

# M-DA-H – F6



**HKS Unternehmensgruppe**

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# Lastenheft zur Größenbestimmung und Gefahrenanalyse

# Performance specification for determining sizes and hazard analysis



Von From
Firma Company
Straße Street
PLZ, Ort City, ZIP-code
Telefon Telephone
Telefax Telefax
Projekt Project
Projektleiter Project-manager

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## HKS Unternehmensgruppe

z.Hd.  
att.

**Leipziger Straße 53-55**  
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Kommission  
Commission

Datum / Unterschrift  
Date / Signature

**\*Nur gültig mit Unterschrift und Datum**  
**\*Only valid with signature and date**

### Technische Daten Technical data

1. Massenträgheitsmoment Moment of inertia	l	kgm <sup>2</sup> lb-in sec <sup>2</sup>
1.1 Hebelarm Leverage	r	m in
1.2 Gewicht Weight	G	kg lb
oder Biegemoment or bending moment		Nm in-lb
1.3 Axiallast Axial load	G <sub>a</sub>	kg lb
1.4 Radiallast Radial load	G <sub>r</sub>	kg lb
1.5 Separate Lagerung Separate bearing	<input type="checkbox"/>	
1.6 Drehmoment Vorgabe Specification of torque		Nm in-lb
2. Schwenkwinkel effektiv Effective angle of rotation		in Grad in deg.
2.1 Gesamt-Schwenkwinkel Total angle of rotation		in Grad in deg.
3. Einbaulage horizontal Horizontal installation	<input type="checkbox"/>	
3.1 Einbaulage vertikal Vertical installation	<input type="checkbox"/>	
4. Schwenkzeit Rotation time	T	Sek. Sec.
4.1 Taktfolge No. of Cycles	Z	/ Minute / minute
4.2 Arbeitsstunden pro Tag Working hours/day		Std h

5. Hydraulikanlage Hydraulic system		
5.1 Effektiver Arbeitsdruck Effective working pressure	p1	bar psi
5.2 Max. zul. Systemdruck Max. permitted system pressure	p2	bar psi
5.3 Förderstrom Delivery rate	Q	l/Minute gpm
5.4 Anlagentemperatur System temperature	C1	°Celsius °F
5.5 Umgebungstemperatur Surrounding temperature	C2	°Celsius °F
5.6 Betriebsmedium Medium used		
5.7 Leitungslänge zum Drehantrieb Length of conduit to actuator		mm in

6. Besondere Einsatzbedingungen  
Special conditions of application

7. Bedingungen am Einsatzort  
Conditions at working place

8. Erforderliche Eigenschaften  
Necessary features of the actuator

9. Gewünschte Zusatzeinrichtungen  
Additional equipment required

Zuganker  Lasthalteventil   
Tension rod Load-holding valves

Sonstiges   
Others

**Bitte Skizze der Lastangriffspunkte mitsenden**  
**Please enclose a sketch showing points of load**  
**induction.**

Empfohlener Antrieb  
Recommended actuator

# Lastenheft zur Größenbestimmung und Gefahrenanalyse

# Performance specification for determining sizes and hazard analysis



## Doppelte Kraftanbindung

Die Last wird an beiden Wellenenden unterstützt.

### Doppelte Kraftanbindung

Die Last wird an beiden Wellenenden unterstützt. Der obere Teil der Halterung wird auf den Wellenflansch geschraubt, der untere Teil ist mit einer Zugstange durch die Wellenbohrung gesichert.

### STRADDLE MOUNTING

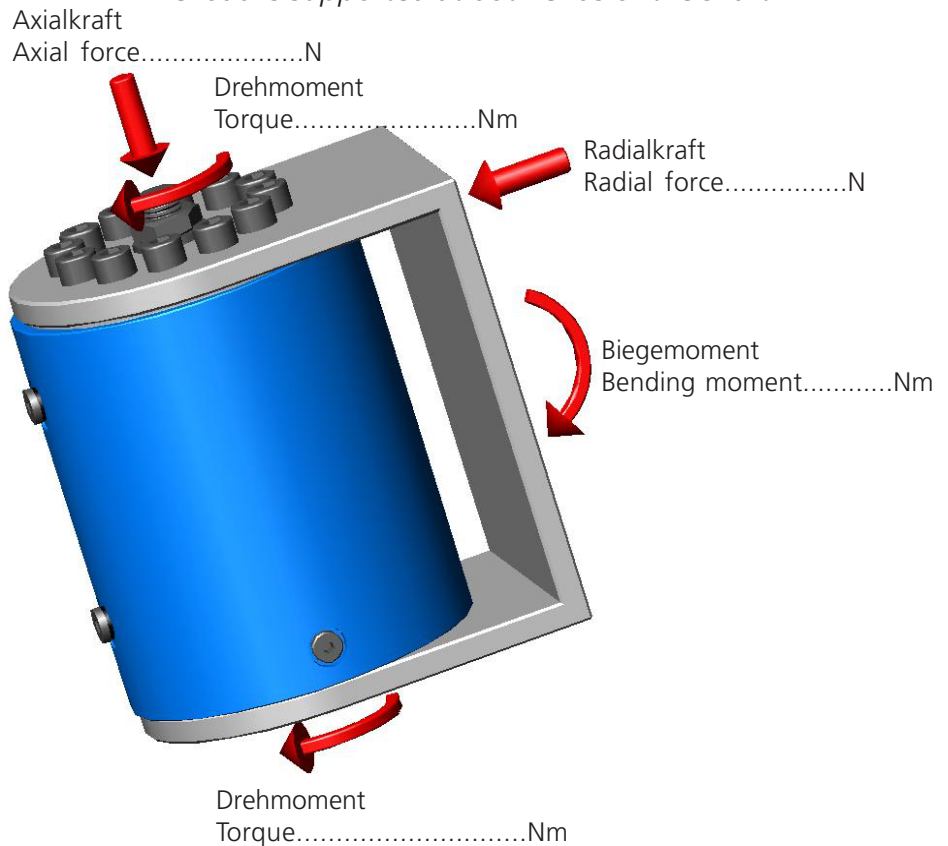
The load is supported at both ends of the shaft. The upper portion of the bracket is bolted to the shaft flange, the lower portion is secured by a tie rod passed to the shaft bore.

Der Hersteller empfiehlt bei Sicherheitsbezogenen Anwendungen die doppelte Kraftanbindung.

For safety related applications dual mounting is recommended by manufacturer.

## Straddle mounting

The load is supported at both ends of the shaft.



## Einfache Kraftanbindung

Die Last wird nur an einem Ende der Welle am Wellenflansch verschraubt.

Zuganker Ja/Nein  
Tie rod yes/no

### Einfache Kraftanbindung

Die Last wird nur an einem Ende der Welle am Wellenflansch verschraubt.

### CANTILEVER MOUNTING

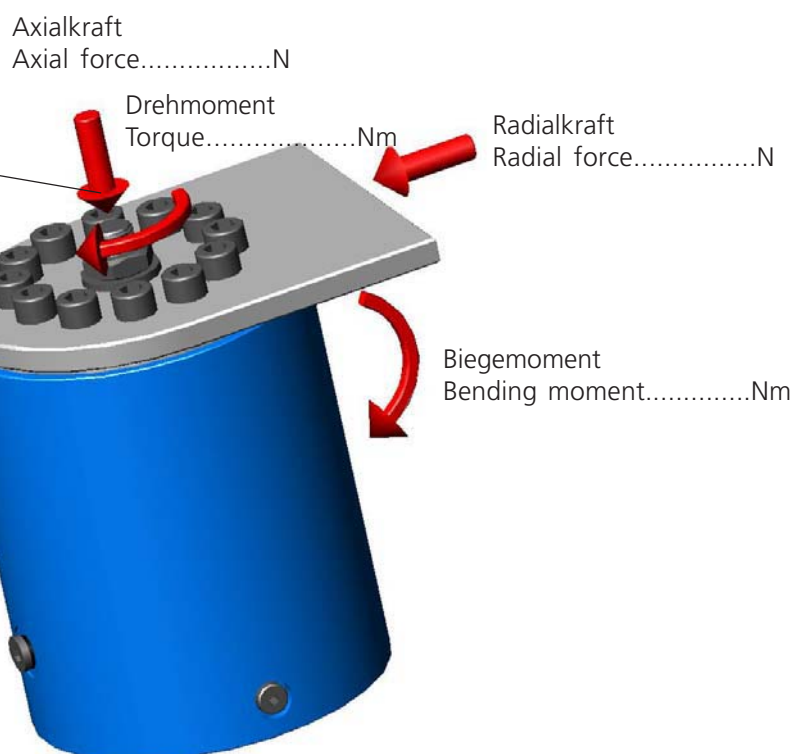
The load is bolt mounted to the shaft flange and only supported at one end of the shaft

Bei kritischen Anwendungen wird die einfache Kraftanbindung nicht empfohlen.

For critical applications single mounting is not recommended.

## Cantilever mounting

The load is mounted to only one end of the shaft.



## Garantieinformationen, Gefahrenhinweis

## Warranty information, indication of danger



Es gelten ausschließlich unsere allgemeinen Verkaufs- und Lieferbedingungen! Bei Lieferungen für den amerikanischen Markt müssen die Garantiebestimmungen mit der HKS Dreh-Antriebe GmbH gesondert vereinbart werden.

*Only the terms of sales and delivery from HKS Dreh-Antriebe GmbH are valid. For deliveries to the American market, warranty information has to be separately agreed with HKS Dreh-Antriebe GmbH.*

Garantieinformationen  
Warranty information

Die Garantiezeit beträgt max. 1 Jahr ab Versanddatum. Bei Missbrauch, Fahrlässigkeit oder Überlastung, und bei nicht genehmigter Veränderung am Produkt, erlischt jeglicher Garantieanspruch. Für folgerichtliche Beanstandungen übernimmt die HKS Dreh-Antriebe GmbH keine Haftung.

*The warranty period extends for one year starting on shipping date. Any misuse, negligent handling or overburdening and unauthorised modification of the product will cause any warranty claim to expire. HKS Dreh-Antriebe GmbH is not liable for any complaints due to consequential damages.*

Die Gründe für Beanstandungen am Produkt müssen eindeutig dargestellt werden.

