

Operating instructions

vacuum based lifting device for Industrial Assembly Applications

OKTOPUS[®] PANEL-Jack PT400

Serial number: _____

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1 General information regarding OKTOPUS[®]

1.1 Manufacturer information

Manufacturer's name and registered office:

WIRTH GMBH Installation Systems Division Brehnaer Straße 1 D-06188 Landsberg

Device characteristics:

Product denomination:	OKTOPUS [®] PANEL-Jack PT400		
Туре:	OKTOPUS [®] PANEL-Jack PT400 E B24 P 030		
Serial number:	(see type plate)		
Year of manufacture:	(see type plate)		
Mass: approx. 690 kg (with 12 round suction pads)			
	approx. 740 kg (with 24 oval suction pads)		
Working Load Limit:	refer to section 2.3 Symbols and markings		
	whereby dimension:		
	Round suction pad = Ø250 mm		
	Oval suction pad = 320 x 100 mm		
CE marking:	in accordance with EC conformity declaration Annex 3		
Inspection tag according to Annex 4 attached to the device.			

1.2 Service workshop

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1.3 Scope of application

This operating manual represents the current state of technology and the safety measures defined by the European Machinery Directive valid at the date of issue of this manual. Diverging or amending national regulations may not be taken into account.

To comply with these amending or diverging regulations is exclusively the responsibility of the user.



2 Proper use of OKTOPUS[®]

2.1 Basic principle and safety concept for the OKTOPUS[®]

Devices of the OKTOPUS[®] system are "*load lifting attachments*" operating according to the principle "*vacuum lifter*". They are mounted to a hoist or operate as a stand-alone unit and are used for handling and positioning large-sized construction elements.

The basic functional principles of the OKTOPUS[®] system are:

- ⇒ controlled suction and release of large-sized construction elements having sufficient inherent stability using one or more suction pad of the OKTOPUS[®],
- \Rightarrow transport and positioning of the sucked elements by manipulating the OKTOPUS[®],
- \Rightarrow vernier positioning of the elements attached to the OKTOPUS[®] by controlling the OK-TOPUS[®] axes (if available).

For various fields of application we offer different designs and types of the OKTOPUS[®]. These differ depending on the used hoist, the loads to be lifted, the required positioning movements and the used controls.

For further information please contact us or visit our website at www.wirth-gmbh.com.

Specific safety requirements, which have been taken into account during construction, execution, technical documentation and in drawing up the operating instructions, result from the function of the OKTOPUS[®] being a load lifting attachment.

Therefore, strict adherence to the instructions and information for proper and safe use given in the operating manual is a prerequisite for the manufacturer's warranty during the stipulated warranty period.

Combining the OKTOPUS[®] with a hoist is the responsibility of the OKTOPUS[®] user. The user himself is responsible for proper implementation of the relevant guidelines and instructions. The instructions given in this operating manual by the OKTOPUS[®] manufacturer are considered to be additional support.

Prior to initial startup of the machine the suitability of the combination OKTOPUS[®]/forklift or crane in operating conditions has to be checked by skilled personnel.

Furthermore, the OKTOPUS[®] has to undergo regular inspections by an expert (see point 4). An expert is a person that due to his technical training and experience has sufficient knowledge in the area of vacuum based load lifting attachments and is familiar with relevant occupational and safety instructions, regulations and generally recognized codes of practice which enables him to assess operational safety of vacuum based load lifting attachments.

The initial inspection of the combination hoist/OKTOPUS[®] as well as the successful performance of the annual inspection of the OKTOPUS[®] by an expert has to be documented.

The OKTOPUS[®] manufacturer offers expert inspections as a service and documents the inspections on the OKTOPUS[®] by placing the inspection tag on the inspection card according to Annex 4 with the indication of the next test date.



2.2 Safety instructions

2.2.1 General safety instructions

- (1) **Never use** a damaged, not fully functional or not complete OKTOPUS[®].
- (2) Before using the crane/OKTOPUS[®] respectively forklift/OKTOPUS[®] working arrangement for the first time always the units have to be **checked by an expert** and this inspection has to be documented!
- (3) Only operate the crane/forklift if you hold a **suitable licence**!
- (4) Only operate the OKTOPUS[®] and the crane/forklift if you are **familiar with the control and display elements as well as the operating instructions**. You need to be aware of the impact a function can have on the entire equipment.
- (5) **Before using** the OKTOPUS[®] and the crane/forklift check the function of the operating and indicating elements as well as the alarm features!
- (6) Make sure that the crane/forklift operator has **a sufficient view** over the sling and assembly location.
- (7) Arrange **hand signals** with the installer and fitter for the necessary crane/forklift operations!
- (8) It is absolutely necessary to observe the maximum Working Load Limit of the OK-TOPUS[®] PANEL-Jack PT400 stipulated in section 2.3 Symbols and markings! These specifications only apply for a working height of up to 400 m above sea level!
- (9) Should be **protection hoods** on the suction heads, the protection hoods must **remove** before start-up!
- (10) Only work in **wind strengths of less than 30 km/h**, else the load is endangered of swinging uncontrollably.
- (11) Check the suction pads daily for damage; if necessary replace with new pads.
- (12) **Clean the suction surfaces** on the elements. Do not place the suction pads on protective film, but remove the film beforehand, at least at the contact areas of the suction pads.
- (13) Never stand or walk under the suspended load!
- (14) Ensure that **no-one attempts to mount or ride** on the OKTOPUS[®] PANEL-Jack PT400 or the suspended construction elements.
- (15) Stop work immediately when the acoustic alarm sounds and the red warning light lights up! In this case there are the danger of a grave damage to the system and falling of the sucked load. Use the elevating machine to put down the OKTOPUS[®] and the sucked load carefully. Find and remove the cause for the alarm. In case the defects cannot be removed, finish working with the OKTOPUS[®] immediately. The OKTOPUS[®] has to be secured against further use.
- (16) In the event of **faults** and during servicing and maintenance work **always switch the** OKTOPUS[®] **off**. Turn therefor the main switch to the OFF position!
- (17) Please note, low temperatures and humidity can cause freezing of the vacuum system!
- (18) Never use the OKTOPUS[®] within highly combustible ranges or within the range of aggressive substances!
- (19) In each case wear suitable protection clothes, helmets, gloves and industrial safety shoes!
- (20) After use protect the suction pads of the OKTOPUS[®] against damage by using protection hoods!
- (21) Never attempt to lift damaged construction elements.



