

Side-Loading Hydraulic Non-Shift Wedge Grips

Series WGR-H up to 2500 kN

This fatigue rated, parallel closing grips are well suited for static, quasi-static, fatigue (through-zero), LCF to HCF testing.

The hydraulic grips WGR-H Series are general-purpose grips for static, pseudostatic and dynamic (through-zero) testing which provides excellent sample grip on a variety of materials.



The grip is designed such that there is no backlash while passing through zero load which makes them the best solution for many tests including those with tension-compression loading.

Their high lateral stiffness and constant lateral gripping force assure and maintaining excellent alignment. The WGR series is versatile, allowing the installation of inserts for flat and round specimen.

Each grip is hydraulically operated, with gripping force being applied via movement of the grip body relative to the wedge-shaped jaw faces. Thus, the wedge inserts remain stationary on the same vertical position when applying initial gripping force to sample while the body of the grip is moving. This feature minimises the preload applied to the sample by the grips and minimize compressive force being applied prior to testing. The grip body wedge area is fitted with jaw guides, to ensure that the jaw faces remain square to each other and to the specimen. Each jaw face is located in the grip body by two extension springs, which allow the jaw faces to release the specimen after testing.

The open-front construction makes specimen insertion quick and easy. This translates into you spending less time inserting and aligning specimens and more time testing.

WGR series allows also the proper clamping of short specimens, minimizing material.

These grips can be mounted on hydraulic or non-hydraulic static testing machines and dynamic rated systems.

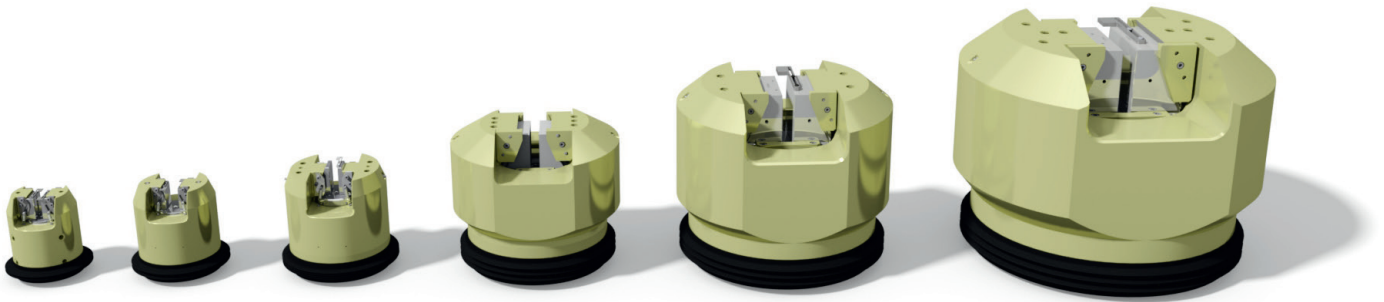
Each grip has two hydraulic ports for the fluid, one for opening of the grip and one for closing / clamping.

The hydraulic supply can be either from an existing hydraulic source or via stand-alone or in the machine integrated hydraulic pump and valve assembly. In combination with extension rods and high-temperature hydraulic fluid the grips can be mounted in environmental chambers.

The grips are nickel plated wear and corrosion resistance.

The WGR Grips are produced up to 2500 kN capacity. Built for years of trouble-free testing at its full rating!

All grips supplied with sealings for Standard Temperature Range of the grips from -40°C to +180°C whereas the use above 75°C requires a standalone grip supply with suitable fluid.



Interface to the testing machine with Washer-System

The grips provide an internal thread that allows a backlash free connection of the grips to your testing machine with spiral washer and connector stud. The washer/stud connection provides backlash-free connection between the grip and the testing machine.

Interface to the testing machine with Thread Bolt Circle

Additional most of the grip sizes have an additional thread bolt circle that allows to interface the load cell or an intermediate flange. As the thread bolt circle is compatible with our range of bending ring load cells this interface allows the direct, backlash-free connection of the grips in the testing machine or at piston rods of servohydraulic actuators.

