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EOMAT PRO

Assembly machine for the cost-effective production of tube lines with EO fittings

Parker

ENGINEERING YOUR SUCCESS.

EOMAT PRO

Safe, economical and easy to use.

The EOMAT PRO is a powerful machine capable of cost-effective and process-safe tube assembly. The machine is designed for assembly of Parker EO-2 and Progressive Ring fittings, according to DIN EN ISO 8483-1 (DIN 2352), with common tube materials (steel, stainless steel, copper, nylon).

The EOMAT PRO is fast and quiet. It permits the assembly of very tight and complex tube bends. The automatic tool detection feature allows short set-up times and prevents failures caused by wrong adjustments. Unlike conventional cutting-ring assembly devices, the EOMAT PRO is stroke-controlled and thus produces accurate and reproducible assembly results.

The **EOMAT PRO** has two operating modes:

Automatic mode:
In automatic mode, the settings are read from a transponder chip in the tool.

The display shows the tube diameter and the type of assembly (EO-2 or Progressive Ring). There is also a useful piece counter which can be reset by the operator. Additional messages are displayed for periodically checking the assembly tools and for monitoring the lifespan.

An error message is displayed if there is a significant, implausible deviation. If MOK universal tools are used with global parameters, then only implausibly large deviations will be displayed as messages.

Adaptive assembly cones MOK-RW permit the operator to control and set the installation parameters and limits in a few simple steps. In this way the tool is optimized for the specific assembly configuration. These custom parameters deliver the best results for the particular tube material, wall thickness and lubricant used. The machine will indicate slight deviations from the set-point values with a red warning light. A prompt on the display to check the assembly will also be shown. It is therefore possible to detect connections that have been incorrectly assembled, to check them and to sort out the problem (for example, the ring may have been mounted in the wrong direction).

While in automatic mode, the operator cannot deactivate automatic tool detection, the archived assembly values and the display of error messages (red warning light and display).

Manual mode:
For non-standard applications, the machine can be operated in manual mode with pressure-controlled assembly. The assembly pressure is then shown on the display. During manual mode, the machine is pressure-controlled and there is no automatic detection of process deviations. A key switch is used for selecting the manual mode. This prevents the manual mode from being selected accidentally.

The tools
The MOK-PRO assembly cones are manufactured from a high-tensile material so that they can hold up for long periods of time when used properly. The assembly parameters and limits for the plausibility check are saved on a transponder chip in the assembly cone.

Two versions are available

- The quick EOMAT PRO22 for tube sizes up to 20-S/22-L. It has a compact assembly head for tight tube bends.
- The high-performance EOMAT PRO42 with sturdy assembly head, suitable for all dimensions up to 38-S/42-L

The benefits of both machines

- Low cost per piece thanks to rapid, powerful hydraulic drive
- Stroke-controlled for consistently accurate assembly results
- Settings are automatically read from the tool
- In automatic mode, the operator cannot change the assembly parameters
- Assembly error detection by MOK-RW adaptive tools that are perfectly adjusted to the assembly parameters
- Display prompt for periodic check of the tool wear and for replacement when the tool reaches end of expected lifespan
- Piece counter and text messages on the display, red warning light for error messages
- Compact assembly head for tight and complex tube bends
- Long service life of the assembly tools, even at low lubrication, because high-strength sintered material is used
- Oil volume and the heat capacity are designed to cope with mass assembly under continuous or shift working patterns
- The EOMAT PRO foot switch allows convenient and secure assembly of long tubes

Assembly cone with transponder chip

The conventional approach:

Pressure-controlled assembly

The conventional process
The hydraulic assembly device is controlled by pressure; The tool joins the components together with a specified force. The specified set pressures are used as the guidelines from which the required assembly movements are derived (e.g., 1½ revolutions of the fitting nut).

The actual assembly results may vary greatly, depending on such factors as lubrication, the hardness of the tube material, the sharpness of the ring-cut edges and all tolerances (such as for the tube diameters). In some individual cases, the pressure setting may need to be adjusted to fit the user's requirements.

Conventional assembly machines (such as the EOMAT ECO or the EOMAT UNI) operate in a pressure-controlled mode. Thus the assembly results tend to vary.

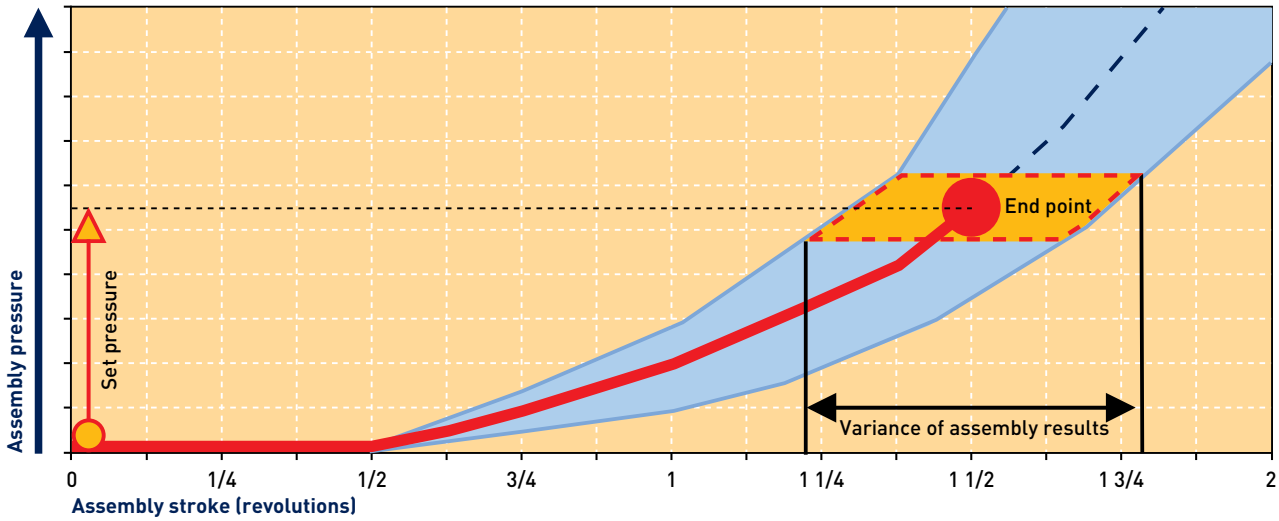
The corresponding manual assembly process is carried out by a mechanic who simply tightens the fitting nut based on his perception of effort.

