



## Ion eXchange Unit IXU 1/4 Series

### Description

The IXU series of easy-maintenance ion exchange units is designed to condition fire-resistant hydraulic and lubrication fluids based on phosphate esters (HFD-R) and polyol esters (HFD-U).

They are effective in removing the acidic products of degradation resulting from hydrolysis and/or oxidation of the fluid as well as metal soaps present in the fluid.

The units are used offline with flow rates of up to  $\approx 9$  l/min on hydraulic and lubrication oil tanks.

Mobile or stationary IXUs are available. HYDAC's own Ion eXchange Elements (IXE), filled with ion exchange resins, are deployed in the IXU.

### Special Features

- Effective removal of acids and metal soaps.
- Free from extractable metals or particles, in contrast to fuller's earth or activated aluminium oxide.
- Units are easy to service.
- Available as a complete unit for oil service work, and as a modular system for retrofitting in existing offline circuits or for OEMs.

In addition we recommend that dewatering is carried out continuously using, for example, a FluidAqua Mobile FAM.

### Advantages

- Reduces functional problems, e.g. on servo valves
- Extended service life of the operating fluid
- Increased machine and system availability

### Technical specifications

| Hydraulic data *                      |  |
|---------------------------------------|--|
| Neutralization number achievable      | < 0.1 mg KOH / g   |
| Typically, possible to use up to      | max. TAN 1 mg KOH / g oil with HFD-R<br>max. TAN 7 mg KOH / g oil  |
| Nominal flow                          | IXU -1 $\approx$ 2.2 l/min<br>IXU -4 $\approx$ 8.9 l/min   |
| Fluid temperature range               | 30 to 60 °C / 86 to 140 °F   |
| Operating pressure max.               | 8 bar / 116 psi  |
| Permitted pressure at suction port IN | -0.2 to 1 bar / 2.9 to 14.5 psi  |
| Viscosity range                       | 15 to 80 mm <sup>2</sup> /s / 15 to 80 cSt   |
| Permitted operating fluids            | HFD-R<br>Fire-resistant hydraulic fluids based on phosphate ester<br>HFD-U<br>Fire-resistant hydraulic fluids based on polyol ester basis  |
| Connections IN / OUT                  | 22L / M30x2 (male thread)  |
| Pump type                             | Gear pump / without pump   |
| Electrical data *                     |  |
| Supply voltage                        | See model code   |
| Electrical power consumption          | 0.25 to 0.6 kW   |
| External fuse required                | 16 A   |
| Protection class to DIN 40050         | IP 55  |
| Ambient conditions                    |  |
| Operating temperature range           | 0 to 40 °C / 32 to 104 °F  |
| Storage temperature range             | 0 to 60 °C / 32 to 140 °F  |
| Relative humidity                     | 0 to 80%, non-condensing   |
| General data *                        |  |
| Length of power cable                 | 10 m (for versions PKZ, FA1, FA2)  |
| Length of suction / pressure hose     | 5 m (for versions S5D5, SKDK)  |
| Sealing material                      | FKM  |
| Noise level at 1m                     | < 80 dB(A)   |
| Weight when empty                     | IXU 1 $\approx$ 70 kg<br>IXU 4 $\approx$ 300 kg  |
| Required fluid cleanliness            | ISO 19/17/14 (ISO 4406:1999)<br>9A/9B/9C (SAE AS4059)<br>We recommend that the IXU is only operated with the pre-filter, which is available as an option, to guarantee the required fluid cleanliness. |

\* Others on request

## MODEL CODE

**IXU - 4 - M - G - A - 1 - C - Z /-S5D5-PKZ /-ATEX**

### Basic type

IXU = Ion eXchange Unit

### Size

- 1 = 1 Ion eXchange element  
IXE2xx ≈ 2.2 l/min  
4 = 4 Ion eXchange element  
IXE2xx ≈ 8.9 l/min