Interface to the testing machine via Mounting Stud with PIN

If the grips are used in static testing machines or if regular installation and removal in the testing machine is unavoidable, we recommend using the mounting stud with PIN connection. This optionally available connection enables quick installation and removal and delivers good alignment.

Mounting of Accessories on the WGR Grips

The WGR grips have standardized threaded holes, some sizes with additional centring pin holes, in the ground end faces. This enables the precisely attaching of compression platen, bending devices or any other fixture, tool or accessories directly to the grips. In many cases, this eliminates the need to remove the grips and makes changing from one task to another easy and productive.

Extension Rods for using the Grips in an Environmental Chamber

The WGR Grips can be mounted for room temperature testing or testing in an environmental chamber. The usable temperature range of the grips inside the environmental chamber is determined by the used fluid (oil), hydraulic hoses or tubes and the type of seals used in the grips. We are supplying the suitable extension rods with accessories to install the grips in an environmental chamber.

Grip Inserts / Jaw Faces

A variety of grip inserts (jaw faces) are available for flat & round specimens. Standard inserts do a good job of gripping materials such as steel a.s.o. The standard inserts are hardened and polished and do a good job of gripping materials such as steel and others. Each set consist of matched set of four (4) inserts. We are also offering inserts with special surface coatings and shapes, extended gripping lengths, and shapes to match specific application.

Extended Grip Inserts / Jaw Faces

For the most of the WGR Grips wide wedge sets are offered for flat specimens with wide clamping section.

Water-Cooled Inserts / Jaw Faces

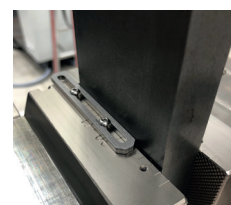
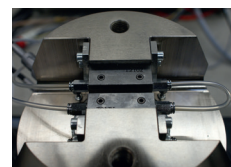
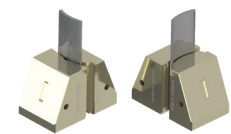
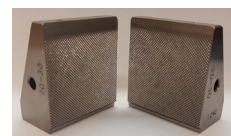
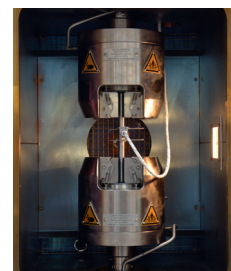
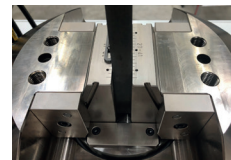
When using the WGR Grips in applications where the specimen is heated as for example in combination with high temperature furnace where the specimen is gripped outside of the furnace, or in combination with inductive heating system water-cooled wedges are available. These inserts have water connecting fittings that allows to connect cooling water or alternative air to circulated through the inserts to cool them when the specimen gets hot. We are also offering the water-cooling kit that includes all parts to connect the jaw faces to a water source and regulate the water flow.

Coated Inserts / Jaw Faces

Coated jaw surfaces such as diamond coating, TiC coating, surfalloy and others are available for all WGR jaw faces.

Flat Specimen Centring

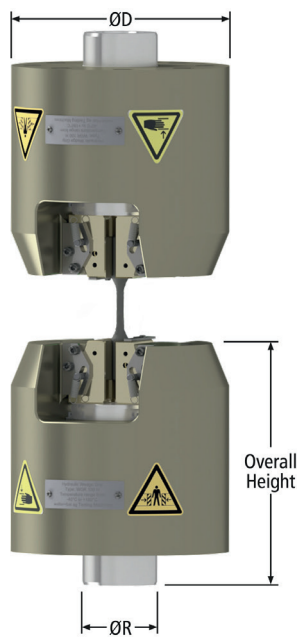
The flat specimen centring (specimen depth stop guide) enables simple, repeatable positioning of the flat specimen in the grips within seconds and helps align the specimen when it is installed. The depth stop can be easily positioned using two small screws. This small option helps align the specimen.