Features of force-controlled assembly:

- **Simple procedure with low-cost machine technology**
- **Assembly results have a relatively high variance**
- **Manual adjustment of the assembly force is required under unfavourable conditions**

State of the art
The DIN EN ISO 8434 standard requires an assembly process with 1 ½ turns of the nut. Force-dependent assembly is not recommended.

High variance in pressure-controlled assembly with conventional devices



The "EOMAT PRO Approach":

Stroke-controlled assembly

The Parker EOMAT PRO process
The EOMAT PRO features precise sensors which measure the stroke of movement. The stroke-controlled Parker EOMAT PRO achieves the 1½-revolution assembly results with relatively little variance. The machine works with different assembly pressures depending on the required force. The machine displays an error message if there are large, non-plausible deviations.

The machine reads all process parameters and tolerances from the transponder chip in the assembly tool.

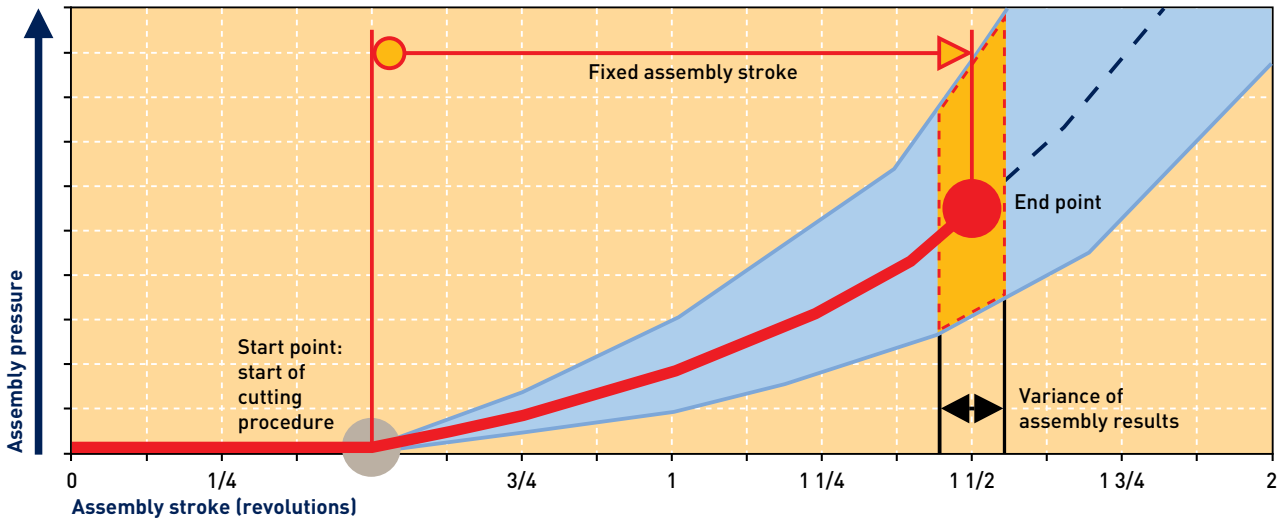
Thus the machine is able to produce the highest quality connection, independent of obstructive factors such as tube quality or lubrication.

The corresponding manual assembly process here is when the mechanic marks the fitting nut and tightens it exactly 1½ revolutions.

Features of the Parker EOMAT PRO:

- **The connection's full potential can be achieved with minimal variance**
- **Obstructive factors are automatically compensated for and thus do not affect the assembly result**
- **Assembly method according to DIN EN ISO 8434**
- **Complex, cost-intensive technology**

Precise assembly results in stroke-controlled assembly with the EOMAT PRO

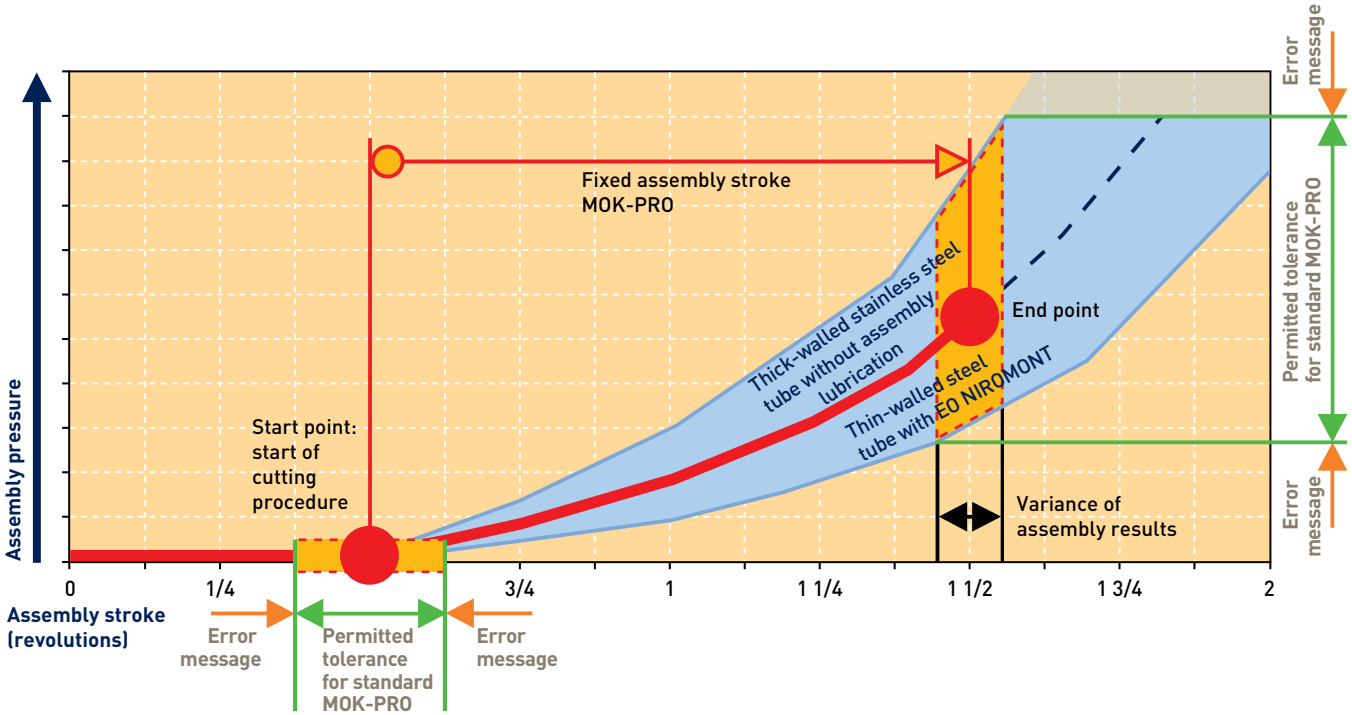


Universal plausibility check

Possible to check for large deviations with standard MOK-PRO tools

The standard MOK-PRO tools are programmed with universal values for all permitted applications. The tolerance ranges are widely specified so that they cover all possible combinations of deviations.

