (0) 211 8224-827 / +49 (0) 211 8224-866
Internet: http://www.dguv.de/fb-holzundmetall/pruefstellen/hebezeuge
E-Mail: pz-hsm.fbhm@bghm.de

Rückseite der DGUV Test Prüfbescheinigung HSM 14037

DGUV Test Prüfbescheinigung

HSM 14037
Sicherheit geprüft
tested safety

PZB09M
A 02.13

ANLAGE
zu Bescheinigung Nr. HSM 14037 vom 22.07.2014
(Ersetzt die vormalige Anlage)

DGUV Test
Prüf- und Zertifizierungsstelle
Hebezeuge, Sicherheitskomponenten
und Maschinen
Fachbereich Holz und Metall

Name und Anschrift des Bescheinigungsinhabers:	SITEMA GmbH & Co. KG G.-Braun-Straße 13 76187 Karlsruhe
Produktbezeichnung:	**Feststelleinheit** Baureihen KFH, KFH/X

Bemerkungen:

- Der Maschinenhersteller muss die Feststelleinheit entsprechend Herstellerangaben und Anforderungen der DIN EN 201, DIN EN 289, DIN EN 692, DIN EN 693 bzw. DIN EN 12622 einbauen.
- Der Maschinenhersteller muss steuerungstechnische Maßnahmen treffen, die das Entriegeln, bevor die Last abgestützt ist, verhindern.
- Der Maschinenhersteller muss entweder die Feststelleinheit so auswählen, dass im Neuzustand mindestens die 1,5-fache Gewichtskraft der (tatsächlichen) Last im 'worst case' getragen werden kann und eine automatische Testeinrichtung auf Haltekraft mit ausreichend hoher Testfrequenz vorsehen oder die Feststelleinheit so auswählen, dass im Neuzustand mindestens die 2-fache Gewichtskraft der Last im 'worst case' getragen werden kann.
- Wenn der Maschinenhersteller keine automatische Testeinrichtung auf Haltekraft vorsieht, muss er je nach zeitlicher Auslastung der Maschine und Anforderungsrate der Feststelleinheit in seiner Betriebsanleitung eine Prüffrist für die Haltekraftprüfung angeben, innerhalb der die Haltekraft nicht unzulässig abfällt.
- Test- und Prüfbelastung: 1,5-fache Gewichtskraft der (tatsächlichen) Last im 'worst case'.
- Wenn der Maschinenhersteller keine automatische Testeinrichtung auf Haltekraft vorsieht, muss er eine Lösung realisieren, damit die Haltekraft im eingebauten Zustand der Feststelleinheit überprüft werden kann und die Durchführung der Haltekraftprüfung in der Betriebsanleitung für die Maschine beschreiben.
- Der Maschinenhersteller muss die Stange, welche durch die Feststelleinheit geklemmt wird, geschützt (gegen Schmierstoff-Trennmittel-Einfluss) einbauen.
- Der Maschinenhersteller muss sicherstellen, dass der Ablauf des Pilotventils der Feststelleinheit drucklos ist.

Folgebescheinigung zu Nr. HSM 11037 vom 26.05.2014

Düsseldorf, 22.07.2014

(Dipl.-Ing. Heinke)
Stellv. Leiter der Prüf- und Zertifizierungsstelle

Prüf- und Zertifizierungsstelle HSM · DGUV Test · Fachbereich Holz und Metall