

# ELEMENT 400 L PRODUCTIVITY REDEFINED

State-of-the-art laser technology for  
maximum productivity and quality





# ELEMENT

## INNOVATING PLATE PROCESSING

Independent servo driven tools provide versatile processing options.

Reduce setup time by spacing or parking multiple tools automatically through the part program or at the control (optional).

CNC control designed to improve operator efficiency, eliminate redundancy and to provide more clarity of operations of important production data.

High-speed lifters and advanced process optimization techniques ensure productivity gains.

Industrial quality components guarantee a reliable, laser matching precision with the highest dynamics.

**For over 120 years, we have provided quality products and reliable services for the metal processing industry.**

The ELEMENT is a flexible machine platform that can be specifically adapted to your application.

As the ELEMENT 400 L laser machine, it scores with remarkably high dynamics, the latest laser technology and the ability to economically process XXL sheets. Various features can be combined with powerful software to ensure maximum productivity and performance. In this way, the ELEMENT 400 L becomes a seamless total solution for metal processing in just a few steps.





ELEMENT 400 L

# CARRIER OF SOLUTIONS



## PROCESS OPTIONS

### Laser

Leap in performance in laser technology! Whether it is rapidly increasing laser powers, different fiber types or even new cutting gases: Today's laser machines must be able to follow current trends.

Innovation is needed as applications must become more effective and transparent. In addition, the increasing shortage of skilled workers is pushing for plants to become more self-sufficient. One machine operator alone has to be able to supervise several machines.

Automation of nozzle change material supply and removal and continuous data exchange or reconciliation across the entire production flow are the prerequisites that were at the forefront of the ELEMENT L's development.

LASER PRECISION CUTTING OF MILD STEEL O2 AND N2 AS WELL AS MIXED GAS TECHNOLOGY, STAINLESS STEEL AND ALUMINIUM



- + Increased dynamics
- + Tightest component tolerances
- + Reduced maintenance
- + Automation for loading and unloading



## PROCESS OPTIONS

### Plasma

Several advancements in plasma technology over the last few years allow for precision cutting of mild steel, stainless steel and aluminum. Most recent development has been focused on improved hole cutting and longer consumable life, providing fewer secondary operations and lower operating costs.

The best plasma system to fit your application will include collision protection and will be mounted on one of our high-speed lifters. Along with other process optimizing features, we can provide higher productivity with all industry standard plasma systems.

PRECISION CUTTING OF FERROUS AND NON-FERROUS MATERIAL UP TO 2 INCHES



- + Maximum thickness up to 150 mm (non-ferrous material)





## LASER BEVEL CUTTING HEAD

### Bevel-U

The Bevel-U bevel unit, specially developed for the laser process, enables bevels in the workpiece between  $-50^{\circ}$  and  $50^{\circ}$ . The bevel angle is continuously adjusted during the laser cutting process. Edge shapes such as I, V, Y, X, and K are possible for a subsequent welding process of the workpieces. The actual cutting angles depend on the material type, thickness, and bevel type such as AS or DS. With this unique design, precise and repeatable bevel parts can be produced. Consistent quality after nozzle changes is ensured by an automatic test and calibration routine. The design also includes magnetic collision protection for the cutting head and a manual control panel for all drives to perform adjustments directly on the machine.

## SPECIAL FEATURES

### Automatic sheet position detection system

The sheets to be processed are never aligned parallel to the processing machine. This is where the sensor technology of the cutting nozzles helps to detect the sheet position before the actual cutting.

By contactlessly approaching the sheet edge at three points, the automatic system is able to determine the actual orientation of the sheet and rotate the CNC program accordingly. This considerably reduces the work involved in placing the sheets and also makes it possible to process several remaining sheets automatically.



## MARKING OPTIONS

### Inkjet Marker

Parts often need non-permanent marking for secondary operations such as layout lines or simple part identification as they move through production. The inkjet marker produces markings that do not damage the plate and are not visible after painting.

Production does not slow down for marking as the marker creates text at speeds of up to 17 characters per second. Available with 7 or 16 nozzles.

Black ink only systems satisfy most requirements while optional hardware can be used with pigmented ink to create higher contrast results for some applications.



## MARKING OPTIONS

### Pin Marker

For applications which require a more permanent mark, the pin marker uses a vibrating stylus to create easily legible characters or layout lines.

In just a few seconds, the robust and low-maintenance marker can create text as small as 10 mm.

