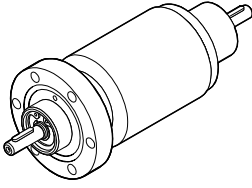


# Rotary feedthrough

DN 40 CF-F  
FRU040-N



Operating Manual  
incl. Manufacturer's Declaration

rina13e1 (0004)

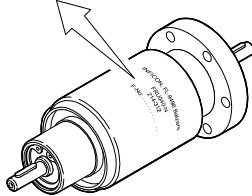
## Product Identification

In all communications with Inficon, please specify the information on the product nameplate. For convenient reference copy that information into the space provided below.

INFICON, FL-9496 Balzers

FRU040-N  
214-312

F-No: .....



## Validity

This document applies to products with part number 214-312.

The part number can be taken from the product nameplate.

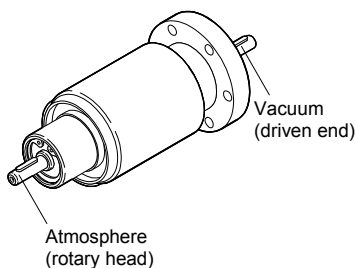
We reserve the right to make technical changes without prior notice.

## Intended Use

The mechanical FRU040-N all metal rotary feedthrough is used for transferring rotary movements into vacuum systems.

## Functional Principle

The rotary movements at the rotary head are directly transmitted to the curved shaft (cat tail principle).



## Safety

### Symbols Used

**DANGER**  
 Information on preventing any kind of physical injury.

**WARNING**  
 Information on preventing extensive equipment and environmental damage.

**Caution**  
 Information on correct handling or use. Disregard can lead to malfunctions or minor equipment damage.

### Personnel Qualifications

**Skilled personnel**  
 All work described in this document may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

### General Safety Instructions

- Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.
- Before you begin to work, find out whether any vacuum components are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Communicate the safety instructions to other users.

### Liability and Warranty

Inficon assumes no liability and the warranty becomes null and void if the end-user or third parties

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of changes (modifications, alterations etc.) to the product
- use the product with accessories not listed in the corresponding product documentation.

The end-user assumes the responsibility in conjunction with the process media used.

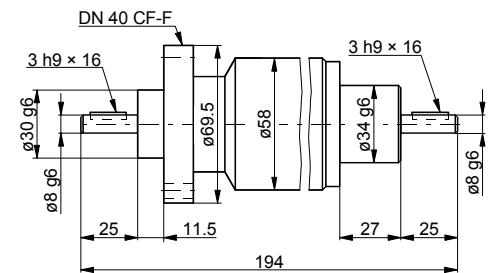
## Technical Data

Connection flange	DN 40 CF-F
Mounting orientation	any
Tightness	1×10 <sup>-10</sup> mbar l/s
Pressure range	1×10 <sup>-9</sup> mbar ... ... 2 bar (absolute)
Cycles to first overhaul	5,000,000 revolutions
Transferable torque dynamic static	4 Nm 3 Nm
Shaft load to vacuum radial axial	60 N 20 N
to atmosphere radial axial	100 N 30 N
Basic clearance	2°
Elasticity with maximum torque	6°
Rotary speed	1000 / 500 <sup>1)</sup> rpm
Temperatures operation (static, dynamic) bakeout storage	300 °C <sup>2)</sup> 300 °C -15 °C ... +60 °C
Materials feedthrough, bellows	stainless steel
Weight	1.5 kg

<sup>1)</sup> At maximum torque

<sup>2)</sup> Dynamic with a torque of ≤0.2 Nm.

### Dimensions



## Installation

### Vacuum Connection

#### Caution

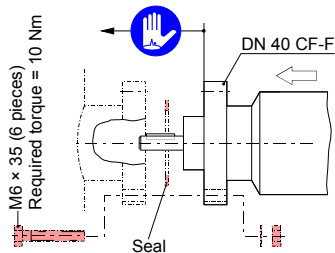


Caution: vacuum component  
Dirt and damages impair the function of the vacuum component.  
When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.

#### Caution



Caution: dirt sensitive area  
Touching the product or parts thereof with one's bare hands increases the desorption rate.  
Always wear clean, lint-free gloves and use clean tools when working in this area.



Seal	Ordering number
Copper (10 pieces)	213-372
Copper, silver plated (10 pieces)	213-382
FPM (5 pieces)	213-392

### Connecting the Shaft

#### Caution



When designing a rotary drive, take care that the rotary feedthrough is not the weakest component of the assembly.