*The reasons for complaints about the product must be stated unequivocally.*

Garantiefälle müssen direkt an die HKS Dreh-Antriebe GmbH, Leipziger Str. 55, D-63607 Wächtersbach-Aufenau gesendet werden. Garantiefälle werden in Form von Reparaturen bzw. Ersatzlieferungen bearbeitet und kostenfrei an den Kunden zurückgeschickt.

*Any items making a warranty operative must be shipped directly to HKS Dreh-Antriebe GmbH, Leipziger Str. 55, 63607 Wächtersbach-Aufenau. Such warranty events will be remedied in form of repair or replacement and will be returned to the customer free of charge.*

Die HKS Dreh-Antriebe GmbH behält sich das Recht vor, zu jeder Zeit Veränderungen am Design oder der Konstruktion ihrer Produkte vorzunehmen, ohne die Verpflichtung einzugehen, diese Änderungen bzw. Veränderungen auch bei vormals verkauften Produkten vorzunehmen.

*HKS Dreh-Antriebe GmbH reserves the right to implement changes to the design or construction of its products at any time without being committed to implement such change or modification in any products sold prior to such change or modification.*

Viele HKS-Antriebe sind in Anwendungen eingesetzt, bei denen Fehlbetrieb zu ernststen Schäden und sogar zum Tode führen kann. Die endgültige Entscheidung bei der Auswahl eines geeigneten Produktes der HKS Dreh-Antriebe GmbH liegt in der alleinigen Verantwortung des Kunden. Es sollten Tests mit angewandten Lasten, die der statischen und dynamischen Lastenfrequenz mindestens gleichkommen, durchgeführt werden, um die Eignung des Antriebes für die Anwendung festzustellen.

*Many HKS actuators are installed in applications which might result in serious injury or death in case of misuse. The customer is ultimately responsible for choosing the adequate product supplied by the HKS Dreh-Antriebe GmbH. Such decision should be based on prior tests with applied loads, which are at least identical to static and dynamic load frequency, in order to determine the suitability of the actuator for the specific application.*



Gefahrenhinweis  
Indication of danger

Werden der HKS Dreh-Antriebe GmbH die Einbaudetails und ein vollständig ausgefülltes „Datenblatt zur Größenbestimmung und zur Gefahrenanalyse“ zur Verfügung gestellt, kann gewährleistet werden, dass der geeignete Antrieb für die Anwendung ausgewählt wurde. Die Sicherheit der gesamten Einbauintegrität von Produkten der HKS Dreh-Antriebe GmbH liegt in der letztendlichen Verantwortung des Kunden.

*Be sure to transmit installation details and the completed form „Data sheet for determining sizes and hazard analysis“ to HKS Dreh-Antriebe GmbH in order to assure the appropriate actuator is chosen for the application. The customer is ultimately responsible for safety of the entire installation integrity of products supplied by HKS Dreh-Antriebe GmbH.*

Wenn diese Warnung unklar ist oder Sie andere Fragen haben, kontaktieren Sie bitte die HKS Dreh-Antriebe GmbH.

*Please contact HKS Dreh-Antriebe GmbH in case you have any questions about this warning or any other related issues.*

**Functional description**

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

**Direction of rotation**

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

**Angle of rotation**

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

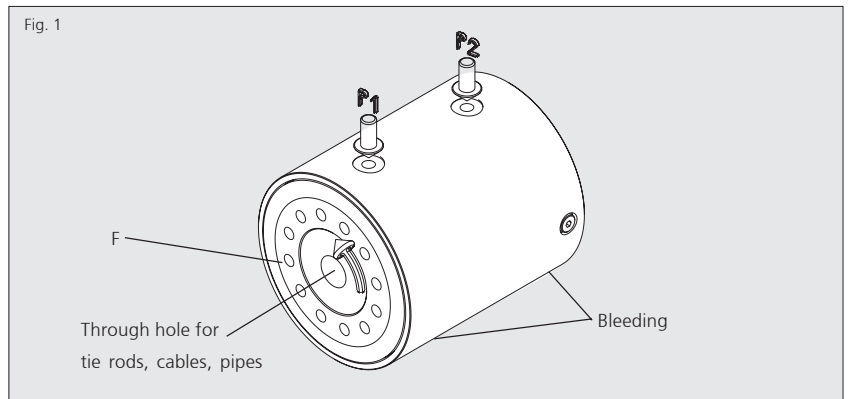
**Pressures, seals and temperatures**

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

**The advantages of the M-DA-H series**

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



**Technical data type M-DA-H 50 180°**

Order no.: 200518009917

Angle of rotation		180°
Nominal torque	Nm	190
Max. working pressure	bar	210
Weight	kg	~7,4
Absorption volume	dm <sup>3</sup>	0,073
You will find further technical data on the next page		

**Cycle times**

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

**General characteristics**

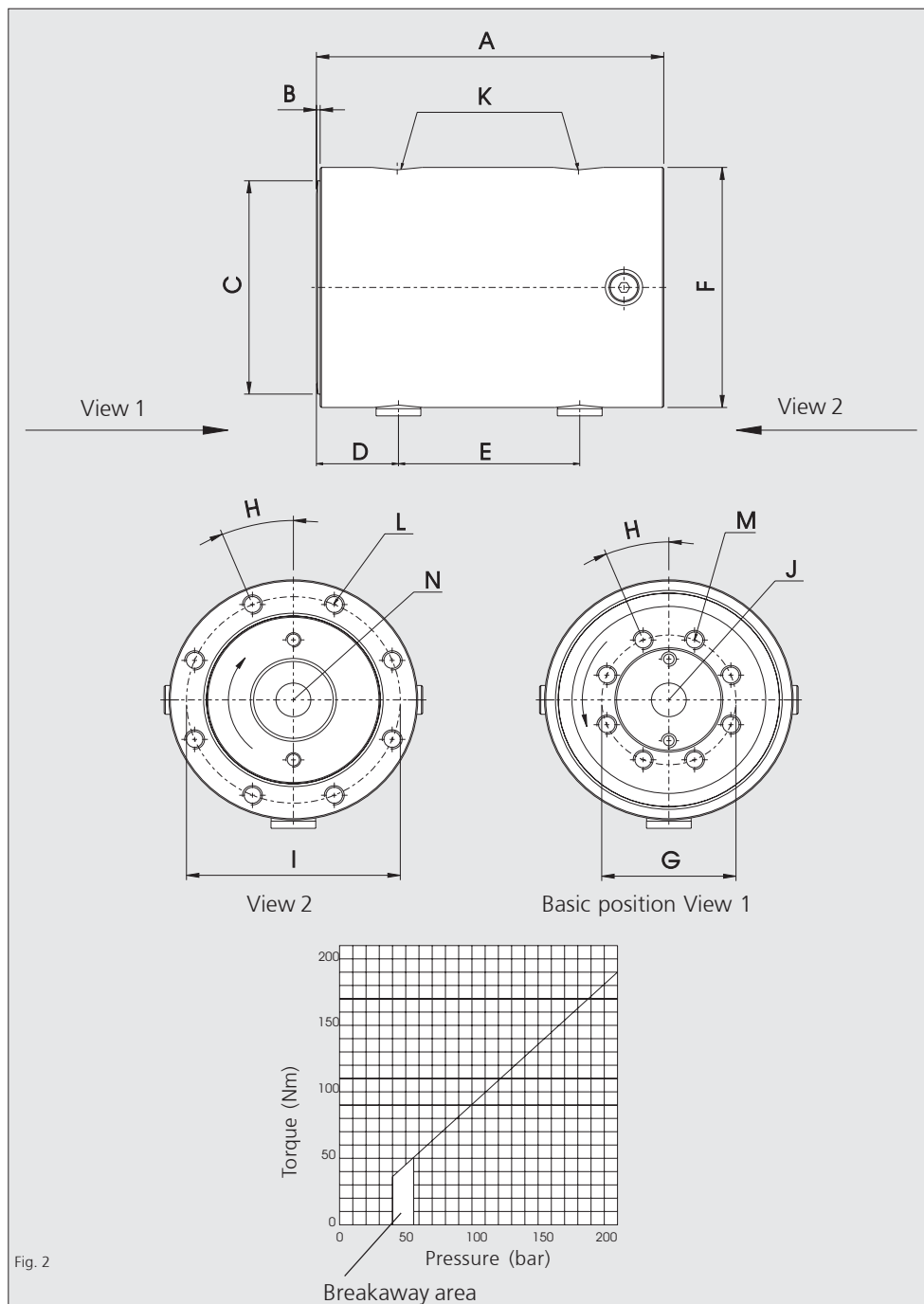
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

**Typical applications**

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 50 180°

## Mobile hydraulic rotary actuator



Dimensions	M-DA-H 50 180°	
	mm	inch
A	139,7	(5,5")
B	1,5	(0,059")
C	∅ 88,8	(3,498")
D	32,5	(1,28")
E	72,9	(2,87")
F	∅ 100	(3,937")
G	∅ 54	(2,126")
H	22,5°	
I	∅ 86	(3,386")
J	∅ 14	(0,55")
Trough hole		
K		G1/4"
Number L	8	
L		M8x12
Number M	8	
M		M8x12
N*)	∅	
	deep	

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	9000
Max. radial force	N	9000
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	564

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

### HKS Unternehmensgruppe

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**Functional description**

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

**Direction of rotation**

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

**Angle of rotation**

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

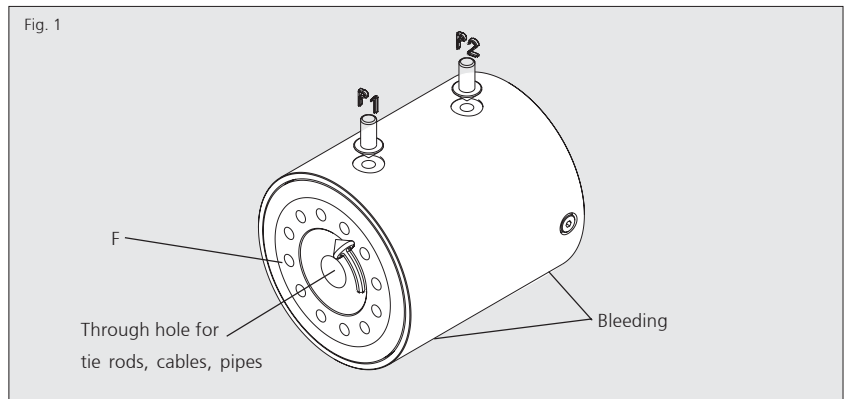
**Pressures, seals and temperatures**

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

**The advantages of the M-DA-H series**

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



**Technical data type M-DA-H 60 180°**

Order no.: 200618009916

Angle of rotation		180°
Nominal torque	Nm	340
Max. working pressure	bar	210
Weight	kg	~10,6
Absorption volume	dm <sup>3</sup>	0,122
You will find further technical data on the next page		

