

INTERNAL ORDER PROJECT No.: 222.693

TYPE OF PRODUCT:	ECOVAC		
BASIC INFORMATION:			
CUSTOMER:	Inducat		
REF.NO. CUSTOMER:			
CONTACT:	A. Bosschaart		
DATE:	22.12.2023		
CHASSIS BRAND/MODEL:	MAN TGS 26.360 6x2-4 BL CH		
CHASSIS DELIVERY TIME:	WK32-2023		
DEALER NAME:	BTS		
DELIVERY TIME:	WK15-2024 (Q-week)		
COLOUR:	Inducat colouring		
TYPE OF COUPLING:	4" TW, female (suction/pressing) 6" Bauer, female (lower exhaust) 2½" Storz, cam distance 81 mm (water)		
LANGUAGE:	EN		
NO. OF PAGES:	21		
WIJZIGINGEN:	NAME (reviser)	REVISION INDEX (date)	
ADJUSTMENT NO.1	Translated to EN because of Final Build at EUROM	AB (22-12-2023)	
ADJUSTMENT NO.2			
ADJUSTMENT NO.3			
ADJUSTMENT NO.4			

NOTES:

- Vehicle partially suitable, in the long term (likely after 18 months), to be put on German license. This is applicable on ATEX vacuum pump and AT/FL chassis (sleeper cabin). However, no full stainless steel ball valves.

OPERATIONAL MANAGER:	TECHNICAL MANAGER:	ACOUNT MANAGER:

ADR KIT 12.13b/7.3

- Danger classes : body designed for operation with ADR hazardous

substances within classes 2023-§ 6.10, tank codes S4AH and

L4AH.

- Body design : on the basis of project design calculations.

- Pressure/vacuum tank : constructed for full vacuum and a positive pressure of 3 bar.

Provisions : carbon steel roll bars on top and on the rear door,

: plain stainless steel grounding strip on the plate of the

lower rear door clamp.

Explosion pressure: 8,7 bar, according to the latest ADR directives.

Calculation : NEN-EN 14025:2018.

- Tank inspection : by the authorized inspection service RDW/TÜV.

Consisting of : hydraulic pressure test on 4 bar,

X-raying of longitudinal and cross welds.

Provisions : rupture disk DN 65, incl. safety valve and pressure gauge.

- Ball valves/seals : on behalf of the connections on the rear door,

automatically secured when the PTO is disengaged.

- **Pressure connection** : to be used for suctioning liquids with a low flash point.

- Tipping device : the pressure/vacuum tank automatically secured onto the

auxiliary frame by means of bolting eyes (when the PTO is

disengaged).

Protection : at the tank front on behalf of bolting during driving,

: not being able to tip when the tank bolting cylinders fail to

retract.

- **Piping** : provided with flame returning grid on behalf of bleeding/

aerating the piping and the pressure/vacuum tank.

- Nitrogen connection : on behalf of safe discharging the tank when filled with

substances with a low flash point.

Provisions : claw coupling,

ball valve,

safety valve, adjusted to 3 bar, safety valve, adjusted to 1 bar (ADR),

pressure gauge,

: butterfly valve on top of the tank.

Location : at the right vehicle rear.
- Electric device : according to ADR directives.

- Earth reel : provided with 25 m cable and earth clip.

- Label holders : 3 pieces on both tank sides,

3 pieces at the tank rear, on the brace on top of the

protective brace of the ball valves.

Provision : locking joggle.

Excluding : labels.

Material : stainless steel.

See section "CHOSEN OPTIONS".

- Number plate holders : 1 piece at the chassis front,

1 piece at the tank rear, on the brace on top of the

protective brace of the ball valves.

Provision : protective cover.

Material : stainless steel.

Including : set of numbers.

- Fire extinguisher : 12 kg.

Provision : plastic housing.

- Final inspection : by the authorized inspection service RDW/TÜV.

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PRESSURE/VACUUM TANK 1.2/1.17/1.32/1.6/1.7

- **Volume** : approx. 12.000 l.

Execution : horizontal cylindrical tank with tipping facility. Designed for : full vacuum and a positive pressure of 3 bar.

Tank diameter : 1.800 mm inner.

Vessel material : 6 mm stainless steel AISI 316L grade, material no. 1.4404.