Technical Data

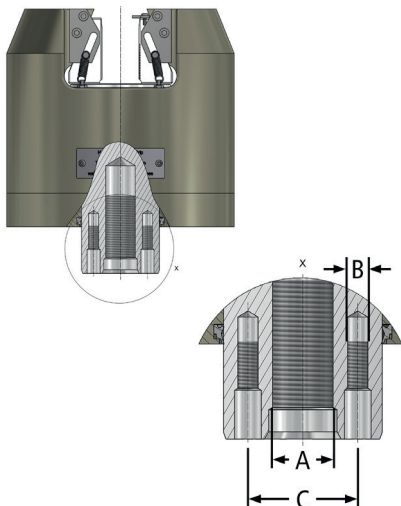
Model	Static Force (kN)	Dynamic Force (kN)	Max. Round Specimen Ø	Max. Flat Specimen Thickness	Width of Flat Jaws	Width of Extra Width Jaws
WGR-16	16	10	18	10	35	On Request
WGR-32	32	25	30	40	50	100
WGR-63	63	50	30	40	50	100
WGR-160	160	100	30	40	50	100
WGR-300	320	250	36	42	60	100
WGR-400	400	320	40	41	100	On Request
WGR-630	630	500	63	60	100	150
WGR-1500	1500	1200	70	60	150	On Request
WGR-2500	2500	2000	70	60	200	On Request

All grips supplied with sealings for Standard Temperature Range of the grips from -40°C to +180°C whereas the use above 75°C requires a stand-alone grip supply with suitable fluid.



Dimensions

Model	Overall Height	Outside Diameter ($\varnothing D$) mm	Piston-Rod Diameter ($\varnothing R$) mm	Weight each Grip (kg)
WGR-16	16	$\varnothing 125$	$\varnothing 55$	7.5
WGR-32	32	$\varnothing 158$	$\varnothing 55$	9.5
WGR-63	63	$\varnothing 158$	$\varnothing 55$	19
WGR-160	160	$\varnothing 190$	$\varnothing 65$	32
WGR-300	320	$\varnothing 250$	$\varnothing 100$	61
WGR-400	260	$\varnothing 300$	$\varnothing 125$	97
WGR-630	355	$\varnothing 405$	$\varnothing 160$	227
WGR-1000	425	$\varnothing 480$	$\varnothing 210$	410
WGR-1500	445	$\varnothing 520$	$\varnothing 250$	485
WGR-2500	555	$\varnothing 740$	$\varnothing 330$	1185



Model	Internal Thread (A)	Internal Thread Depth (mm)	Bolt Circle (mm)	Bolt Circle Size (B)
WGR-16	M16x1.5	40	$\varnothing 30$	8 x M6
WGR-32	M16x1.5	40	$\varnothing 30$	8 x M6
WGR-63	M16x1.5	40	$\varnothing 30$	8 x M6
WGR-160	M27x2	65	$\varnothing 45$	8 x M10
WGR-300	M33x2	75	$\varnothing 71$	8 x M16
WGR-400	M36x2	50	$\varnothing 71$	8 x M16
WGR-630	M52x2	75	$\varnothing 112$	8 x M24
WGR-1000	M90x2	145	$\varnothing 175$	12 x M24
WGR-1500	M90x2	180	$\varnothing 200$	12 x M24
WGR-2500	M120 x 3	200	$\varnothing 250$	12 x M30

All-Temperature Side-Loading Hydraulic Non-Shift Wedge Grips Series WGR-AT up to 2500 kN