**Cycle times**

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

**General characteristics**

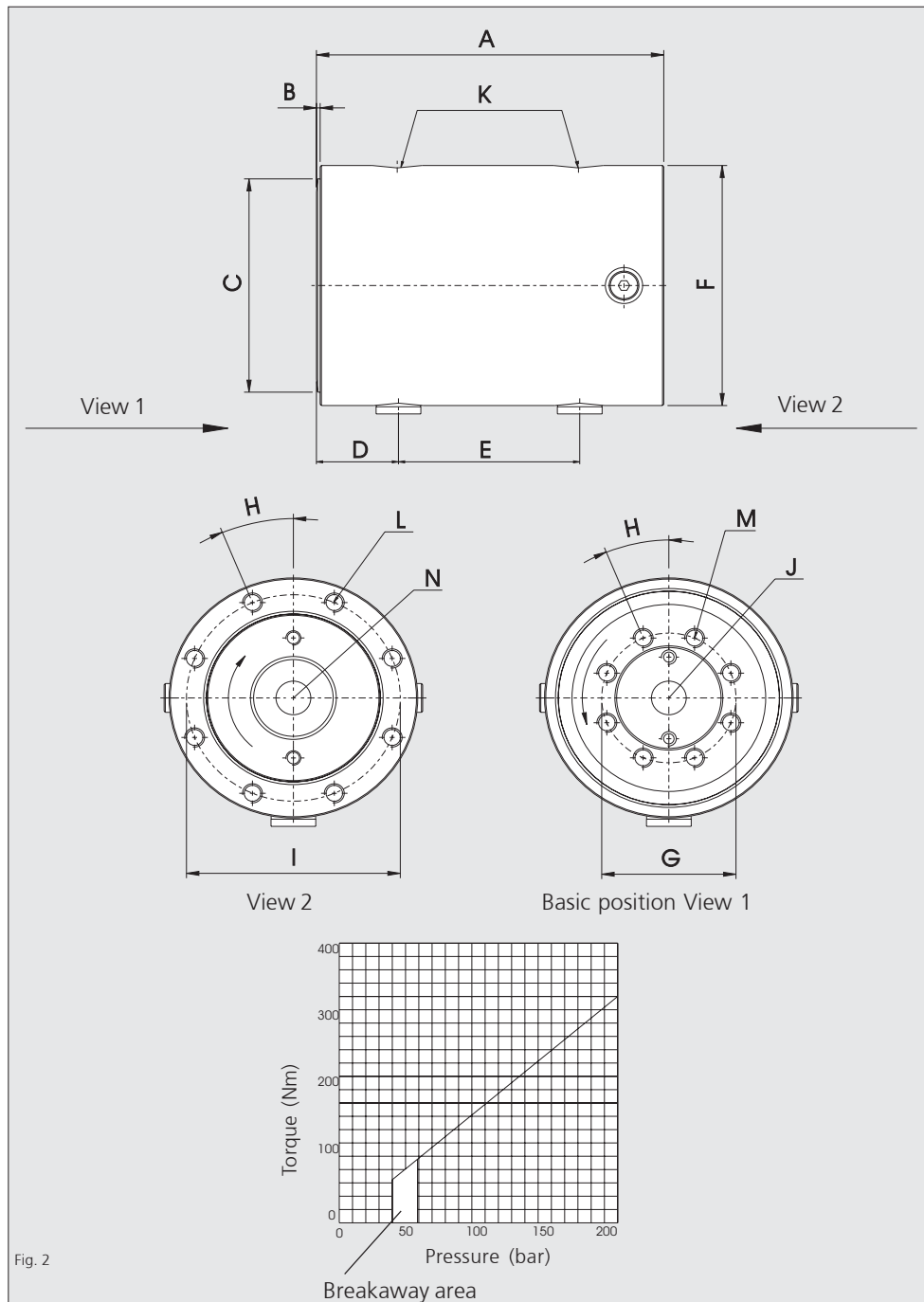
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

**Typical applications**

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 60 180°

## Mobile hydraulic rotary actuator



Dimensions		M-DA-H 60 180°	
		mm	inch
A		143	(5,63")
B		1,5	(0,059")
C	∅	99,85	(3,931")
D		32,5	(1,28")
E		66,9	(2,634")
F	∅	119,3	(4,697")
G	∅	73	(2,874")
H		22,5°	
I	∅	103,2	(4,063")
J	∅	16,7	(0,657")
Trough hole			
K			G1/4"
Number L		8	
L			M8x12
Number M		8	
M			M8x12
N*)	∅	17,15	(0,675")
	deep	38,8	(1,528")

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	13500
Max. radial force	N	13500
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	1020

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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### Functional description

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

### Direction of rotation

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

### Angle of rotation

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

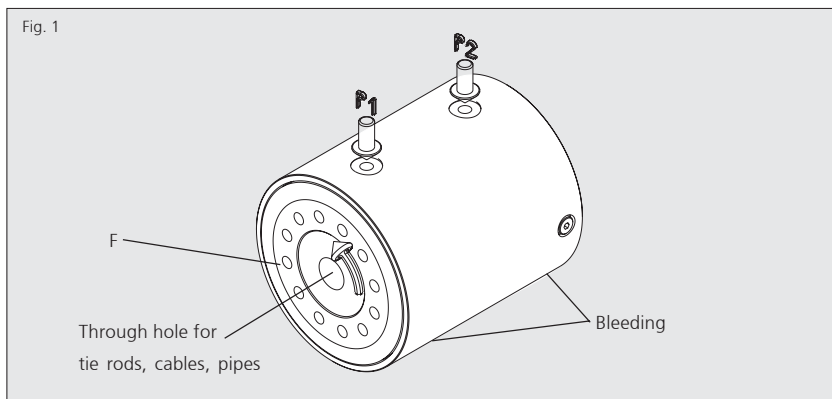
### Pressures, seals and temperatures

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

### The advantages of the M-DA-H series

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



### Technical data type M-DA-H 60 360°

Order no.: 200636009940

Angle of rotation		360°
Nominal torque	Nm	340
Max. working pressure	bar	210
Weight	kg	~13,5
Absorption volume	dm <sup>3</sup>	0,234
You will find further technical data on the next page		

### Cycle times

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

### General characteristics

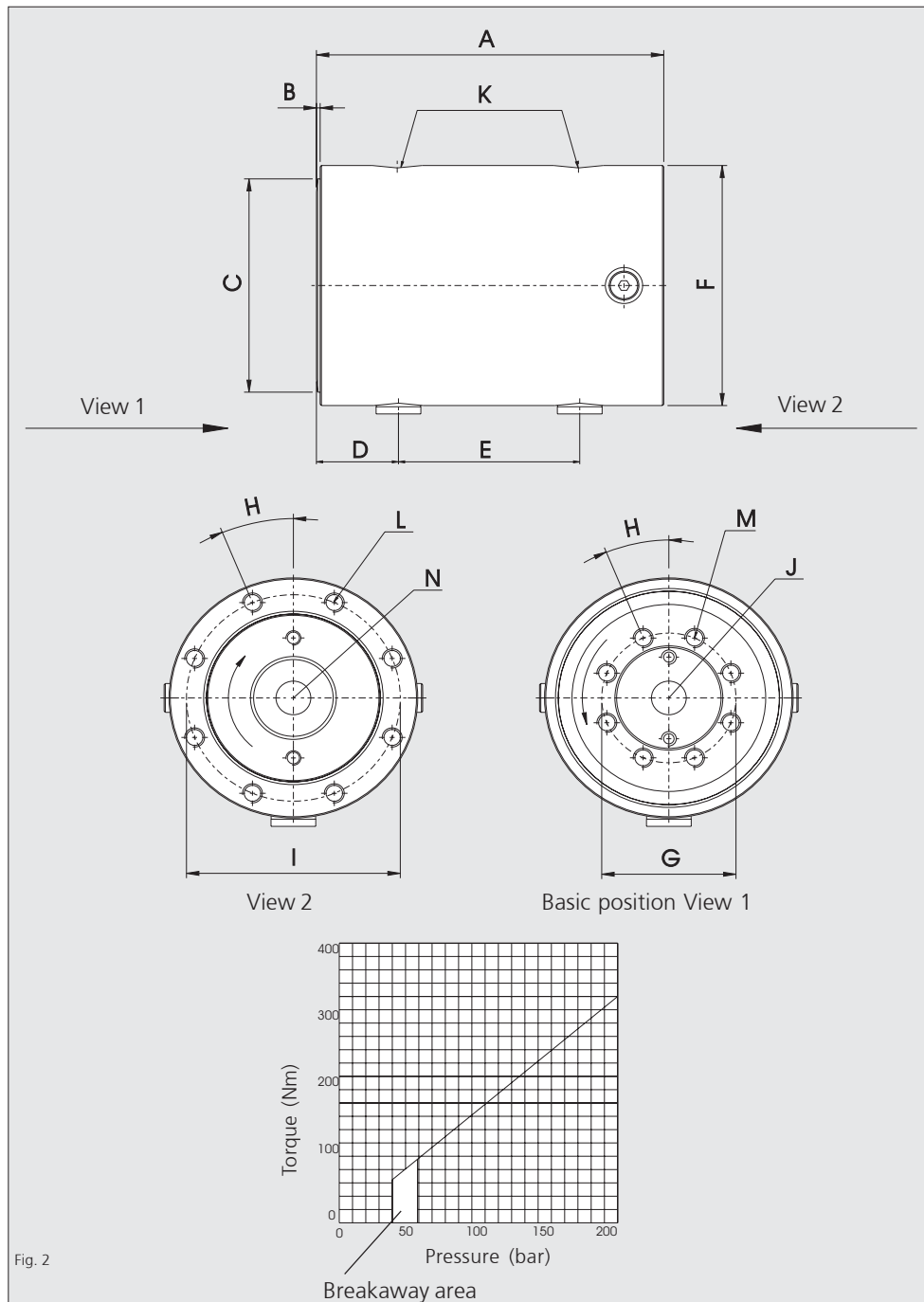
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