Plausibility check using the MOK-PRO standard:
When using standard MOK-PRO tools, errors are indicated only for large deviations that are not plausible. Large deviations can be caused, for example, when someone forgets to insert the Progressive Ring for the assembly. Critical errors (such as the "Progressive Ring upside down") are not recognized.



Factors influencing variance of "start of cutting point":
- Progressive Ring type: PSR steel or DPR stainless steel
- Tolerance of inner diameter for Progressive Ring
- Tolerance of outer diameter of tube
- Tube preparation: sawing, deburring
- Worn condition of the MOK assembly cone
- Lubrication: where and with which lubricant?

Factors influencing variance at the "assembly pressure end point":
- Progressive Ring type: PSR steel or DPR stainless steel
- Tube material: steel, stainless steel, copper, plastic
- Tube wall thickness, use of support sleeves
- Tube preparation: sawing, deburring
- Worn condition of the MOK assembly cone
- Lubrication: where and with which lubricant?

Application example: Mass production of tubes with different wall thickness and different materials at a supplier factory
The chart shows the typical dispersion of the pressure-path curve during the assembly of a 12-L progressive ring on tubes of varying materials, wall thickness and lubrications. The range of variance is relatively large. Only rough process deviations, such as "Progressive Ring is missing" can be detected.

Benefits for the user:
- The required ring incision is carried out precisely, regardless of the varying materials, tube thickness, and irregular lubrication.
- Low variance for the incision depth in mass production
- Non-relevant error messages are suppressed; only large deviations are shown

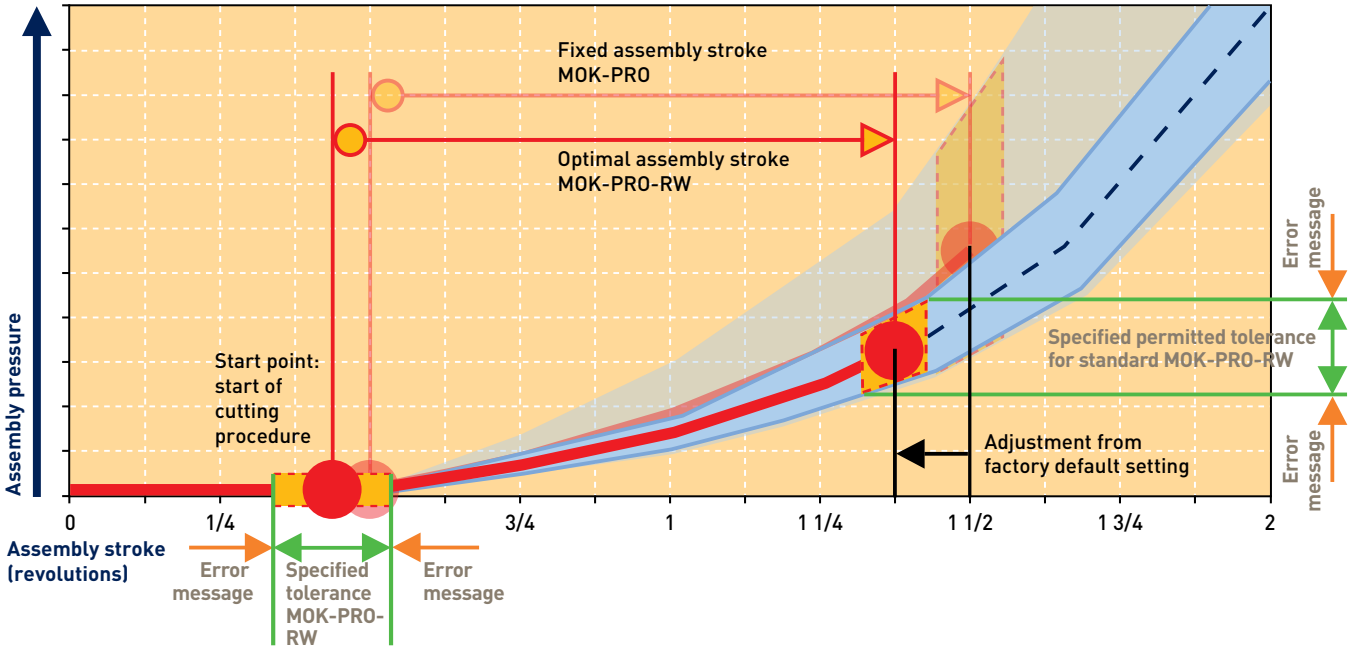
Restrictions:
- No effective error detection

Intelligent failure detection

Can be individually customized with adaptive MOK-PRO-RW tool

Only a few steps are required to adjust the assembly parameters and control limits for the error detection. The narrower the control limits are set, the more reliable error detection will function. The control limits, however, should not be set so that they are within the normal variance dispersion of the process. Otherwise error messages could occur for proper assemblies.

Error detection with the adaptive MOK-PRO-RW:
Errors will be displayed for even minimal deviations when using programmed MOK-PRO tools. Critical errors (such as the "Progressive Ring upside down") are not recognized.



Low variance at "start of cutting sequence"
- No mix of different types and product brands
- No mix of different tube dimensions
- Standardized tube preparation
- Tools are not worn down
- Standardized tube lubrication (Also: dry assembly)

Low variance at "assembly pressure end point":
- Standardized Progressive Ring type and standard material
- Standardized tube material: steel, stainless steel, copper, plastic
- Standardized tube wall thickness, use of support sleeves
- Tools are not worn down
- Standardized tube lubrication (Also: dry assembly)

Application example: Mass production of lubricating lines for commercial vehicles
The chart shows the typical dispersion of the pressure-path curve during the assembly of a 12-L Progressive Ring onto a 12X1 steel tube without the use of a lubricant. The range of variance is relatively minimal. The user may decide to reduce the default-setting assembly stroke distance so that the tube is not overly constricted. The smaller incision is acceptable since this is not a high-pressure hydraulic application. The operator saves the reduced assembly stroke setting and the adapted MIN / MAX values for the error detection to the transponder chip on the assembly cone MOK-PRO-RW.