Assembly : the tank is mounted torsion free on the auxiliary frame.

Provisions : high pressure front and rear bottom, thickness 7 mm, not

polished,

steel groove and reinforcing support rings,
heavy tipping pivots with double plates,
tipping cylinder brackets with support plates,

plain stainless steel grounding strip on the plate of the

lower rear door clamp.

chute at the rear end of the tank. fully opening with adjustable hinges.

: hydraulically opening by means of a horizontal cylinder,

: opening angle approx. 110°,

: absolutely tight closing by means of a rubber profile EPDM

60° shore in the groove at the tank rear.

- **Bolting** : hydraulically operated rear door clamps.

: ATTENTION: the clamps can only be released when the

pressure/vacuum tank is bleeded/aerated.

- Manhole : provided with cover with 8 clamps and nitrile seal,

: on top of the pressure/vacuum tank, opening to the rear

(from a driving direction point of view).

- Suction connection : 6" block flange,

- Rear door

rising tube,

: ball valve DN 150, provided with coupling (see cover sheet)

with blind stop and chain, and drain tap,

automatically secured when the PTO is disengaged,

: material ball valve: carbon steel with stainless steel ball and

TFM1600 seal,

location: in the base of the rear door at the right hand side.

- Pressure connection : 6" block flange,

ball valve DN 150, provided with <u>coupling</u> (see cover sheet)

with blind stop and chain, and drain tap,

automatically secured when the PTO is disengaged,

: material ball valve: carbon steel with stainless steel ball and

TFM1600 seal,

location: in the base centre of the rear door fully on the

bottom side.

to be used for suctioning liquids with a low flash point.

- Level control : max. level control/shut off system,

action; on completion of loading and when the vacuum pump is switched off, the valve will automatically close,

signal; by means of a claxon when the max. level is reached,

level indicator on the rear door with pointer, stainless steel float ball and level switch. When the max. level is reached, the suction hoses can be emptied by overriding the ATEX

"post suction" switch,

: additional security; shut off ball beneath the butterfly valve,

provided with stainless steel float ball and nitrile seal.

- Aeration : to bleed/aerate the piping and the pressure/vacuum tank,

size DN 125.

Provision : pneumatically operated butterfly valve with grid.

AIR PIPING SYSTEM 0.0/3.12

- Vacuum pump : liquid ring type.

Brand : CVS, type VacuStar WR 3100.

Capacity: approx. 3.100 m³/h.

Water supply : through a pneumatically operated shut-off valve and filter

with exchangeable element.

Shaft sealing : mechanical seals.

Provisions : various tap spots (ball valves).

pre-inlet cooling by means of valve, damper and air filter.

Drive : mechanically from the engine PTO by means of a pneumatic

clutch (incl. rubber damper) and maintenance free crankshaft shaft, V-belt transmission with belt tightener and bearing blocks, provided with vacuum pump drive shaft

protection.

Control : vacuum pump ON/OFF via KOKS control box,

: possibility to manually add cooling water when the water

level in the vacuum pump is too low.

- **Service water tank** : on behalf of the vacuum pump,

Volume : approx. 1.200 l.

Location : in front of the pressure/vacuum tank, on the auxiliary

frame.

Vessel material : stainless steel AISI 304 grade 1.4301(7).

Provisions : inspection hatch DN 400 with hinged cover,

: plexiglas sight glass Ø 40 mm, provided with ball valve in the horizontal supply on the bottom side, a Storz coupling

on the bottom side and top,

: combined filling/drain connection with 2½" ball valve and

coupling (see cover sheet),

: 2½" overflow pipe, provided with coupling (see cover

sheet), and 1/2" ball valve,

water/suction connection to the vacuum pump,return air connection from the water pump.

- Air piping
 Provisions
 as short as possible, adequately sized.
 the necessary flexible connections,

: filter with removable filter element,

nonreturn valve in resistance proof execution,

vacuum relief valve,vacuum manometer,

: lower exhaust with <u>coupling (see cover sheet)</u> with blind stop and drain, positioned at an angle, taking the exhaust

into account.

Piping course : separable execution by means of a sleeve division with

stainless steel Bauer coupling.

Piping material : stainless steel.

- Exhaust stack : hinged, in raised position, the discharge opening is situated

approx. 5 metres above ground level.