### Typical applications

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 60 360°

## Mobile hydraulic rotary actuator



Dimensions	M-DA-H 60 180°	
	mm	inch
A	189,3	7,453"
B	1,5	(0,059")
C	∅ 99,85	(3,931")
D	32,5	(1,28")
E	122,4	2,634"
F	∅ 119,3	(4,819")
G	∅ 73	(2,874")
H	22,5°	
I	∅ 103,2	(4,063")
J	∅ 16,7	(0,657")
Trough hole		
K		G1/4"
Number L	8	
L		M8x12
Number M	8	
M		M8x12
N*)	∅ 17,15	(0,675")
	deep 38,8	(1,528")

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	13500
Max. radial force	N	13500
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	1020

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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**Functional description**

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

**Direction of rotation**

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

**Angle of rotation**

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

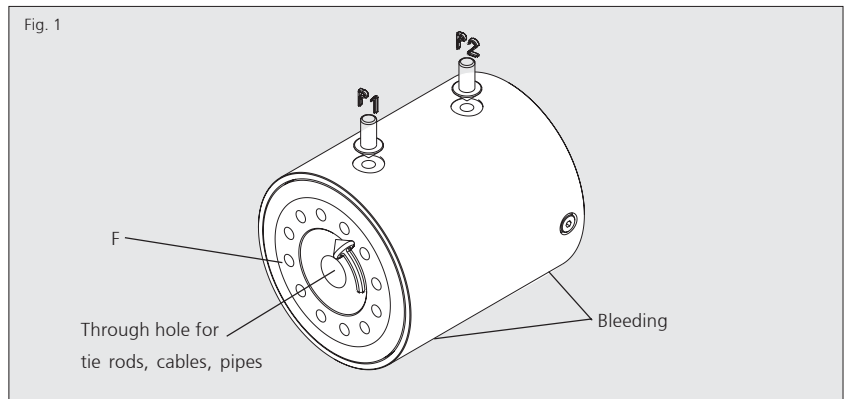
**Pressures, seals and temperatures**

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

**The advantages of the M-DA-H series**

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



**Technical data type M-DA-H 63 180°**

Order no.: 200618009888

Angle of rotation		180°
Nominal torque	Nm	720
Max. working pressure	bar	210
Weight	kg	~14,4
Absorption volume	dm <sup>3</sup>	0,192
You will find further technical data on the next page		

**Cycle times**

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

**General characteristics**

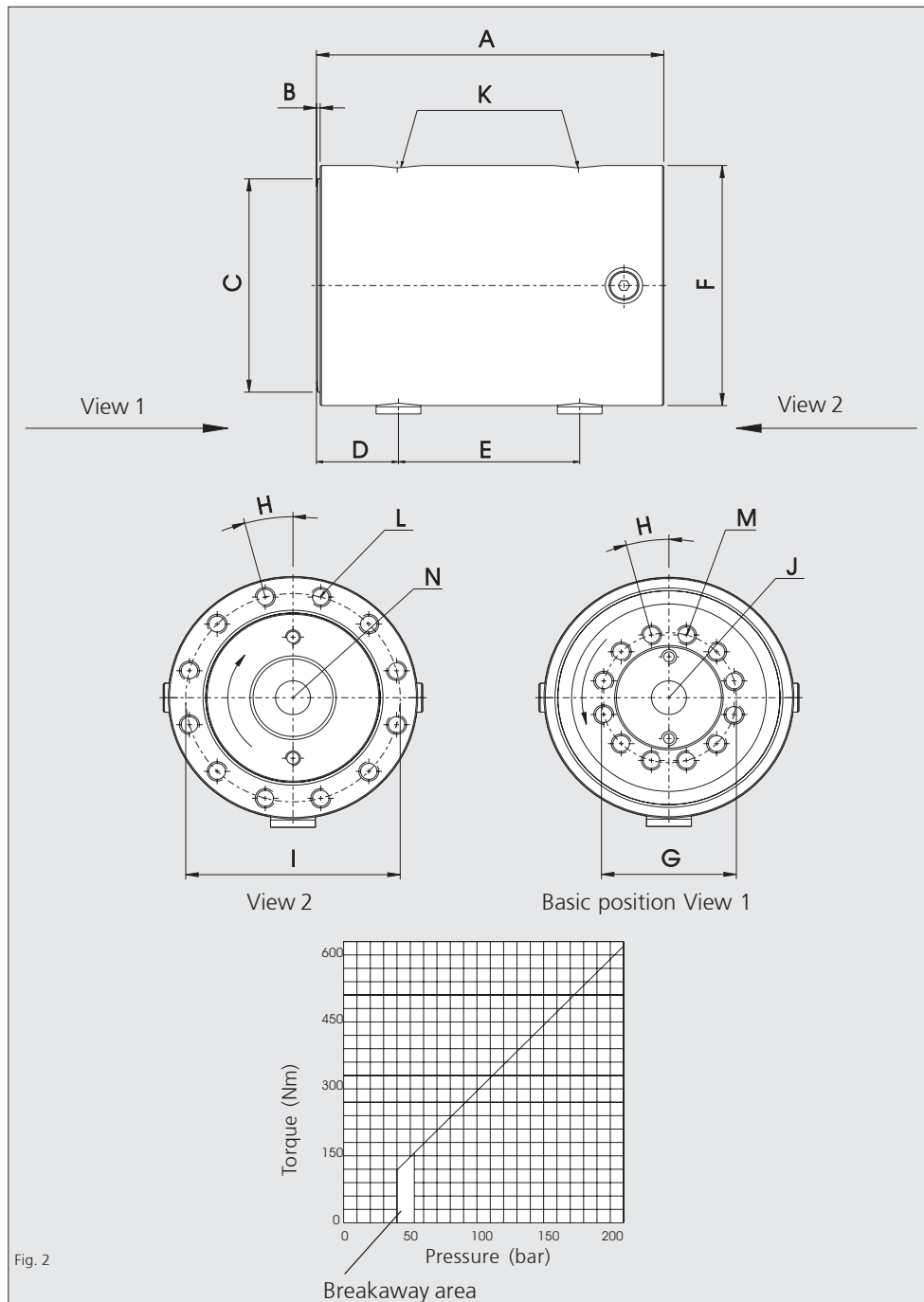
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**Typical applications**

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 63 180°

## Mobile hydraulic rotary actuator



Dimensions	M-DA-H 63 180°	
	mm	inch
A	155,7	6,13"
B	1,27	(0,05")
C	∅ 124,85	4,92"
D	31,77	(1,25")
E	87	(3,43")
F	∅ 135	(5,31")
G	∅ 80	(3,15")
H	15°	
I	∅ 117	(4,6")
J	∅ 21	(0,83")
Trough hole		
K		G1/8"
Number L	12	
L		M10x15
Number M	12	
M		M10x15
N*)	∅ 22	(0,87")
	deep 24,7	(0,97")

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	18000
Max. radial force	N	18000
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	2300

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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### Functional description

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

### Direction of rotation

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

### Angle of rotation

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

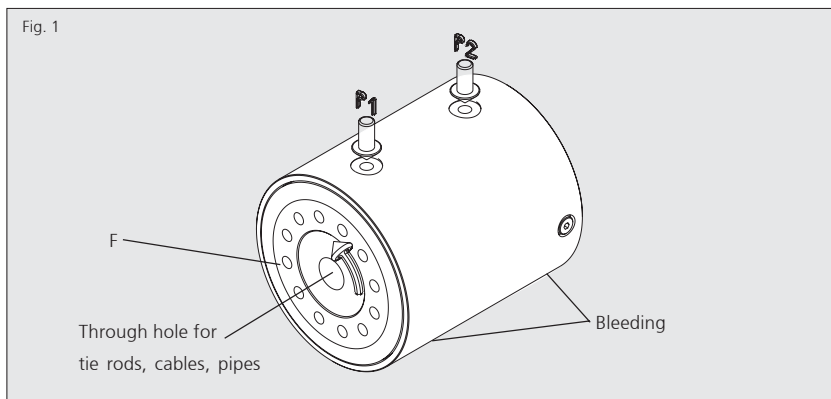
### Pressures, seals and temperatures

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

### The advantages of the M-DA-H series

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



### Technical data type M-DA-H 63 360°

Order no.: 200636009941

Angle of rotation		360°
Nominal torque	Nm	720
Max. working pressure	bar	210
Weight	kg	~18,8
Absorption volume	dm <sup>3</sup>	0,384
You will find further technical data on the next page		

