

# IF-105 user interface

(Original operating and maintenance instructions)



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**Warning** Read and follow the safety precautions and general instructions in this manual and also in the SKF manual *"Safety and general instructions for lubrication systems."* Failure to follow these instructions could result in serious injury or damage to the lubrication system or the equipment that is lubricated.

# 1 General information

IF-105 is the user interface for the internal control unit of SKF Maxilube hydraulic part and for the SKF ST-1240-IF control center.

Lubrication programming, alarm resetting and lubrication event monitoring can be performed with the user interface.

# 2 Design

The IF-105 user interface includes a display (pos. 1), LED-signals for lubrication lines and pressurization (pos. 2), browsing buttons (pos. 3), a setting/function button (SET) (pos. 4) and LED-signals for lubrication channels (pos. 5).



## 2.1 LED-signals for channels

**Note!** LED-signals **CH1** and **CH2** for lubrication channels are in use only in systems with two channels.

LED-signal	Description
<b>CH1</b>	Red LED-signal is lit, when channel 1 is in alarm mode. Green LED-signal is lit, when channel 1 is in normal mode. LED-signal is blinking when channel 1 is selected on the display.
<b>CH2</b>	Red LED-signal is lit, when channel 2 is in alarm mode. Green LED-signal is lit, when channel 2 is in normal mode. LED-signal is blinking when channel 2 is selected on the display.

## 2.2 LED-signals for operation

**Note!** The LED-signals indicate the operation of the channel which is selected on the display.

LED-signal	Description
<b>L1</b>	Green LED-signal is lit, when main line 1 is pressurized. Green LED-signal is lit during interval, when main line 1 has been pressurized last. Red LED-signal is blinking, when main line 1 is in pressure alarm mode.
<b>L2</b>	Green LED-signal is lit, when main line 2 is pressurized. Green LED-signal is lit during interval, when main line 2 has been pressurized last. Red LED-signal is blinking, when main line 2 is in pressure alarm mode.
<b>P</b>	Green LED-signal is lit, when the pressurization phase is in progress. Red LED-signal is blinking, when the pumping center is in low level alarm mode.

## 2.3 Buttons

**Note!** The buttons affect only the channel which is selected on the display.

Button	Description
↑	In normal mode, the button is used to browse set values on the display. In setting mode, the button is used to change the value on the display.
→	In normal mode in a MonoFlex- and a DuoFlex-system the button is used to browse the pressure displays of the lines. In normal mode in a ProFlex system the button is used to go to the pulse counter display. In setting mode, the button is used to move to the next character of the display. When browsing the set values, the button is used to return to normal mode.
SET	In normal mode, the button is used to start extra lubrication, to stop pressurization or reset an alarm. In setting mode, the button is used to save the changed value. When browsing the set values, the button is used to go to the setting mode.

When a button is pressed, all green LED-signals are lit for a moment. This indicates that the information about a button being pressed has been transmitted forward.

## 2.4 Display

**Note!** The display indicates the operation of the channel which is selected on the display.

User interface has a display of 3 characters and 3 decimal points.

The display shows the time and, in pressure transmitter operation, also pressure.

### Time and pulse display

The set value for the lubrication cycle and the elapsed interval are displayed as hours and minutes. Decimal point is used to separate hours and minutes.

Time displayed	Display format	Example
0 min - 59 min	H.MM	12 min = <b>0.12</b>
1 h - 9 h 59 min	H.MM	1 h 20 min = <b>1.20</b>
10 h - 99 h 50 min	HH.M	12 h 50 min = <b>12.5</b>
100 h - 999 h	HHH.	120 h = <b>120.</b>

The set value for the maximum pressurization time and elapsed pressurization time are displayed as seconds without the decimal point.

The set pulse amount and the counted pulses are displayed as integers, without a decimal point.

## 3 Operation

### 3.1 Normal mode

#### 3.1.1 Functions

##### Display power saving mode

In normal mode, the display shifts to power saving mode when no buttons have been used for ten (10) minutes. In power saving mode only the decimal points are blinking on the display. Lubrication events are performed according to the set values. The display returns to normal mode if any button is pressed or if there is an alarm.