The results are visible on a variety of materials, including primed, rusted or mill scale plate. In some cases, the mark may still be visible after painting.

#### BEVEL UND WELD PREPARATION



- + With bevel angle from  $-50^{\circ}$  to  $+50^{\circ}$
- + YDS, YAS, K with land height from 1.5 mm for automated robot welding as well as V and X cuts
- + Variable bevels for developments

#### PRECISE ALIGNMENT OF THE NC PROGRAM TO THE ACTUAL POSITION OF THE METAL SHEET



- + Manually from the control panel or automatically from the program
- + Very fast
- + Helps to make optimal use of plates

#### NON-PERMANENT MARKING OF TEXT AND LAYOUT LINES



- + Dye-based ink MEK (Methyl Ethyl Ketone)
- + Dries in 3-5 seconds
- + Will not wipe off with water
- + Standard text height at 9, 12, 18, 27 mm
- + Optional 45 and 67 mm text

#### TEXT AND LAYOUT LINES THAT ARE MORE PERMANENTLY VISIBLE



- + Clear, physical markings that cannot be easily removed
- + Variable marking depth



#### SPECIAL FEATURES

### Motion System

Is the cut edge smooth enough? Are the holes round? Are the corners sharp? Is the part accuracy correct? The answers to these questions speaks volumes about the quality of the machine. An experienced operator, optimized parameters and new consumables will not produce any usable parts if the machine motion is uneven and the tool does not stay in position.

The ELEMENT L is equipped with a helical rack and pinion drive and precise linear guides, which form the basis for smooth motion. Powerful AC servo motors ensure fast rapid acceleration of the cutting tool in and around holes and corners and thus for outstanding cutting quality.

#### SPECIAL FEATURES

### Laser Nozzle Control LNC

The nozzle has a great influence on the cutting quality: With the next generation Laser Nozzle Control (LNC), Messer Cutting Systems offers the solution to operate a laser cutting machine with maximum processing quality and productivity for any material, thickness and process as well as to achieve autonomous operation. The operator does not even need to be present, the machine does it itself.

The LNC offers the following functions: Before each job, it checks whether all necessary nozzles are present in the station. To ensure maximum process reliability, the nozzle quality is regularly checked, cleaned and replaced if necessary, e.g. in the event of a defect or if a different nozzle is required for a different sheet thickness.

In addition, the calibration of the nozzle height and centering of the nozzle jet ensure reliable cut quality and shortened setup times.

#### SPECIAL FEATURES

### Safety

Functional safety technology prevents damage to the machine and minimizes downtime. However, its main task is to ensure the protection of people.

With modern fiber laser technology, this requires full enclosure that is light-tight under all circumstances. In addition, its access points for material and people are monitored for safety.

A robust shuttle table ensures fast material changes. This minimizes downtimes and thus optimizes the benefits of the laser system. Incidentally, this system offers the best prerequisites for the next step in the direction of automation. Both for material supply and removal.

#### SPECIAL FEATURES

### Cutting table with fume extraction

Fume extraction tables ensure workpiece support and a very effective extraction of the pollutants produced by thermal cutting.

Sectional exhaust ventilation ensures the concentration of the entire ventilation process upon the cutting area and thus uses minimal fan power to achieve complete ventilation of cutting dust and smoke.

Single or multiple channel extraction available for optimised requirements based on the volume of air extracted whilst maintaining the full effectiveness of the fume extraction table.

Especially for laser systems with shuttle table, the option of automatic discharge of slag and small parts is a good choice. This relieves operators considerably.

HIGHEST PART QUALITY IN  
SHORTEST PROCESSING  
TIME



- + Positioning speed up to 140 m/min
- + High acceleration

FAST AND RELIABLE  
AUTOMATION OF LASER  
MACHINES



- + Automation of set-up operations
- + Prevents machine downtime
- + Shortened set-up times before and during the cutting process
- + Planning reliability and optimization

LEVEL OF PROTECTION FOR  
THE MACHINE BUT MORE  
IMPORTANTLY THE OPERATOR



- + Light curtains and other overall machine safety features are available
- + Internationally certified TwinSAFE on-board
- + Key switch prevents machine movement during maintenance operations and when performing consumable exchange

EFFECTIVE SMOKE REMOVAL  
AND MINIMAL CUTTING  
TABLE MAINTENANCE



- + Can be used with plasma, oxyfuel and laser applications
- + Small parts may also be easily retrieved
- + Table widths from 1,600 bis 5,100 mm
- + Table lengths up to 25,000 mm



# PRODUCTION DIGITIZATION

Our solutions ensure maximum transparency in operations management, production planning and control.