### Cycle times

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

### General characteristics

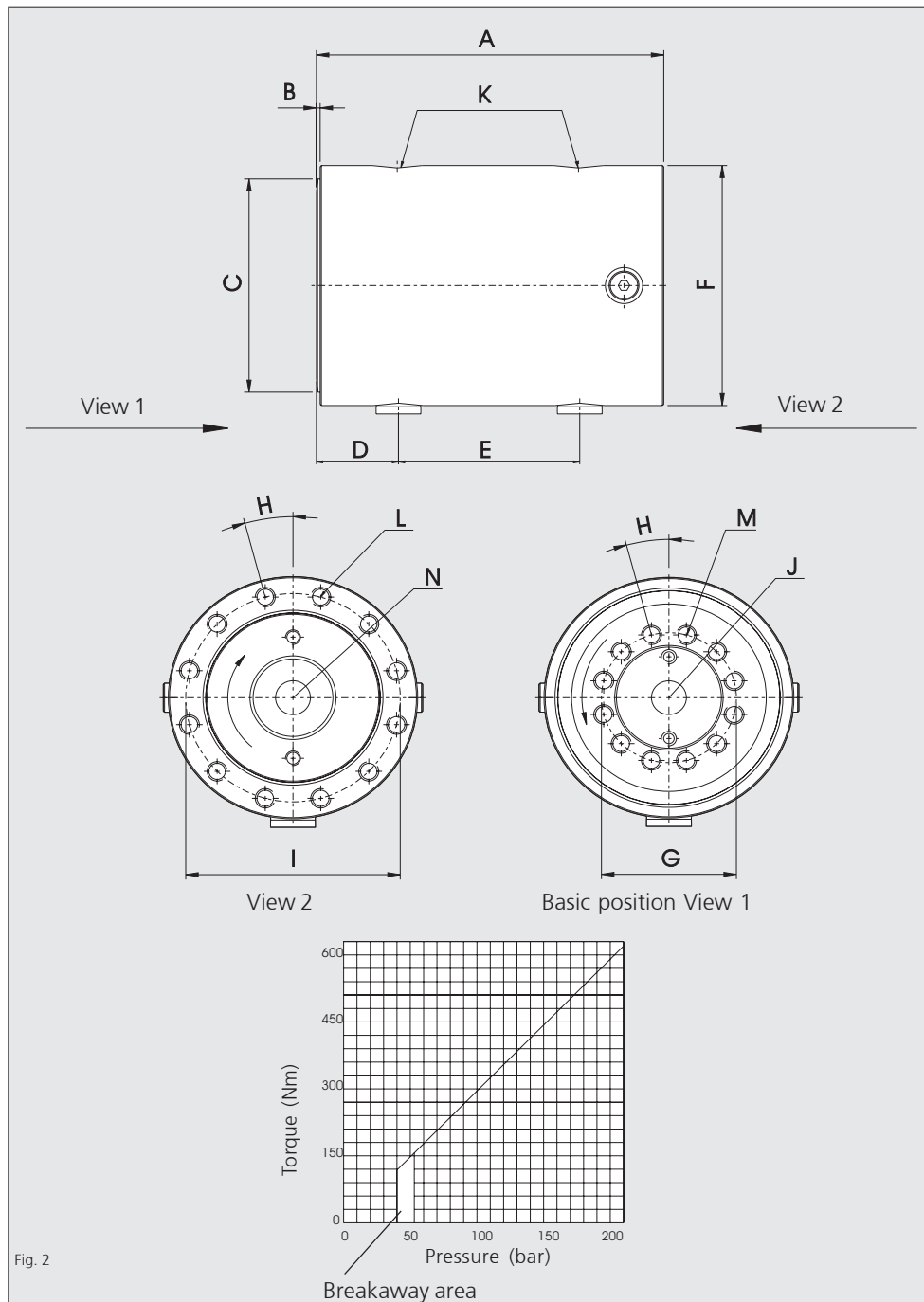
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

### Typical applications

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 63 360°

## Mobile hydraulic rotary actuator



Dimensions		M-DA-H 63 360°	
		mm	inch
A		212,1	(8,35")
B		1,27	(0,05")
C	∅	124,85	(4,92")
D		31,77	(1,25")
E		143,23	(5,64")
F	∅	135	(5,31")
G	∅	80	(3,15")
H		15°	
I	∅	117	(4,6")
J	∅	21	(0,83")
Trough hole			
K			G1/8"
Number L		12	
L			M10x15
Number M		12	
M			M10x15
N*)	∅	22	(0,87")
	deep	24,7	(0,97")

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	18000
Max. radial force	N	18000
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	2300

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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**Functional description**

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

**Direction of rotation**

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

**Angle of rotation**

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

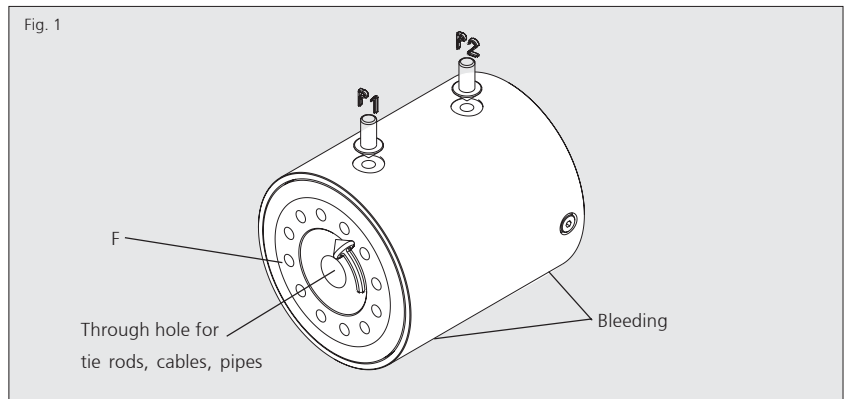
**Pressures, seals and temperatures**

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

**The advantages of the M-DA-H series**

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



**Technical data type M-DA-H 80 180°**

Order no.: 200818009886

Angle of rotation		180°
Nominal torque	Nm	1073
Max. working pressure	bar	210
Weight	kg	~26,5
Absorption volume	dm <sup>3</sup>	0,346
You will find further technical data on the next page		

**Cycle times**

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

**General characteristics**

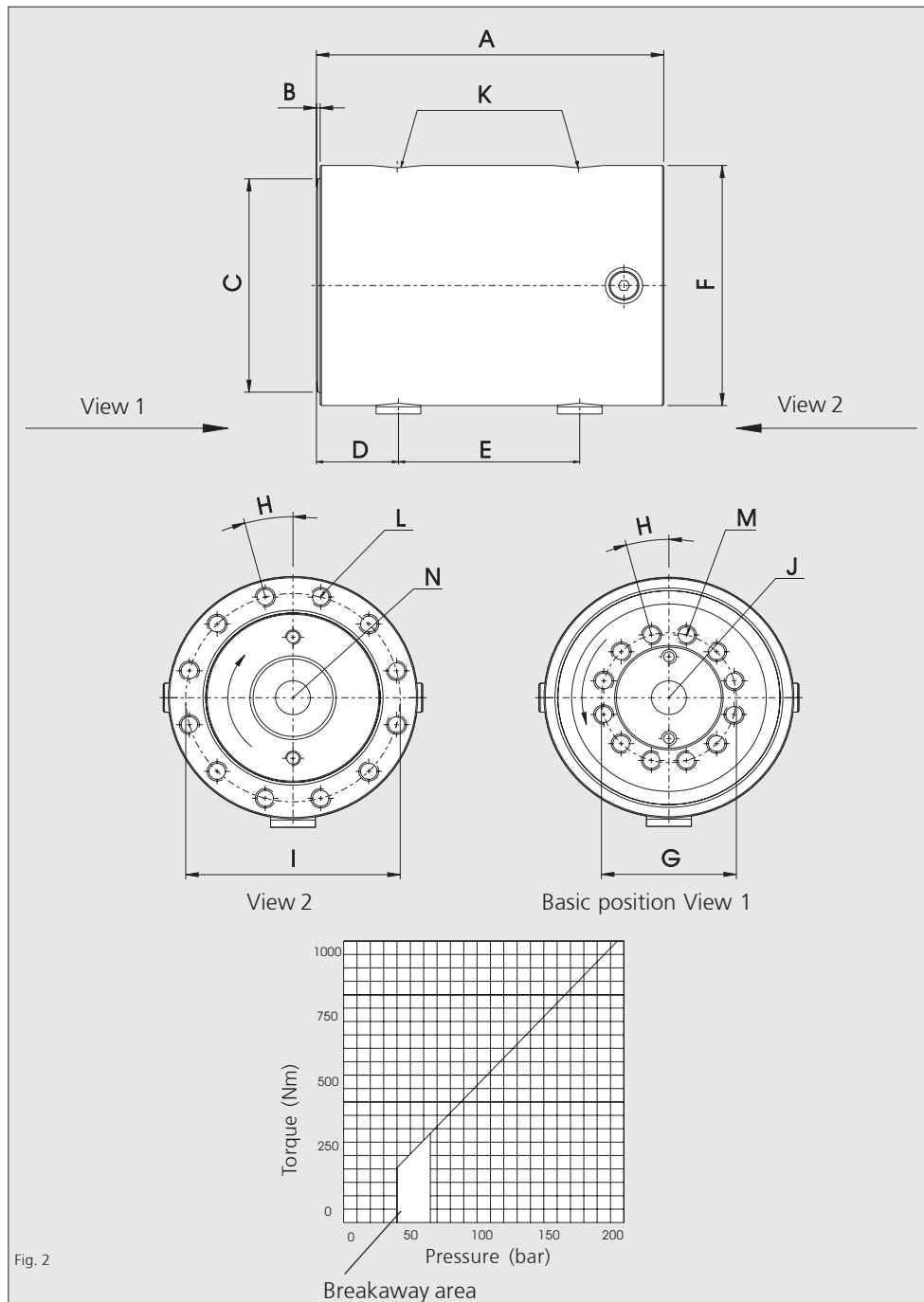
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

**Typical applications**

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 80 180°

## Mobile hydraulic rotary actuator



Dimensions	M-DA-H 80 180°	
	mm	inch
A	184,2	(7,25")
B	2	(0,08")
C	∅ 157,85	(6,21")
D	38	(1,5")
E	108	(4,25")
F	∅ 169,9	(6,69")
G	∅ 102	(4,02")
H	15°	
I	∅ 151	(5,94")
J	∅ 35,7	(1,41")
Trough hole		
K		G1/4"
Number L	12	
L		M12x19
Number M	12	
M		M12x19
N*)	∅	
	deep	

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	36000
Max. radial force	N	36000
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	5700

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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### Functional description

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

### Direction of rotation

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

### Angle of rotation

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

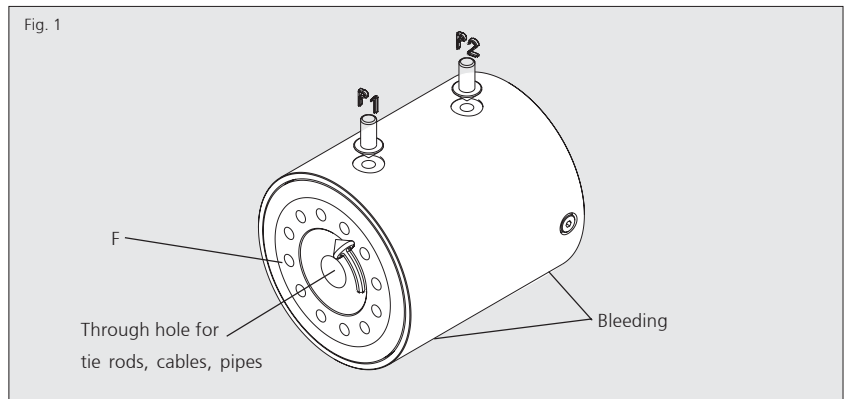
### Pressures, seals and temperatures

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

### The advantages of the M-DA-H series

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



### Technical data type M-DA-H 80 360°

Order no.: 200836009896

Angle of rotation		360°
Nominal torque	Nm	1073
Max. working pressure	bar	210
Weight	kg	~36
Absorption volume	dm <sup>3</sup>	0,712
You will find further technical data on the next page		