##### Interval counting

In normal mode the display shows the time elapsed since the last pressurization as hours and minutes. Green LED-signal for line **L1** or **L2** shows which line has been pressurized last.

Interval time is counted always, except when

- channel is in alarm mode
- interlocking switch of the channel is closed
- channel is closed (maximum pressurization time = 0)

##### Pressurization

Pressurization time is displayed as seconds. Green LED-signal for line **L1** or **L2** shows the line to be pressurized. Green LED-signal **P** indicates that pressurization is in progress.

Pressurization can be stopped with the **SET** button.

Pressurization time display and setting can be changed from seconds to minutes with factory setting parameter **Prt**. When the pressurization time is displayed as minutes all the decimal points are lit on the display.

##### Extra lubrication

Extra lubrication can be started if the channel is not currently in alarm mode, closed or pressurizing.

Extra lubrication is started in normal mode with the **SET** button, when the display shows the time elapsed since the last pressurization.

In a DuoFlex lubrication system both lines are pressurized once. The next line in the set pressurization sequence is pressurized first. In a MonoFlex and a ProFlex lubrication system the line is pressurized once.

Extra lubrication can be stopped with the **SET** button.

In pressure transmitter operation, the line pressure discharge is measured. New pressurization starts only after pressure in the lines is below the set low limit value.

In pressure switch operation, the system waits for line pressure discharge. New pressurization starts only after the set delay time.

During pressure discharge phase code **dC** is displayed.

### 3.1.2 Phase codes for normal mode and alarm mode

In normal or alarm mode, the phase code corresponding to the program phase is displayed.

Phase code	Description
<b>dC</b>	Pressure discharge waiting time ( <b>d</b> is <b>C</b> harge)
<b>Loc</b>	Interlocking switch is closed ( <b>L</b> ocked)
<b>OFF</b>	The channel is closed
<b>AGr</b>	Lubricant reservoir low level alarm ( <b>A</b> larm, <b>G</b> rease)
<b>ALP</b>	Pressure low alarm (line pressure does not rise high enough during pressurization time) ( <b>A</b> larm, <b>L</b> ow <b>P</b> ressure)  Pulse amount alarm in a ProFlex system ( <b>A</b> larm <b>L</b> ow amount of <b>P</b> ulses)
<b>AHP</b>	Pressure high alarm (line pressure is not low enough when pressurization phase starts) ( <b>A</b> larm, <b>H</b> igh, <b>P</b> ressure)
<b>Aln</b>	Alarm from doser operation indicator (SKF Doser monitor). The code is displayed only if SKF Doser monitors are in use. ( <b>A</b> larm, <b>I</b> ndicator)
<b>Air</b>	Alarm from the air pressure switch of the grease spray system. The code is displayed only if air pressure switch is in use. (Alarm, <b>A</b> ir)
<b>APC</b>	Warning message for pump change when doubled pumping center (Dualset) is in use. ( <b>A</b> larm, <b>P</b> ump <b>C</b> hanged)

### 3.1.3 Normal mode displays, MonoFlex and DuoFlex lubrication systems

Normal mode displays, which show the set values for the lubrication program, can be browsed with the **↑**-button.

Display codes change in the following order when **↑**-button is pressed.