- (22) Wet components **must not be sucked in**, because:
 - a. this reduces the load bearing capacity considerably and
 - b. the vacuum system and/or the control system of the OKTOPUS[®] might be damaged!
- (23) **Do not lift** the load higher than necessary.
- (24) **Never leave** a lifted load unsupervised.
- (25) Lift never more than one construction element at the same time.
- (26) Always comply with the prescribed maintenance instructions:
 - **daily visual and functional test** (charge level of the battery, vacuum gauges, suction pads, red warning light, green signal light, acoustic alarm, control panels)!
 - depending on the operating conditions, **however at least annually**, inspection by a qualified expert!
- (27) Never modify the OKTOPUS[®] in such a way, that its safety is impaired. The manufacturer's warranty is otherwise rescinded.
- (28) Never remove information signs, safety signs and test card (with test badge) from the OKTOPUS[®]! The manufacturer's warranty is otherwise rescinded.

2.2.2 Safety instructions forklift truck use

- (1) Only use forklift trucks which are provided with the following specifications:
 - Load bearing capacity ^{*)} min. 3000 kg
 - Fork length 900 1200 mm
- (2) Install and **lock** the OKTOPUS[®], as in section 3.1 of this operating manual described, at the forklift.
- (3) **Never tilt the forks of the fork lift truck** forwards; a shift in the centre of gravity can cause toppling!

2.2.3 Safety instructions crane use

(1) Only use cranes with a load bearing capacity exceeding the live load of the OK-TOPUS[®] PANEL-Jack PT400 in all working positions by at least 750 kg!

2.3 Symbols and markings

Signal word Meaning		Consequences of non-compliance	
AWarns of imminentDANGERthreat of danger		Death or serious injury or substantial material damage as consequence.	
	Warns of potential threat of danger	Death or serious injury or substantial material damages are possible.	
	Warns of possibly dangerous situation	Light injury or material damages are possible.	

Next to the type plate the following safety-related signs and pictographs are attached to the OKTOPUS[®]:



Operating Instructions OKTOPUS[®] PANEL-Jack PT400 Technical documentation

BA 000 005

Working Load Limit OKTOPUS [®] PANEL-Jack PT400				
	Installation of roofing elements (0 ≤ α ≤ 10°)	Turn-over of elements		
8 Round suction pads	350 kg	250 kg		
12 Round suction pads	400 kg	400 kg		
8 Oval suction pads	200 kg	130 kg		
12 Oval suction pads	300 kg	200 kg		
16 Oval suction pads	400 kg	260 kg		
24 Oval suction pads	400 kg	400 kg		

(Working Load Limit OKTOPUS®)

Arrangement	of the suction pads
]]	8 Oval suction pads 8 Round suction pads
HI HI	12 Oval suction pads 12 Round suction pads
HH HH	16 Oval suction pads
	24 Oval suction pads

(Arrangement suction pads)



(Before operating, read and comply with operating manual as well as safety instruction!)



(Warning notices)

blue righ



(Suspension point forklift transport rack)



(Beware of suspending load)



(Caution against dangers from batteries)



(Disconnect mains plug before opening)

red left

(Vacuum circuits)

blue left

red right



(Suspension point forklift OKTOPUS®)



2.4 Design and use of the OKTOPUS[®]

The OKTOPUS[®] PANEL-Jack PT400 is a load suspension device for large, inherently stable construction elements with at least one partial smooth and air impervious surface being frequently used for industrial construction. It can be used for rotating of panels (face-to-face delivery) and for the installation of roofing panels.

The main assemblies are (refer to Fig. 1):

- the crane adapter (1), coupling the OKTOPUS[®] to the crane,
- the red warning light (5), indicating a critical situation and the green signal light (18) defining the working range,
- the vacuum gauges (20) indicating the current vacuum level,
- the charge indicator (6),
- the suction bridge (22) with the suction pads (16),
- 4 pcs. of eyelets (10) to fasten the optional safety belts,
- the main switch (7) for switching the equipment on and off and the cable remote control (9) to operate the OKTOPUS[®].