Material : stainless steel, approx. 10" in diameter.

Operation : pneumatically operated, automatically coming down when

the PTO is switched off.

Provision : rubber buffers in a support.

- **Compressor** : on behalf of discharging the pressure/vacuum tank.

Brand/model : Alfons Haar, type V-max. Operating pressure: max. approx. 2-2,5 bar.

Air displacement : max. 200 m³/h.

Drive : hydraulic.

Provisions : suction filter, : nonreturn valve.

pressure relief valve, adjusted to 2 bar.

Execution : $\langle x \rangle$ II 2 G c T4.

HYDRAULIC SYSTEM

- Tipping system : Operating parameters; tipping of tank, loaded with solids

having a specific gravity of approx. 1600 kg/m³.

Tipping angle : 45°.

Provisions : front cylinder with retracting stage.

- **Hydraulic unit for** : supply of operating power to the tipping system,

: supply of operating power for rear door opening/ closing,

supply of operating power to the compressor,

: supply of operating power to the high pressure pump (if

present).

Provisions : piston pump (including safety room in order to avoid

mixing of the hydraulic oil with the gearbox oil) mounted

directly on to the small gearbox PTO,

oil tank with return filter, filling/bleeding cap, sight glass

and drain plug,

: oil cooler.

ELECTRIC/CONTROL UNIT 0.0

- Control box : leakproof, IP 65.

Consisting of : control box with buttons, switches, pneumatic and hydraulic

valves.

Including : several switches and warning lamps,

hour counter, revolution counter.

: separate fuses on behalf of the various functions,

reset button (emergency stop),

: plug for emergency stop (brought to a position underneath

the control box),

panel lighting by means of license lights,

heating element,

Engine speed control: diesel engine provided with integrated throttle control.

- **Hydraulic valves** : on behalf of the hydraulic functions.

Location : at the rear, on the right hand chassis side, integrated in the

tool box.

- Pneumatic system : on behalf of the pneumatically operated components

(butterfly valves and other valves).

Position : on the front surface of the toolbox, rear of the vehicle.

- Working light : lighting the working spot.

Execution : LED.

Brightness : approx.1400 lumen.

Location : centred on top of the rear door, on an extended mount.

STORAGE FACILITIES

-Tool box : on behalf of storage of for instance tools, HP gun, reels,

couplings, etc.

Depth: 600 mm.

Provisions : lockable cover with countersunk stainless steel lock,

: rubber mat.

Material : brushed stainless steel.

Location : on the right hand vehicle side.

See section "CHOSEN OPTIONS".

- Hose box : on behalf of storage of hoses and couplings.

Depth : 600 mm.

Material : brushed stainless steel. Length : as long as possible.

Provisions : drip trays with drain taps,

removable vertical stakes on the sides,securing eyes on behalf of cover bands,

: rubber mat,

: rubber cover belts.

Location : on the left hand vehicle side.

STANDARD SAFETY PROVISIONS (INCLUDED):

- Beacon light : orange, on the left rear door hinge.

Model : LED. Switch : in the cab.

- Emergency stop : on behalf of bleeding/aerating the vacuum system in case of

an emergency,

: on behalf of interrupting the hydraulic system in case of an

emergency.

Execution : pneumatically operated butterfly valve in the piping,

provided with flame returning grid,

push button on the control panel.

Including : emergency stop reel with 25 m cable and plug.
- Hose rupture safety : on behalf of the rear door and tipping cylinder.

- Rupture disk : on top of the pressure/vacuum tank.

Provisions : rupture disk DN 65,

safety relief valve, pressure gauge 0/+6 bar,

protective cover.

- Rear bumper : manually extending.

Provisions : chute,

aluminium ripple plate footboards on the lamp housings

and the bumper.

See section "CHOSEN OPTIONS".

- Catwalk : on the left hand body side.

On behalf of : access to the manhole and hose storage.

Provisions : stairs,

: rail, height 1.100 mm (incl. handle).

Including : aluminium advertisement plates on both body sides,

provided with bend.

- Repair cross beam : on behalf of safe repair jobs below the pressure/vacuum

tank in tipped position.

Execution : hinged between the auxiliary frame and lower end of the

tank.

