ANSI CE 안 INNOBIZ 기술혁신형중소기업

USER'S MANUAL

AUTO-DARKENING WELDING HELMET

SERVOGLAS **5000X**

SERVORE

www.servore.com

Instructions for use of ServoGlas® 5000X
Thank you for purchasing a ServoGlas® 5000X welding helmet.

⚠ **Note**	For your own protection, safety and to ensure the maximum service life of your new helmet please read this manual carefully before use. Misuse or abuse may result in injury or reduced protection and may also void your warranty.

1. Before Use

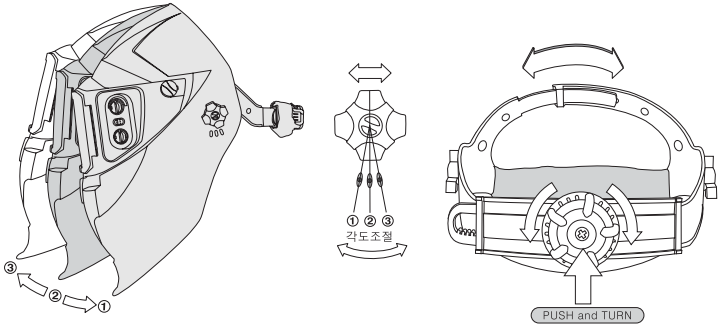
1-1 ServoGlas® 5000X

The auto darkening welding filter in the 5000X has been designed for arc welding and gas cutting. It is suitable for all normal arc welding processes such as MIG, MAG, TIG, SMAW, Plasma Arc and Air Carbon welding.
Before use the shade control should be adjusted to the appropriate level based upon EN169 (European Standard specifications or equivalent) or other appropriate safety guidelines. When in doubt please consult your safety representative or your authorized ServoGlas® 5000X distributor.
The ServoGlas® 5000X provides continuous protection from ultraviolet and infrared radiation to the maximum level indicated on the product and as described in the relevant Standards. This protection is fail-safe and is not compromised by loss of battery power or other electronic failure.
The ServoGlas® 5000X welding filter cartridge is fitted with two independently operated sensors that detect the welding arc and respond accordingly resulting in the appropriate darkened filter state as set by the user and as indicated on the scaled adjustment. Please note that professional judgement may be required to achieve the best results. When in doubt consult an authorized safety representative or your ServoGlas® distributor and always maintain a conservative attitude towards operation.
Two replaceable lithium batteries type CR2032 (3V) are used as major power sources. An additional solar cell panel extends battery life and ensures efficient operation. When operating normally the welding helmet will switch on automatically and switch off automatically to save power a few minutes after the last welding arc has been detected.
To provide a general check of system status you may wish to set the shade control to 11 and hold the helmet towards a bright incandescent light source. Under normal circumstances the filter will change from light to dark state and back to light state again as you move the helmet away. Please note that if you have any questions or there is any doubt about the performance of your Servore product you should refer to your authorized safety representative or ServoGlas® distributor.

⚠ **Note**	■ Always use genuine ServoGlas® 5000X front and inside cover plates. Failure to do so may result in injury and will void the warranty. ■ The ServoGlas ® 5000X is not designed for overhead welding without the use of additional protection. ■ Check your helmet for physical damage and test it regularly. If your helmet is damaged or is not working normally have it tested and repaired before use. ■ Always select the appropriate shade before use according to the type of welding and current/amperes used. When in doubt refer to your authorized safety representative.

1-2 Helmet and Head harness Adjustment

Please make the appropriate adjustment(s) to the head harness to ensure a comfortable and secure fit. It only takes a minute and helps ensure you are properly protected. The ServoGlas® 5000X harness allows you to adjust the distance and angle between your eyes and the filter window.You can also adjust the circumference of the headband to ensure a comfortable but firm fit. Please make these adjustments before use based on the illustrations in figures shown below.



2. Markings

The appropriate available shade number markings and range are indicated on the product. Please ensure that the appropriate shade number is selected before welding. Used properly the ServoGlas® 5000X provides eye and face protection to meet or exceed EN379 and EN175 and other relevant Standards where indicated. The following example illustrates these requirements. Please note this example is provided for illustration purposes only.