Benefits for the user:
- The tube sections are not secured or constricted during assembly
- Errors are detected (such as Progressive Ring placed upside-down)
- The tool must only be programmed once. The machine operator does not need to adjust anything on the machine after that.

Restrictions:
- Effective error detection only for standardized processes
- The optimum process parameters must be specified for each specific application

Versatility during production

An overview of the three assembly options

Constant process

- Original Parker EO Progressive Ring
- Not suitable for EO-2
- Same tube material
- Same wall thickness
- Same lubrication, also dry mounting

Changing process

- Progressive Ring and EO-2
- Different tube materials
- Different wall thickness
- Different lubrication

Made-to-order assemblies for custom applications

- Not intended for mass production

⚠ Operator must be an expert in the progressive ring assembly process

Examples:

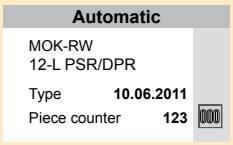
- Extremely thin-walled tubes
- Special lower-strength materials
- Product mix from various manufacturers

Mass production with error detection

Automatic mode with adaptive tools

Automatic mode
- Stroke-controlled assembly
- Parameters are specified
- The operator cannot change anything

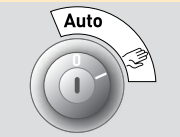
Adaptive MOK-PRO-RW
- Writeable transponder chip
- As delivered from the factory, the MOK-PRO-RWs have the same values as the universal MOK-PRO tools.



Settings
- Values are read automatically from the tool
- The values can be adjusted in order to optimize the assembly result (for example, for a thin-walled tube)
- The sensitivity level of the error detection can be adjusted

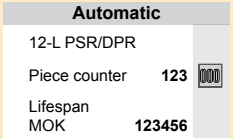
Mass production without error detection

Automatic mode with universal tools



Automatic mode
- Stroke-controlled assembly for Progressive Ring
- Pressure-controlled assembly of EO-2
- Parameters are specified
- The operator cannot change anything

Standard MOK-PRO
- Programmed with universal parameters intended for common tube materials, wall thickness and assembly without lubrication
- Different MOK assembly cone for Progressive Ring and EO-2



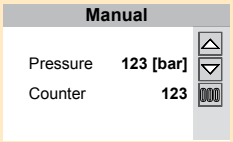
Settings
- Values are read automatically from the tool
- The values cannot be changed

Full flexibility for special applications

Pressure-controlled assembly in manual mode

Manual mode
- Pressure-controlled assembly
- Tool detection and error detection are disabled
- Key to switch is required

Standard MOK-PRO
- Different MOK assembly cone for Progressive Ring and EO-2
- Standard MOK-PRO can also be used for EO-2



Pressure settings
- The operator can adjust the assembly pressure according to the Guidelines Table.
- The operator can adjust the assembly pressure as needed

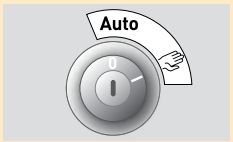
Error detection
- Deviations from the default assembly parameters are detected and displayed as an error message.
- The operator is prompted to check the assembly result, and to acknowledge the error message.
- In automatic mode, the operator cannot change the settings or control limits for the error detection.

Plausibility check
- Large deviations from the default assembly parameters are detected and displayed as an error message.
- No error detection as with the MOK-RW

No error detection
- Error detection is disabled in manual mode

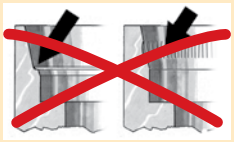
⚠ Operator must be an expert in the progressive ring assembly process

Built-in quality
Standardized processes

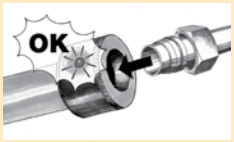


Safety in automatic mode
In automatic mode, the operator can neither change settings or ignore error messages. Automatic mode can only be disabled using the key switch. This ensures the maximum level of safety during mass production.

Periodic tool inspections
After every 50 assemblies, the operator is prompted to clean and inspect the tool and to re-lubricate (DIN EN ISO 8434). The machine is first operational after the operator acknowledges this message.



Tool lifespan
After the normal lifespan of the tool has been reached, a display message will be prompted to replace the worn tool. Replace the worn tool promptly in order to avoid faulty assemblies.



Assembly inspection
The machine features – automatic tool detection, stroke-controlled assembly, lockable automatic mode, tool inspection – along with its excellent reliability and precision ensure the optimal foundation for a safe assembly process.

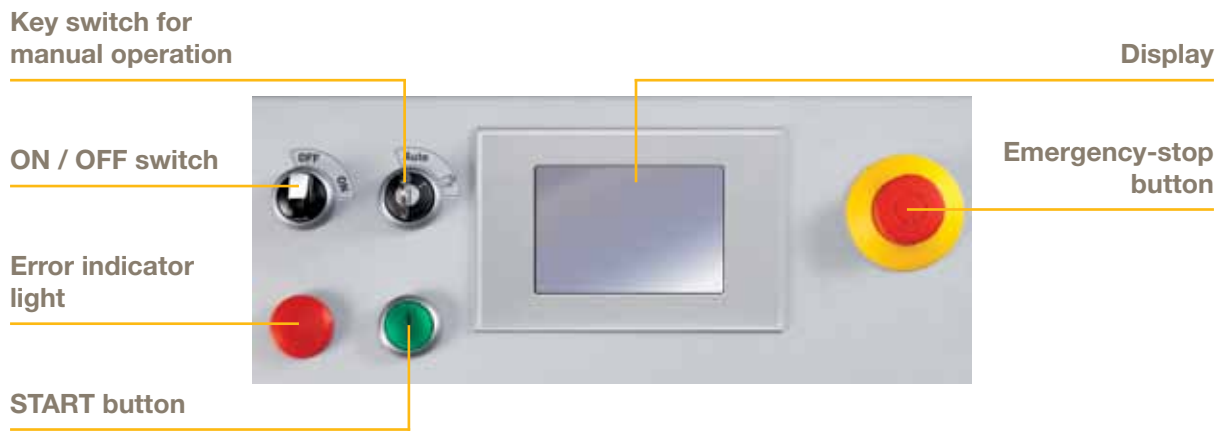
Nevertheless, incorrect assemblies cannot be ruled out completely (for example, when the tubes are inadequately prepared). Therefore, according to DIN EN ISO 8434, it is required to carry out a visual inspection of the assembled tubes. The AKL distance gauge is a practical tool that can help during the visual inspection.