- Clamp protection : in order to prevent suctioning/pressurizing with opened

rear door.

Provisions : indicator on one of the rear door clamps,

warning light and switch on the control box.

- **Earth reel** : vehicle grounding. Execution : manually operated.

Cable length : approx. 25 m. Provision : earth clip.

- Fire extinguisher

Brand : Ajax.

Model : powder extinguisher.

Execution : 12 kg.
Provision : plastic box.

- **Tipping sensor** : warning that the sludge tank is still in a tipped position.

Provisions : approaching switch,

red warning light in the truck cab.

- Exhaust stack signal : in order to prevent driving with raised exhaust stack.

Including : red light in the truck cab, which lights when the exhaust

stack is in vertical position.

- Rear door protection : in order to prevent the opened rear door from falling to

shut.

Execution : 1 position.

Provisions : pin with air cylinder,

control button.

HIGH PRESSURE SYSEEM, 4.1/4.6 *8.19/8.1 * 8.8b/8.13 *

- High pressure pump : plunger pump type. - Model : Speck NP 25/30-200.

Rate of flow : 31,1 l/min.
Operating pressure: 200 bar.

No. of revs : approx. 1.450 rpm.

Driving power : 12,2 kW.

Driving power : 12,2 kW.
Drive : hydraulic.

Provisions : pressure regulator, : pressure gauge.

Bypass pipe : returned from the HP pump into the water tank.

See section "CHOSEN OPTIONS".

- Clean water tank : on behalf of supply to the high pressure pump.

Volume : approx. 1.500 l.

Location : on the auxiliary frame, integrated with the service water

tank.

Material : equal to the service water tank material..

Provisions : manhole DN 400 with hinged cover,

: plexiglas sight glass Ø 40 mm, provided with ball valve in the horizontal supply on the bottom side, a Storz coupling

on the bottom side and top,

: combined filling/drain connection with 2½" ball valve and coupling (see cover sheet), equipped with blind cap with

chain,

: 2½" overflow pipe, provided with coupling (see cover

sheet), and ½" ball valve,

suction connection to the high pressure pump,

bypass connection to the HP system,

positive pressure protection by means of a nonreturn valve.

Including : level protection.

- Hose reel : on behalf of the high pressure pump.

Designed for : approx. 25 m HP hose, DN 13 (½"),

200 bar operating pressure.

Execution : manually operated, provided with handle.

Material : galvanized steel.

Provisions : ball valve,

: rotary lead-through,

ball bearings,

: HP gun with holder near the hose reel.

Including : 25 m HP hose, size 13 mm.
Location : at the left hand chassis rear.

POSITION OF COMPONENTS 12.41

- Auxiliary frame : multifunctional execution by means of heavy U profiles

equipped with groove holes with tie plates (model dependent on the chassis brand), to be mounted on any chassis brand, in combination with a flywheel or engine/

distribution PTO.

- Vacuum pump : on the auxiliary frame on the right hand side above the

chassis line, an adjustable frame on behalf of the various

angles of the different chassis brands.

- Water tanks : separate from the pressure/vacuum tank, on the front of

the auxiliary frame.

- Evacuating pipe : separable execution by means of a sleeve division with

Bauer coupling.

- Vehicle engine exhaust: depending on the applied chassis.

- **Rear mudguards** : to be supplied by the chassis supplier free of charge.

Provisions : KOKS mud flaps.

GENERAL 0.9/10.8

- Body inspection : arranged by KOKS Industry.

Execution : lighting, outline collision protection and (outline) marking

according to directive 2018/858.

- Instruction manuals

Consisting of : operating/maintenance instructions,

: drawings,: schedules,: parts lists,: certificates,

: declaration of conformity.

PRESERVATION/PAINTING 0.0 See spraying schedule for details.

CHASSIS SPECIFICATIONS

- Brand/model : MAN TGS 26.360 6x2-4 BL CH

. MAN TGS 2
- IVIAN code : Z1MVZJZN
- A-nummer : 600383007
- Fz-nummer : 1053405

- Further details : see "Truck" file in the project file.

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CHOSEN OPTIONS



KE-02-B HIGH PRESSURE KIT VARIANTS

- High pressure pump : Speck NP 25/70-140. Instead of : Speck NP 25/30-200.