CE 4 / 9–13 SERVORE 1 / 1 / 1 / 379

- Light shade
- Dark shade
- Manufacture identification
- Optical class
- Diffusion of light class
- Variations in Luminous transmittance class
- Certification mark or number of standard

3. Parts List

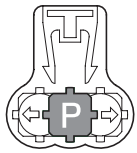
The following parts are available from Servore and your authorized ServoGlas® 5000X distributor.

Helmet Knob Parts

Part No.	Parts
1	Helmet shell
2	Inner Protection Lens
3	Magnifyng Lens(108X51mm)
4A	AutoLift Folder
4A-1	External Control
4A-2	Wire Holder
4P	Fixed Front Folder
5	Inside Cover Plate
6	Auto-darkening Filter Cartridge
6-1	Battery(CR2032)
7	Front Cover Plate(117X95mm)
8	Front Cover
9A	Push Button Assembly
9A-1	Push Button
9A-2	Button Spring
9P	Front Cap Assembly
9P-1	Helmet Front Cap
9-3	Button Washer
9-4	Button Screw
10	Hinge Cap Assembly
10-1L	Hinge Cap L
10-1R	Hinge Cap R
10-2L	Hinge Controller L
10-2R	Hinge Controller R
10-3L	Hinge Spring L
10-3R	Hinge Spring R
10-4	Hinge Cap Holder
10-5	Hinge Cap Screw
11	Helmet Side Cap

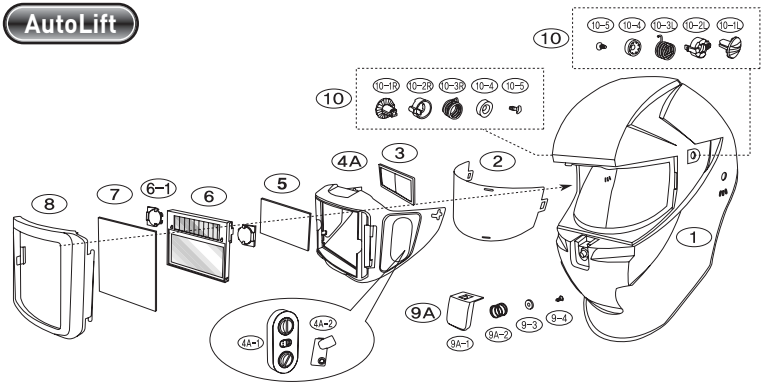
Part No.	Parts
HB	Head Band
HN	Helmet Knob Set
HN-1	P-Bolt
HN-2	Band Holder
HN-3L	Angular Stopper L
HN-3R	Angular Stopper R
HN-4	Angular Washer
HN-5	Washer
HN-6	Knob

Helmet Adjustment

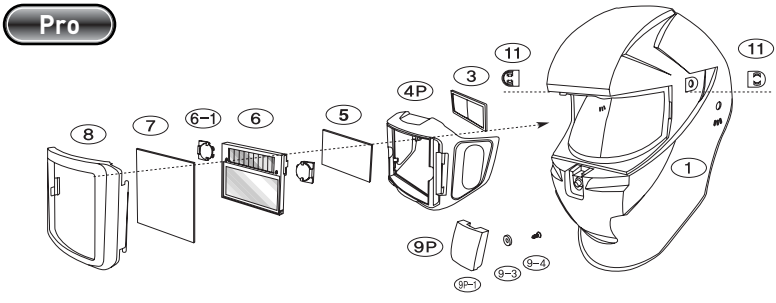


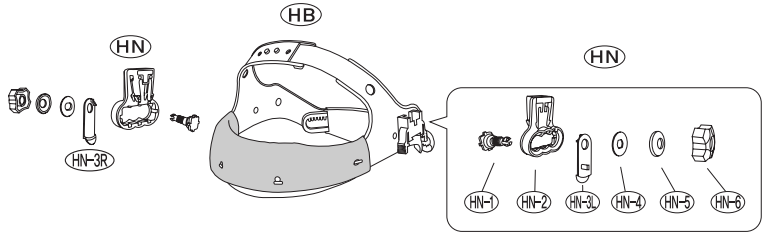
Move P-bolt back and forth to adjust the helmet distance between eyes and filter window.