Fig. 1: OKTOPUS[®] PANEL-Jack PT400

- 1 Crane eyelet
- 2 Cover 1
- 3 Power supply socket battery charger
- 4 Connector socket cable remote control
- 5 Red warning light
- 6 Charge indicator
- 7 Control panel main switch
- 8 Extension
- 9 Control panel cable remote control
- 10 Eyelet safety belt
- 11 Water separator

- 12 Safety chain
- 13 Locking screw
- 14 Forked fitting
- 15 Center support
- 16 Suction pad
- 17 Abdeckung 2
- 18 Green signal light
- 19 Alarm horn
- 20 Vacuum gauge
- 21 Stop cock
- 22 Suction bridge





Fig. 2: OKTOPUS[®] PANEL-Jack PT400 with extensions

Wirth standard suction pads

Ex factory 2 variants of suction pads are available:

- Round suction pads (Ø 250 mm),
- Oval suction pads (320 x 100 mm).

Which suction pad should be used, depends on the shaping of the element. Your Wirth service team would be pleased to advice you.



Round suction pad



Oval suction pad

Fig. 3: Wirth standard suction pads

Arrangement of the suction pads

According to the version and the amount of suction pads the arrangements, which are portrayed in section 2.3 Symbols and markings, are possible. Please contact the Wirth Service Team if a deviating arrangement of the suction pads would become necessary!



Always split the suction pads equally on both vacuum circuits up!



The load carrying attachment OKTOPUS[®] PANEL-Jack PT400 has been designed as an attachment device and is mounted to the crane respectively forklift truck in accordance with Fig. 4 and 5.



Fig. 4: Load carrying device OKTOPUS[®] PANEL-Jack PT400 with crane



Fig. 5: Load carrying device OKTOPUS[®] PANEL-Jack PT400 with forklift truck

The use of the load carrying attachment system OKTOPUS[®] offers the following benefits during the assembly of large sized construction elements:

- faster, more rational and more efficient assembly process,
- smaller assembly team required,
- higher quality of the process on account of careful handling which protects materials,
- lower physical strain on the fitters because they don't have to carry and lift heavy loads,
- high degree of safety at work.

The rationalization effects and savings compared with conventional methods lead to a shortterm amortization of the capital expenditure.



2.5 Conditions and restrictions for the use of the system

The construction elements to be processed with the OKTOPUS[®] PANEL-Jack PT400 have to fulfil the following criteria in the suction areas:

- they have to be airtight,
- they must have an smooth, dry, oil-free and clean surface and
- they must not be equipped with a protective plastic film.

The OKTOPUS[®] is delivered with suction pads for smooth construction element surfaces. In case profile boards (e. g. with a trapezoidal cross section) are to be transported, special vacuum pads adapted to that end have to be used, which can be provided by the manufacturer of the OKTOPUS[®] system as a customer specific option.

Wirth cannot meet any general statements about the length of the elements that can be installed with this OKTOPUS[®]. It depends almost completely on the stiffness and with that on the deformation behaviour of the elements.

Suction of oil, water, fumes or aggressive gasses should be avoided. The ambient temperature must be at least 0 °C and may not exceed 40 °C (valid for 1013 mbar and sea level). The capacity of the used batteries is reduced at low temperatures. The air-borne sound emitted by the OKTOPUS[®] PANEL-Jack PT400 amounts to < 70 dB(A), vibrations amount to < 2.5 m/s^2 , so that no specific protective measures are required on account of that.

The scope of application of the OKTOPUS[®] PANEL-Jack PT400 is limited by the maximum bearing capacity (see section 2.3 Symbols and markings) and the performance data and operating conditions of the employed crane and site conditions. Furthermore it is to be made sure that the elements to be processed are sufficiently stable enough in itself and suitable for the installation with vacuum lifting devices (If necessary clarify it with the manufacturer of the elements.).

Because of the large variety of elements and surface coatings at the market we cannot assume the liability for possibly occurring material incompatibilities between the surface coating of the element and the suction rubber of our vacuum pads.

The maximum Working Load Limit stipulated on the OKTOPUS[®] only applies to the use of the original suction pads and a working height of maximum 400 m above sea level. Employing the OKTOPUS[®] in heights above 400 m leads to a decreased Working Load Limit of the OKTOPUS[®] on the one hand and the OKTOPUS[®] control system needs to be adjusted on the other hand. If you want to employ the OKTOPUS[®] in heights above 400 m, please contact the Wirth Service Team beforehand.

Employing the OKTOPUS[®] at heights above 400 m leads to a decreased Working Load Limit! The Working Load Limits stipulated on the OKTOPUS[®] and in this operating manual do not apply in this case!



Never carry out unauthorized adjustments at the control system of the OK-TOPUS[®] as it may lead to serious malfunctions of the device! It means danger to life and limb! Consult with the OKTOPUS[®] manufacturer if it is necessary to adjust the control system of the OKTOPUS[®], e.g. for height adjustment.



2.6 Working areas of operating personnel

There are two working areas during operation of the OKTOPUS® PANEL-Jack PT400:

- a) Driver's area for handling the crane respectively forklift truck.
- b) Installation area to operate the OKTOPUS[®] PANEL-Jack PT400 by the fitter or installer and to position the suctioned construction element.