Type : piston pump. Rate of flow : 70 l/min.

Operating pressure: 140 bar (set at 70 bar because of SIR regulation).

No. of revolutions: approx. 1,450 r.p.m.

Requested power : 19.2 kW. Drive : hydraulic.

Provisions : pressure regulator,

: pressure gauge.

Bypass pipe course: returned from the HP pump into the water tank.



KE-04 HYDRAULICALLY HINGED BUMPER

- Bumper : hydraulically hinged.

Instead of : manually extended bumper.

Provision : control valve,

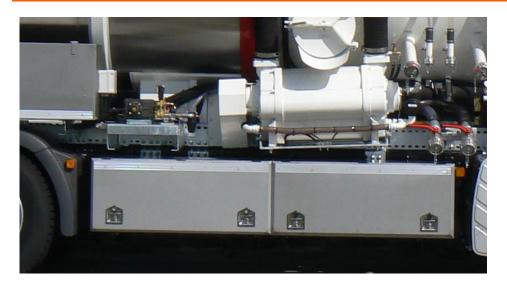
: chute, easily removable,

: lamp housings + bumper with footboards made of

aluminium ripple plate.

Markings : depending on country/destination.

Directive : conform R58-3, type KOKS.



KE-06 ADDITIONAL TOOL BOX

- Tool box : for storage of for example tools, HP gun, reels, couplings,

etc.

Material : unpainted stainless steel AISI 304 grade, the inside pickled

and superficially brushed.

Measurements : length approx. 1,000 mm (depending on the available

space),

: depth 500 mm, : height 550 mm.

Execution : upward hinged doors (opening angle approx. 160°) with

countersunk T-locks.

Including : rubber mat.

Provisions : covers with sloped edges and incl. gas struts.

Position : on the right hand vehicle side.

Quantity : 2 pieces.



KE-14 SIR KIT VEHICLE FOR HANDLING LIQUIDS

- General

Attention : various SIR provisions have already been included in the

standard quotation, however in order to clarify these

subjects they are mentioned once again.

- PED approval

Directive : Pressure Equipment Directive according to EN 97/23/EG.
On behalf of : all pressure equipment with an over pressure over 0,5 bar.
Purpose : decontrolling technical trade by harmonization of the

legislation of the EU member countries (by CE marking), : replacement of the Dutch laws with regard to pressure

equipment in construction stage, maintaining the present safety level.

Remark : mandatory with the application of a SIR kit in case the

vehicle is not ADR approved.

- Rear door clamp protection

Remark : the rear door clamps can only be opened when the

pressure/ vacuum tank is bleeded/aerated. by means of an indicator on the clamp.

Operation : by means of an indicator on the clamp.

Signal : by means of a green light on the control box.

- Remote control

On behalf of : the vacuum system.

Provisions : control box with emergency stop function,

: cable, length 25 metres, with plug.

- Closing the rear door

Purpose : operating the rear door closing function from such a

location, that the operator will always be able to survey

the vehicle rear completely.

Including : two hands control for opening as well as closing.

- Emergency stop

On behalf of : bleeding/aerating the vacuum system in case of an

emergency.

Execution : pneumatically operated shut-off valve in the piping,

: push button on the control panel,

: socket on the control panel.

Remarks : no application of an approaching switch near the ball

valve of the suction connection,

: "TANK VENTILATION" switch on the control panel.

- Rear door bolting

Clamps : hydraulically operated.

Including : 2-hands control for opening as well as closing.

- Rear door safety pin

On behalf of : protecting the opened rear door from falling to shut.

Execution : 1 position. Provisions : NCH pin,

: control button.

- Repair cross beam

On behalf of : safe repair jobs below the tipped pressure/vacuum tank.

Location : underneath the pressure/vacuum tank.

Execution : control from outside vehicle.

- Hinged exhaust stack

Size : approx. 200 mm.

Execution : pneumatically operated, automatically coming down when

the PTO is switched off,

: in raised position, the discharge opening is situated

approx. 6 metres above ground level.

Including : blind plate and bolt on the dome.

- Hinged exhaust stack signal

Consisting of : warning light in the cab, which will be activated when the

exhaust stack is in vertical position.

- Tip warning light

Location : in the cab.

Purpose : indication that the tank is in tipped position.