Display code	Description
<b>CH</b>	The lubrication channel selected on the display. The code is in use only in systems with two (2) channels. Press the <b>SET</b> button to go to another channel when the code is displayed. ( <b>Channel</b> )
<b>Cou</b>	Lubrication cycle counter. ( <b>Cycle Counter</b> ) Counter reading is added by one unit when lubrication ends. Decimal point is used to separate thousands.
<b>C</b>	Lubrication cycle setting value as time [h.mm] or pulses depending on the factory setting parameter <b>CYC</b> . Can be set between 0 min – 999 h or 000...999 pulses. ( <b>Lubrication Cycle</b> )
<b>P</b>	Maximum pressurization time set value [s]. Can be set between 0 s – 999 s. Set value can be changed to minutes with factory setting parameter <b>Prt</b> . Can be set between 0 min – 999 min. ( <b>Lubrication, Pressurization time</b> )
<b>PLo</b>	Low limit pressure set value [bar/psi]. Can be set between 0-200 bar/0-2900 psi. ( <b>Pressure, Low limit</b> ) Code is in use only in pressure transmitter operation.
<b>PHi</b>	High limit pressure set value [bar/psi]. Can be set between 0-200 bar/0-2900 psi. ( <b>Pressure, High limit</b> ) Code is in use only in pressure transmitter operation.
<b>dEL</b>	Pressure discharge delay multiplier [n] ( <b>DELay</b> ) Delay = P * n [s] Code is in use only in pressure switch operation.
<b>HL</b>	Manual operation setting <b>On</b> : manual operation mode <b>OFF</b> : automatic mode
<b>PU</b>	Pump in use when doubled pumping center (Dualset) is in use: 1: Pump 1 is in use. 2: Pump 2 is in use. This parameter is visible only when the factory setting parameter <b>dUA</b> has been set to <b>YES</b> .

Decimal points are used to separate thousands on lubrication cycle counter reading. Counter max. reading is **49.9 = 49 999**.

Depending on the factory setting parameter **Pre**, the pressure unit on the display is bar or psi. In a psi reading decimal points are used to separate thousands. For example **1.02 = 1020 psi**.



### 3.1.4 Normal mode displays, ProFlex lubrication system

Normal mode displays, which show lubrication program set values, can be browsed with the **↑**-button.

Display codes change in the following order when **↑**-button is pressed.

Display code	Description
<b>CH</b>	The lubrication channel selected on the display. Press the <b>SET</b> -button to go to another channel when the code is displayed.
<b>Cou</b>	Lubrication cycle counter. (Cycle <b>C</b> ounter) Counter reading is added by one unit when lubrication ends. Decimal point is used to separate thousands.
<b>C</b>	Lubrication cycle setting value as time [h.mm] or pulses depending on the factory setting parameter <b>CYC</b> . Can be set between 0 min – 999 h or 000...999 pulses. (Lubrication <b>C</b> ycle)
<b>P</b>	Maximum pressurization time set value [s]. Can be set between 0 s – 999 s. Set value can be changed to minutes with factory setting parameter <b>Prt</b> . Can be set between 0 min – 999 min. (Lubrication, <b>P</b> ressurization time)
<b>PP1</b>	The pulse count setting ( <b>PP1</b> ) can be 000...999. If <b>PP1</b> is set as 0, pressurization takes the maximum pressurization time. The pulse sensor does not need to be connected. Alarms will not be received, except for the low limit alarm. ( <b>P</b> ulses <b>p</b> er <b>1</b> pressurization)
<b>HL</b>	Manual operation setting <b>On</b> : manual operation mode <b>OFF</b> : automatic mode
<b>PU</b>	Pump in use when doubled pumping center (Dualset) is in use: 1: Pump 1 is in use. 2: Pump 2 is in use. This parameter is visible only when the factory setting parameter <b>dUA</b> has been set to <b>YES</b> .

Decimal points are used to separate thousands on lubrication cycle counter reading. Counter max. reading is **49.9 = 49 999**.

### 3.1.5 Pressure and pulse displays for lines

#### Pressure transmitter operation

In pressure transmitter operation, line pressure displays can be selected with the →-button. Pressing the button will show the pressure display for line 1 first. Code **P1** and the pressure display for line 1 are displayed in turns. Pressing the button again will show the pressure display for line 2. Code **P2** and the pressure display for line 2 are displayed in turns. If line 2 does not exist, the program returns to display the phase code. From the pressure display for line 2, the program returns to display the phase code by pressing the →-button. The display returns the phase code automatically to the display after 4 minutes if no buttons have been used.