### Cycle times

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

### General characteristics

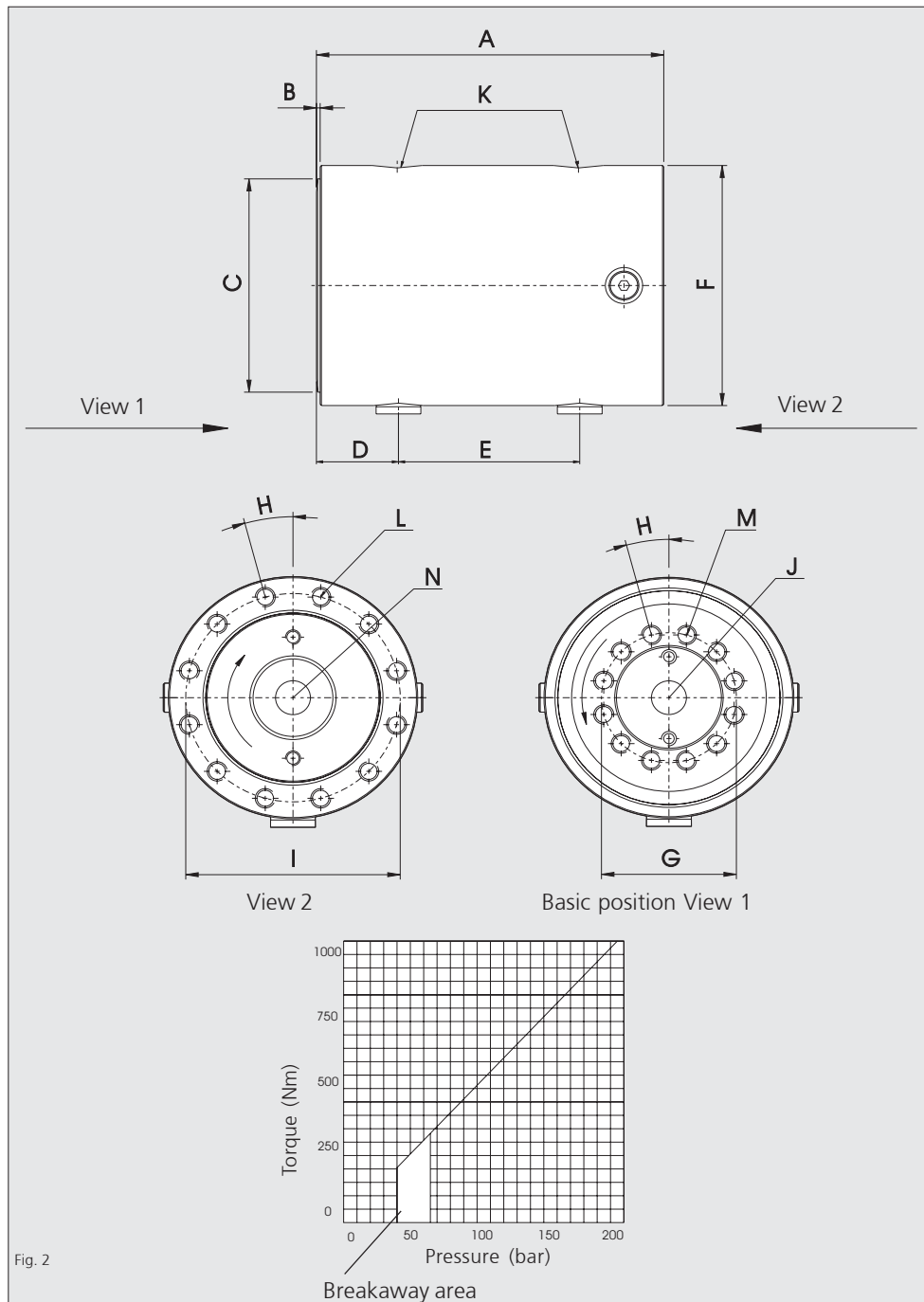
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

### Typical applications

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 80 360°

## Mobile hydraulic rotary actuator



Dimensions	M-DA-H 80 360°	
	mm	inch
A	258	(10,157")
B	2	(0,08")
C	∅ 157,85	(6,21")
D	38	(1,496")
E	161	(6,339")
F	∅ 169,9	(6,69")
G	∅ 102	(4,02")
H	15°	
I	∅ 151	(5,94")
J	∅ 36	(1,42")
Trough hole		
K		G1/4"
Number L	12	
L		M12x19
Number M	12	
M		M12x19
N*)	∅	
	deep	

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	36000
Max. radial force	N	36000
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	5700

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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### Functional description

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

### Direction of rotation

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

### Angle of rotation

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

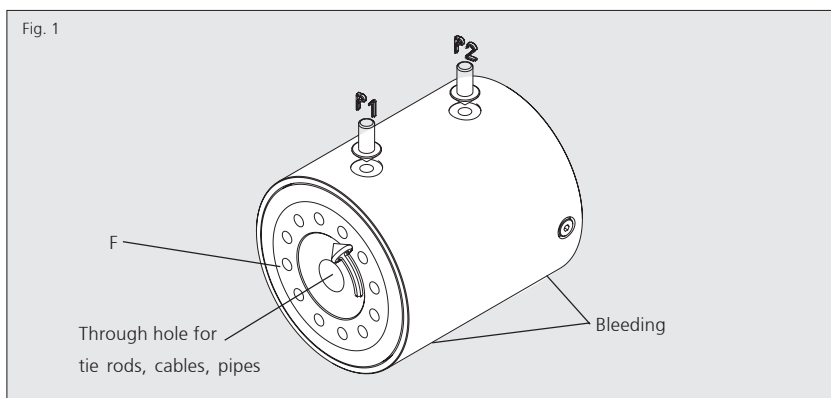
### Pressures, seals and temperatures

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

### The advantages of the M-DA-H series

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



### Technical data type M-DA-H 90 180°

Order no.: 200918009915

Angle of rotation		180°
Nominal torque	Nm	1700
Max. working pressure	bar	210
Weight	kg	~43
Absorption volume	dm <sup>3</sup>	0,55
You will find further technical data on the next page		

### Cycle times

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

### General characteristics

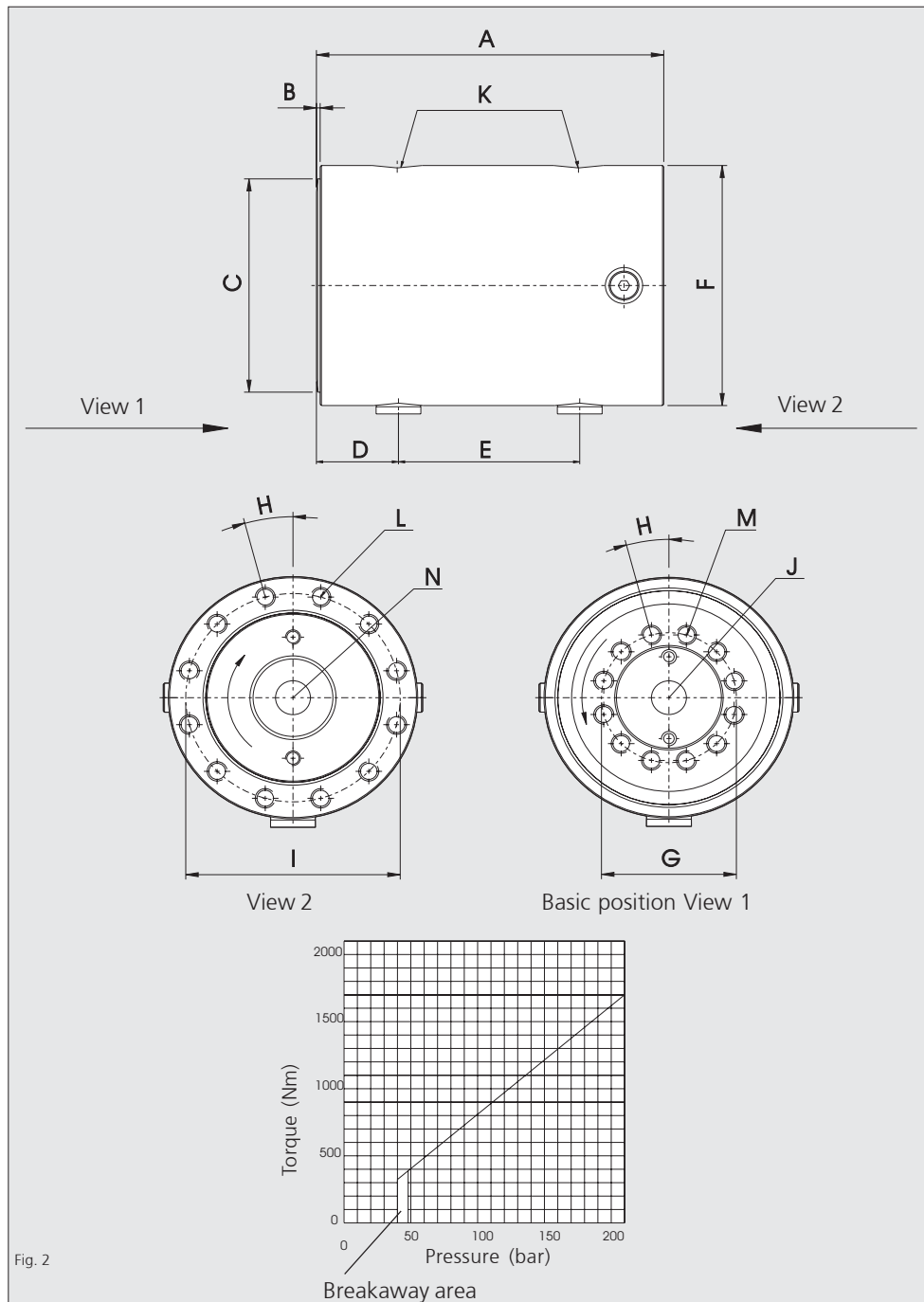
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

### Typical applications

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 90 180°

## Mobile hydraulic rotary actuator



Dimensions	M-DA-H 90 180°	
	mm	inch
A	224	(8,819")
B	2	(0,08")
C	∅ 179,85	(7,081")
D	45	(1,772")
E	134	(5,276")
F	∅ 197	(7,756")
G	∅ 127	(5")
H	15°	
I	∅ 175	(6,89")
J	∅ 45,7	(1,799")
Trough hole		
K		G1/4"
Number L	12	
L		M12x19
Number M	12	
M		M12x19
N*)	∅	
	deep	