- Earth grounding device : IGC Premium.

Process software : health check,

calibration/virtual earth spot, load vehicle characteristic,

loop control,

: clamp monitoring.

User software : diagnose screen,

drive information.

Hardware : external built-on unit earth grounding device,

green warning light "ready for use",

: red warning light "supply",: output for switch relay.

Certification : CE-inspection.

- Earth reel 0.0

Model : IGC Premium.

Execution : manually operated.

Cable length : approx. 25 m.
Provision : earth clip.
Material : stainless steel.

- Signal light 11.4

On behalf of : earth grounding device.

Colour : green.

- Vacuum pump

Model : liquid ring vacuum pump.

Remark : obligatory when executing pressure/vacuum activities with

liquids with a flash point below 100°C (K1, K2 and K3 substances); see schedule in the SIR pressure/vacuum

manual.

- HP system

Remarks : high pressure liquid cleaning activities will have to be

executed with clean water,

: no water from the service water tank or another tank with

filthy water may be used.

- High pressure unit

Remarks : in case a pressure/vacuum truck is provided with a high

pressure unit, the pump will have to be provided with clean water from an external source or from a separate

clean water tank,

: no water from the service water tank or another tank with

filthy water may be used,

: in case the operating pressure is higher than 250 bar, or

higher than 25 bar at a pump capacity over 10 kW, the directives of the SIR manual High Pressure jetting cleaning

are applicable.



KE-24 HIGH BOXES

- **High execution** : Instead of the standard low boxes.

Quantity : 2 pieces (including the control box).

Dimensions

tool box : width 1,600 mm,

: height 960 mm,

depth at the bottom 500 mm,depth at the top 250 mm.

Provisions : 2 hinged doors,

sound lock,

stainless steel shelf.

Including : rubber mat.

Dimensions

control box : width 1,200 mm,

height 960 mm,

depth at the bottom 500 mm,depth at the top 250 mm.

Facilities : roller shutter,

: solid lock.

Material : unpainted stainless steel AISI 304 grade, pickled on the

inside and superficially brushed.



KS-01 K1/K2 SYSTEM

- K1/K2 circuit : on behalf of safe loading of substances with a flashing

point within classes 1 (K1) and 2 (K2) as described in the ADR and SIR manual, in combination with a limited vacuum.

Classes : 1 (K1) flashing point below 23°C,

: 2 (K2) flashing point between 23°C - 60°C.

Execution : two pneumatically operated butterfly valves on behalf of

suctioning K1 and K2 substances through the Koks KM vacuum pump, in order to guarantee the vacuum for K1 substances at -0,2 bar and K2 substances at 0,5 bar. The system is provided with a selector switch on the control box.

Hose type : Ohmse execution (on behalf of the K1/K2 system).



KS-03 CLAMP PROTECTION BOXES

- **Drip-trays** : around the clamps, in order to prevent spillage of product

from the tank when opening the rear door (at discharge).

Material : stainless steel.



KS-04 PNEUMATICALLY FOLDABLE RAIL

- Foldable rail : entering the platform safely.
Location : on the left-hand body side.

Design : pneumatic cylinder, instead of gas spring.

Provision : rail, height 1,100 mm.

Operation : at face height, near the stairs.



KS-06 UPPER/LOWER EXHAUST SELECTION

- **Upper/lower exhaust** : selector switch.

Execution : two pneumatically operated butterfly valves on behalf of

operating the lower and upper exhaust.

Instead of : manually closing the upper and lower exhaust.



KS-15 WALKWAY ON THE SERVICE AND CLEAN WATER TANK 11.2

- Walkway : on behalf of access to the manhole on the service and clean

water tank.

Execution : galvanized.

Including : aluminium name plate (with bend),

: folding railing, height 1,100 mm.

KS-29 FOLDING ADR DANGER CLASS SIGNS

- **Signs** : 7-piece folding ADR signs.

Material : stainless steel.
Quantity : 9 pieces.
Instead of : fixed model.

ADDITIONAL OPTIONS

- Vacuum pump : In ATEX zone 1 (internal) instead of non-ATEX.

- Exhaust : Equipped with stainless steel plate to protect for water

leakage on the exhaust. Depending on the chassis.

- Nozzle : Supply of both flat spray and round spray nozzle.

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