If a signal from the pressure transmitter is not detected, code **---** is displayed.

#### Pressure switch operation

In pressure switch operation, the status of the pressure switches of the lines can be selected with the →-button. Pressing the button will display the status of the pressure switch for line 1 first. Code **P1** and the status of the pressure switch for line 1 are displayed in turns. Pressing the button again will display the status of the pressure switch for line 2. Code **P2** and the status of the pressure switch for line 2 are displayed in turns. The display returns the phase code automatically to the display after 4 minutes if no buttons have been used.

The status closed contact of the pressure switch is displayed with code **on** and the status open contact with code **oF**.

#### Pulse counter display in the ProFlex system

Counted sensor pulses can be selected on the display with the →-button. Code **P1** and the pulse counter of the selected channel are displayed in turns. →-button is used to return to the time display.

## 3.2 Power failure

The set values and program status are preserved in the memory also during power failures. Once the power is back on, the operation will resume from the status it was in before power failure occurred. Pressurization that may have been interrupted restarts for the same line. The interval time is not counted during power failures.

## 3.3 Alarms

System with one (1) channel:

- The system is in alarm mode when the red LED-signal for line **L1**, line **L2** or pressurization **P** is blinking.

System with two (2) channels:

- The system is in alarm mode when the red LED-signal for channel **CH1** or **CH2** is lit.
- When the channel selected on the display is in alarm mode, the red LED-signal for line **L1**, line **L2** or pressurization **P** is blinking.

### 3.3.1 Low level alarm

The channel triggers a low level alarm, stops pressurization and goes into alarm mode, if the lubricant reservoir is empty. This means that the reservoir's low level switch is closed. Code **AGr** is blinking on the display and the red LED-signal **P** for pressurization is blinking. Pressurization will restart for the same line when the low level switch opens and the alarm has been reset by pressing the **SET**-button.

### 3.3.2 Pressure alarm, MonoFlex and DuoFlex lubrication systems

The channel triggers a pressure alarm and goes into alarm mode, if the line pressure is not low enough when pressurization phase starts or if the line pressure does not rise high enough during pressurization time.

#### Alarm, high pressure

If the line pressure is not low enough at the beginning of the pressurization phase, code **AHP** is blinking on the display and the red LED-signal **L1** or **L2** of the line that triggered the alarm is blinking.

**In pressure transmitter operation** an alarm is triggered, if the line pressure is above the set low limit when pressurization starts. Pressurization will restart for the same line when the pressure level is below the low limit value and the alarm has been reset by pressing the **SET**-button.

**In pressure switch operation** an alarm is triggered, if the pressure switch is closed when the pressurization starts. Pressurization will restart for the same line when the pressure switch opens and the alarm has been reset by pressing the **SET**-button.

#### Alarm, low pressure

If the pressure in the line does not rise high enough during pressurization time, code **ALP** is blinking in the display and the red LED-signal **L1** or **L2** of the line that triggered the alarm is blinking.

**In pressure transmitter operation** an alarm is triggered, if the line pressure does not reach the set high limit within the set maximum pressurization time. Pressurization will restart for the same line when the alarm has been reset by pressing the **SET**-button.

**In pressure switch operation** an alarm is triggered if the pressure switch of the line does not close within the set maximum pressurization time. Pressurization will restart for the same line when the alarm has been reset by pressing the **SET**-button.

### 3.3.3 Pulse alarm, ProFlex lubrication system

The channel triggers a pulse alarm **ALP** (Alarm Low amount of Pulses) and goes into alarm mode if the pulse amount is not reached within the set maximum pressurization time.

### 3.3.4 Alarm from SKF Doser monitor -doser operation indicator

The SKF Doser monitors are in use when factory settings parameter **LGI** has been set in status **YES**.

An alarm will be triggered when the SKF Doser monitor does not recognize doser operation during a lubrication cycle. Code **Aln** is displayed. Lubrication continues normally despite the alarm. This feature is different from other alarms. The alarm can be reset with the **SET**-button.