To avoid risks no personnel may stand or walk underneath the suspended load!

2.7 Requirements to be met by the used cranes/forklift trucks and their operation

Crane operation

Performance data of the crane: minimum bearing capacity:

crane

Fig. 6: Hazard zones crane operation

Ensure that no-one is standing under the suspended load or in the hazard zone. Furthermore ensure that no-one tries to mount or ride on the OK-TOPUS[®] PT400 or the load (Fig. 6).

Forklift truck operation

Performance data of the forklift truck:

minimum bearing capacity	3000 kg
fork length	900-1200 mm



The indicated minimum load-carrying capacity of the forklift truck is noncommittal. There is in each case the necessity for the rough computation of the remainder load-carrying capacity in accordance with annex 5 of this manual.

min. 750 kg over the live load of the OKTOPUS[®]



On non-illuminated building sites it must be possible to illuminate the installation area with the forklift truck lights.

In order to document conformity with EC directives the forklift truck must be provided with the CE marking. The forklift truck driver bears the overall responsibility for operation of the OK-TOPUS[®].

The following instructions must be complied with to ensure the safety of the operating personnel:

WARNING

Ensure that no-one tries to mount or ride on the OKTOPUS[®] or on the elevated forks of the truck (see Fig. 7). It is prohibited to carry passengers on

Ensure that no-one is standing under the suspended load or in the hazard



zone (see Fig. 7).

industrial trucks.



Fig. 7: Hazard zones forklift operation

2.8 Transport and storage

The OKTOPUS[®] must only be moved with a suitable crane or elevator means of transport having a sufficient load-bearing capacity.



Switch off the OKTOPUS[®] during transport! For it turn the main switch to the OFF position!



Protect the rubber lips of the suction pads against pollution and damage by covering them with protective coverings.



In order to prevent damaging of the batteries through discharge during storage, the OKTOPUS[®] has to be connected to the mains supply for charging the battery at least every two weeks.



Transport rack

The OKTOPUS[®] PANEL-Jack PT400 is delivered with a transport rack as shown in Fig. 8. It makes possible:

- a space-saving storage of the OKTOPUS® and
- the protection of the suction pads, in particular the rubber lip during transport and storage.







Lock the OKTOPUS[®] in the transport rack always completely by using the fasteners contained in the scops of supply!

Note:

To remove the steel-pin with axial lock, push the button of the steel-pin up to the steel-pin is pulled completely.

To install the steel-pin with axial lock, push the button of the steel-pin again up to the steelpin is pushed in completely.



3 Instructions for use of the OKTOPUS[®]

3.1 Coupling of the OKTOPUS[®] to the crane/forklift truck

Coupling of the OKTOPUS[®] to the crane

The OKTOPUS[®] PANEL-Jack PT400 has to be coupled to the crane as a load carrying device to make it ready for operation. The assembly of the OKTOPUS[®] has to be carried out while the crane is immobile and the OKTOPUS[®] is switched off.

Coupling of the OKTOPUS[®] to the forklift truck

The OKTOPUS[®] PANEL-Jack PT400 has to be coupled to the forklift truck as an attachment unit to make it ready for operation (refer to Fig. 9 and Fig. 10).

- Insert the truck forks into the forked fitting of the OKTOPUS[®] PANEL-Jack PT400 as far as possible.
- Lift the OKTOPUS[®] with the forks slightly.
- Tighten the screws of the locking plates on both sides firmly.
- Fasten the safety chain attached at the OKTOPUS[®] to the mounting plate of the forklift truck.



Fig. 9: Coupling of the OKTOPUS[®] PANEL-Jack PT400 to the forklift truck

To detach the OKTOPUS[®] from the forklift truck remove at first the safety chain from the mounting plate of the forklift truck. Than lift the OKTOPUS[®] again slightly. The lifting relieves the loosing of the screws of the locking plates.



Fig. 10: Locking the OKTOPUS[®] PANEL-Jack PT400 at the forklift truck





Only the provided safety chain and likewise the shackle contained in the scope of supply of the OKTOPUS[®] may used for locking the OKTOPUS[®] at the forklift truck!

3.2 Power supply

3.2.1 Electrical power

The electrical power is provided by a battery 24 V /55 Ah (Two batteries in a row.).

The charge level is controlled by a charge indicator according to fig. 11. After switching on the OKTOPUS[®], light-emitting diodes (LED) in the signal colours green, yellow and red indicate the current charging level.

The charge indicator provides the following charging information for you:

- \Rightarrow If one of the green LEDs light up, the battery is charged. Now you can work with the OKTOPUS[®].
- \Rightarrow If the third LED from the left (yellow LED) lights up, the battery should be charged.
- ⇒ If the second LED from the left (yellow LED) lights up or if the second LED form the left and the red LED are alternately flashing, the battery has to be charged immediately, to avoid a deep discharge and damages.

The charge indicator is located according to Fig. 1.



Fig. 11: Charge indicator

WARNING

Do not use the OKTOPUS[®] when the yellow LED flashes or the yellow and the red LED are flashing alternately. The load, which might be drawn in, should be lowered. The OKTOPUS[®] should be immediately charged to avoid a deep discharge and damages.