AutoLift



Pro





4. Technical Specifications

Switching time (light to dark)	1/25,000sec (0.04msec)	
Shade level	Inactivated	Shade #4
	Activated	Shade #9 - #13
Sensitivity adjustment	Dual sensors plus pre-shading (Low-High)	
Switching delay (dark to light)	Low : 0.3-0.6s Fast : 0.1-0.35s	
Power supply	3V Lithium (CR2032) 2EA (user replaceable)	
Battery life	3000 hours (Approximately)	
Supplementary power	Solar Cells (Auto On/Off)	
Battery replacement	Replaceable (Low battery indicator)	
Cartridge size	110 ×90mm (4.3 ×3.5 in)	
Filter window	97 ×46 mm (3.8 ×1.8 in)	
Total weight	Autolift 560g(19.6oz) / Pro 520g(18.2oz)	
Operating temperature	-5℃~+55℃	TIG / MIG/MAG / Electrode
Storage temperature	-20℃~+70℃	

1 Solar Cell Power Saver.

The 5000X series solar cell array minimizes battery use by supplying continuous power during welding. The optimized auto on/off power management circuits ensure stable performance and maximum battery life under all conditions.

3 Brilliant Clear X-View technology.

By incorporating the best optically correct UV and IR filters with special ultra-fast low-distortion LCD panels Servore have made a quantum leap in filter clarity and performance. When combined with Servore' s proprietary electronic control technology the results are simply amazing. Blazingly fast, beautifully clear and extremely stable the 5000X series cartridge sets new industry standards in performance, protection and control.

2 Dual Sensors Plus Pre-Shading.

Z-Slide cartridges incorporate the latest advances in sensor and pre-shading technology. By sensing RF and using specially programmed circuits the Z-Slide responds reliably under the most demanding conditions. From Low amp TIG work to simple stick welding, the Z-Slide can be depended upon to respond reliably every time and with the Brilliant Clear X-View screen, welding is now even easier and more enjoyable.

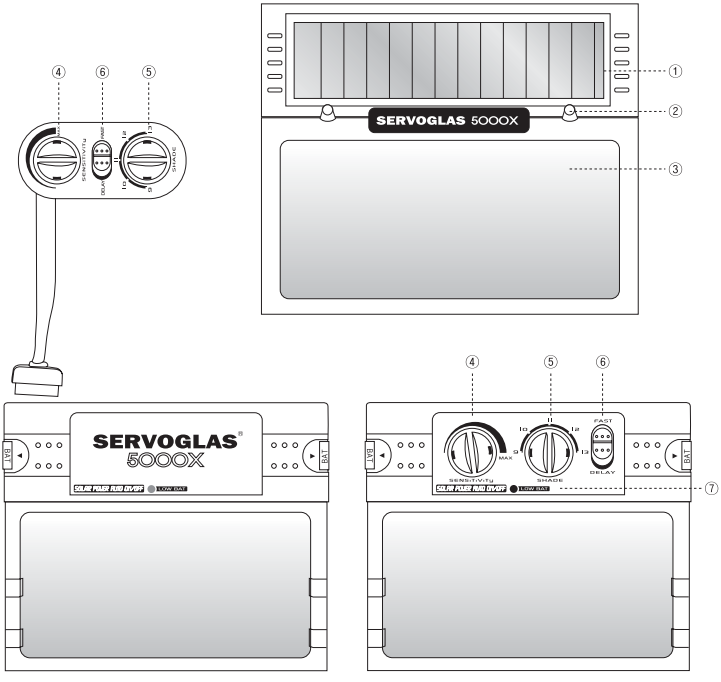
4 Z-Slide Modular Design.

So clever and so practical. Servore' s unique patented Z-Slide technology allows the filter cartridge assembly to be matched with any 5000X series control unit for the ultimate in flexibility, ease of maintenance and upgradeability.

5. Control Function

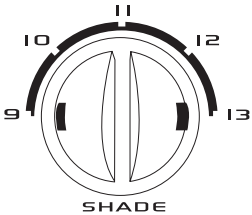
PARTS

1. Solar Cell Panel
2. Sensor
3. LCD Filter Plate
4. Sensitivity Control
5. Shade Control
6. Delay Switch
7. Low Battery Lamp



〈5000X AutoLift〉 〈5000X Pro〉

5-1. Shade Control



The required filter dark state can be selected by using the shade control. The ServoGlas® 5000X can be adjusted between shades 9 to 13 with the embossed arrow on the dial indicating the current adjustment.
Always use the appropriate shade for the welding operation you are undertaking. When in doubt please consult the relevant Standards or your authorized safety representative.