Summary

The key specifications for the EOMAT PRO

	EOMAT PRO22 and PRO42
Machine	
Usage	Cost-effective mass production of Parker EO tube connections
Suitable for	Parker EO-2 and PSR / DPR Progressive Ring fittings, cutting-ring fittings according to DIN EN ISO 8434-1, Parker FERULOK and A-Lok fittings
Type of process	Stroke-controlled / pressure-controlled assembly with error detection
Economic production quantity	Min. 100 assemblies per day
Tube specifications	
Tube material	Steel, stainless steel, copper, nylon, CuNiFe, Duplex
Tube specifications	Cold-drawn, seamless EO precision tubes, and all tubes that are approved for processing with EO Parker connections
Assembly specification	
Parker EO-2	Closed gap
Progressive Ring PSR / DPR	1½ turns of the fitting nut
Other products	Refer to the manufacturer's documentation
Function	
Tool change	Manual
Tool detection	RFID technology, with transponder in MOK assembly cone
Settings	Automatic adjustment of all assembly parameters
Assembly	Hydraulic
Control	Automatic sequence: After pressing the START button
Error detection	Automatically when using programmed MOK-PRO-RW tools
Display	
Display	Industry-compatible 3-1/2" backlit touch screen
Available languages	German, English, French, Spanish, Italian
Display in AUTO mode	Type of fitting, tube diameter and series, tool lifespan and resettable piece counter
Display in MANUAL mode	Pressure setting and resettable piece counter
Error reporting	"Check assembly result" message for non-plausible assembly parameters, prompt for tool inspection after every 50 assemblies, prompt for tool replacement after reaching end of normal lifespan, warning when critical machine condition has been reached
Tools	
Assembly cones	MOK-PRO made from high-performance material, with transponder chip
Lubricant	EO-NIROMONT
Backing plates	See below
Test equipment for progressive ring	AKL distance gauge and cone template KONU
Test equipment for EO-2	Not required
Specifications	
Design	Desktop unit with optional mobile cart
Dimensions	D 620 mm x W 735 mm x H 340 mm (approx.)
Power supply	400 V 3-phase 50 Hz
Drive output of electric motor	1100 W
Cable	5 m cable with CEE 16 phase-inverter plug
Production medium	Esso Nuto H32 hydraulic oil or equivalent (delivered filled)
Allowed duration of operations	100%
Emitted noise level	Less than 75 dB (A)
Ambient conditions	
Operating temperature	+0 . . . +40°C
Storage temperature	-25 . . . +60°C
Relative humidity	Max. 90% non-condensing
Mobile cart	
Dimensions	D 950 mm x W 800 mm x H 935 mm (approx.)
Three racks for	Approx. 20 sets of assembly cones, backing plates, distance gauges, spare tools, etc.
Transportation options	On wheels, with crane or forklift
Weight	Approx. 150 kg

Type	EOMAT PRO22	EOMAT PRO42
Specifications	Assembly machine with a compact assembly head and fast drive	Assembly machine with a large assembly head and power drive
Technical data		
Outer diameter of tubes	4 . . . 22 mm	4 . . . 42 mm
Series	LL, L and S	LL, L and S
Min. U-bend	Approx. 35 mm	Approx. 70 mm
Working height above the supporting surface on the cart (+ approx. 935 mm)	Approx. 275 mm	Approx. 250 mm
Weight	Approx. 90 kg	Approx. 100 kg
Tools	MOK-PRO assembly cones and compact GHP-PRO backing plates	MOK-PRO assembly cones and standard GHP backing plates
Speed of operating stroke	Approx. 1 s	Approx. 2 s
Cycle duration	Approx. 8 s	Approx. 10 s
Economic production quantity	Min. 100 or more assemblies per day	Min. 100 or more assemblies per day
Application	Cost-effective mass production of tubes with up to 22-mm outer diameter	Affordable production for all tube dimensions



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Ordering machines and accessories

Machine	
Type	**Order code**
EOMAT PRO basic machine, ready for use, with key-operated auto/manual switch, with operating manual, filled with hydraulic oil, without tool or testing equipment	
EOMAT PRO22 Tube outer diameter: 4 – 22 mm 400V, 50Hz, three-phase Renting (monthly use) Leasing (2-year hire purchase)	 EOMATPRO22400V EOMATPRORENTFEE EOMATPROLEASEFEE
EOMAT PRO42 Tube outer diameter: 4 – 22 mm 400V, 50Hz, three-phase Renting (monthly use) Leasing (2-year hire purchase)	 EOMATPRO42400V EOMATPRORENTFEE EOMATPROLEASEFEE

Accessories	
Type	**Order code**
Lubricant for assembly cone 250 ccm bottle	EONIROMONTFLUESSX
Safety foot switch kit For EOMAT PRO, EO-2-FORM F3/PRO22	FOOTSWITCHSAFETYKIT
Attachment clip for MOK	EOMATPRO/CLIP
Spare key for switch	EOMATPRO/KEY
English brochure	4043/UK via Parker Catalogue Service EMDC
German brochure	4043/DE via Parker Catalogue Service EMDC
Operating manual Five languages UK, DE, FR, IT, ES	EOMATPRO/MANUAL
Preventative maintenance	EOMATPRO/INSPECTION
Tool rack for ten MOK and GHP	EOMATPRO/TOOLRACK
Mobile cart with tool rack	EOMATPRO/BASE