The user has to secure that the battery of the OKTOPUS[®] is sufficiently charged during the operation with the OKTOPUS[®].



The charge indicator shows only the current voltage level of the battery. There are no reliable qualitative indications to the capacity of the batteries.



The charge indicator reacts/responds slowly. To judge the voltage level after the charge realistically (see point 4.5), the vacuum pump of the device needs to run for approx. 2 minutes. With the indicated charging level of the batteries you can decide about the use of the device.



3.2.2 Hydraulic system

The minimum oil level is given if the oil tank is filled ³/₄ while the cylinders are retracted. The nominal hydraulic pressure is limited by a pressure limitation valve.

3.2.3 Vacuum system

The vacuum supply is provided by an electrically operated vacuum pump, which is supplied by the battery. Starting from the vacuum pump the OKTOPUS[®] PANEL-Jack PT400 is developed as a dual circuit system. That means, all following vacuum modules, like nonreturn valve, vacuum reservoir, water separator and suction pads are two times present (2 vacuum circles).

At the OKTOPUS[®] PANEL-Jack PT400 the 2 vacuum circles are marked by different colors, one color per vacuum circuit (blue and red). It is to be made sure that only vacuum hoses and vacuum hose couplings of same color are interconnected.

Mounted on the crane the OKTOPUS[®] PANEL-Jack PT400 is ready for operation when sufficient vacuum is provided in both vacuum reservoirs. The current vacuum level is constantly indicated on the two vacuum gauges (Fig. 12).

The green scale range is the



permissible working range from -0,65 bar to -0,9 bar.

Fig. 12: Vacuum gauge

During operation the vacuum is monitored by two pressure control devices. If the vacuum is in both vacuum circles in the working area, the green signal light shines. The OKTOPUS[®] is ready for use. If the vacuum drops in one or both vacuum circles below the prescribed level (exceeds the pressure the -0.65 bar mark = red scale range), an alarm is activated automatically:

- \Rightarrow the acoustic alarm sounds,
- \Rightarrow the red warning light lights up.



Only interconnect vacuum hoses and couplings of the same color! Noncompliance with these instructions could, in case of a breakdown of a vacuum circuit, lead to the load suddenly dropping due to uneven load distribution.



If the alarm is activated, stop working instantly and evacuate the hazard zone, as the sucked element could disengage suddenly. Never stand or walk under the OKTOPUS[®] or the suctioned element!





The alarm remains active until the vacuum pressure is restored within its permitted limits.

3.3 Control devices

The OKTOPUS[®] PANEL-Jack PT400 is operated with two control panels as shown in Fig. 13 and 14.

The control panel for switching the unit on and off and for canceling the alarm is firmly installed (see Fig. 1, Pos. 8). The control panel for suctioning and releasing as well as swivelling is connected to the OKTOPUS[®] with a cable.



Fig. 13: Control panel main switch



Fig. 14: Control panel cable remote control

3.4 Start-up

Proceed as follows to start operation of the OKTOPUS®:

- Turn the main switch to the "ON" position.
- Check the charge level of the battery on the charge indicator:
 - \Rightarrow The operational readiness is indicated through the luminescence of a green LED.



- ⇒ If the second LED from the left (yellow LED) flashes or the second LED from the left (yellow LED) and the red LED flash alternately, the battery needs to be charged!
- Turn the selector switch "Suction/Release" to the "Release" position, then press button "Release confirm" and button "Cancel alarm".

3.5 Handling of construction elements

3.5.1 Handling of construction elements while crane operation

In order to get the OKTOPUS® PANEL-Jack PT400 ready for operation the OKTOPUS®:

- \Rightarrow has to be configured according to the construction elements (type and number of suction pads, number of extensions).
- ⇒ has to be coupled to the crane as a load carrying device. The assembly of the OK-TOPUS[®] has to be carried out while the crane is immobile and the OKTOPUS[®] is switched off.
- ⇒ has to be checked according to the position of the stop cocks and the center supports. The stop cocks must be opened in case they are closed. The center supports (Fig. 1, Pos. 15) has to be adjusted in a level with the suction pads.

The assembly of the construction elements is carried out as follows:

- ⇒ Drive the crane with the mounted OKTOPUS[®] PANEL-Jack PT400 to the element stack. Adjust the suction pads in such a way that they are parallel to suction area of the load by pressing the buttons "Swivel up" and "Swivel down" and manual guiding of the OKTOPUS[®].
- ⇒ Place the OKTOPUS[®] above the centre of mass of the load (± 5 cm). If the surface of the element is provided with a protective film, the protective film is to be removed at least within the range of the suction pads before putting on the OKTOPUS[®].



Make sure that the load is placed properly on the OKTOPUS[®]. Unbalanced loads can tilt or turn unexpectedly.