### Mechanical design

- M = mobile  
S = stationary

### Pump type

- G = gear pump with motor  
Z = without pump

### Voltage, frequency, power supply

- A = 400 V, 50 Hz, 3 Ph  
B = 415 V, 50 Hz, 3 Ph  
C = 200 V, 50 Hz, 3 Ph  
D = 200 V, 60 Hz, 3 Ph  
E = 220 V, 60 Hz, 3 Ph  
F = 230 V, 60 Hz, 3 Ph  
G = 380 V, 60 Hz, 3 Ph  
H = 440 V, 60 Hz, 3 Ph  
I = 500 V, 50 Hz, 3 Ph  
K = 480 V, 60 Hz, 3 Ph  
L = 220 V, 50 Hz, 3 Ph  
M = 230 V, 50 Hz, 1 Ph  
N = 575 V, 60 Hz, 3 Ph  
O = 460 V, 60 Hz, 3 Ph  
X = other voltage (please specify)  
Z = without

### Pre-filter

- 1 = with pre-filter (OLF5 Toploader)  
Z = without pre-filter

### Clogging indicator

- C = differential pressure indicator – electrical (VM2C.0),  
for protective filter,  
pre-filter with visual differential pressure indicator  
(VM2BM.1)  
BM = differential pressure indicator – visual (VM2BM.1)  
for pre-filter and protective filter

### Measuring equipment

- AS = AquaSensor AS1000. Hydraulic connection only.  
Additional equipment such as HYDAC HMG 3000 or HMG500  
is required for display and data storage.  
Z = without

### Supplementary details

- S5D5 = suction/return line hose with lance, length = 5 metres  
SKDK = suction/return line hose with threaded connection, length = 5 metres  
PKZ = on/off switch with motor circuit breaker  
FA1 = on/off switch with motor circuit breaker and cut-off when  
filter is clogged. Requires neutral wire. For voltages up to  
max. 240V, 1Ph, or max. 415V, 3Ph.  
Clogging indicator type C is required.  
FA2 = on/off switch with motor circuit breaker and cut-off when  
filter is clogged. Does not require neutral line.  
All voltages. Clogging indicator type C required.

### Explosion protection version

On request

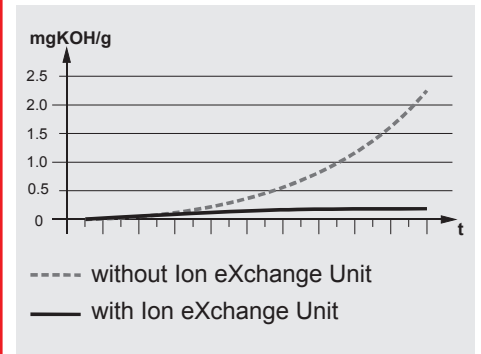
## Sizing

As a rough guide, the IXU can be sized according to the tank volume of the system.

| Tank volume in litres | IXU      |
|-----------------------|----------|
| < 3,500               | IXU-1    |
| 3,500 – 15,000        | IXU-4    |
| > 15,000              | 2x IXU-4 |

## Graph

Example of acidification in HFD fluids with and without Ion eXchange Unit:

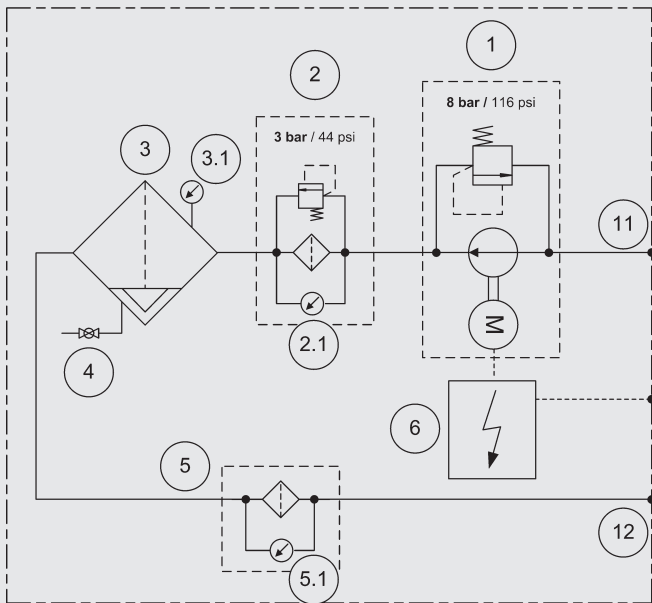


## Items supplied

- IXU with protective filter and additional equipment as per model code
- Operating manual
- EC declaration of conformity

Ion eXchange elements and filter elements for pre-filter and protective filter must be ordered separately.