#### WARNING



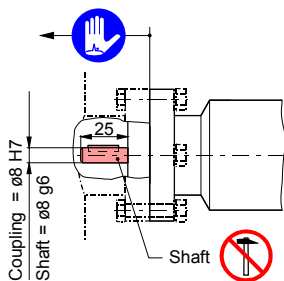
Caution: stress on the rotary feedthrough  
Inadmissible loads damage the rotary feedthrough.  
Do not apply force when sliding the coupling piece over the shaft. Consider the admissible levels of axial and radial force (→ "Technical data").

### Vacuum

#### Caution



Caution: dirt sensitive area  
Touching the product or parts thereof with one's bare hands increases the desorption rate.  
Always wear clean, lint-free gloves and use clean tools when working in this area.

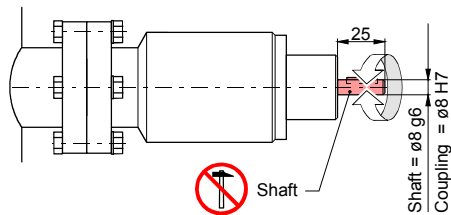


Tolerances:

$$\varnothing 8\ H7 \approx \varnothing \begin{matrix} +0.015 \\ 0 \end{matrix} \text{ mm}$$

$$\varnothing 8\ g6 \approx \varnothing \begin{matrix} -0.005 \\ -0.014 \end{matrix} \text{ mm}$$

### Atmosphere



Tolerances:

$$\varnothing 8\ H7 \approx \varnothing \begin{matrix} +0.015 \\ 0 \end{matrix} \text{ mm}$$

$$\varnothing 8\ g6 \approx \varnothing \begin{matrix} -0.005 \\ -0.014 \end{matrix} \text{ mm}$$

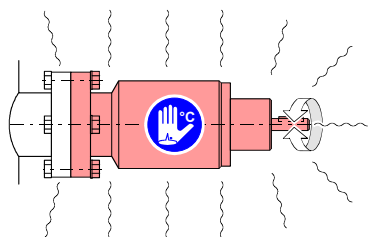
### Operation

The rotary feedthrough is ready for installation as soon as it has been installed.

#### DANGER



Caution: hot surface  
The operating temperature can reach up to 300 °C. Touching the hot surface (>55 °C) can cause burns (see "Technical data").  
Wear protective gloves.



## Deinstallation

#### DANGER



Caution: contaminated parts  
Contaminated parts can be detrimental to health and environment.  
Before beginning to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

#### Caution



Caution: vacuum component  
Dirt and damages impair the function of the vacuum component.  
When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.

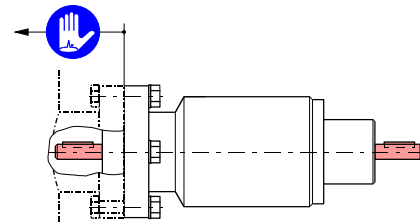
#### Caution



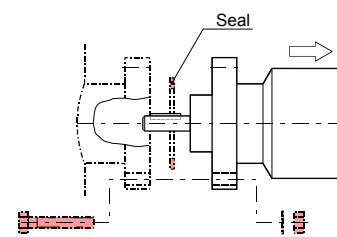
Caution: dirt sensitive area  
Touching the product or parts thereof with one's bare hands increases the desorption rate.  
Always wear clean, lint-free gloves and use clean tools when working in this area.

### Procedure

- 1 Vent the vacuum system and wait until it has cooled down to <math>< 55\text{ °C}</math>.
- 2 Loosen the coupling pieces on both, the vacuum and atmospheric side.



- 3 Disconnect the rotary feedthrough from the vacuum system.



#### Caution



We recommend using a new seal when reinstalling the rotary feedthrough (→ "Installation").



(0004)

## Maintenance

Under clean operating conditions, the product requires no maintenance during the rated cycle life (→ "Technical data").

We recommend returning the product to your nearest Inficon-Service Center for service.

Inficon assumes no liability and the warranty becomes null and void if any service work is carried out by the end-user or third parties.

## Repair

We recommend returning the product to your nearest Inficon-Service Center for repair.

Inficon assumes no liability and the warranty becomes null and void if any repair work is carried out by the end-user or third parties.