〈Recommended shade numbers according to BS 679, DIN 4647-1 and EN169〉

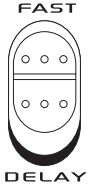
Welding process	Current in amperes
	0.5 1 2.5 5 10 15 20 30 40 60 80 100 125 150 175 200 225 250 275 300 350 400 450 500
Covered electrodes	9 10 11 12 13 14
MIG on heavy metals	10 11 12 13 14
MIG light alloys	10 11 12 13 14 15
TIG on all metals and alloys	9 10 11 12 13 14
MAG	10 11 12 13 14 15
Arc–air gouging	10 11 12 13 14 15
Plasma jet cutting	11 12 13
Micropasma arc welding	4 5 6 7 8 9 10 11 12 13 14 15

According to the conditions of use,
the next greater or the next smaller scale number can be used.

5-2. Light Sensitivity Control

Where problems are encountered during welding at low amps (e.g. TIG) or there is a high level of ambient light please follow these steps. First try adjusting the sensitivity control switch. Start with the sensitivity LOW (gently turn anticlockwise until the knob stops) and adjust upwards as required. If this does not solve the problem, set the sensitivity control in the middle position and hold the helmet close to the target object and adjust the shade control completely clockwise. If the welding filter stays in the light state, leave the control set at this point. If the filter switches to the dark state, turn the shade adjustment back until the filter just switches into the light state. The filter should now be adjusted correctly. If the welding filter still does not respond appropriately, please adjust the sensitivity control again (having previously adjusted the shade control as explained above).
[To achieve optimum results in very unusual circumstances you may need to perform this process again having first reset the sensitivity control to low.]

5-3. Delay Control



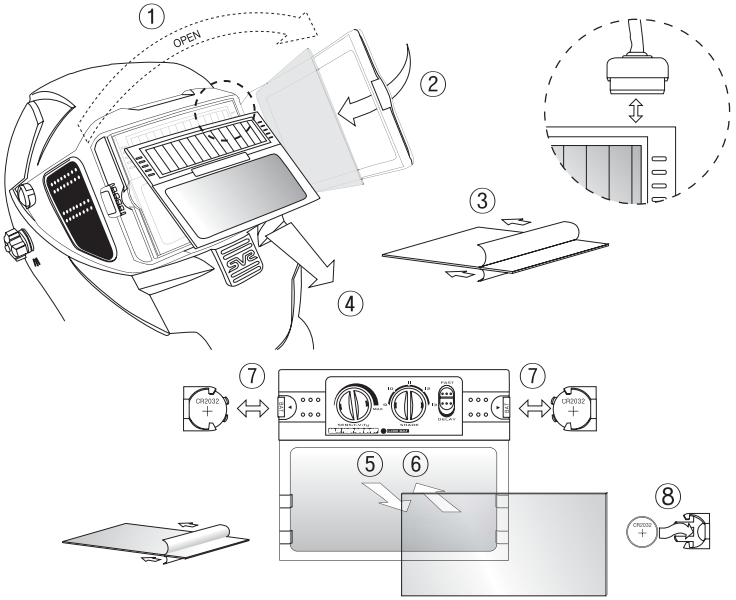
Adjustment of the speed at which the welding filter clears can be reduced by means of the delay control toggle switch. When this switch is set to 'Fast' the screen will clear more quickly.

6. Maintenance

⚠ **Note**	**Always ensure that all maintenance procedures are conducted in a clean dry place. Use clean dry hands and avoid direct contact with any glass surfaces. Handle cover plates and welding filters by the edges and carefully clean off any dirt or debris before re-use.**

6-1. Changing the front and rear cover plates

- Unclip and open the front cover as shown in the diagram. You will then be able to remove and replace the front cover lens as required.
- Before installing the new cover lens remove the protective film from both sides.
- To change the rear cover lens gently remove the cartridge from the helmet you will then be able to unclip the inner cover lens and replace it. Again, you must remove the protective film from both sides of the cover lens before installing it.



⚠ **Note**	Always use genuine Servore parts. Never use a welding helmet without both front and rear cover lenses installed.

