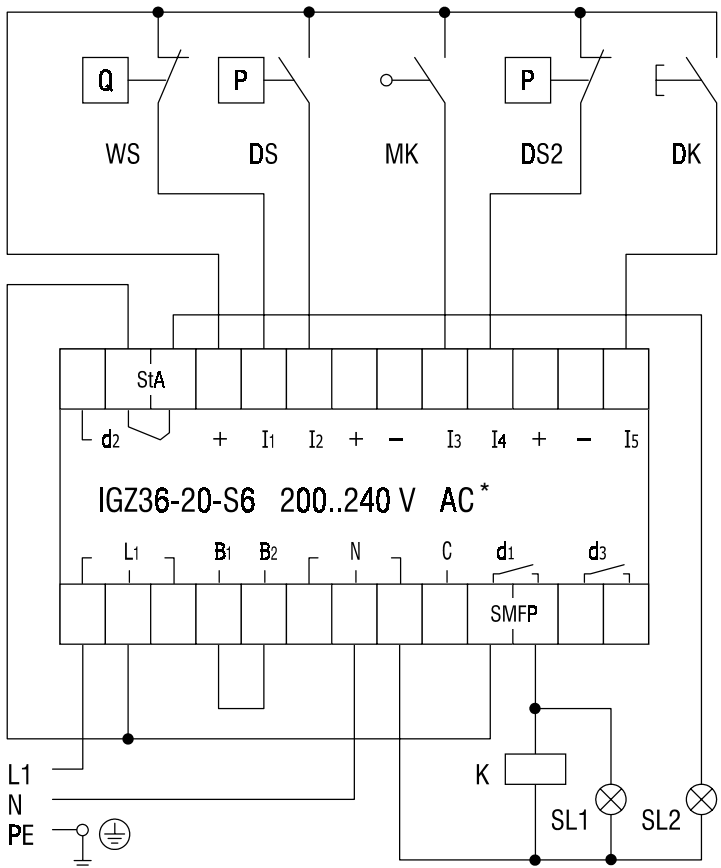


*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 6. Connection Diagram for IGZ36-20-S6

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
DS	pressure switch (pressure build-up monitoring)
DS2	pressure switch (pressure build-down monitoring)
MK	machine contact
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure (StA) operating contact: operation OK
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor

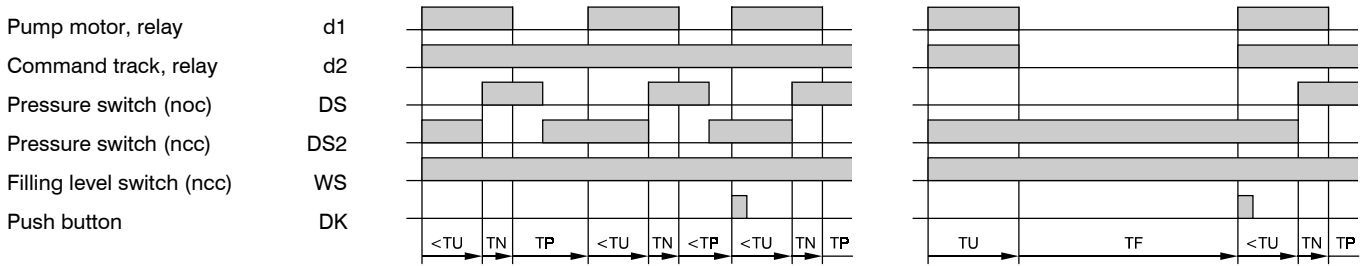
The input I4 (DS2) must be bridged, when the pressure build-down monitoring is not to be used.

IGZ36-20-S6 Pulse Diagrams

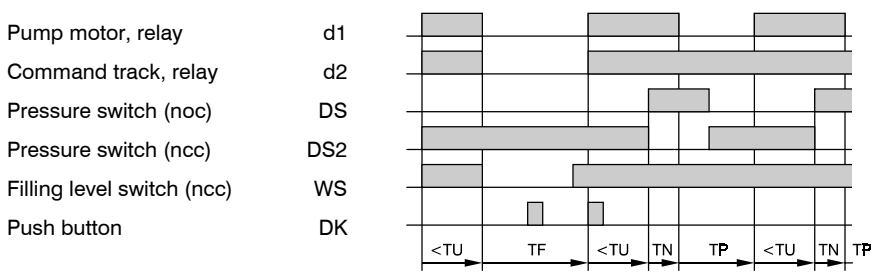
(Time axis not true to dimensions)

Normal process

Process in case of pressure build-up failure



Process in case of filling level failure



Legend

TU = monitoring time

TN = pump dwell time

TP = pause time

TF = function sequence stopped

Figure 2 - 7. Pulse Diagram for IGZ35-20-S6

IGZ38-30, IGZ38-30-S1

Operating Modes

The controller IGZ38-3 can be operated as pulse transmitter (operating mode B) or pulse counter (operating mode D).

Scope of Functions

The devices IGZ38-30 and IGZ38-30-S1 feature the functions listed below. The default and the adjustable parameters are listed in table 2 - 11.

IGZ38-30
- adjustable pause time
- pump run time limit
- pressure build-up monitoring
- level monitoring (normally closed contact)

IGZ38-30-S1
Like IGZ38-30, but:
- level monitoring (normally open contact)

Input functions

The standard settings of the input functions are listed in tables 2 - 12 and 2 - 13.
The input functions can be altered as described in section “Adjusting the input functions” in chapter “Operation” of the general section of this manual.

Table 2 - 11. Parameters of IGZ38-30 and IGZ38-30-S1

Designation	Abbreviation	Default setting	Unit	Adjustment range	Unit
operating mode	BA	B		B (pulse transmitter) D (pulse counter)	
pause time	TP	10	minutes	01 E 00 - 99 E 04 (BA B) 01 E 00 - 99 E 04 (BA D)	minutes pulses
monitoring time	TU	60	seconds	not adjustable	
dwell time	TN	15	seconds	not adjustable	seconds

Installation, First Operation

Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagrams (figures 2 - 8 and 2 - 10).

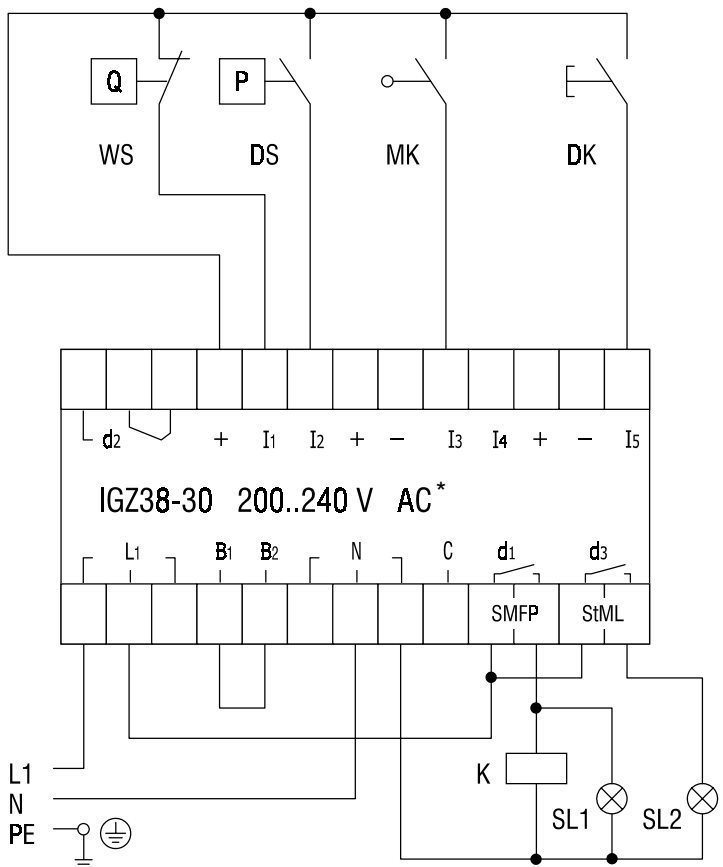
After installation, input of parameters and applying the operating voltage, the device begins its function sequence with prelubrication.

Table 2 - 12. Input functions of IGZ38-30

Input	Setting	Meaning
I1	O	normally closed contact
I2	S	normally open contact
I3	S	normally open contact
I4	-	not used
I5	S	normally open contact

Table 2 - 13. Input functions of IGZ38-30-S1

Input	Setting	Meaning
I1	S	normally open contact
I2	S	normally open contact
I3	S	normally open contact
I4	-	not used
I5	S	normally open contact



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 8. Connection Diagram for IGZ38-30

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
DS	pressure switch (pressure build-up monitoring)
MK	machine contact
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure display operating contact: operation OK
d3	operating contact for failure (StML)
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor

IGZ38-30 Pulse Diagrams

(Time axis not true to dimensions)