- ⇒ Turn the selector switch "Suction/Release" to the "Suction" position. The construction element is sucked in. If this procedure should not be finished within approx. 20 s, please proceed as follows: Close the stop cocks shown in figure 13. The selector switch "Suction/Release" stands thereby on position "Suction". Following that open first one of the stop cocks closed until then. Now the suction action of the suction pads connected with this vacuum circuit should take place immediately. Proceed for the remaining stop cocks in the same way, until all stop cocks are opened and all vacuum pads sucked in.
- ⇒ After the red warning light and the alarm horn have both gone out and the vacuum gauges (see Fig. 12) indicate that the working range has been reached, the green signal light lights up and you have made sure, that no one is present in the danger area, you can lift the load.



The lifting of a load is permitted only if all four stop cocks are opened and all suction pads are sucked in!

 \Rightarrow Only lift the load as high as necessary!



- ⇒ Use the operating control of the crane and the buttons "Swivel up" and "Swivel down" of the cable remote control in order to bring the load into the desired position.
- \Rightarrow Place the element at the place of destination in such a way that no hazard is originating from it after the OKTOPUS[®] has been released.
- ⇒ The element has to be released. For releasing turn the selector switch "Suction/Release" to the "Release" position and press the button "Release confirm". The confirmation is an additional safeguard against inadvertent incorrect operation.





3.5.2 Handling of construction elements while forklift truck operation

In order to get the OKTOPUS® PANEL-Jack PT400 ready for operation the OKTOPUS®:

- \Rightarrow has to be configured according to the construction elements (type and number of suction pads, number of extensions).
- ⇒ has to be coupled to the forklift truck as described in chapter 3.1 of this operating manual. The assembly of the OKTOPUS[®] has to be carried out while the OKTOPUS[®] is switched off.
- ⇒ has to be checked according to the position of the stop cocks and the center supports. The stop cocks must be opened in case they are closed. The center supports (Fig. 1, Pos. 15) has to be adjusted in a level with the suction pads.

The assembly of the construction elements is carried out as follows:

- ⇒ Drive the forklift truck with the mounted OKTOPUS[®] PANEL-Jack PT400 to the element stack. Adjust the suction pads in such a way that they are parallel to suction area of the load by pressing the buttons "Swivel up" and "Swivel down" of the OKTOPUS[®] as well as by using the drive and lifting movements of the forklift truck.
- ⇒ Place the OKTOPUS[®] above the centre of mass of the load (± 5 cm). If the surface of the element is provided with a protective film, the protective film is to be removed at least within the range of the suction pads before putting on the OKTOPUS[®].



Make sure that the load is placed properly on the OKTOPUS[®]. Unbalanced loads can tilt or turn unexpectedly.

⇒ Turn the selector switch "Suction/Release" to the "Suction" position. The construction element is sucked in. If this procedure should not be finished within approx. 20 s, please proceed as follows: Close the stop cocks shown in figure 13. The selector



switch "Suction/Release" stands thereby on position "Suction". Following that open first one of the stop cocks closed until then. Now the suction action of the suction pads connected with this vacuum circuit should take place immediately. Proceed for the remaining stop cocks in the same way, until all stop cocks are opened and all vacuum pads sucked in.

⇒ After the red warning light and the alarm horn have both gone out and the vacuum gauges (see Fig. 12) indicate that the working range has been reached, the green signal light lights up and you have made sure, that no one is present in the danger area, you can lift the load.



The lifting of a load is permitted only if all four stop cocks are opened and all suction pads are sucked in!

- \Rightarrow Only lift the load as high as necessary!
- ⇒ Use the buttons "Swivel up" and "Swivel down" of the cable remote control and the drive and lifting movements of the forklift truck in order to bring the load into the desired position.
- \Rightarrow Place the element at the place of destination in such a way that no hazard is originating from it after the OKTOPUS[®] has been released.
- ⇒ The element has to be released. For releasing turn the selector switch "Suction/Release" to the "Release" position and press the button "Release confirm". The confirmation is an additional safeguard against inadvertent incorrect operation.



Fig. 16: Swivel a load while forklift truck operation



3.6 Assembly and disassembly of the extensions and center supports

We recommend to **assembly** the extensions as follows (cf. Fig. 17):

- \Rightarrow Couple the OKTOPUS[®] to a crane or a forklift truck.
- ⇒ Install the extensions symmetrically to the OKTOPUS[®]. Use therefor the locking bolts and clip pins contained in the scope of supply. The extension with the mounted suction bridge has to be installed always at the very end.
- \Rightarrow Mount the center supports to the extensions as shown in figure 17. Use therefore the screws M10x140, washers and locking nuts contained in the scope of supply.
- \Rightarrow Couple the suction pads placed on the suction bridges to the vacuum system of the OKTOPUS[®] by plugging in the quick couplings.



WARNING

Connect only vacuum hoses respectively vacuum hose couplings of the same color!

Make sure that all locking bolts und screws after the installation of the extensions and center supports are always completely locked by lynch pins or locking nuts respectively.



Use joints and fastenings certified by the manufacturer only!



Fig. 17: Assembly of the extensions

The **disassembly** of the extensions and center supports takes place in reverse order.

3.7 Safety belts

The manufacturer supplies optionally safety belts. For safety reasons the safety belts should be used especially during the installation of roof elements:



The suctioned construction element is first elevated by approximately 0,5 m. Then latch the snap hooks of the safety belts successively into the eyelets provided for it (see Fig. 18). Tighten the safety belts in such a way that they fit tightly to the element.