Safety foot switch

Mobile cart

Lubricant EO-Niromont

Assembly tools for EO tube fittings







Size		Tool order code					Testing equipment	
Series	Tube O.D. (mm)	Adaptive assembly cone for Progressive Ring	Standard assembly cone for Progressive Ring	Standard assembly cone for EO-2	Backing plate for EOMAT PRO42	Compact backing plate for EOMAT PRO22	Distance gauge only for Progressive Ring	Cone template
LL	4	MOK04LLPRORW	MOK04LLPRO		GHP04X	GHP04PRO	AKL04LL	KONU04LL
	6	MOK06LLPRORW	MOK06LLPRO		GHP06X	GHP06PRO	AKL06LL	KONU06LL
	8	MOK08LLPRORW	MOK08LLPRO		GHP08X	GHP08PRO	AKL08LL	KONU08LL
	10	MOK10LLPRORW	MOK10LLPRO		GHP10X	GHP10PRO	AKL10LL	KONU10LL
	12	MOK12LLPRORW	MOK12LLPRO		GHP12X	GHP12PRO	AKL12LL	KONU12LL
L	6	MOK06LPRORW	MOK06LPRO	MOKEO206LPRO	GHP06X	GHP06PRO	AKL06LS	KONU06L
	8	MOK08LPRORW	MOK08LPRO	MOKEO208LPRO	GHP08X	GHP08PRO	AKL08LS	KONU08L
	10	MOK10LPRORW	MOK10LPRO	MOKEO210LPRO	GHP10X	GHP10PRO	AKL10L	KONU10L
	12	MOK12LPRORW	MOK12LPRO	MOKEO212LPRO	GHP12X	GHP12PRO	AKL12L	KONU12L
	15	MOK15LPRORW	MOK15LPRO	MOKEO215LPRO	GHP15X	GHP15PRO	AKL15L	KONU15L
	18	MOK18LPRORW	MOK18LPRO	MOKEO218LPRO	GHP18X	GHP18PRO	AKL18L	KONU18L
	22	MOK22LPRORW	MOK22LPRO	MOKEO222LPRO	GHP22X	GHP22PRO	AKL22L	KONU22L
	28	MOK28LPRORW	MOK28LPRO	MOKEO228LPRO	GHP28X		AKL28L	KONU28L
	35	MOK35LPRORW	MOK35LPRO	MOKEO235LPRO	GHP35X		AKL35L	KONU35L
	42	MOK42LPRORW	MOK42LPRO	MOKEO242LPRO	GHP42X		AKL42L	KONU42L
S	6	MOK06SPRORW	MOK06SPRO	MOKEO206SPRO	GHP06X	GHP06PRO	AKL06LS	KONU06L
	8	MOK08SPRORW	MOK08SPRO	MOKEO208SPRO	GHP08X	GHP08PRO	AKL08LS	KONU08L
	10	MOK10SPRORW	MOK10SPRO	MOKEO210SPRO	GHP10X	GHP10PRO	AKL10S	KONU10L
	12	MOK12SPRORW	MOK12SPRO	MOKEO212SPRO	GHP12X	GHP12PRO	AKL12S	KONU12L
	14	MOK14SPRORW	MOK14SPRO	MOKEO214SPRO	GHP14X	GHP14PRO	AKL14S	KONU14S
	16	MOK16SPRORW	MOK16SPRO	MOKEO216SPRO	GHP16X	GHP16PRO	AKL16S	KONU16S
	20	MOK20SPRORW	MOK20SPRO	MOKEO220SPRO	GHP20X	GHP20PRO	AKL20S	KONU20S
	25	MOK25SPRORW	MOK25SPRO	MOKEO225SPRO	GHP25X		AKL25S	KONU25S
	30	MOK30SPRORW	MOK30SPRO	MOKEO230SPRO	GHP30X		AKL30S	KONU30S
	38	MOK38SPRORW	MOK38SPRO	MOKEO238SPRO	GHP38X		AKL38S	KONU38S
		Programmable with individual parameters for plausibility checks	Programmed with universal parameters, without effective error detection	Programmed with universal parameters without effective error detection	Also suitable for EO-KARRYMAT and all EOMAT devices from Parker	Only suitable for the EOMAT PRO22 device from Parker	To check the assembly result of Parker EO Progressive Rings (not for EO-2)	For checking the wear on the MOK assembly cone for Progressive Ring (not the MOK EO-2)

The high performance MOK-PRO assembly cones along with their transponder chips can be used in all Parker assembly machines (EO-KARRYMAT, EOMAT ECO, EOMAT II and EOMAT UNI).

The standard MOK assembly cones for the EO Progressive Ring, EO-2, FERULOK and A-Lok can also theoretically be used in the EOMAT PRO. They can only function in manual mode with the pressure set manually by the operator. The fixing pin must be removed from the tool support for this purpose.

Refer to the TFDE handbook 4100 for information on tools for the Parker FERULOK fittings.
Refer to Parker's IPD documentation for information on tools for the Parker A-LOK fittings.

Tool lifetime

Assembly tools are subject to wear, and must be periodically (at least every 50 assemblies) cleaned and inspected (see Chapter E in the handbook 4100 for the inspection instructions). Worn tools can cause dangerous assembly failures and need to be replaced promptly. Long tool life can be achieved by:

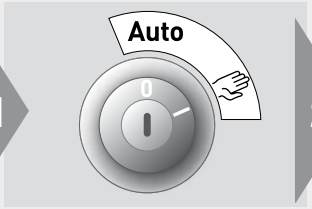
- Regularly cleaning and lubricating
- Storing the tool in an area that is protected from dirt and corrosion
- Carefully deburring and cleaning the tube ends
- Careful alignment and operation of the tool
- Using the recommended lubrication

The MOK-PRO assembly cones are made from wear-resistant tool steel, and are therefore well suited for mass production. If used properly, they should have an average lifetime of approximately 10,000 assemblies. After this lifetime is reached, the display will show that a tool change is needed. A worn tool should be replaced. Worn assembly cones can be used after the end of their expected lifetime in manual mode on own risk.

EOMAT PRO Assembly Instructions

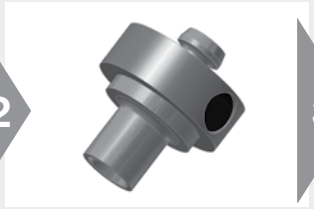
Assembly AUTO mode

1



- Switch set to AUTO
- The automatic tool detection and plausibility check are active
- The key is not required
- During AUTO mode, the operator cannot change the machine settings
- Select the language in manual mode

2

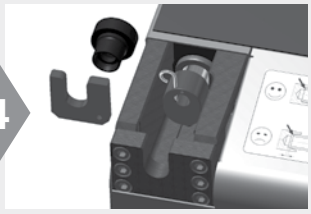


- Select the appropriate MOK-PRO assembly cone
- The MOK-PRO-RW must be programmed
- There are different assembly cones for Parker EO-2 (grooved) and the Progressive Ring (smooth)
- Be sure to regularly clean and lubricate the assembly tool
- Prompt to check and renew tool on display

3

- Select the appropriate backing plate
- GHP-PRO for EOMAT PRO22
- GHP for EOMAT PRO42
- Two-part GHP backing plate for 35 L and 42 L

4



- Insert assembly cone and secure using the clip
- Insert the backing plate

5

Automatic

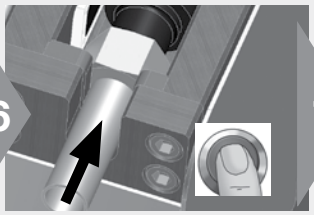
12-L PSR/DPR

Counter **123**

Lifetime MOK **123456**

- The tool has been recognized and is shown in the display:
- Product: Parker EO-2 or Progressive Ring PSR/DPR
- Outer diameter of tube in mm
- Series: LL – L – S
- Piece counter (can be reset)
- Remaining lifespan for MOK

6



- Insert the tube with nut and ring
- Press the tube end up against the tool's end stop point and hold the tube firmly
- Press and hold the start button
- Use additional support and a foot switch when working with longer tubes

⚠ The assembly will fail if the tube is not firmly bottomed in MOK

7

- Check the assembly
- EO-2: Check the gap distance
- Progressive ring: Check the cut and use the AKL (distance gauge)

⚠ Faulty assemblies must be discarded

8

Note

Check assembly result!