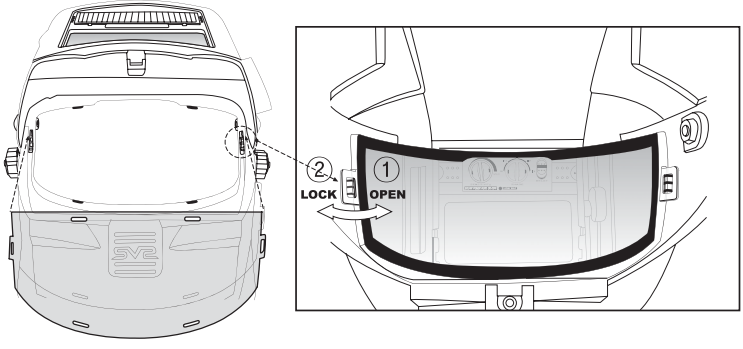
6-2. Changing the battery

- The Servoglas ServoGlas® 5000X series of helmets uses two 3V lithium Ion batteries (CR2032) as a main power source. These batteries are user replaceable and should be replaced immediately when the battery warning light comes on and/or at least every three years. Always replace both batteries at the same time with brand new batteries. Never install previously used batteries in your helmet.
- To replace the batteries slide out the battery holders from either side of the cartridge and discard the old batteries. Install the new batteries in the battery holders and slide the battery holders back into the cartridge.

⚠ **Note**	Always note the polarity of the batteries and install them as shown in the diagram and as marked. Batteries rely on good electrical contact to function properly and so always use clean dry hands and avoid getting dirt inside the cartridge when exchanging batteries.

6-3. Changing the inner cover plate on the ServoGlas® 5000X AutoLift

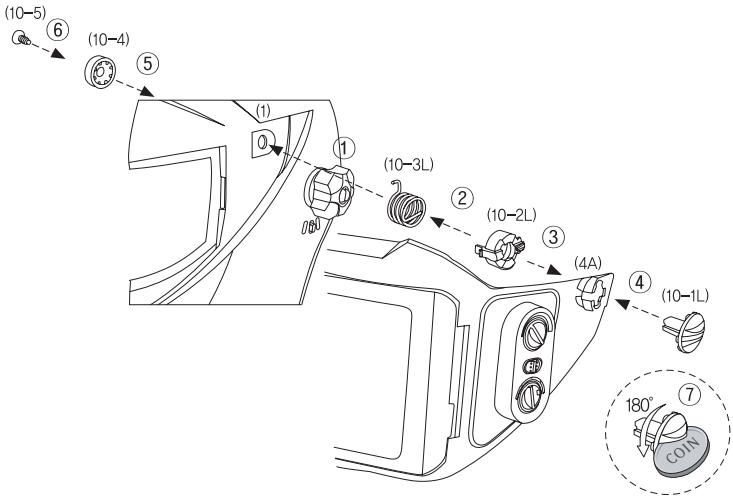
- From inside the helmet unclip the installed cover plate from the shell noting the locking tags on either side of the helmet (see diagram).
- Remove the film from both sides of the new cover plate and then insert first one side and then the other into the relevant slots on each side of the helmet.



⚠ **Note**	Always check to ensure that the locking tags on each side of the helmet are properly mated with the slots in the cover plate and that the four raised guides on the helmet shell are located in the matching slots in the cover plate.

6-4. Maintaining the AutoLift assembly on the 5000X Auto Lif

- Assembling and disassembling the AutoLift assembly on the ServoGlas® 5000X AutoLift is a simple process but should be done according to the following instructions to ensure problem free operation of the helmet.
- Locate the spring (10-3L) in the recess on the outside of the helmet shell ensuring that the end of the spring is hooked into the hole provided and pointing upwards. Springs are handed (R/L) and if reversed the AutoLift mechanism will not work.
- Place the spring retainer (10-2L) over the spring and ensure that the tongue of the retainer is located in the slot provided on the side of the helmet shell.
- Mount the AutoLift Folder over the spring retainer ensuring that the notches in the top of the spring retainer are nested into the matching slots on the AutoLift Folder.
- Insert the slotted bolt into the hole and over the end of the spring.
- While holding the slotted bolt in place with your thumb, look inside the shell and locate the black washer over the end of the bolt which should now be visible on the inside of the shell.Note that the black washer has internal fins that mate with the end of the slotted bolt.
- Insert the self tapping screw into the washer and screw it in. Avoid over-tightening.
- Use a coin to tension the springs on each side by turning the head of the slotted bolts with the coin. Avoid over tensioning. Test the AutoLift mechanism after each adjustment. Usually turning the hindecap a few 'clicks' or about 180 degrees gives perfect results.