Fig. 18: Fixing of the safety belts

Remove the safety belts briefly before the element has reached its final position at the installation place (approx. 0,5 m before placing).



Never grap or bend yourselves under the raised element!

3.8 Lifting test

The manufacturer of the vacuum lifting device cannot guarantee or assure that all forms and types of construction elements can be manipulated reliably with the lifting device.

It is the task of the user to determine whether the elements can be lifted and transported with the lifting device safely. In particular length, width, weight and rigidity of the elements affect the distribution of load on the individual suction pad of the system. If necessary it is to be clarified with the manufacturer of the elements whether the elements are suitable for transport and/or for installation with a vacuum lifting device. Furthermore the user has to examine whether the surface of the elements regarding their gas impermeability and/or shaping are suitable for transport with the lifting device.



Therefore carry out a lifting test at the concrete elements before starting work. Place therefor the OKTOPUS[®] on the element which should be lifted, turn the main switch to the ON position and press the button "Suction". After the red warning light and the alarm horn both have gone out and the vacuum gauges indicate that the working range has been reached, the green signal light lights up and you have made sure, that no one is present in the danger area, lift the OKTOPUS[®] including the load somewhat. The lifting test regarding gas impermeability and suitability of the shaping for transport is been successful, when the element holds for 5 minutes at the OKTOPUS[®], without the vacuum pump switches on.



4 Service and Maintenance

4.1 General remarks

As the OKTOPUS[®] system is a load suspension device, the manufacturer and operator bear great responsibility for ensuring a high standard of safety during the entire operation of the unit. For this reason servicing and maintenance are of prime importance.

In order to maintain a high level of operational safety, the OKTOPUS[®] PANEL-Jack PT400 must be inspected by the service centre of Wirth GmbH or a specially qualified technician

- \Rightarrow at least every 12 months or shorter time intervals, if required by national standards or regulations or
- \Rightarrow after any special occurrences.

Any operative and scheduled servicing, maintenance and repair work in addition to this inspection should be performed by qualified technicians only.

Servicing and repair work should only be performed when the machine is out of operation. Remove the cover of the OKTOPUS[®] before performing any maintenance work

WARNING

Before performing any repair and maintenance work switch off the OK-TOPUS[®] by turning the main switch to position "OFF" and pull the mains plug.

Replace defective components only with original spare parts. These are supplied after consulting the service centre of the OKTOPUS[®] manufacturer upon request. The manufacturer will not accept any liability in the event of installation of anything but original spare parts.

Only use suitable tools to perform maintenance and servicing work.



Always perform a functional test after completing any repair work.

In the event of faults that cannot be remedied by in-house personnel, please contact the Wirth GmbH service centre.

4.2 Mechanical system

The mechanical components are sturdy and are provided with surface protection. Maintenance work comprises

⇒ daily inspection of the mechanical components of the OKTOPUS[®] PANEL-Jack PT400 to detect damages before starting the operation of the unit.

The OKTOPUS[®] PANEL-Jack PT400 is a load lifting attachment. Therefore, repairs to the mechanical function components may only be executed by the OKTOPUS[®] manufacturer.



Never carry out any repair work on the mechanical function components!



4.3 Hydraulic system

Servicing work mainly concentrates on oil maintenance/oil change. The hydraulic system was initially filled with Mobil DTE 22. For re-filling the hydraulic system the before mentioned hydraulic oil or an equivalent one with the viscosity degree VG 22 (according to DIN 51519) has to be used.

Only qualified personnel with special training and experience in working with hydraulic systems may perform any work on the hydraulic components. This applies in particular to maintenance and repair works in order to prevent any damage and resulting hazards.

The OKTOPUS[®] operator must perform regular inspections:

- \Rightarrow daily inspection for correct fit and leakages, especially
 - of pipes and connections and unit securing fittings (if necessary repairs should be performed).
 - of the oil level (replenish hydraulic oil if necessary).
- ⇒ always after 500 operating hours. We recommend exchanging the hydraulic oil at least once a year. In the course of this:
 - Clean the oil reservoir, refill the oil, which has to be foam-free, only with a filter.
 - Bleed the circuit! The system is fully bled when all functions run smoothly and without jerking.
 - Test the system! Jerky movements can indicate trapped air.
 - Always make sure that operating supplies as well as exchange parts are disposed in a safe and environmentally friendly way.

When	inspecting	and assessing	the hydra	utic oil auali	ity the followinc	table can be used.
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	Diagnosis	Remedy	
Color	- Slight dark discoloration	 None, Oil becomes darker with use 	
	- Clouding	- See next section	
Contamination with impurities	- Clean and clear, no separation	- None	
	- Clean and clear, slight separation	- Shorter inspection intervals	
	 Floating impurities, clouding or separated impurities 	 Change the hydraulic oil, clean system 	
Water content	 Clouding (emulsion) visible, water separation 	 Change the hydraulic oil, check the water content at shorter inter- vals 	
Foam	 Increasing foam quantities, foam discharged from oil tank 	 Check the pipe for leaks and check the fluid level in the tank 	



4.3.1 Hydraulic hoses

The hydraulic hoses are labelled by the manufacturer with the date of manufacture, the manufacturer and the permissible dynamic operating pressure. According to DIN 20066 and DGUV (German Social Accident Insurance) regulation 113-015 (until now: BGR [German trade association rules] 237) hydraulic hoses may be used for a maximum of 6 years beginning on the date of manufacture. For this reason the OKTOPUS[®] manufacturer recommends replacing the hoses after 6 years at the latest regardless of visible damages.