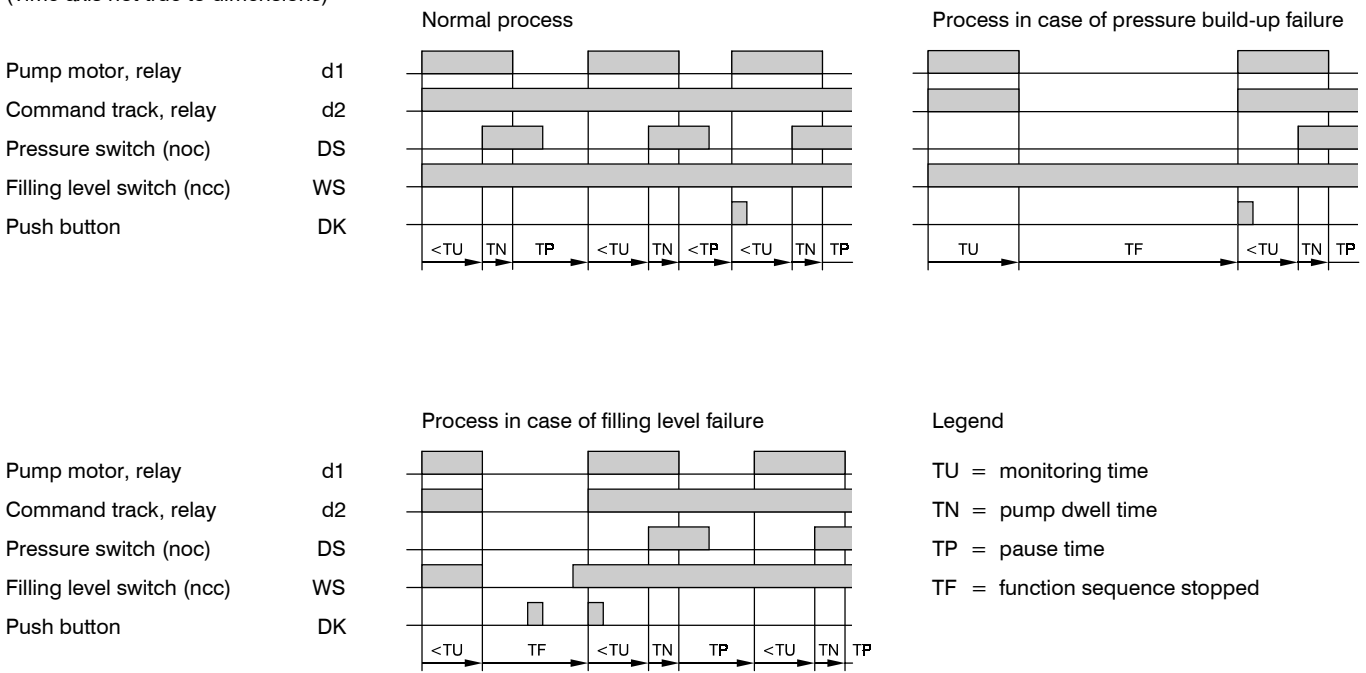
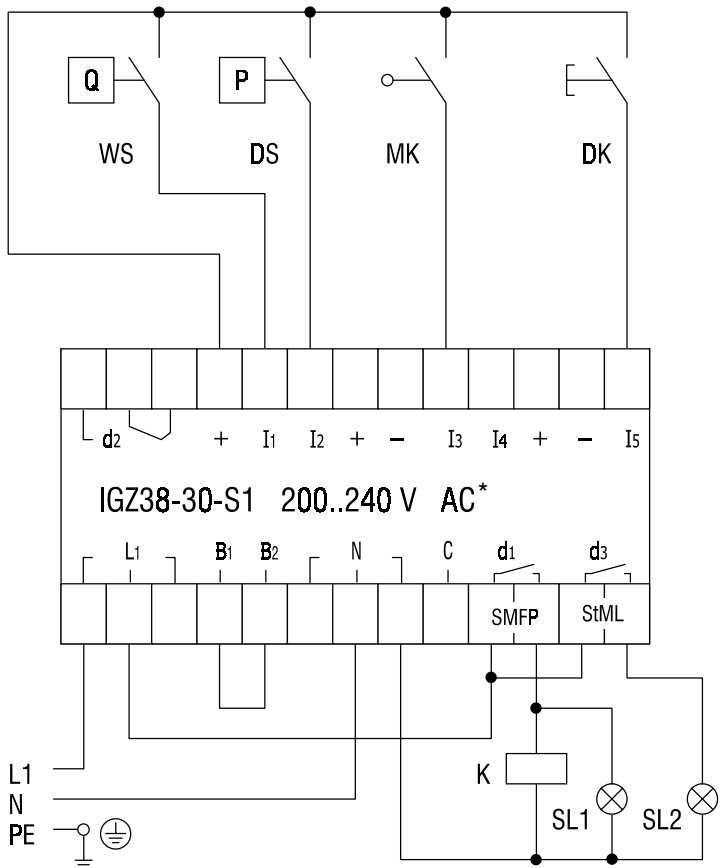


Figure 2 - 9. Pulse Diagram for IGZ38-30



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 10. Connection Diagram for IGZ38-30-S1

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
DS	pressure switch (pressure build-up monitoring)
MK	machine contact
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure operating contact: operation OK
d3	operating contact for failure (StML)
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor

IGZ38-30-S1 Pulse Diagrams

(Time axis not true to dimensions)

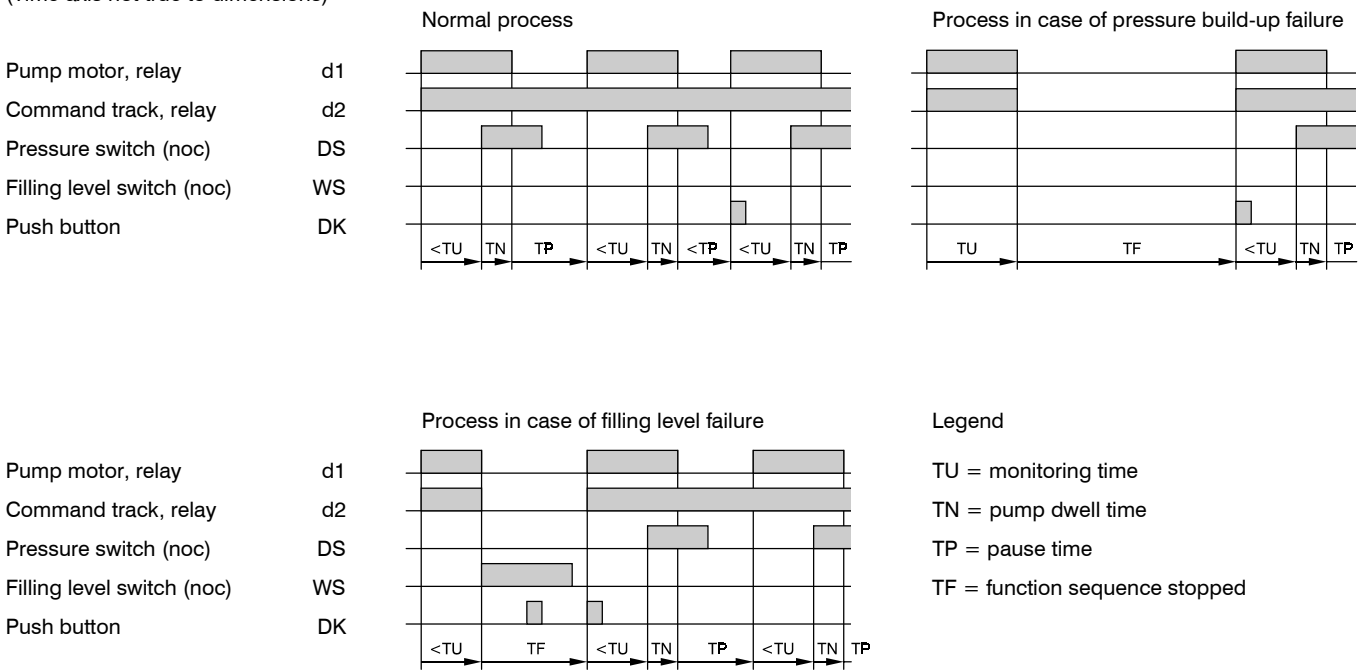


Figure 2 - 11. Pulse Diagram for IGZ38-30-S1

IG351-10

Operating Modes

The controller IG54-10 can only be used as pulse transmitter (operating mode A).

Scope of Functions
The controller IG351 features the functions listed below. The default and the adjustable parameters are listed in table 2 - 14.

- adjustable pause time
- adjustable pump run time
- level monitoring (normally open contact)

Input functions

The standard settings for the input functions are listed in table 2 - 15. The input functions can be altered as described in section “Adjusting the input functions” in chapter “Operation” of the general section of this manual.

Installation, First Operation

Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagram (figure 2 - 12).

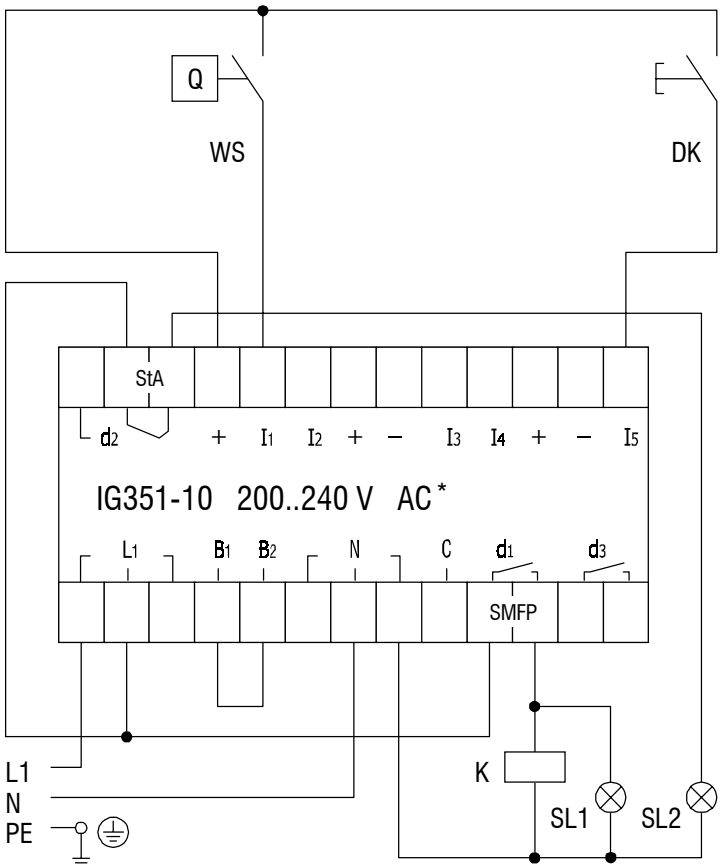
Table 2 - 14. Parameters of IG351-10

Designation	Abbreviation	Default	Unit	Adjustment range	Unit
operating mode	BA	B		not adjustable	
pause time	TP	10	minutes	01 E 00 - 99 E 04	minutes
pump run time	TL	5	seconds	01 E 00 - 99 E 03	seconds

After installation, input of parameters and applying the operating voltage, the device begins its function sequence with prelubrication.