7. Storage and Temperature Range

Your Servore welding helmet is strong and durable. It is designed to work in temperatures between -5C and +55C. Do not use your helmet in very hot conditions where temperatures exceed +65C. Always store your helmet in a clean dry place out of the direct sun and protect it from exposure to moisture or extreme heat (min/max storage temperature is -20C ~ +70C).
Avoid unnecessary impact or compression of your helmet and never use a helmet that is damaged. Your Servore welding helmet is a quality professional tool and careful storage will extend the life of your investment.

8. Inspection

Check your helmet shell and filter on a regular basis when in normal use and after extended periods of storage. Never use a cracked or damaged helmet as this may result in personal injury and will void your warranty.
Please replace any worn or damaged parts as necessary.
Genuine ServoGlas® replacement parts are available from your authorized ServoGlas® distributor.

9. Cleaning

⚠ **Note**	**Never expose the filter cartridge to direct contact with water or solvents.**

After removing the welding filter from the shell the shell can be cleaned using a mild detergent and water solution. Sweat bands can be washed. A silicone based lubricant may be used on moving parts if necessary but is not normally required. The filter may be carefully wiped with a cloth dampened with household window cleaning solution. Please be careful not to scratch or otherwise damage the filter cartridge with fragments of welding spatter or other abrasive dirt. Refer to the relevant parts diagram for illustrations regarding assembly and disassembly.

10. Cautions

⚠ **Cautions**	■ The ServoGlas® 5000X is designed for personal eye and face protection from harmful radiation, sparks and welding spatter produced under normal welding conditions. Please follow good industry and safety practices and use additional protection where necessary. ■ Cover plates are strong and of industry standard quality but they are breakable. The ServoGlas® 5000X is a quality welding helmet but is not designed to provide protection from severe impact such as broken grinding wheels or debris from other broken tools, corrosive liquids, explosions, or other extreme incidents. We recommend you always adopt a conservative attitude towards safety and take additional precautions as required and recommended in the relevant safety standards relating to the operation you are undertaking. ■ The welding filter is not designed to be waterproof. Please do not use your helmet in the rain or other inclement weather. To do so may reduce the life of your helmet and result in damage or injury. ■ In the event that your helmet or welding filter is exposed to direct contact with, or is submerged in water or other liquid immediately stop using the helmet, remove the filter cartridge from the shell, remove the batteries from the filter, inspect carefully for damage and if necessary mop-up excess moisture with a paper towel and then leave to dry in a warm (not hot) place out of direct sunlight. Never place your helmet in an oven or microwave to dry. Before use perform all normal system checks and if in any doubt contact your ServoGlas® distributor. Your Servore helmet is a precision engineered professional protection product and must be maintained in good condition to ensure your personal protection.

⚠ Cautions

- When working in the vicinity of other welders it is necessary to adopt good industry standard practice and ensure a minimum distance of 1M between workers. Failure to do so may result in injury or malfunction of the auto darkening mechanism.
- Please do not wear the helmet when you are not welding. In some circumstances the auto darkening mechanism may be unexpectedly triggered resulting in reduced vision and subsequent injury to yourself or others.
- Servore does not support the use of ServoGlas® 5000X range of products in combination with any other manufacturers' products. To use parts that are not approved by Servore may void your warranty and result in personal injury. Please use only genuine ServoGlas® 5000X parts and spares as provided by your authorized ServoGlas® distributor.
- Servore reserves the right to make improvements, change or otherwise modify the specifications, materials and design of any and all Servore products at their sole discretion with a view to ensuring continuous improvement. Never attempt any unauthorized modifications or alterations to your Servore product. To do so may result in personal injury and void your warranty.

Thank you for purchasing a Servore product. If you have any questions regarding this or any other Servore product please contact your authorized ServoGlas® distributor.

SERVO GLAS 5000X

CE EN175
EN379

ANSI Z87.1

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