### 3.3.5 Alarm from the air pressure switch of the grease spray system

Air pressure control is in use when factory settings parameter **AC** has been set in status **YES**.

**Note!** In a ProFlex system, the channel spray control starts always when the pump is running. The pump stops when the pulse amount has been reached. The spray control remains on for 10 seconds.

An alarm is triggered if the air pressure switch is not open when pressurization starts or closed when pressurization has stopped. Code **Air** is displayed. Pressurization will restart for the same line when the alarm has been reset by pressing the **SET**-button.

### 3.3.6 Warning message for pump change (doubled pumping center/Dualset)

When doubled pumping center (Dualset) is in use, a warning message **APC** is displayed when the pump has been changed automatically. Lubrication continues normally despite the warning message. It can be reset with the **SET**-button. Alarm output is not activated in this case.

## 3.4 Manual operation

Go to manual operation mode in the selected channel by setting the parameter **HL** in status **On**.

Return to automatic operation mode as follows:

- set the parameter **HL** in status **OFF**

or

- automatically when 60 minutes have elapsed since going into manual operation mode

or

- restart SKF Maxilube hydraulic part or SKF ST-1240-IF control center

In manual operation mode **SET**-button is used to:

- start pumping
- stop pumping
- shift pumping to another line

The lubrication program keeps the pressure in the set high limit value in the line being pumped. The oil lubrication system (lubrication system operation mode **01** or **02**) and ProFlex-system have no pressure monitoring.

## 4 Settings

### 4.1 General

Set values are lubrication channel basic values, for example lubrication cycle and maximum pressurization time. Set values are channel specific.

All settings are password-protected.

### 4.2 Entering password

- 1 Select the code for the setting to be changed on the display with the **↑**-button.
- 2 Press the **SET**-button.
- 3 Display shows code **PPP**.
- 4 In a moment the first character of the display starts to blink.
- 5 Select with the **↑**-button the first number of the password on the display.
- 6 Move to the next character with the **→**-button.
- 7 When all three numbers of the password have been entered, press the **SET**-button.
- 8 Once the password has been entered correctly, code **ACC** is displayed and the set values can be changed during the next 10 minutes.
- 9 If the password has not been entered correctly, code **Err** is displayed and the display returns to normal mode.

<b>Note!</b> Password for set values is <b>105</b> .
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### 4.3 Entering settings

- 1 Select the code for the setting to be changed on the display with the **↑**-button.
- 2 Press the **SET**-button.
- 3 The first number of the value to be set is blinking on the display.
- 4 Select the desired number with the **↑**-button on the display.
- 5 Move to the next character with the **→**-button.
- 6 The set value is saved in the memory with the **SET**-button.
- 7 Exit setting mode with the **→**-button. The display returns to normal mode automatically after 4 minutes if no buttons have been used.

#### 4.3.1 Lubrication cycle counter

Lubrication cycle counter can be reset when needed.

- 1 Select code **Cou** for the lubrication cycle counter on the display with the **↑**-button.
- 2 Reset the counter with the **SET**-button.

## 4.3.2 Lubrication cycle

Lubrication cycle set value is displayed as hours and minutes. Decimal point is used to separate hours and minutes. Decimal point of the set value can be moved as follows.

- 1 Select the code for the setting to be changed on the display with the **↑**-button.
- 2 Press the **SET**-button.
- 3 Set the desired value with the **↑**- and **→**-buttons.
- 4 Press the **→**-button.
- 5 The decimal point starts to blink.
- 6 Move the decimal point to the desired location with the **↑**-button.
- 7 The set value is saved in the memory with the **SET**-button.

# 5 Technical specification

## 5.1 Technical data

Value	Unit	Description
-10...+50 14...122	°C °F	Operating temperature range
45 x 140 x 17 (w x h x d)	mm	Dimensions
Polycarbonate		Material, casing
IP67		Protection class

## 5.2 Symbols

IF-105	Abbreviation	Description
IF:	IF	Interface
105:	105	model

# 6 Contact information

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