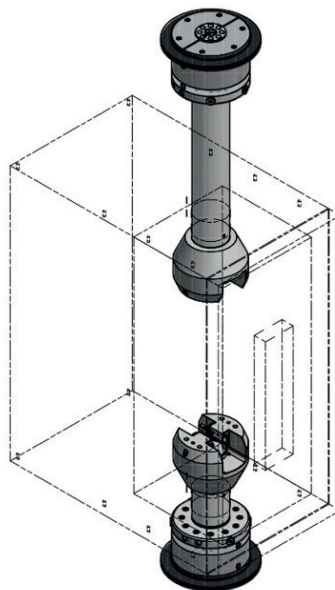
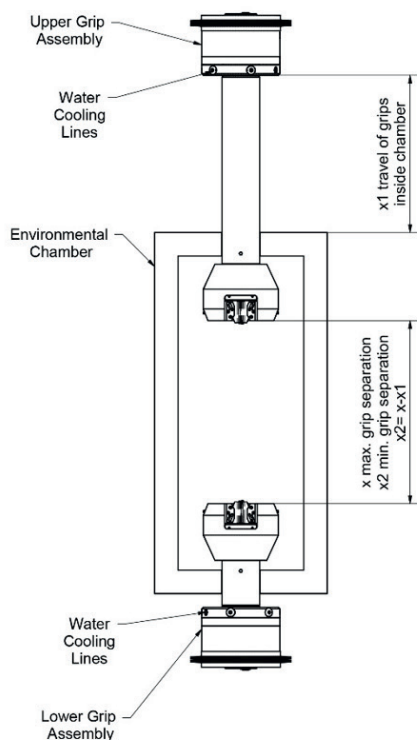
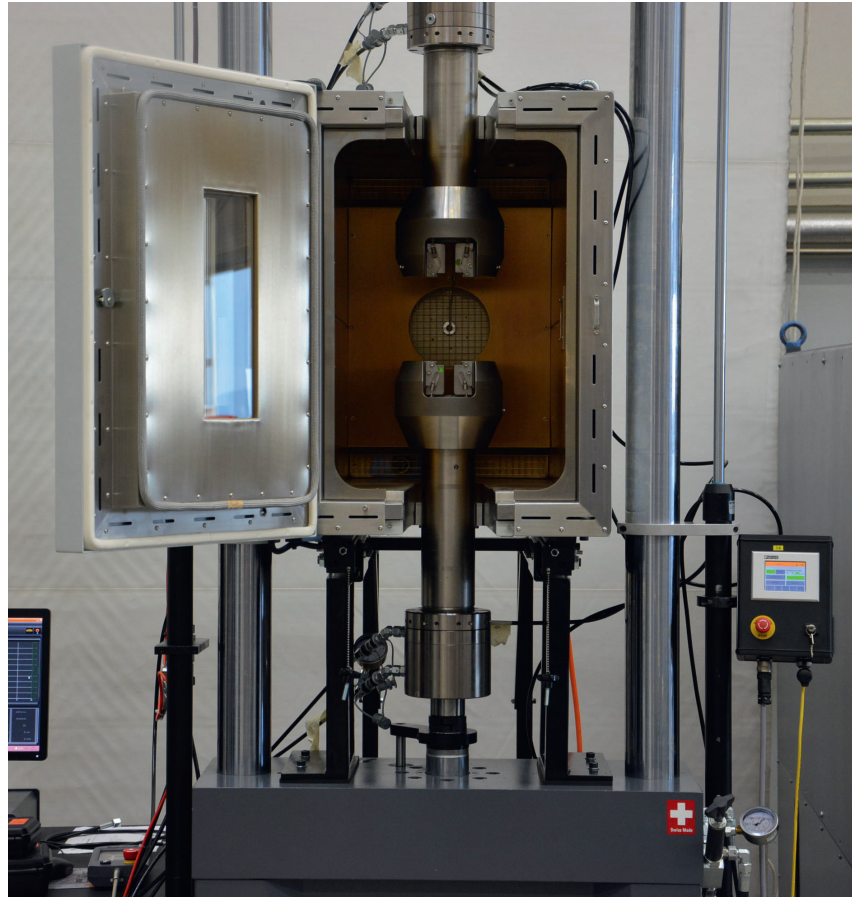
The WGR-AT All-Temperature grips are designed to be used inside an environmental chamber.