Replace damaged hydraulic hoses instantly!



Replace hydraulic hoses in shorter intervals if this is required by national regulations of the country of use!

4.4 Vacuum system

Vacuum components, which are subject to wear and are relevant to safety, must be inspected regularly. For this purpose

- \Rightarrow Check the correct fit and check for mechanical damages **daily**, especially on
 - the suction pads (if necessary tighten the screws or replace the suction pads),
 - the hoses (if necessary tighten the screws or replace the hoses),
 - the vacuum gauges.



Replace the suction pads and the hoses immediately if these have mechanical damages (cracks, cuts, etc.)! These damages could lead to a reduced Working Load Limit of the OKTOPUS[®].

The vacuum pump runs fully oil-free. The robust design permits almost maintenance-free operation. The ingress of dust and moisture into the vacuum pump is prevented by 4 water separators (see Fig 1, Pos. 11).



Fig. 19: Water separator

Because of this the maintenance work on the vacuum system is concentrated on this assembly and mainly comprises:

⇒ Empty the separator in case you can recognize water in the inspection glass. To this purpose you have to release the drain plug by hand or by Allen key for some revolutions only **in the vacuum-free condition** of the system. Close the drain key as soon as the water separator is completely emptied.



4.4.1 Cleaning the suction pads

Always clean the suction pads prior to every operation of the OKTOPUS[®], if the suction areas are soiled (dirt, dust, oil, etc.). Clean especially the suction rubbers (refer fig. 3). Dirt could cause leakages and leave marks on the manipulated elements.

For cleaning the suction pads we recommend to use water, if necessary add some detergent. Do not use chemical solvents, petrol, diesel oil or similar in any case.



Never use solvents, petrol or aggressive chemicals for cleaning the suction pads! Otherwise this may result in damaging the suction pads, which could endanger the operator as well as others.

Ensure that fluids cannot enter the vacuum system during the cleaning process by positioning the suction pads or by covering the suction opening. Give the suction pads a sufficient amount of time to completely dry before operating the OKTOPUS[®].

4.5 Electrical and electronic components

The OKTOPUS[®] PANEL-Jack PT400 is running with maintenance-free lead-gel-batteries (acidic). The battery casings are hermetically sealed.

Maintenance work is reduced to:

- \Rightarrow **daily** inspection of the external electrical function and alarm devices:
 - Red warning light,
 - Green signal light,
 - Control panels and cables.
- \Rightarrow checking the charging level of the battery on the charge indicator (see Fig. 11).
- \Rightarrow charging the battery

The battery charger is integrated into the OKTOPUS[®]. The battery has to be charged as follows:

- Switch off the OKTOPUS[®] on the control panel. For it turn the main switch (see Fig. 13) to the "OFF" position.
- Insert the power cable, which is contained in the scope of supply, into the power supply socket of the battery charger (see Fig. 1, Pos. 3).
- Connect the power cable with the mains supply (230 V AC / 50 Hz).
- The charging procedure is finished when
- The charging procedure is finished if the tenth LED from the left (green LED) on the charge indicator lights up (refer to chapter 3.2.1 Electrical power). Check these by turning the main switch to the ON position.
- Separate the OKTOPUS[®] from the mains supply.



Make sure that when connecting the OKTOPUS[®] to the mains supply (230 V AC / 50 Hz) the supply line is fused by a Residual Current Operated Device (RCD, RCCB) / Ground Fault Circuit Interrupter (GFCI).

Please contact our service centre for servicing and in the event of failure of the internal battery charger.



Because of the use of sealed lead-gel-batteries, the charging instructions have to be complied exactly!



In order to prevent a destruction of the battery caused by deep discharging, the battery has to be recharged every two weeks.



5 Conduct in the event of faults

In the event of faults the acoustic alarm sounds and the warning light lights up. The total failure of the electric power supply is signaled by a down going sound of the alarm horn.



Fig. 20: Alarm devices

In case the warning buzzer sounds and/or the red warning light lights up, leave the danger area because the suctioned elements could fall down suddenly. Find and remove the cause for the alarm. If the defects cannot be removed, stop working with the OKTOPUS[®] immediately. After any possibly suctioned elements have been detached, the OKTOPUS[®] has to be secured against further use.



In case of faults that cannot be remedied, working with the OKTOPUS[®] shall be stopped immediately. The OKTOPUS[®] has to be secured against further use.

If no indication is given on the charge indicator when the OKTOPUS[®] is switched on, always contact the service centre of Wirth GmbH immediately.

6 Disposal and recycling

For the packaging of the OKTOPUS[®], materials like wood, cardboard, paper and film are used. These materials have to be recycled according to national regulations.

To dispose the OKTOPUS[®], hand it in to a waste management company. If you have any questions, please do not hesitate to contact the Wirth GmbH.



To protect the environment, hand in the OKTOPUS[®] to a waste management company who knows and meets the national regulations.