Table 2 - 15. Input functions of IG351-10

Input	Setting	Meaning
I1	S	normally open contact
I2	-	not used
I3	-	not used
I4	-	not used
I5	S	normally open contact



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 12. Connection Diagram for IG351-10

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure (StA) operating contact: operation OK
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor

IGZ51-20-S3

Operating Modes

The controller IGZ51-20-S3 features a selectable power supply failure memory (EEPROM). This results in the following operating modes:

A - pulse transmitter with EEPROM
B - pulse transmitter without EEPROM
C - pulse counter with EEPROM
D - pulse counter without EEPROM

Scope of Functions

The controller IGZ51-20-S3 features the functions listed below. The default and the adjustable parameters are listed in table 2 - 16.

- adjustable pause time
- adjustable pump dwell time
- adjustable monitoring time
- pump run time limit
- pressure build-up monitoring
- pressure build-down monitoring
- level monitoring (normally open contact)
- pause time extension
- selectable power supply failure memory

Table 2 - 16. Parameters of IGZ51-20-S3

Designation	Abbreviation	Default setting	Unit	Adjustment Range	Unit
operating mode	BA	A		A (pulse transmitter with EEPROM)) B (pulse transmitter without EEPROM)) C (pulse counter with EEPROM)) D (pulse counter without EEPROM))	
pause time	TP	10	minutes	01 E 00 - 99 E 04 (BA A, B) 01 E 00 - 99 E 04 (BA C, D)	minutes pulses
monitoring time	TU	60	seconds	01 E 00 – 10 E 01	seconds
dwell time	TN	15	seconds	01 E 00 - 99 E 03	seconds

Input functions

The standard settings for the input functions are listed in table 2 - 17. The input functions can be altered as described in section “Adjusting the input functions” in chapter “Operation” of the general section of this manual.

Table 2 - 17. Input functions of IGZ51-20-S3

Input	Setting	Meaning
I1	S	normally open contact
I2	S	normally open contact
I3	S	normally open contact
I4	S	normally open contact
I5	S	normally open contact

Installation, First Operation

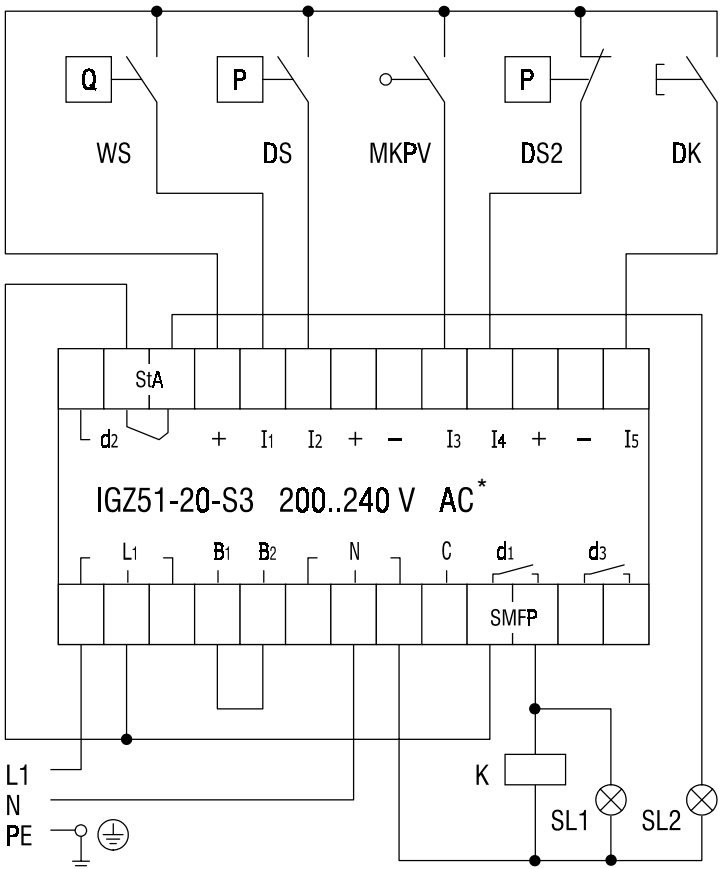
Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagram (figure 2 - 13).

After installation, input of parameters and applying the operating voltage, the device begins its function sequence with prelubrication.

Operation with Power Supply Failure Memory

In case of a power failure, the power supply failure memory saves the values for the remaining pause time or a failure message that may have occurred. When power returns, this enables the controller to resume the control process from where it was interrupted.

When the interruption occurs during the monitoring time or pump dwell time, the controller continues the process with a pause. An existing failure message is not deleted by the interruption of the power supply.



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 13. Connection Diagram for IGZ51-20-S3

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
DS	pressure switch (pressure build-up monitoring)
DS2	pressure switch (pressure build-down monitoring)
MKPV	machine contact/ pause time extension
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure (StA) operating contact: operation OK
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor

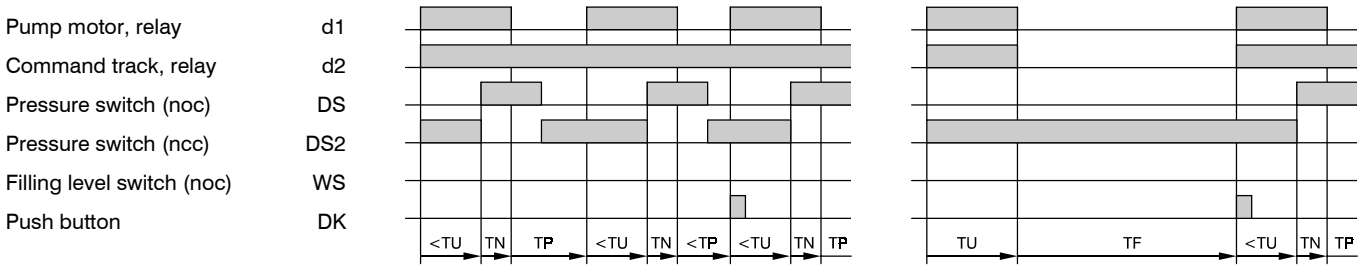
The input I4 (DS2) must be bridged, when the pressure build-down monitoring is not to be used.

IGZ51-20-S3 Pulse Diagrams

(Time axis not true to dimensions)

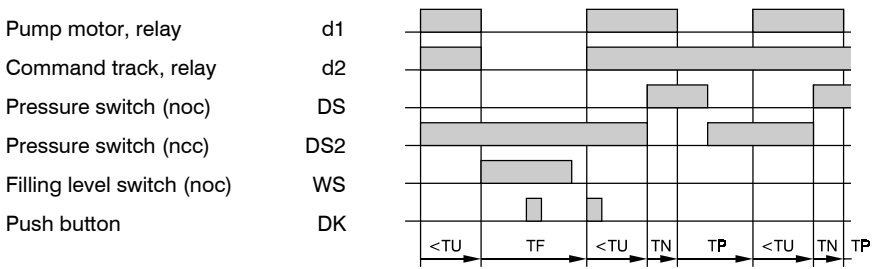
Normal process

Process in case of pressure build-up failure



Process in case of filling level failure

Legend



TU = monitoring time

TN = pump dwell time

TP = pause time

TF = function sequence stopped

Figure 2 - 14. Pulse Diagram for IGZ51-20-S3

Controllers for Oil+Air Lubrication System

Application

The controllers described in this chapter are used for time or pulse-control of oil+air lubrication systems.

Overview

Table 2 - 18 lists the available VOGEL controllers for oil+air lubrication systems and their scope of functions.

Table 2 - 18. Overview of VOGEL Controllers for Oil+Air Lubrication Systems

Designation	Short description
IG54-20	Pulse transmitter with fixed prelubrication cycles, adjustable pause time and power supply failure memory
IG54-20-S1	Pulse transmitter with freely selectable number of prelubrication cycles, pause time and dwell time, power supply failure memory
IG54-20-S3	Like S1, level monitoring switch as normally closed contact
IG54-20-S4	Pulse transmitter with freely selectable number of prelubrication cycles, pause time and dwell time, power supply failure memory as well as additional relay output for compressed air valve

Function

The controllers trigger lubrication at certain time intervals. The special feature of the controllers described in this chapter is their prelubrication function which has been adapted to the specific needs of oil+air lubrication systems. The functions available in this device series are outlined below. To which extent these functions are realized depends on the individual device type.

The Lubrication Cycle
A lubrication cycle is comprised of contact time (lubrication) and pause time (TP).