The grips provide all the advantages of the WGR-H grips but is designed for a wider temperature range.

These grips are available in different temperature ranges from low sub-zero to high temperatures.

The chamber should have the removable wedge option (U-plugs) in order the chamber can be installed after the grips are installed.

Once the grips are heated or cooled to its test temperature and the first test is conducted, there is no need to cool down or heat up grips down before insert the next specimen. Thus, productive testing is assured as the specimen changeover can be made without touching the hot or cold grips. As the grip head is installed inside the environmental chamber and operates at test temperature the thermal gradients between the grip and the specimen are low.



As the WGR-H grips also the WGR-AT grips are backlash-free once the specimen is gripped so that they are well suited for through zero testing.

The all-temperature grips have an extension piston and cylinder that extends together with the wedge body into the environmental chamber while the hydraulic chamber with its hydraulic connection fittings and hoses remains outside of the chamber. The length of the extension piston and cylinder are supplied in accordance of the requirements of the minimum and maximum grip separation and used environmental chamber.

Mechanical Side-Loading Non-Shift Wedge Grips Series WGR-M up to 100 kN

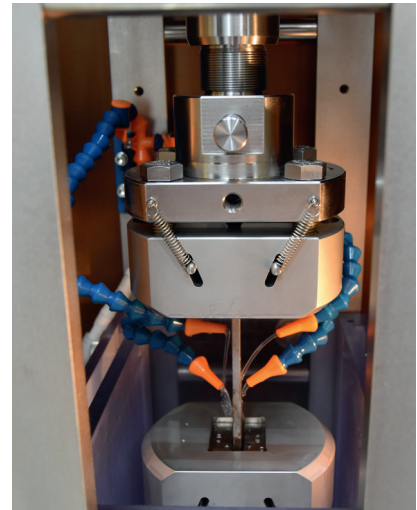
The WGR-M mechanical Side-Loading Non-Shift Wedge Grips are designed for clamping of round and flat specimens for static, quasi-static and dynamic (including through zero tension-compression) testing. These grips provide excellent gripping on a variety of materials including steel.

Due to the closed grip design these grips are extremely stiff at low weight.

The WGR-M series of grips have the same working principle as the WGR-H hydraulic series but are mechanically operated. The gripping force is introduced by the tightening four hexagon head screws on the underside of the grip head, that moves the grip body relative to the grip inserts applying the related gripping force to the specimen.

Available are interchangeable grip inserts (jaw faces) accommodating either round or flat specimens. As the inserts move in a horizontal direction only, relative to the specimen, the specimen will be clamped with minimal introduced axial specimen pre-loading.

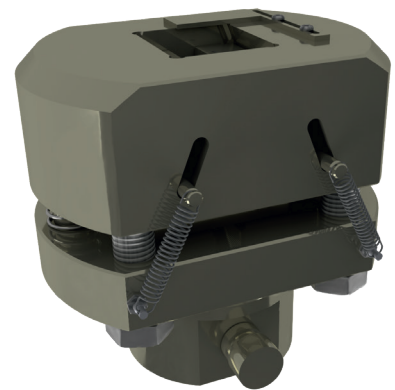
The grips are available with Interface to the testing machine with internal thread that allows a backlash free connection of the grips to your testing machine with spiral washer and connector stud or alternative with mounting stud with PIN connection.



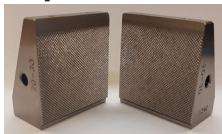
Extension Rods for using the Grips in an Environmental Chamber

The WGR-M Grips can be mounted for room temperature testing or testing in an environmental chamber.

The usable temperature range of the grips inside the environmental chamber is determined by the temperature range of the grips and the extension rods which is optionally available.



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Coated jaw surfaces such as diamond coating, TiC coating, surfalloy and others are available for all WGR jaw faces.

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