## Storage

### Caution



Caution: vacuum component  
Inappropriate storage leads to an increase of the desorption rate and/or may result in mechanical damage of the product.

Cover the side of the product which is going to be exposed to the vacuum with grease free aluminum foil. Do not exceed the admissible storage temperature range (→ "Technical Data").

## Returning the Product

### WARNING



Caution: forwarding contaminated products  
Contaminated parts (e.g. radioactive, toxic, caustic or microbiological) can be detrimental to health and environment.

Products returned to Inficon should preferably be free of harmful substances. Adhere to the forwarding regulations of all involved countries and forwarding companies and enclose a duly completed declaration of contamination.

Products that are not clearly declared as "free of harmful substances" are decontaminated at the expense of the customer.

Products not accompanied by a duly completed declaration of contamination are returned to the sender at his own expense.

## Disposal

### DANGER



Caution: contaminated parts  
Contaminated parts can be detrimental to health and environment.

Before beginning to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

### WARNING



Caution: substances detrimental to the environment

Products or parts thereof (mechanical and electric components, operating fluids etc.) can be detrimental to the environment.

Dispose of such substances in accordance with the relevant local regulations.

## Separating the Components

After disassembling the product, separate its components according to the following criteria:

- Contaminated components  
Contaminated components (radioactive, toxic, caustic, or biological hazard etc.) must be decontaminated in accordance with the relevant national regulations, separated according to their materials, and recycled.
- Other components  
Such components must be separated according to their materials and recycled.

## Declaration of Contamination

The service, repair, and/or disposal of vacuum equipment and components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.  
This declaration may only be completed (in block letters) and signed by authorized and qualified staff.

<b>1 Description of product</b> Type _____ Article Number _____ Serial Number _____	<b>2 Reason for return</b> _____ _____ _____																														
↓																															
<b>3 Operating fluid(s) used</b> _____ _____																															
↓																															
<b>4 Process related contamination of product:</b> toxic                    no <input type="checkbox"/> yes <input type="checkbox"/> corrosive                no <input type="checkbox"/> yes <input type="checkbox"/> biological hazard    no <input type="checkbox"/> yes <input type="checkbox"/> *) explosive                no <input type="checkbox"/> yes <input type="checkbox"/> *) radioactive            no <input type="checkbox"/> yes <input type="checkbox"/> *) other harmful substances no <input type="checkbox"/> yes <input type="checkbox"/>																															
↓																															
*) Products thus contaminated will not be accepted without written evidence of decontamination!																															
↓																															
The product is free of any substances which are damaging to health    yes <input type="checkbox"/>																															
↓																															
<b>5 Harmful substances, gases and/or by-products</b> Please list all substances, gases and by-products which may have come into contact with the product:																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Trade/product name manufacturer</th> <th style="width: 20%;">Chemical name (or symbol)</th> <th style="width: 15%;">Dangerous material class</th> <th style="width: 20%;">Measures in case of spillage</th> <th style="width: 25%;">First aid in case of contact</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>		Trade/product name manufacturer	Chemical name (or symbol)	Dangerous material class	Measures in case of spillage	First aid in case of contact																									
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<b>6 Legally binding declaration:</b> I/we hereby declare that the information on this form is complete and accurate and that I/we will assume any further costs that may arise. The contaminated product will be in accordance with the applicable regulations.																															
Organization/company _____ Address _____                    Post code, place _____ Phone _____                    Fax _____ Email _____ Name _____																															
Data and legally binding signature _____                    Company stamp _____																															

This form can be downloaded from our website.

Copies:  
Original for addressee - 1 copy for accompanying documents - 1 copy for file of sender

## Manufacturer's Declaration

as defined by the Council Directive relating to machinery 98/37/EC, Appendix IIb

We, Inficon, hereby declare that putting the incomplete equipment mentioned below into operation is not permitted until evidence is given that the system into which that incomplete equipment shall be installed is in accordance with the provisions of the EC Council Directive relating to machinery.

### Rotary feedthrough

DN 40 CF-F  
FRU040-N

#### Part number

214-312

#### Standards

Harmonized and international/national standards and specifications:

- 89/392/EEC version 93/68/EEC .....
- EN 292-1+EN 292-2 / 9.91 .....

#### Signatures

Inficon AG, Liechtenstein

02 May 2000



Hans-Christoph Gehlhar  
Product Management

02 May 2000



Hugo Frei  
Product development



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