Prelubrication
A prelubrication is a contact time that directly follows power-up of the device. If a failure occurs during the prelubrication, a failure message is output.

The Prelubrication Cycle
On some devices, a prelubrication cycle is triggered upon every power-up. During the prelubrication cycle the pump motor is switched on and several contact times are processed with short pauses in between. The number of contact times can be fixed or selected by the user, depending on the device type. At the end of the prelubrication cycle a pause time is started.

On some devices operating with power supply failure memory, triggering of a prelubrication cylce can be suppressed by setting the number of prelubrication cycles (VZ) to 0.

During the prelubrication cycle, failures are only indicated by flashing of the symbol of the respective input on the display and by interruption of the function (also see chapters Operation and Display of Failures).

The Pause Time
The pause time is the time between two contact times. The length of the pause can be determined in two ways, resulting in two different operating modes (BA) of the controllers (pulse transmitter or pulse counter). The operating mode can be adjusted manually at the unit (see chapter Operation - general part of the operating manual).

Operating Mode Pulse Transmitter
In this operating mode the controller determines the length of the pause by starting a contact time at an interval programmed by the user.

Operating Mode Pulse Counter
In this operating mode the pause time is determined by the machine, sending pulses to the controller while it operates. The pulses received at the machine contact (MK) are counted by the controller, and the contact time is started after a preset number of pulses. The number of pulses to be counted can be set by the user.

The Contact Time
After time-out of the pause time, the controller triggers the lubrication, also referred to as contact time. The contact time is comprised of monitoring time (TU) and pump dwell time (TN).

Pressure Build-Up Monitoring Oil Pressure
During the contact time, the pump motor is first started and the pressure required for lubrication is built up in the lubrication lines. This process is monitored by a pressure switch (DS). The required pressure must be reached within a certain time, the monitoring time, otherwise the pump is switched off and a failure message is output.

Monitoring Time TU
The monitoring time is a time window for pressure build-up by the pump. If the required pressure is reached within the monitoring time, the latter is terminated. Thereafter the pump dwell time is started. The monitoring time is generally adjusted permanently and cannot be changed by the user.

Pump Dwell Time
The pump dwell time is the time during which the pump continues running after the required pressure has been built up in the lubrication lines, to ensure all lubrication points are supplied with lubricant even in very large central lubrication systems.

Pump Run Time Limit
The pump run time (TL) is limited in principle by the monitoring time.

Air Pressure Monitoring
With an additional pressure switch (DS_L) the air pressure in the compressed air line is monitored. If the pressure drops or if no pressure is built up in the first place, a failure messsage is output and the function sequence stopped.

Level Monitoring
The filling level of the lubricant reservoir is monitored by means of a level monitoring switch (WS). This switch can be configured as a normally closed contact or normally open contact; this must be considered when the device type is selected. If the level monitoring switch is configured as a normally closed contact, the signal lines leading up to the level monitoring switch are at the same time monitored for breakage of the wires.

As soon as the level in the lubricant reservoir drops below minimum, the function of the lubrication system is stopped and a failure message output.

Automatic Lubricant Refill
To some of the controllers two level monitoring switches (WS_L and WS_H) can be connected to allow control of automatic lubricant refill. If the lubricant level in the lubricant reservoir drops below the minimum, the relay d3 activates a valve or pump refilling lubricant until the maximum level is reached. If automatic lubricant refill fails, that is, if the level remains below the minimum level for a prolonged period, a failure message is output.

Power Supply Failure Memory (EEPROM)
In case the power supply fails, the power supply failure memory saves the most important data of the controller, such as remaining pause time and a failure message. This allows the controller to continue the function on the basis of the device type upon the next power-up, and failure messages are not lost.

Installation

Install the controller in the control cabinet for a VOGEL central lubrication system as described in chapter Assembly in the general section of this operating manual.

Also please observe the notes in the description of the respective device type.

Operation

Switching On
The device is switched on, when the operating voltage is applied. When the operating voltage is present, the green operating voltage LED is on.

Power must be switched on or off instantaneously.

Upon power-up the device begins the function sequence, generally it starts with a prelubrication cycle.

Prelubrication
On some devices prelubrication is started upon power-up. The pump motor is switched on and the failure message relay d2 is energised. Prelubrication is performed just like a standard contact time.

Prelubrication Cycle
On some devices a prelubrication cycle is started upon power-up. The pump motor is switched on and a number of lubrication runs is started with fixed pause times in between. During this time relay d2 remains de-energised and the failure LED is on, however, this does not indicate a failure.

At the end of the prelubrication cycle, a pause time is started, relay d2 is energised and the failure LED shuts off.

If a failure occurs during the prelubrication cycle, relay d2 remains de-energised and the failure LED is still on (also see chapter Display of Failures).

Pause Time
After time-out of the prelubrication, relay d1 is de-energised and the pump motor shut off. Then the preset value for the pause time is read and the pause started. Subsequently contact time and pause time alternate.

Contact Time (Lubrication)
The contact time is started after time-out of the pause time. It is comprised of the time required for pressure build-up and the dwell time. At the beginning of the contact time, relay d1 is energised and the pump motor thereby switched on. As soon as the required pressure is reached, the monitoring time is terminated and the pump dwell time started. At the end of the dwell time, the next pause time begins.

Relay d2 in Normal Operation
When the operating voltage is applied and the device is operating without failures, relay d2 is always energised, except during the prelubrication cycle.

Intermediate Lubrication
Short pressing of the ⧫ button during a pause triggers an intermediate lubrication. Intermediate lubrication is performed just like a standard contact time.

Switching Off
The device is switched off by separating it from the operating power supply.

Upon shut-off, the device must remain off for some time, before it can be switched on again (see reclosing time, specifications).

Changing Parameters and Operating Mode
The change of parameters and the selection of the operating mode are described in chapter Operation in the general part of this operating manual. Parameter changes, such as change of the pause time, will become operative with the beginning of the next pause. A change of the operating mode will only become operative after the device is switched off and back on.

Operation with Power Supply Failure Memory
In case the power supply fails, the power supply failure memory saves the most important data of the controller, such as remaining pause time and a failure message.

After a power failure, the device generally starts with a prelubrication cycle. If this function has been deactivated, however, the start after return of power depends on the situation prevailing when the power failure occurred (see table 2 - 19).

Display of Failures

If a failure occurs, the red failure LED is on and the symbol for the respective input flashes on the display.

Oil Pressure Missing
If the pressure required is not built up in the main supply line during the monitoring time, that is, if the pressure switch DS is not activated, the failure LED will switch on and the pump motor will shut off. At the same time the symbol for input DS will flash on the display. The relays d1 and d2 are or remain de-energised. At the same time the function sequence is stopped.

Air Pressure Missing
An air pressure failure is present when the pressure switch DS2 is not activated during the

monitoring time, pump dwell time, or pause time, or if it is not activated within 5 seconds after power-up or after deletion of a failure message. A failure message is output and the function sequence is stopped. At the same time the symbol for input DS flashes on the display.

Low Filling Level
If the filling level in the lubricant reservoir drops too far, the level monitoring switch WS opens, causing an interruption of the current function sequence. The relays d1 and d2 are de-energised and the failure LED lights up. At the same time the symbol for input DS flashes on the display.

Failure of the Automatic Lubricant Refill
On devices with automatic lubricant refill, a failure message is output when the level remains below the minimum for a prolonged period. Relay d2 is energised, the failure LED lights up and the symbol for input WS_L flashes on the display. The function sequence is stopped.

Relay d2 when Operation Fails
If a failure occurs, relay d2 remains de-energised. The function sequence remains interrupted, until the error has been resolved and the failure message has been deleted by pressing the ⦿ -button.

Failure Message during a Prelubrication Cycle
If a failure occurs during a prelubrication cycle, the process is stopped and the symbol of the respective input flashes on the display. After deletion of the failure, the device continues the prelubrication cycle.

Deleting a Failure Message
Delete a failure message by pressing the ⦿ button after the cause of the failure has been resolved. This triggers an intermediate lubrication.

A level monitoring switch failure message can only be deleted, when a sufficient amount of lubricant has been refilled.

Delete a failure message only after resolving the cause of the failure.

Table 2 - 19. Operation with Power Supply Failure Memory – Start Procedure upon Power Failure

Situation at time of power failure	Procedure upon power-up
During the monitoring time (before DS1 input is energised)	contact time
During the pump dwell time (after DS1 input has been energised)	pause time
During pause time	pause continues after reading of the remaining pause time from the power supply failure memory
During failure reported by pressure switch DS or DS2	prelubrication cycle
During failure reported by level monitoring switch WS	failure message remains stored

IG54-20

Operating Modes

The controller IG54-20 can only be used as pulse transmitter (operating mode A).

Scope of Functions

The IG54-2 features the functions listed below. The default and the adjustable parameters are listed in table 2 - 20.

- adjustable pause time
- pump run time limit
- oil pressure monitoring
- air pressure monitoring
- level monitoring
- power supply failure memory (EEPROM)

Input functions

On this device the input function of the level monitoring switch (WS) can be changed. The adjustment is described in section “Adjusting the input functions” in the chapter “Operation” of the general section of this manual.