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	49000
Max. radial force	N	49000
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	9040

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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### Functional description

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

### Direction of rotation

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

### Angle of rotation

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

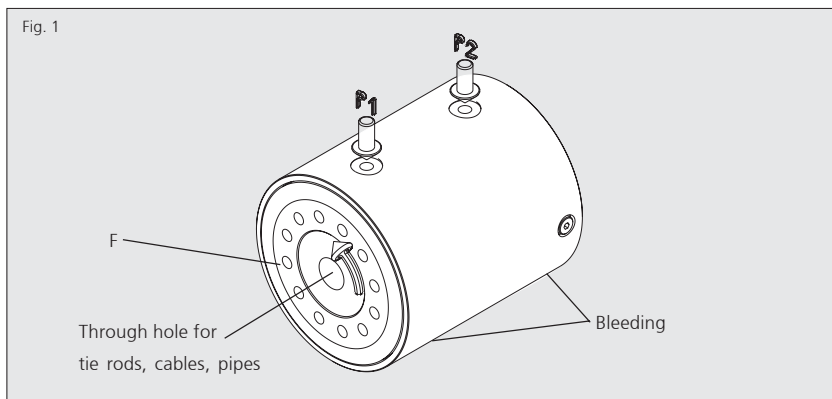
### Pressures, seals and temperatures

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

### The advantages of the M-DA-H series

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



### Technical data type M-DA-H 90 360°

Order no.: 200936009953

Angle of rotation		180°
Nominal torque	Nm	1700
Max. working pressure	bar	210
Weight	kg	~55
Absorption volume	dm <sup>3</sup>	1,1
You will find further technical data on the next page		

### Cycle times

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

### General characteristics

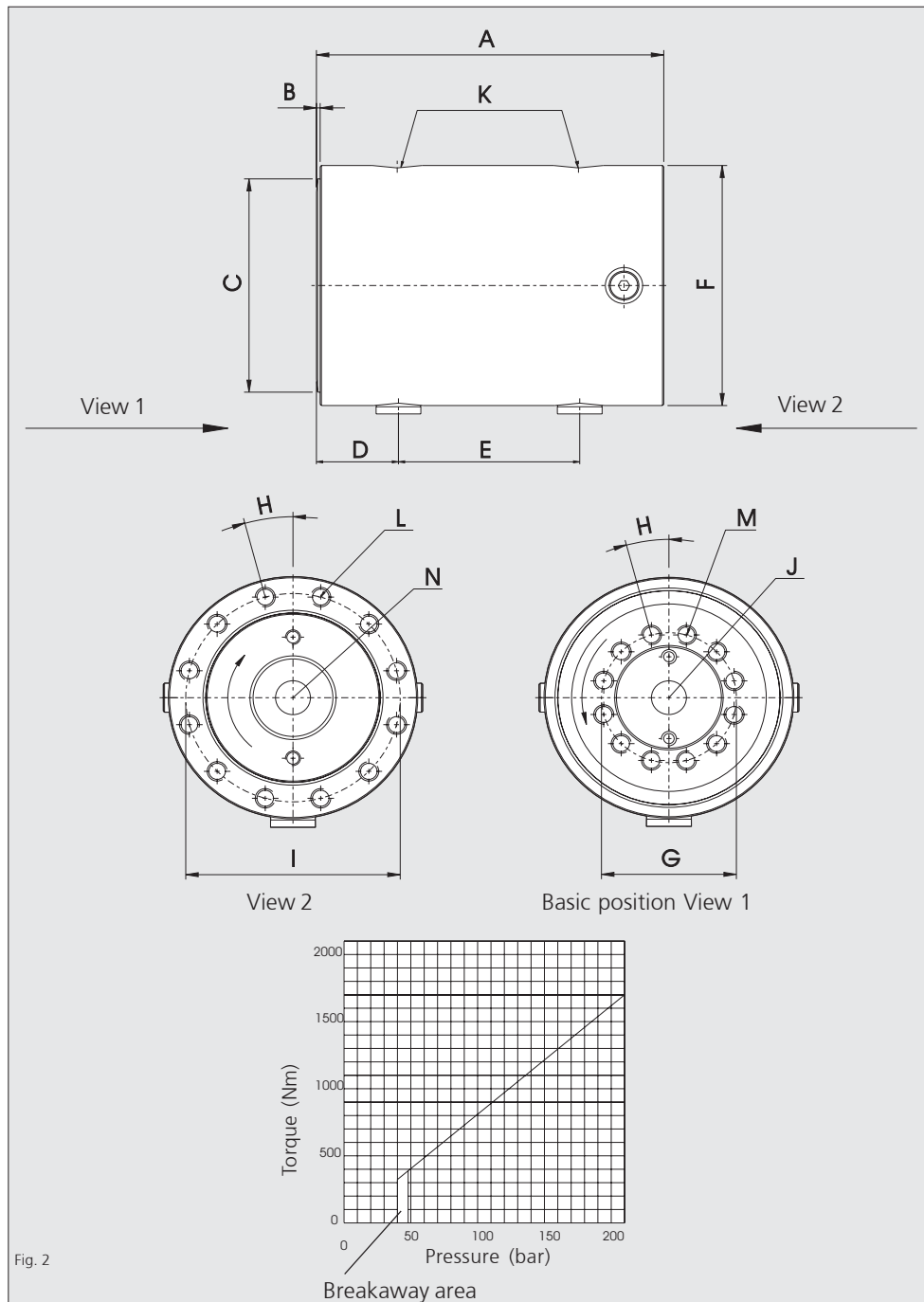
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

### Typical applications

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 90 360°

## Mobile hydraulic rotary actuator



Dimensions	M-DA-H 90 360°	
	mm	inch
A	311	(12,244")
B	2	(0,08")
C	∅ 179,85	(7,081")
D	45	(1,772")
E	200	(7,874")
F	∅ 197	(7,756")
G	∅ 127	(5")
H	15°	
I	∅ 175	(6,89")
J	∅ 45,7	(1,799")
Trough hole		
K		G1/4"
Number L	12	
L		M12x19
Number M	12	
M		M12x19
N*)	∅	
	deep	

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	49000
Max. radial force	N	49000
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	9040

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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### Functional description

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

### Direction of rotation

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

### Angle of rotation

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

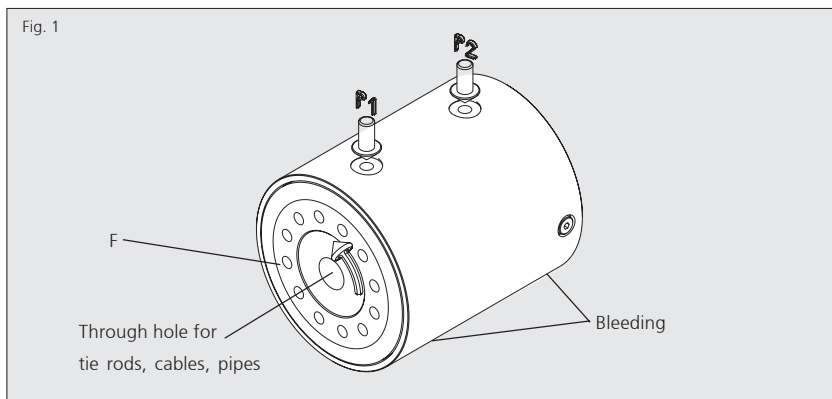
### Pressures, seals and temperatures

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

### The advantages of the M-DA-H series

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



### Technical data type M-DA-H 100 180°

Order no.: 201018009913

Angle of rotation		180°
Nominal torque	Nm	2900
Max. working pressure	bar	210
Weight	kg	~58
Absorption volume	dm <sup>3</sup>	0,829
You will find further technical data on the next page		

### Cycle times

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

### General characteristics

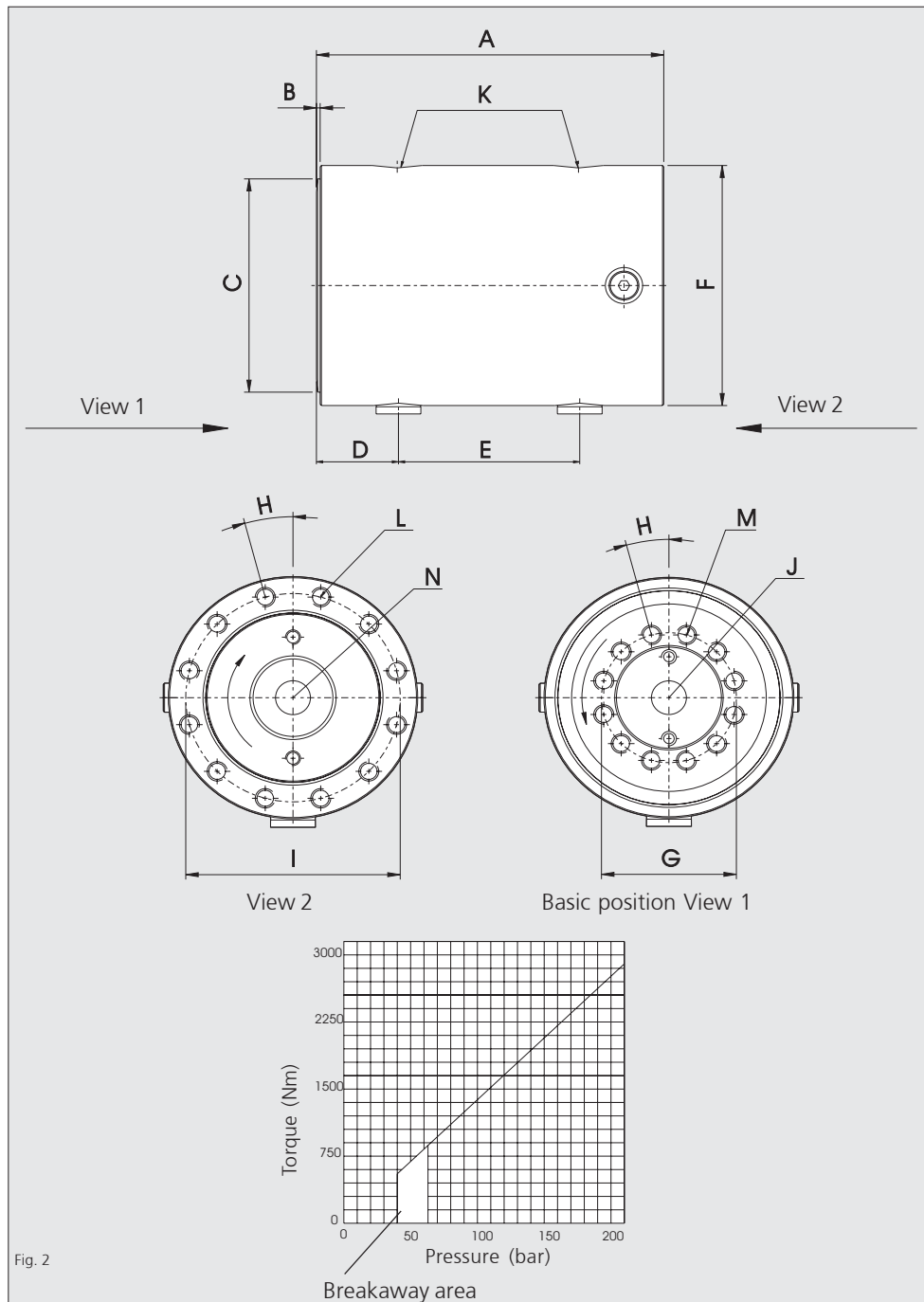
The rotary actuators in the M-DA-H series are designed principally for the mobile range. Based on the helical gear technique, a compact solution has been produced for a max. working pressure of 210 bars and a torque of up to 2900 Nm. The harmonic design and compact structure complete the overall image on a positive note. Rotary movements are possible in both directions. The use of high quality materials guarantees extremely long service life. In the actuator there is a drilled hole for cables and pipes, but alternatively this hole may be used for a tie rod for transferring high bending moments.