Next = >

- The red warning lamp illuminates when there is an error or fault
- Observe the message on the display

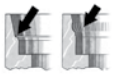
⚠ Faulty assemblies must be discarded

⚠ Damaged tools must be replaced

EOMAT PRO display messages

The red warning lamp illuminates when there is an error or fault

- A message will be shown in the display
- ⚠ Correct the cause of the error
- Reset error message

Note	Note	Note	Note
Insert assembly cone! 	**Check the assembly!**  Next = > ESC	**Check assembly cone!**  Next = > ESC	**Replace assembly cone!**  Next = > ESC

⚠ No transponder signal
- Insert the appropriate MOK
- Not active in manual mode

The error message is reset automatically when an appropriate tool is fitted.

⚠ Deviation from the nominal value detected
- Check the assembly
- Check the cut
- Use the distance gauge (AKL)

⚠ Faulty assemblies must be discarded
- Find the cause of the error and solve it

Reset the error message with the ESC key

- Prompt to regularly check the assembly cone after every 50 assemblies
- Remove the assembly cone and clean it
- Check the MOK assembly cone for wear and defects

⚠ Replace defective tools with new ones
- Lubricate assembly cone and place back into machine

Reset the error message with the ESC key

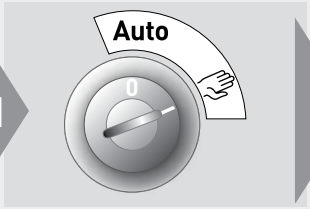
⚠ Assembly cone has reached the end of its expected life
- No longer use the assembly cone in mass production
- Replace the assembly cone with a new MOK assembly cone

The error message is automatically reset when a new assembly cone is inserted

EOMAT PRO Assembly Instructions

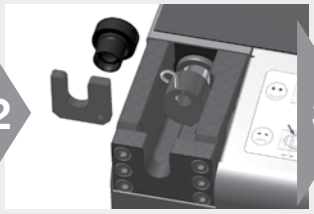
Determining individual assembly parameters and write on the tool's chip

1



- Turn the selector switch to Manual
- A key is needed for the switch
- The adaptive MOK-PRO-RW can only be programmed when the selector switch is in this position

2



- Select the appropriate MOK-PRO-RW assembly cone
- Insert assembly cone and secure using the clip
- Select and insert the appropriate backing plate

3

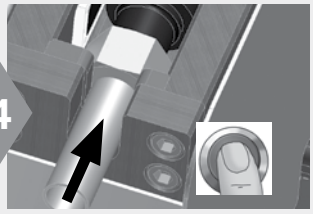
MOK-RW settings

12-L PSR/DPR

Assemble tube
Check the result!

- If a brand new MOK-PRO-RW is fitted, the display will indicate that a test assembly should be carried out
- If the MOK-PRO-RW has already been programmed, the MANUAL menu will be shown in the display
- By pressing and holding the ESC key, already programmed MOK-PRO-RW tools can be re-programmed

4



- A standard value for the assembly stroke is pre-configured
- Carry out a test assembly
- Use standard parts (nuts, rings, tubes)
- Work under standard conditions (tube deburring, tool lubrication)

5

- Assess the assembly results
- Is the collar sufficient?
- If thin-walled tubes are being used, is the constriction acceptable?

6

MOK-RW settings

Assembly stroke settings

Actual	**1.2 [mm]**
Set-point	**1.2 [mm]**

Save = >

- The proposed standard value can be corrected if needed
- If the factory default settings should be used, continue to the next step with SAVE

7

MOK-RW settings

Assembly stroke settings

Actual	**1.2 [mm]**
Set-point	**1.0 [mm]**

Save = >

- Adjustment of the set-point value
- If under assembled (cut too shallow): Increase the assembly stroke: △key
- if over assembled (cut too deep/ excessive constriction): Reduce the assembly stroke: ▽key
- Continue by pressing SAVE

⚠ Reduced assembly stroke can result in reduced pressure performance

8

- Carry out a test assembly following each change
- Check the test result again
- If needed, adjust the value
- Repeat steps 4 to 6 until the desired assembly result is obtained
- When assembly stroke is correct, don't change and press ↵ ENTER

9

MOK-RW settings

10 tube assemblies remaining

	min	max
Stroke	**1.2 [mm]**	**1.2 [mm]**
Pressure 123 [bar]	**123 [bar]**	

ESC

- The display will show the message: "Assemble 10 tubes"
- Carry out 10 assemblies under standard serial production conditions

10

MOK-RW settings

4 tube assemblies remaining

	min	max
Stroke	**1.0 [mm]**	**1.4 [mm]**
Pressure	**113 [bar]**	**134 [bar]**

ESC

- The display shows the number of assemblies remaining
- The display shows the measured values for the starting point (MIN/ MAX) and the assembly pressure (MIN/MAX)

11

- Check the assembly results after 10 test assemblies
- Is the collar sufficient?
- If thin-walled tubes are being used, is the constriction acceptable?
- OK: Continue with the ENTER key.
- Not OK: Press the ESC key and correct the assembly stroke (Step 7)

12

MOK-RW settings

Check assembly result!