Standard setting WS: S (normally open contact)

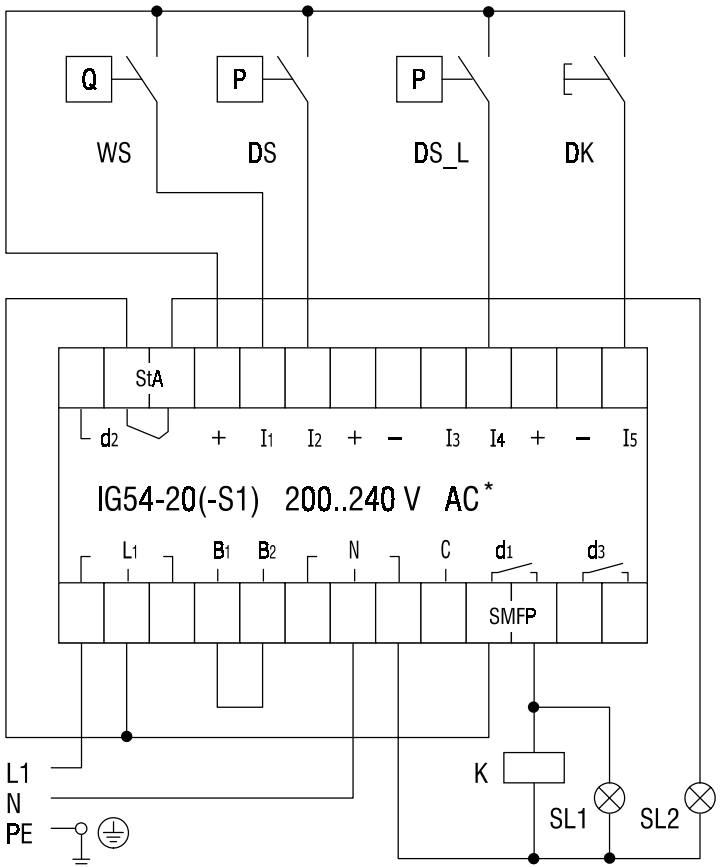
Table 2 - 20. Parameters of IG54-20

Designation	Abbreviation	Default setting	Unit	Adjustment range	Unit
operating mode	BA	A		not adjustable	
pause time	TP	10	minutes	01 E 00 - 99 E 00	minutes
monitoring time	TU	60	seconds	not adjustable	
dwell time	TN	5	seconds	not adjustable	

Installation, First Operation

Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagram (figure 2 - 15).

After installation, input of parameters and applying the operating voltage, the device begins its function sequence with prelubrication.



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 15. Connection Diagram for IG54-20 and IG54-20-S1

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
DS	pressure switch (pressure build-up monitoring)
DS_L	pressure switch (air pressure monitoring)
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure message (StA) or prelubrication cycle operating contact: operation OK
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor

IG54-20 Pulse Diagrams

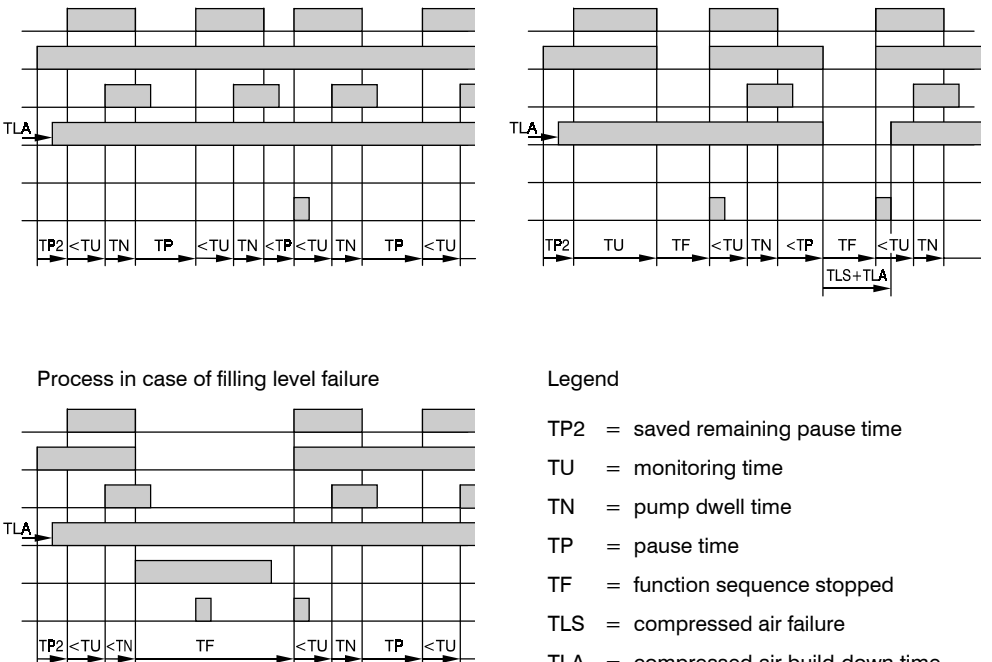
(Time axis not true to dimensions)

Normal process

pressure build-up failure (DS or DS_L)

Process in case of filling level failure

Pump motor, relay	d1
Command track, relay	d2
Pressure switch Öl (noc)	DS
Pressure switch Luft (noc)	DS_L
Filling level switch (noc)	WS
Push button	DK



Legend

TP2 = saved remaining pause time
TU = monitoring time
TN = pump dwell time
TP = pause time
TF = function sequence stopped
TLS = compressed air failure
TLA = compressed air build-down time

Figure 2 - 16. Pulse Diagram for IG54-20

IG54-20-S1, IG54-20-S3, IG54-20-S4

Operating Modes

The controllers IG54-20-S1, IG54-20-S3, and IG54-20-S4 can only be used as pulse transmitters (operating mode B).

Scope of Functions

The controllers IG54-20-S1, IG54-20-S3, and IG54-20-S4 feature the functions listed below. The default and the adjustable parameters are listed in table 2 - 21.

IG54-20-S1
- adjustable pause time
- adjustable number of prelubrication cycles
- adjustable pump dwell time
- pump run time limit
- oil pressure monitoring
- air pressure monitoring
- level monitoring (normally open contact)
- power supply failure memory (EEPROM)

IG54-20-S3
Like IG54-20-S1, but
- level monitoring (normally closed contact)

Table 2 - 21. Parameters of IG54-20-S1, IG54-20-S3, and IG54-20-S4

Designation	Abbreviation	Default setting	Unit	Adjustment range	Unit
operating mode	BA	B		not adjustable	
pause time	TP	10	minutes	01 E 00 - 99 E 00	minutes
monitoring time	TU	60	seconds	not adjustable	
dwell time	TN	5	seconds	00 E 00 – 99 E 00	seconds
prelubrication cycles	VZ	10		00 E 00 – 99 E 00	

IG54-20-S4
Like IG54-20-S3, but
- additional output d3 for compressed air valve

Prelubrication Cycles (Setting „00“)
If the prelubrication cycles have been set to „00“, the device operates without prelubrication cycles when it starts from the failure memory.

Pump Dwell Time (Setting „00“)
If the pump dwell time has been set to „00“, the device terminates the lubrication time immediately upon successful pressure build-up. Relay d1 is de-energised and the pump motor shut off.

Input functions

On these devices the input function of the level monitoring switch (WS) can be changed. The adjustment is described in section “Adjusting the input functions” in the chapter “Operation” of the general section of this manual.

IG54-20-S1
Standard setting WS: S (normally open contact)

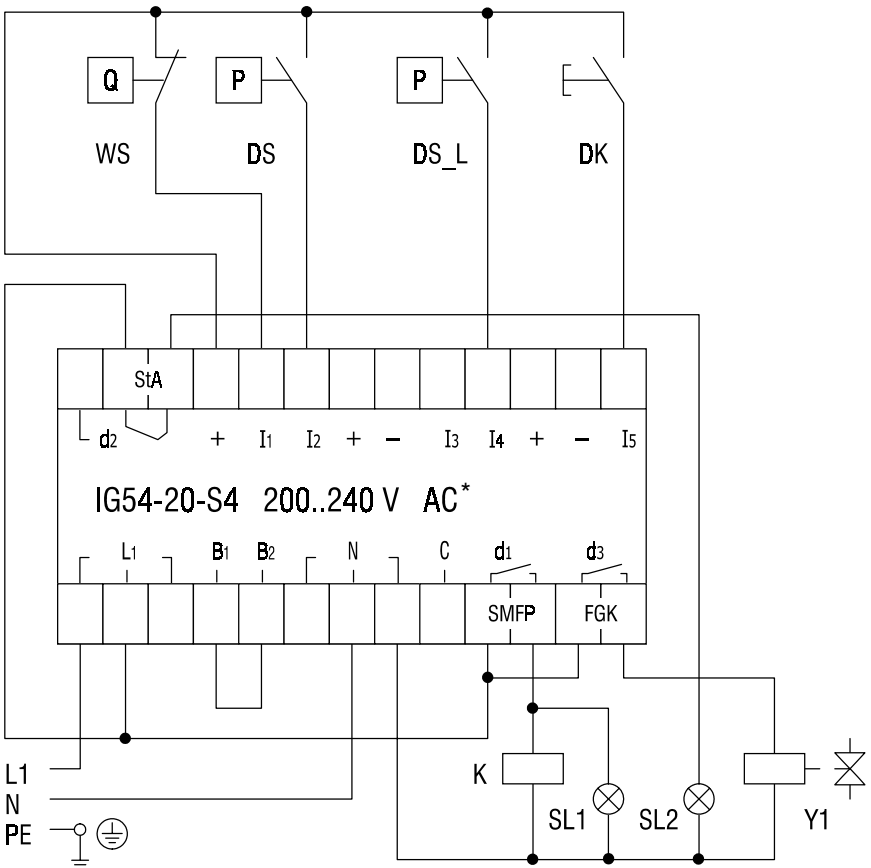
IG54-20-S3
Standard setting WS: O (normally closed contact)

IG54-20-S4
Standard setting WS: O (normally closed contact)

Installation, First Operation

Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagram (figure 2 - 17).