## Hydraulic circuit



| Item | Description                               |
|------|---|
| 1    | Motor/pump assembly*                      |
| 2    | Prefilter*                                |
| 2.1  | Clogging indicator - visual               |
| 3    | Ion exchange column                       |
| 3.1  | Pressure gauge                            |
| 4    | Drain                                     |
| 5    | Protective filter                         |
| 5.1  | Clogging indicator - electrical or visual |
| 6    | On/Off switch with motor protection*      |
| 11   | Inlet                                     |
| 12   | Outlet                                    |

\*optional

## Ion eXchange elements

Filter elements must be ordered separately and installed before initial operation on site. The number of elements is based on the size of the IXU.

Operating fluid: HFD-R

| Part number | Description | Application range             |
|-------------|-------------|-------------------------------|
| 3348961     | IXE 200     | Removes acids and metal soaps |
| 3413670     | IXE 210     | Removes metal soaps           |
| 3464744     | IXE 220     | Removes acids                 |
| 4081665     | IXE 280 D   | Removes acids and water       |
| 3560654     | IXE 200 D   | Removes acids and metal soaps |
| 3559516     | IXE 250     | Acid (TAN > 1 mg KOH / g)     |

Operating fluid: HFD-U

| Part number | Description | Application range |
|-------------|-------------|-------------------|
| 3820200     | IXE 350     | Removes acids     |

The maximum storage time for all Ion eXchange elements is 6 months after supply.

## Filter elements for pre-filter and protective filter

Filter elements must be ordered separately and installed before commissioning on site. One filter element per filter is required.

| Part number | Description | Filtration rating |
|-------------|-------------|-------------------|
| 3068101     | N5DM005     | 5 µm              |
| 3102924     | N5DM010     | 10 µm             |

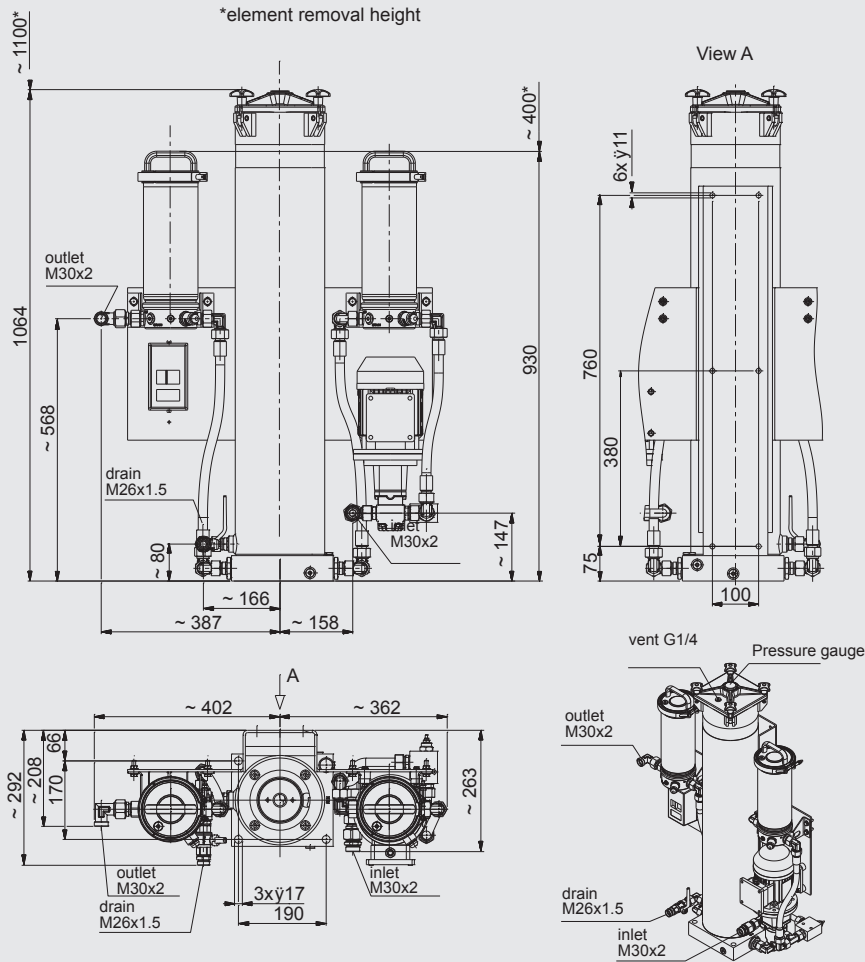
## Example of required order quantity:

IXU- 4 -M-G-A -1-BM-Z /-S5D5-PKZ  
 4 x IXE200 element  
 2 x N5DM010  
 (for pre-filter and protective filter)

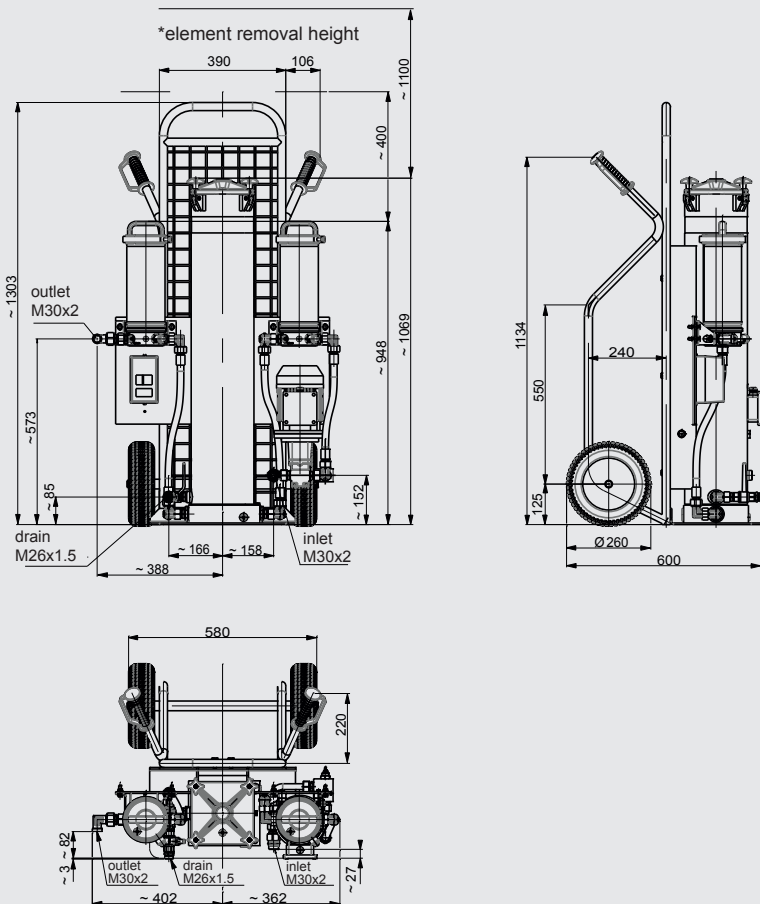
IXU- 4 -M-G-A -Z-BM-Z /-S5D5-PKZ  
 4 x IXE200 element  
 1 x N5DM010 (only for protective filter)

IXU- 1 -M-G-A -1-BM-Z /-S5D5-PKZ  
 1 x IXE200 element (Tank < 500 Liter)  
 2 x N5DM010  
 (for pre-filter and protective filter)