OMNIWIN

## Ideal for work preparation

OmniWin is a powerful, easy to use designing and nesting software that saves time, material and costs. It is the ideal tool for work preparation in oxyfuel, plasma and laser cutting with CNC machines, taking over all cutting tasks for order-based production.

The software is both effective and economical – for small production runs as well as for just-in-time manufacturing with changing quantities in custom cutting operations.



OMNIBEVEL

## The tool for bevel cutting

OmniBevel is the software for dimensionally accurate parts and the leading product for bevel cutting. The post-processor module with a graphical, easy to use interface delivers optimal cutting results.

It stands for vertical cuts, cylindrical holes, exact bevel angles and enormous flexibility. Almost all possible technology parameters and operation details are adjustable.



OMNIFAB

## Software suite for digital transformation

The OmniFab Suite digitizes your processes from sales quotes, production planning, control and monitoring to business process analysis in the entire value chain.

You gain real added value from the “enhanced” machine data in real time through the integration of all systems. Control your material handling systems like loading/unloading stations, towers, material transport devices and more with OmniFab – even on mobile devices.



# GLOBAL CONNECT



## Everything at a glance

With OmniFab Job Management, you always have an overview of all jobs – even on the Global Connect. Process your orders on the right machines at the right time and with optimal utilization, regardless of whether you plan manually or automatically.

Via OmniFab PDC, feedback from the running operation comes in real-time from the machine operators. You can use this information to react quickly to unforeseen events and make the right decisions.



OmniFab  
Job Management



OmniFab  
PDC Digital  
Working Paper



OmniFab  
PDC Parts Status

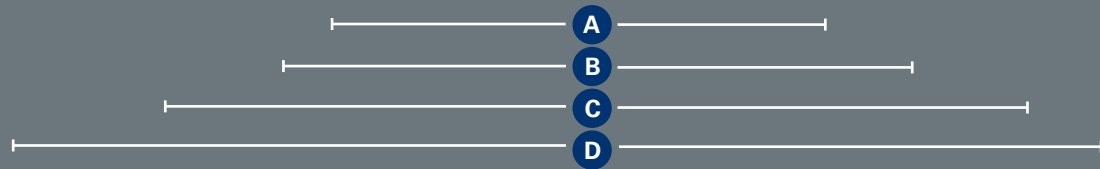
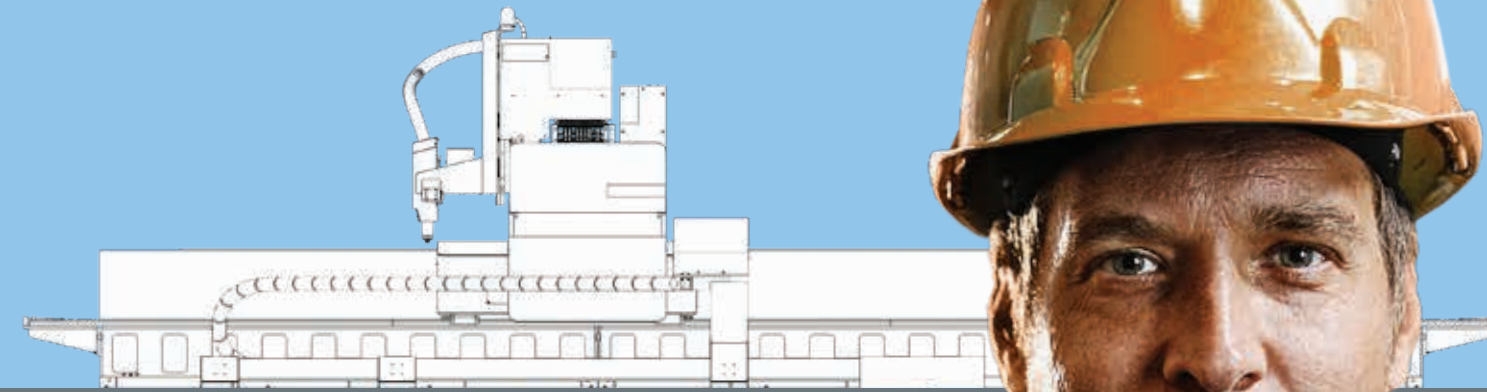
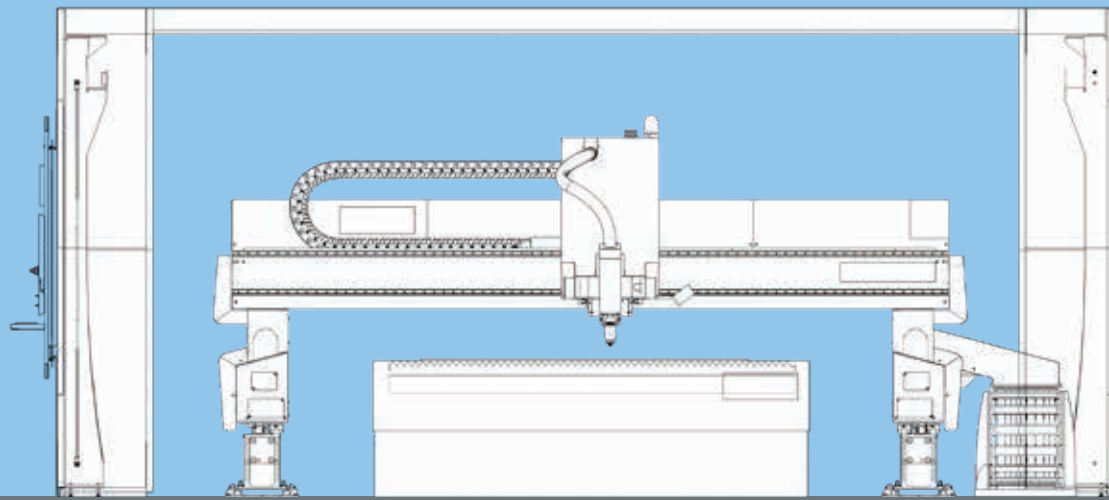
**Novice operators become experts.  
Programmers control the process remotely.  
Maintenance employees prevent downtime.  
Production managers know the job status  
and reduce operating costs.**