### Typical applications

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 100 180°

## Mobile hydraulic rotary actuator



Dimensions		M-DA-H 100 180°	
		mm	inch
A		238,5	(9,39")
B		2,5	(0,1")
C	∅	199,85	(7,87")
D		40,5	(1,59")
E		150	(5,91")
F	∅	225,5	(8,8")
G	∅	140	(5,51")
H		15°	
I	∅	203	(7,99")
J	∅	66,8	(2,63")
Trough hole			
K			G1/4"
Number L		12	
L			M12x19
Number M		12	
M			M16x19
N*)	∅		
	deep		

\*) Not available in every overall size

### Technical data (diagram)

Max. axial force	N	66800
Max. radial force	N	66800
Radial force flat on the shaft flange		
<b>For eccentric axial force:</b>		
Max. Bending moment	Nm	11300

For swelling load only! (where the load varies consult the manufacturer!) Tie rods may be supplied as optional extras by agreement.

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We reserve the right to make modifications

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**Functional description**

The oil pressure supplied via connections P1 or P2 generates a rotary movement on the actuator flange (F) (Fig.1). Here the linear movement of the piston is converted by helical gear running in opposite directions on the housing, piston and shaft to a rotary movement.

**Direction of rotation**

Due to the admission of pressure in P1 the actuator flange (F), with shaft rotates to the left from the initial position, see Fig.2 (counter-clockwise when viewed in the direction of the actuator flange). A change of direction of rotation is possible as a special version. All mobile rotary actuators are delivered in the front end position.

**Angle of rotation**

The actuators in the M-DA-H series are available with a standard angle of rotation of 180° and 360°. In addition to the standard angle of rotation, any additional angle of rotation is available.

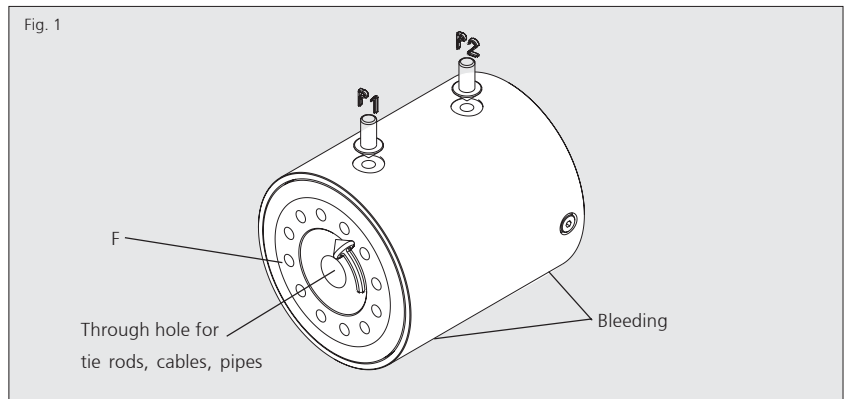
**Pressures, seals and temperatures**

The M-DA-H series is designed for a maximum working pressure of 210 bars. Mineral oils to ISO-VG-46 are recommended. The actuators with standard seals should be operated within the temperature range of -18°C to +70°C. Please consult the factory if they are to operate at higher or lower thermal loads.

**The advantages of the M-DA-H series**

- No internal leakage
- Precise positioning without deviation
- Any intermediate angle of rotation possible
- Direct securing of load on one or both sides
- Through shaft hole
- High bearing load capacity
- Harmonic design
- Compact solution
- Use of high quality, high strength materials
- Sealing material from reputable manufacturers

Special requirements can be met wherever possible.



**Technical data type M-DA-H 100 360°**

Order no.: 201036009939

Angle of rotation		360°
Nominal torque	Nm	2900
Max. working pressure	bar	210
Weight	kg	~81,5
Absorption volume	dm <sup>3</sup>	1,659
You will find further technical data on the next page		

**Cycle times**

In regular rotary movement the cycle times should be no faster than 5 seconds for a rotary movement of 180° and 10 seconds for one of 360°. The values indicated are effective values and lower values are not permitted. In a multi-shift operation and where the continuous stresses are very high, we recommend considering a safety factor of 70% of the maximum permissible torque.

**General characteristics**

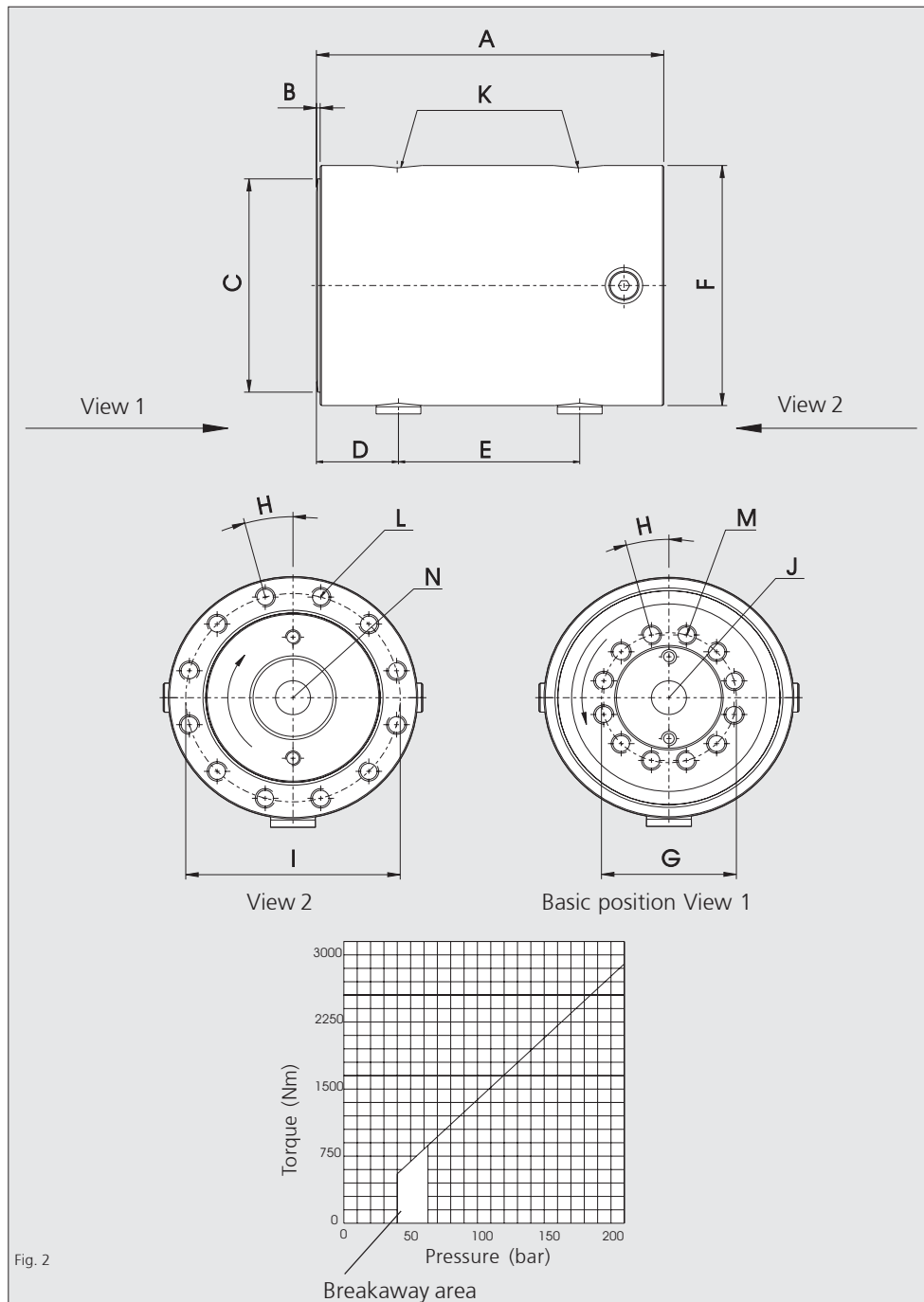
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**Typical applications**

The applications range from automotive engineering, working platforms and control of construction machinery through fire fighting working baskets to concrete conveyor belts etc. You may obtain information on further possible applications from the manufacturer.

# Technical information M-DA-H 100 360°

## Mobile hydraulic rotary actuator



### Dimensions M-DA-H 100 360°

Typ	mm	inch
A	346,4	(13,64")
B	2,5	(0,1")
C	∅ 199,85	(7,87")
D	40,5	(1,59")
E	258	(10,16")
F	∅ 225,5	(8,8")
G	∅ 140	(5,51")
H	15°	
I	∅ 203	(7,99")
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Trough hole		
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L		M12x19
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