After installation, input of parameters and applying the operating voltage, the device begins its function sequence with prelubrication.



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 17. Connection Diagram for IG54-20-S4

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
DS	pressure switch (pressure build-up monitoring)
DS_L	pressure switch (air pressure monitoring)
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure message (StA) or prelubrication cycle operating contact: operation OK
d3	release contact for compressed air valve (FGK)
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor
Y1	compressed air valve

IG54-20 -S4 Pulse Diagrams

(Time axis not true to dimensions, Darstellung nach Ablauf der Vorschmierzyklen)

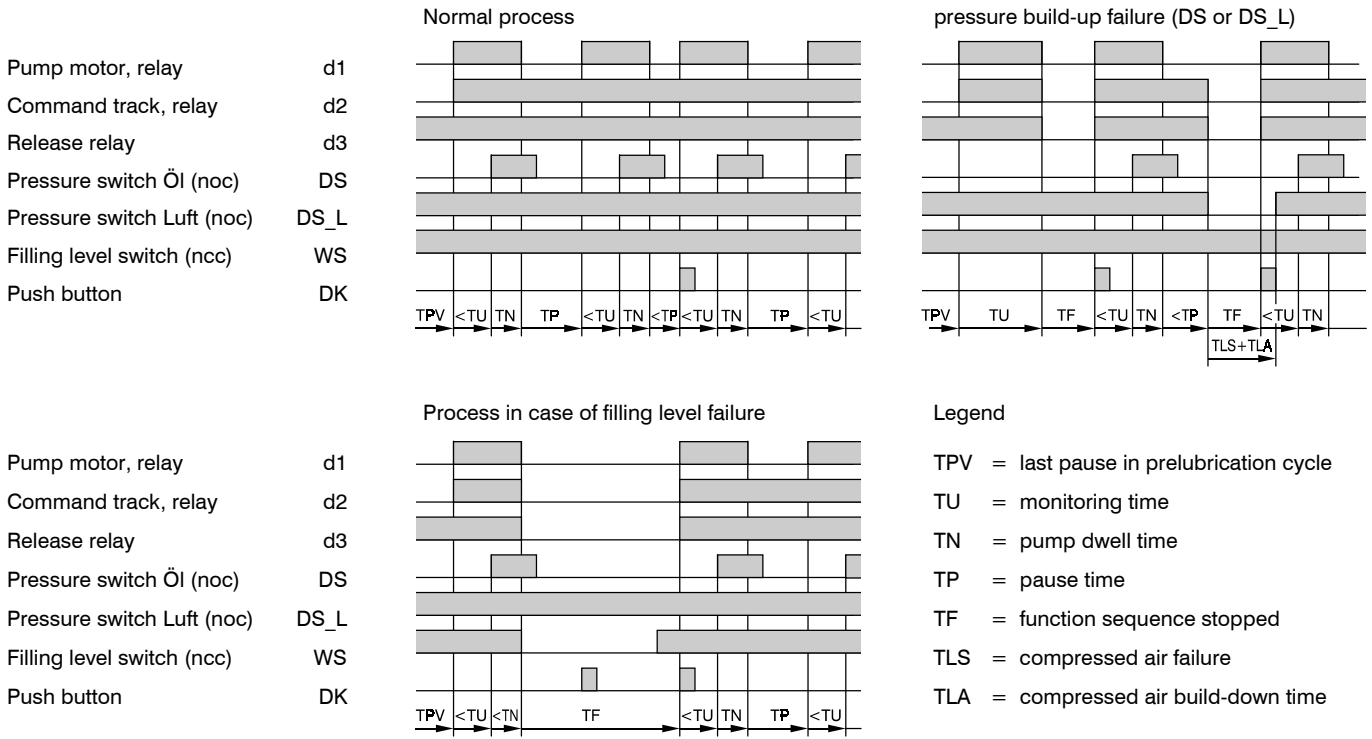


Figure 2 - 18. Pulse Diagram for IG54-20-S4

Controllers for Systems with Progressive Feeders

Application

The controllers described in this chapter are used for time or pulse-controlled central lubrication systems with progressive feeders.

Overview

Table 2 - 22 lists the available VOGEL controllers for systems with progressive feeders and their scope of functions.

Function

The controllers trigger lubrication at certain time intervals. The special feature of the controllers described in this chapter is their capability to monitor the strokes of feeder pistons and to have the pump run intermittently during the contact time. The pressure is not monitored.

The functions available in this device series are outlined below. To which extent these functions are realized depends on the individual device type.

The Lubrication Cycle
A lubrication cycle is comprised of contact time (lubrication) and pause time (TP).

Table 2 - 22. Overview of VOGEL Controllers for Systems with Progressive Feeders

Designation	Short Description
EXZT2A03	Pulse transmitter/counter with selectable monitoring time, filling level and pump run time monitoring (stroke monitoring), adjustable dwell time and pause time extension
EXZT2A06	Pulse transmitter/counter with selectable monitoring time, filling level and pump run time monitoring (stroke monitoring), with adjustable dwell time, pause time extension and pulse monitoring
IGZ51-20	Pulse transmitter/counter with selectable intermittent or continuous pump operation, with adjustable stroke number, selectable pause and monitoring time as well as filling level and pump run time monitoring
IGZ51-20-S2	Like IGZ51-20, with power supply failure memory
IGZ51-20-S7	Like IGZ51-20-S2 with filling level switch as normally closed contact, pump run time = adjusted monitoring time
IGZ51-20-S8	Pulse transmitter/counter with selectable intermittent or continuous pump operation, prelubrication, selectable pause and monitoring time, with filling level and pump run time monitoring as well as power failure memory

The Pause Time TP
The pause time is the time between two contact times. The length of the pause can be determined in two ways, resulting in two different operating modes (BA) of the controllers (pulse transmitter or pulse counter). The operating mode can be adjusted manually at the unit (see chapter Operation).

Operating Mode Pulse Transmitter
In this operating mode the controller determines the length of the pause by starting a contact time at an interval programmed by the user.

Operating Mode Pulse Counter
In this operating mode the pause time is determined by the machine, sending pulses to the controller while it operates. The pulses received at the machine contact (MK or MKPV) are counted by the controller. After a preset number of pulses, lubrication is triggered. The number of pulses to be counted can be set by the user.

Pulse Monitoring
On devices with pulse monitoring (only in operating mode pulse counter), a second machine contact (MKUe) is used in addition to the machine contact MK or MKPV. Both inputs are polled alternately. If there is no pulse at contact

MKUe between two pulses at MK/MKPV, a failure message is output.

The Contact Time
After time-out of the pause time, a lubrication cycle is triggered, that is, the pump is switched on and the monitoring time started. This is referred to as contact time. During the contact time, the strokes of a piston in one of the progressive feeders is monitored by a proximity switch - here referred to as cycle switch. It registers the piston movements. After a defined number of strokes, the contact time ends and the pump motor is shut off.

Intermittent Operation
Since pneumatic pumps may be used in central lubrication systems with progressive feeders, the controllers can be set to intermittent pump control during the contact time to allow proper control of such pumps.

The Cycle Switch
The cycle switch (ZS) controls the pump run time on the basis of the number of strokes of the progressive feeder. The pump is shut off after a defined number of switch actuations during the contact time.

The number of switching operations of the cycle switch corresponding to the number of piston strokes can be adjusted on some units. The parameter stroke number is abbreviated NH.

Monitoring Time
The monitoring time (TU) is an adjustable time for the pump run time. If the monitoring time runs out before the expected number of operations of the cycle switch have been registered, the controller stops the pump at the end of the monitoring time and outputs a failure message.

Pump Run Time Limit
The pump run time (TL) is limited in principle by the monitoring time.

Level Monitoring
The filling level of the lubricant reservoir is monitored by means of a level monitoring switch (WS). This switch can be configured as a normally closed contact or normally open contact; this must be considered when the device type is selected.

As soon as the level in the lubricant reservoir drops below minimum, the function of the lubrication system is stopped and a failure message output.

If the level monitoring switch is configured as a normally closed contact, the signal lines leading up to the level monitoring switch are at the same time monitored for breakage of the wires.

Power Supply Failure Memory (EEPROM)
In case the power supply fails, the power supply failure memory saves the most important data of the controller, such as remaining pause time and a failure message. This allows the controller to continue the function on the basis of the device type upon the next power-up and failure messages are not lost.

The Prelubrication
Prelubrication is normally started after power-up of the operating voltage. Intermediate lubrication is performed just like a standard contact time. However, the failure message relay d2 remains de-energised and the failure LED is on.

This function is not available in all controllers of this series.

The Intermediate Lubrication
An intermediate lubrication is triggered by pressing the ⦿ button. It is processed like a normal contact time.

Pause Time Extension
On some units operating as pulse transmitters, the input I3 can be used to stop and release the pause. When the input is activated, the pause is stopped, when it is deactivated, the pause continues.

Installation

Install the controller in the control cabinet for a VOGEL central lubrication system as described in chapter Assembly in the general section of this operating manual.

Also please observe the notes in the description of the respective device type.

Operation

Switching On
The device is switched on, when the operating voltage is applied. When the operating voltage has been applied correctly, the green power LED is on and the status of the inputs and outputs is indicated on the display.

Power must be switched on or off instantaneously.

What time parameter is the first in the control sequence started upon power-up depends on the device type (see the chapters on the individual device types).