All of this is possible if you see the CNC control as the connector between production plant, machine and its operator to allow local as well as remote production scheduling. Data transparency to others within the organization provides key information which is needed to make better business decisions.

- + Flexible job-centric environment for new operators to learn quickly and experienced operators to excel
- + Job scheduling for improved production flow
- + Quick processing of past or repetitive jobs
- + Local nesting and standard shape library for just-in-time workflow







Beam	A Maximum Table Width	B Machine Rail Gauge	C Machine Working Width	D Overall Machine Clearance
3000	2100	2600	3833	4333
3400	2600	3000	4233	4733
3700	2600	3300	4533	5033
4000	3100	3600	4833	5333
4400	3600	4000	5233	5733
5000	4100	4600	5833	6333
5400	4600	5000	6233	6733
6400	5600	6000	7233	7733

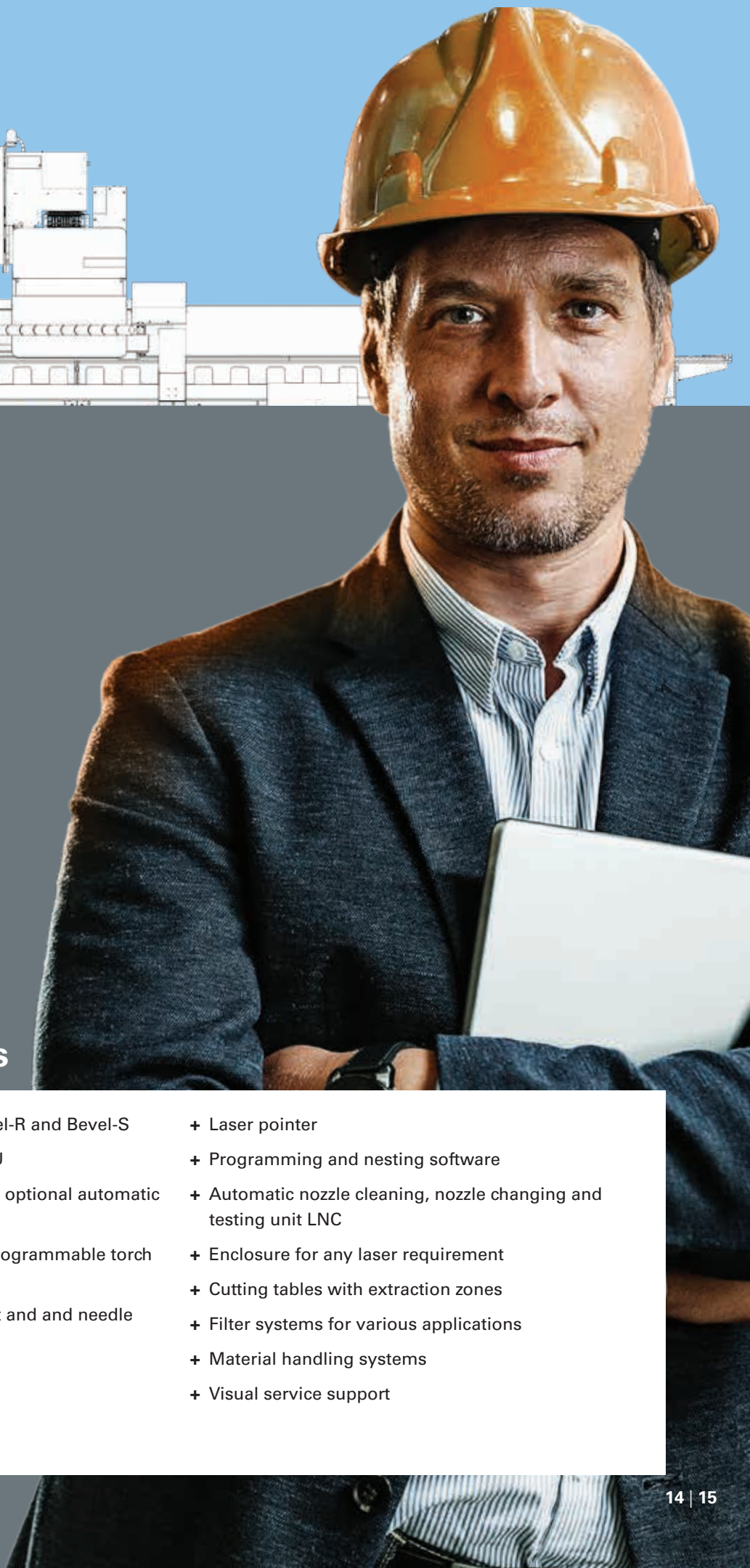
All dimensions in mm

## Standard features

- + Working width 1,600 mm to 5,100 mm
- + Working length up to 25,000 mm
- + Sheet thickness up to 40 mm possible
- + Mild steel, stainless steel, aluminum
- + Positioning speeds up to 140 m/min (combination X/Y axis)
- + Reinforced welded steel construction
- + Closed energy chains in both axes as standard
- + Up to six torch stations (maximum two laser stations)
- + Global Connect, Windows®-based with easy-to-use user interface
- + Stand-alone operator console, tiltable and swiveling for high convenience
- + Virtual Service remote consultation and diagnostics
- + High positioning accuracy via linear guidance in X- and Y-axis
- + Advanced laser technology ensures uniform piercing and faster cutting
- + Meets all safety requirements