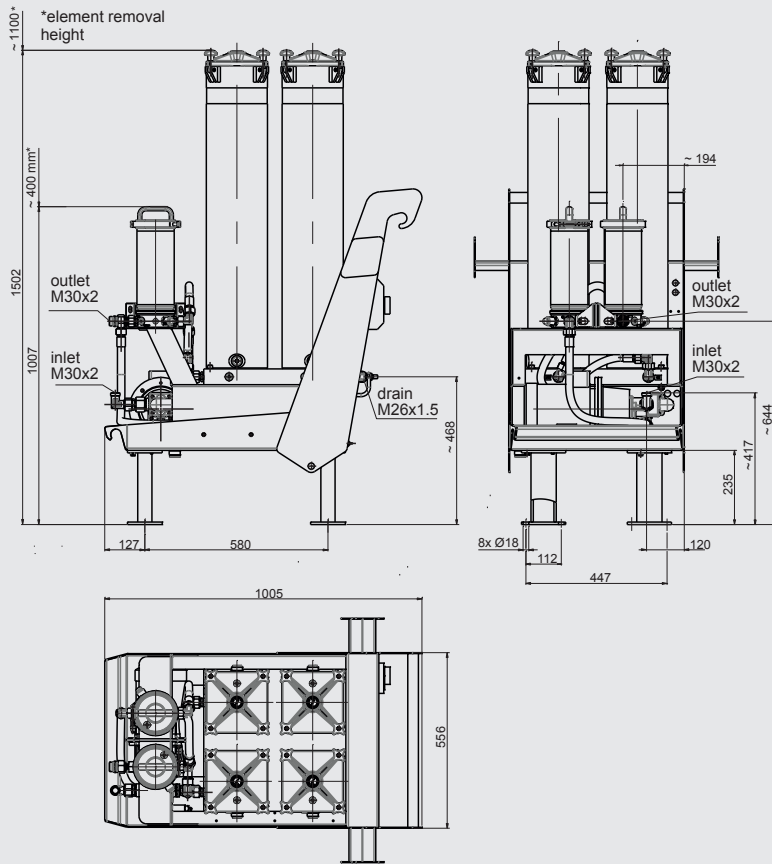
## Dimensions - IXU-1 stationary



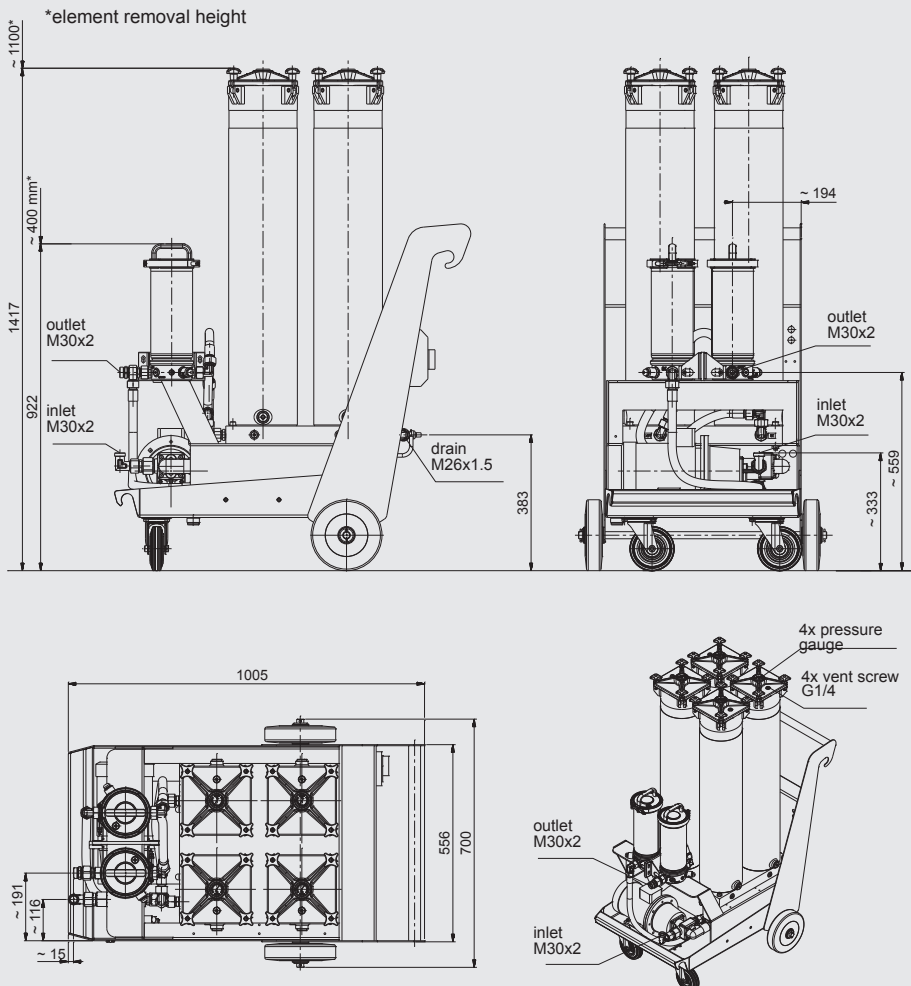
## Dimensions - IXU-1 mobile



## Dimensions - IXU-4 stationary



## Dimensions - IXU-4 mobile



**Note**

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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