Contact Time (Lubrication)
During the contact time, relay d1 is energised and the pump motor thereby switched on. At the same time, the monitoring time starts. After the last switching operation of the cycle switch, relay d1 is de-energised and the monitoring time terminated. Then a pause begins.

Pause Time
At the beginning of the pause time, the adjusted pause time value is read and the pause then started. Subsequently contact time and pause time alternate.

Relay d2 in Normal Operation
When the operating voltage is applied and no failure has occurred, the relay d2 is always energised.

Intermediate Lubrication
Short pressing of the ⦿ button during a pause triggers an intermediate lubrication. Intermediate lubrication is performed just like a standard contact time.

Switching Off
The device is switched off by separating it from the operating power supply.

Upon shut-off, the device must remain off for some time before it can be switched on again (see reclosing time, specifications).

Changing Parameters and Operating Mode
The change of parameters and the selection of the operating mode are described in chapter Operation in the general part of this operating manual.

Parameter changes, such as change of the pause time, will become operative with the beginning of the next pause. A change of the operating mode will only become operative after the device is switched off and back on.

Operation with Power Supply Failure Memory
In case the power supply fails, the power supply failure memory saves the most important data of the controller, such as remaining pause time and a failure message.

Which process is the first upon return of power depends on the situation at the time of the power failure and on the device type.

Display of Failures

If a failure occurs, the red failure LED is on and the symbol for the respective input flashes on the display.

Cycle Switch Failure
If the adjusted monitoring time runs out before all of the expected switching operations of the cycle switch ZS have been registered, the function sequence is terminated. The relays d1 and d2 are de-energised. The failure LED lights up and the symbol for the input ZS flashes on the display.

Low Filling Level
The input of the level monitoring switch WS is continuously monitored as long as the operating voltage is applied. If too low filling level is detected for more than 1 s, the function sequence is terminated and relay d2 is de-energised. At the same time, the failure LED lights up and the symbol for the input WS flashes on the display.

As long as the input WS is de-energised, the failure message cannot be deleted. After the input WS is again energised, the failure message remains, until the ⦿ button is pressed to acknowledge the failure.

Missing MK Pulses
On devices with pulse monitoring (only in operating mode pulse counter), the machine contacts MK or MKPV and MKUe are polled alternately. If no pulse is received at contact MKUe

between two pulses received at MK/MKPV, a failure message is output and the symbol of input MKUe flashes on the display.

Conversely, the symbol of input MK/MKPV flashes when no pulse is received at MK/MKPW between two pulses received at contact MKUe.

Relay d2 when Operation Fails
If a failure occurs, relay d2 remains de-energised. The function sequence is interrupted until the error is resolved and the failure message deleted.

Deleting a Failure Message
A failure message can be deleted by pressing the ⦿ button, causing intermediate lubrication to be triggered, or it may be deleted by removing the operating voltage.

On devices with power supply failure memory the failure message can only be deleted by pressing the ⦿ button.

A level monitoring switch failure message can only be deleted, when a sufficient amount of lubricant has been refilled.

Delete a failure message only after resolving the cause of the failure.

EXZT2A03

Operating Modes

The controller EXZT2A03 can be operated as pulse transmitter (operating mode B) or pulse counter (operating mode D).

Scope of Functions

The controller EXZT2A03 features the functions listed below. The default and the adjustable parameters are listed in table 2 - 23.

- adjustable pause time
- adjustable monitoring time
- adjustable pump dwell time
- pump run time limit by stroke monitoring
- adjustable stroke number
- level monitoring (normally open contact)
- pause time extension

Input functions

The standard settings for the input functions are listed in table 2 - 24. The input functions can be altered as described in section “Adjusting the input functions” in chapter “Operation” of the general section of this manual.

Table 2 - 23. Parameters of EXZT2A03

Designation	Abbreviation	Default setting	Unit	Adjustment range	Unit
operating mode	BA	B		B (pulse transmitter) D (pulse counter)	
pause time	TP	10	seconds	01 E 00 - 99 E 04 (BA B) 01 E 00 - 99 E 04 (BA D)	seconds pulses
monitoring time	TU	60	seconds	01 E 00 - 99 E 04	seconds
dwell time	TN	15	seconds	01 E 00 - 25 E 00	seconds
stroke number	NH	3		01 E 00 - 25 E 00	

Installation, First Operation

Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagram (figure 2 - 19).

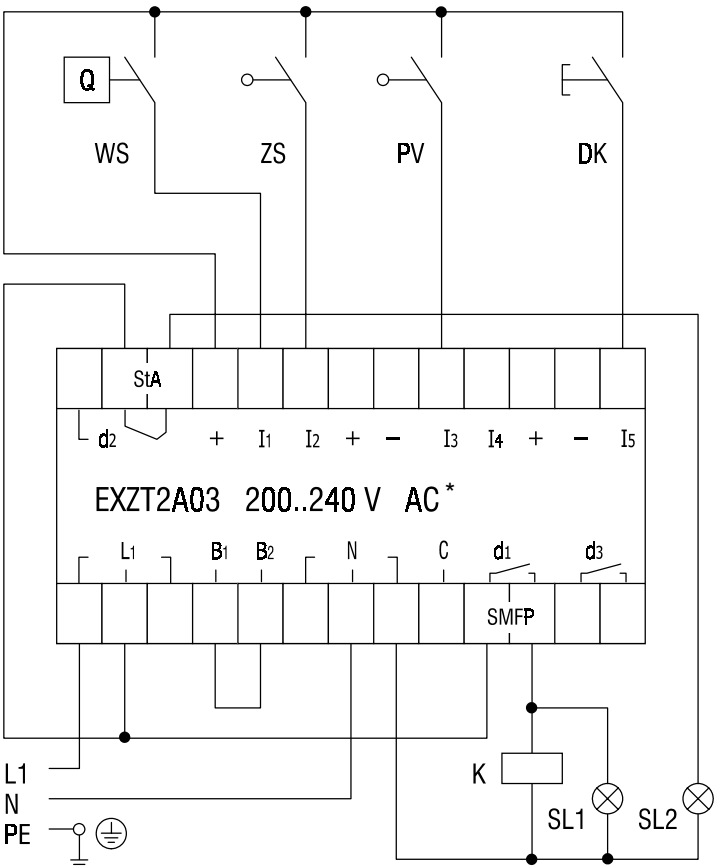
After installing the unit, trigger an intermediate lubrication by pressing the ⦿ button.

Table 2 - 24. Input functions of EXZT2A03

Input	Setting	Meaning
I1	S	normally open contact
I2	S	normally open contact
I3	S	normally open contact
I4	-	not used
I5	S	normally open contact

Operation

The EXZT2A03 is supplied without power supply failure memory. If the device is shut off, the operating data such as remaining pause time and failure messages are lost. Upon return of power, the controller always starts with a contact time.



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 19. Connection Diagram for EXZT2A03

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
ZS	cycle switch (stroke monitoring)
PV	pause time extension
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure (StA) operating contact: operation OK
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor

EXZT2A06

Operating Modes

The controller EXZT2A06 can be operated as pulse transmitter (operating mode B) or pulse counter (operating mode D).

Scope of Functions

The controller EXZT2A06 features the functions listed below. The default and the adjustable parameters are listed in table 2 - 25.

- adjustable pause time
- adjustable monitoring time
- adjustable pump dwell time
- pump run time limit (stroke monitoring)
- adjustable stroke number
- level monitoring (normally closed contact)
- pause time extension
- pulse monitoring

Input functions

The standard settings for the input functions are listed in table 2 - 26. The input functions can be altered as described in section “Adjusting the input functions” in chapter “Operation” of the general section of this manual.

Table 2 - 25. Parameters of EXZT2A06

Designation	Abbreviation	Default setting	Unit	Adjustment range	Unit
operating mode	BA	B		B (pulse transmitter) D (pulse counter)	
pause time	TP	10	seconds	01 E 00 - 99 E 04 (BA B) 01 E 00 - 99 E 04 (BA D)	seconds pulses
monitoring time	TU	60	seconds	01 E 00 - 99 E 04	seconds
dwell time	TN	15	seconds	01 E 00 - 25 E 00	seconds
stroke number	NH	3		01 E 00 - 35 E 00	

Installation, First Operation

Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagram (figure 2 - 20).

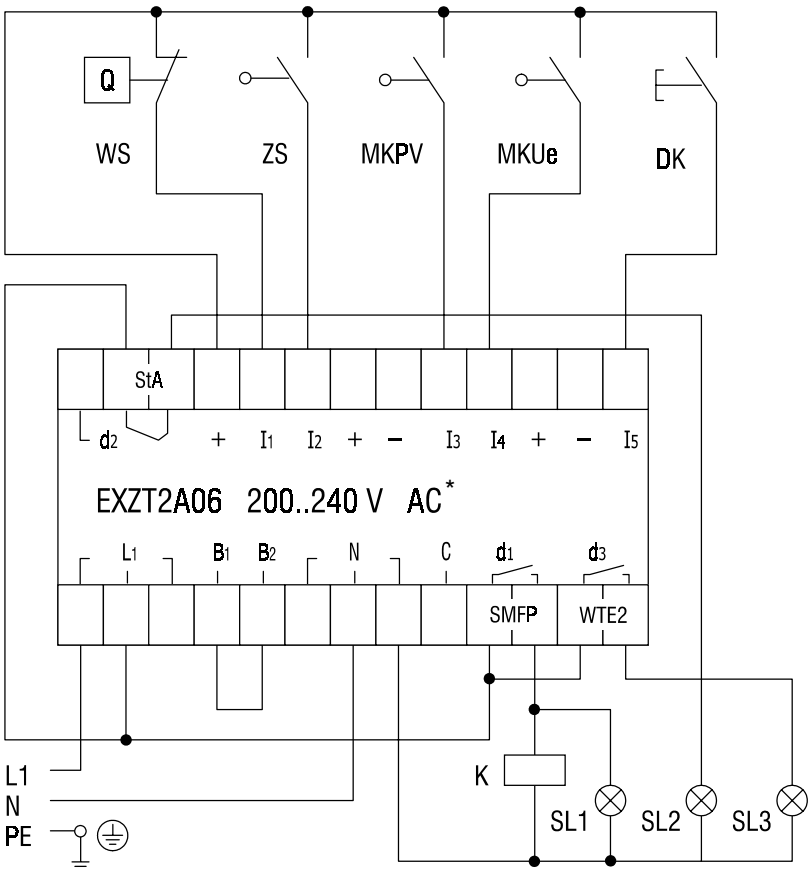
After installing the unit, trigger an intermediate lubrication by pressing the ⦿ button.