## Optional features

- + Plasma bevel cutting units: Bevel-R and Bevel-S
- + Laser bevel cutting unit: Bevel-U
- + Advanced laser technology with optional automatic gas mixing unit
- + Automatic torch spacing with programmable torch selection
- + Marking systems: Plasma, inkjet and needle marker
- + Digital video camera
- + Automatic plate alignment
- + Laser pointer
- + Programming and nesting software
- + Automatic nozzle cleaning, nozzle changing and testing unit LNC
- + Enclosure for any laser requirement
- + Cutting tables with extraction zones
- + Filter systems for various applications
- + Material handling systems
- + Visual service support







# CREATING SOLUTIONS BEYOND MACHINES

## What we stand for

### PRODUCT

Messer Cutting Systems is a global supplier of cutting edge technology for the metalworking industry.

### AUTOMATION

With over 900 employees worldwide in over 50 countries, we maintain a constant dialogue with our customers to achieve sustainable user-oriented innovation.

### DIGITAL

### SERVICES

Our portfolio embraces the themes PRODUCT, DIGITAL, SERVICES, AUTOMATION and KNOW-HOW. We will live up to our claim “Creating Solutions Beyond Machines” not just with the most modern cutting systems and solutions for oxyfuel technology.

### KNOW-HOW

Appropriate services and training, our own software applications as well as the integration of solutions from our technology partners, e. g. in the field of automation, complete the machine to give forward-looking total solutions.

Our know-how combined with our customer-oriented attitude and actions have made us the worldwide partner of choice for innovative total solutions on all aspects of cutting systems for over 120 years.

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