Result OK => ↵

Corrections => ESC

- In the next two windows, the tolerance windows for error messages are set
- The proposed values can be accepted or adjusted as required
- If the tolerance windows are too low, small deviations will results in "check assembly" requests during production

EOMAT PRO Assembly Instructions

Determining individual assembly parameters and write on the tool's chip

13

MOK-RW settings

Stroke window settings

Actual **11.0 – 11.8 [mm]**

Set-point
10.8 – 12.0 [mm]

Save = >

- Starting point in mm: The set-point value (MIN/MAX) where the progressive ring should begin to make a cut into the tube
- Deviations can be caused by: "Ring upside down", "Tube not at the end stop" or tolerance deviations of the components
- Flashing values can be adjusted using the △▽ key and SAVE

14

MOK-RW settings

Pressure window settings

Actual **85 – 93 [bar]**

Set-point **80 – 98 [mm]**

Save = >

- Assembly pressure in bar: Set-point value (MIN/MAX) that should be reached at the end of the assembly
- Deviations can be caused by: incorrect component fitting "tube not at the end stop", double assembly or tolerance deviations of components
- Flashing values can be adjusted using the △▽ key and SAVE

15

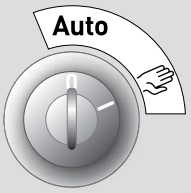
MOK-RW settings

Day of settings
10/06/2011

Save = >

- A suggested date is shown in the display, this will be used later in AUTO mode
- This date is used for allocation and it can be adjusted using the △▽ key
- Press SAVE to finish the programming; all the installed values are saved on the transponder chip of the assembly cone

16



- When you have finished programming the tool, return the selector switch to AUTO
- The automatic tool detection and plausibility check are active
- The key can be removed in this position
- The operator cannot change assembly parameters and tolerances in AUTO mode

Batch production in automatic mode

17

Automatic

MOK-RW
12-L PSR/DPR

Type **10.06.2011**

Piece counter **123**

- The display shows the measurements and the saved date

18

Note

Check the assembly!

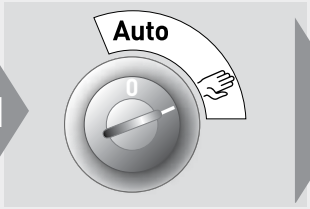
Next = >

- Deviations from the programmed tolerances will be displayed as an error message

EOMAT PRO Assembly Instructions

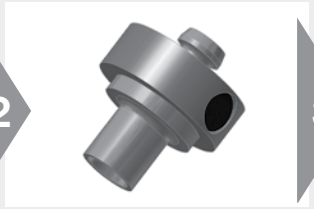
Assembly in MANUAL mode

1



- Turn the selector switch to Manual
- ⚠ Automatic tool recognition and plausibility checking are turned off
- The machine operates under pressure-control

2

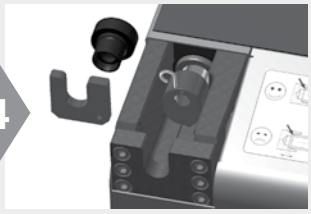


- Select the appropriate MOK-PRO assembly cone
- There are different MOK assembly cones for Parker EO-2 (grooved) and smooth Progressive Rings
- Be sure to regularly clean and lubricate the assembly tool

3

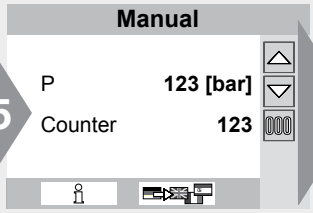
- Select the appropriate backing plate
- GHP-PRO for EOMAT PRO22
- GHP for EOMAT PRO42
- Two-part GHP at 35 L and 42 L

4



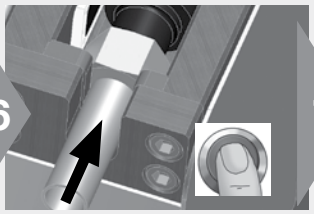
- Install the MOK assembly cone and secure with the clip
- Attach the GHP backing plate
- Ensure correct positioning and tight fitting of the MOK tool and the backing plate

5



- The assembly pressure is shown in the display
- Adjust the assembly pressure using the △▽ key
- Use the pressure table for EOMAT PRO 22/42
- Check the assembly result and adjust the pressure if needed
- Counter (can be reset)
- Choice of language possible

6



- Insert the tube with nut and ring
- Press the tube end up against the tool's end stop point and hold the tube firmly
- Press and hold the start button
- Use additional support and a foot switch when working with longer tubes
- ⚠ The assembly will fail if the tube is not firmly bottomed in MOK

7

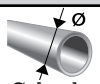
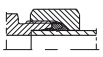
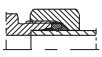
- Check the assembly
- EO-2: Check the gap distance
- Progressive Ring: Check the cut and use the AKL (distance gauge)

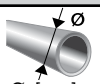
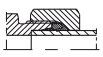
- ⚠ Faulty assemblies must be discarded

8

- ⚠ In "Manual" mode, no error messages will be displayed

Recommendation for manual pressure setting

EOMAT PRO22		03/2011
 Ø, [mm]	 EO-2, P [bar]	 PSR/DPR, P [bar]
6	64	48
8	80	64
10	96	80
12	112	96
14	144	112
15	144	112
16	176	144
18	176	144
20	210	192
22	192	176

EOMAT PRO42		03/2011
 Ø, [mm]	 EO-2, P [bar]	 PSR/DPR, P [bar]
6	25	19
8	32	25
10	38	32
12	45	38
14	57	45
15	57	45
16	70	57
18	70	57
20	102	76
22	76	70
25	134	102
28	102	89
30	191	127
35	159	115
38	210	178
42	191	146

The stated values are guidelines based on Parker EO-tube in standard dimensions.
The assembly result must be thoroughly checked. It might be advised to adjust pressure setting on own judgement to achieve required result.

Checking instructions for EO assembly tools

Note

Check assembly cone!

Next = > ESC

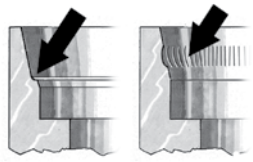
MOK-PRO assembly cones for EOMAT PRO

⚠ Use only genuine Parker MOK-PRO tools
⚠ Use of damaged, worn or non-suitable tooling may result in fitting failure or machine damage
⚠ Tools must be checked regularly, at least after 50 assemblies
⚠ Worn tools must be replaced
⚠ Tools must be kept clean and lubricated

1

- Clean cone surface for checking

2



- Visual checks:
  Cone must be free of wear, damage or cracks

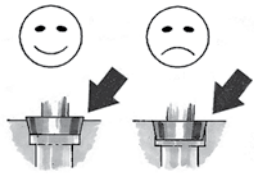
3

- Check for deformation of geometry

⚠ Special cone template KONU must be used

- KONU cone templates are precision measuring devices and must be handled accordingly

4



- Check contour:
  The rear of the template must protrude slightly above the top face of the cone or may be flush

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