Operation

The EXZT2A06 is supplied without power supply failure memory. If the device is shut off, the operating data such as remaining pause time and failure messages are lost. Upon return of power, the controller always starts with a contact time.

Table 2 - 26. Input functions of EXZT2A06

Input	Setting	Meaning
I1	O	normally closed contact
I2	S	normally open contact
I3	S	normally open contact
I4	S	normally open contact
I5	S	normally open contact



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 20. Connection Diagram for EXZT2A06

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
ZS	cycle switch (stroke monitoring)
MKPV	machine contact/ pause time extension
MKUe	machine contact (pulse monitoring)
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure (StA) operating contact: operation OK
d3	operating contact for display of pulse errors (WTE2)
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
SL3	signal lamp for „PULSE ERROR“
K	pump motor contactor

IGZ51-20

Operating Modes

The controller IG51-20 can be operated in the following operating modes:

A pulse transmitter with contiuous pump operation during the contact time
B pulse transmitter with intermittent pump operation
C pulse counter with contiuous pump operation during the contact time
D pulse counter with intermittent pump operation

Scope of Functions

The controller IGZ51 features the functions listed below. The default and the adjustable parameters are listed in table 2 - 27.

- adjustable pause time
- adjustable monitoring time
- adjustable stroke number
- pump run time limit by stroke monitoring
- level monitoring (normally open contact)
- pause time extension

Input functions

The standard settings for the input functions are listed in table 2 - 28. The input functions can be altered as described in section “Adjusting the input functions” in chapter “Operation” of the general section of this manual.

Table 2 - 27. Parameters of IGZ51-20

Designation	Abbreviation	Default setting	Unit	Adjustment range	Unit
operating mode	BA	A		A (pulse transmitter with continuous pump operation) B (pulse transmitter with intermittent pump operation) C (pulse counter with continuous pump operation) D (pulse counter with intermittent pump operation)	
pause time	TP	10	minutes	01 E 00 - 99 E 04 (BA A, B) 01 E 00 - 99 E 04 (BA C, D)	minutes pulses
monitoring time	TU	60	seconds	01 E 00 - 99 E 03	seconds
stroke number	NH	3		01 E 00 - 30 E 00	

Installation, First Operation

Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Figure 2 - 21 shows the connection diagram.

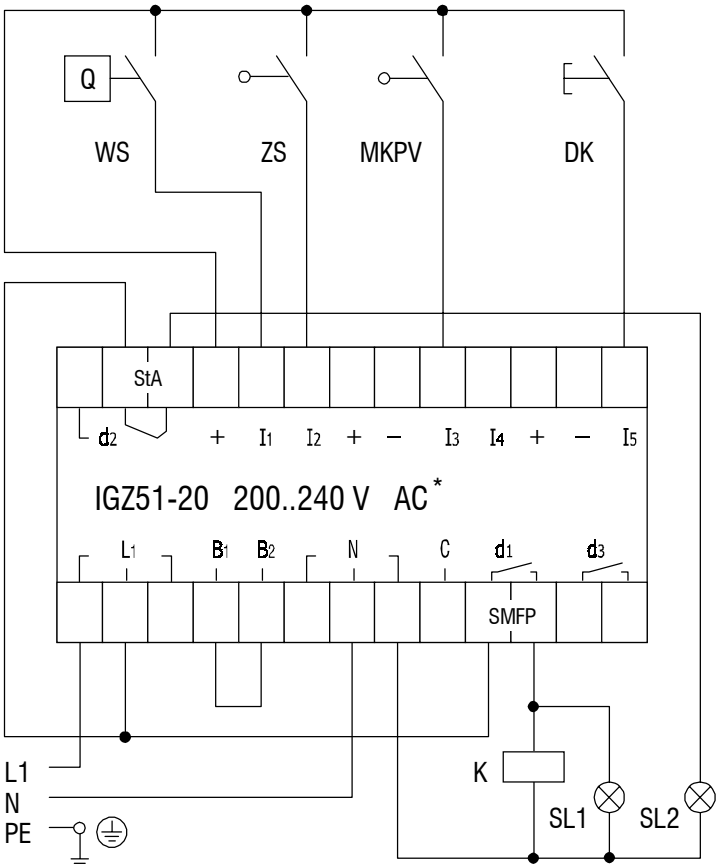
After installing the unit, trigger an intermediate lubrication by pressing the ⦿ button.

Table 2 - 28. Input functions of IGZ51-20

Input	Setting	Meaning
I1	S	normally open contact
I2	S	normally open contact
I3	S	normally open contact
I4	-	not used
I5	S	normally open contact

Operation

The IGZ51-20 is supplied without power supply failure memory. If the device is shut off, the operating data such as remaining pause time and failure messages are lost. Upon return of power, the controller always starts with a new pause time.



*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.

Figure 2 - 21. Connection Diagram for IGZ51-20

L1/N	operating voltage
B1/B2	jumper terminals for operating voltage (here shown: 200..240 V)
WS	level monitoring switch (here shown: reservoir filled)
ZS	cycle switch (stroke monitoring)
MKPV	machine contact/ pause time extension
DK	push-button 1. intermediate lubrication 2. delete failure
+	+24 V DC output
-	0 V DC output
d1	operating contact for lubricant supply pump (SMFP)
d2	change-over contact, command line resting contact: failure (StA) operating contact: operation OK
SL1	signal lamp for „PUMP ON"
SL2	signal lamp for „FAILURE"
K	pump motor contactor

IGZ51-20(-S2) Pulse Diagrams

(Time axis not true to dimensions, stroke preset = 3)

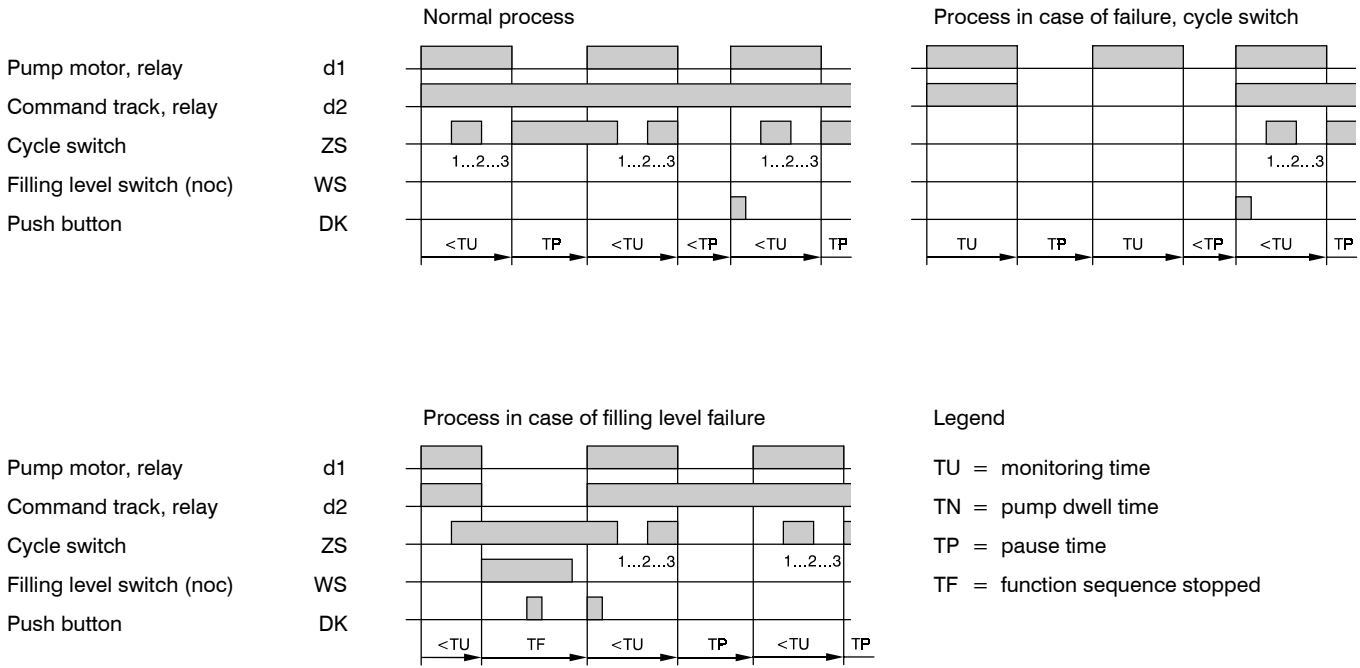


Figure 2 - 22. Pulse Diagram for IGZ51-20