

# SOLUTIONS FOR **AGRICULTURE**

The NTN-SNR range for agricultural machines

**NTN**® **SNR**®

[www.ntn-snr.com](http://www.ntn-snr.com)



With You



**Türkiye Yetkili Distribütörü:**

**ARIF ALAÇAM RULMAN TIC.VE SAN.LTD.STİ**

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## WORLD NO. 3 IN BEARINGS

Expert in Product Life Cycle Management, NTN Corporation is characterised by the closeness and commitment of its teams. We think ahead to development projects in your strategic markets. Our engineers work with you to design solutions specific to your market. Our NTN and SNR brands contribute to the excellence of your machines and so support their promotion.

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## YOUR EXPERT PARTNER IN AGRICULTURE

Farmers must face a rapidly changing economic environment, with strong world competition, whilst adapting to local regulations... NTN-SNR combines committed closeness to the world leaders in agricultural machinery with perfect knowledge of users' needs. Our solutions respond to all the special requirements of agricultural machines and we support agriculture in moving towards greater performance and reliability.

## OUR SOLUTIONS FOR ALL AGRICULTURAL MACHINES

### SOIL PREPARATION



Bearings able to work in all types of conditions, for optimum soil preparation before seeding.

#### OUR ADVANTAGES:

Increased maintenance intervals due to bearings developed to resist severe environments

### SEEDING



Solutions permitting accurate sowing and reliable operation.

#### OUR ADVANTAGES:

A response adapted to all types of environment and all types of machine design.

### HAY / SILLAGE MAKING



High technology bearings permitting optimum harvesting for quality fodder.

#### OUR ADVANTAGES:

Ease of use due to our maintenance free bearings for mowers.

### HARVESTING



Reliable bearings for continuous intensive harvester work in high pollution conditions.

#### OUR ADVANTAGES:

Recognised expertise in solutions for transmissions and cutter bars

### BALING



A wide choice of bearing technology, participating in producing high quality, constant density bales.

#### OUR ADVANTAGES:

Reliable operation during continuous working periods due to high performance seals.

# NTN-SNR

## A RESPONSE TO ALL YOUR CONSTRAINTS

### SUMMARY

- Resistance to extreme pollution ..... page **5**
- Increased productivity ..... page **10**
- Respect for the environment..... page **14**
- Resistance to heavy loads, shocks and vibrations ..... page **18**



## Resistance to EXTREME POLLUTION

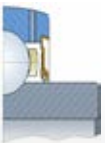




- Self-aligning insert bearings: insert bearings with a wide choice of seals to respond to all your constraints
- Ball bearings: high performance seals as standard and dedicated solutions
- Spherical roller bearings: ULTAGE performance available in a sealed version



# SELF-ALIGNING INSERT BEARINGS

## Whatever your constraint, a suitable seal...

For effective protection in a hostile environment or protection allowing a high rotation speed to be maintained, NTN and SNR self aligning insert bearings give you optimum sealing for your application. Whether for a disc stubble cultivator, a power harrow, a seed drill or a baler, there is a seal suiting your constraints

Seals for insert bearings	Description	Severe contamination (mud - sand - etc.)	Projection (pebbles, earth, etc.)	High pressure cleaning	Rotation speed (% max. speed)
	<p><b>Single lip seal</b></p> <p>Nitrile rubber single lip seal overmoulded on a metal frame.</p> <p>Available as standard on US and ES series</p>	★★★★★	★★★★★	★★★★★	100%
	<p><b>Single lip seal with deflector shield</b></p> <p>Nitrile rubber single lip seal reinforced by a metal core with an additional rotary deflector shield.</p> <p>Available as standard on UC and EX series</p>	★★★★★	★★★★★	★★★★★	100%
	<p><b>L3 triple lip seal</b></p> <p>Seal for very polluted environments: 3 lip nitrile rubber seal supported by a corrosion prevention treated sheet steel frame.</p> <p>Available on UC...L3 and EX...L3 series</p>	★★★★☆	★★★★☆	★★★★☆	30%
	<p><b>L4 labyrinth seal</b></p> <p>Seal for polluted environments, with low rotation torque.</p> <p>2 nitrile seals on corrosion prevention treated pressed steel frame forming a 3 lip + labyrinth seal system.</p> <p>Additional corrosion prevention for bearing rings.</p> <p>Available on UC2..L4 and EX2..L4 series, up to 50 mm bore diameter</p>	★★★★☆	★★★★☆	★★★★☆	40%
<p><b>AGRICULTURE Specific</b></p> 	<p><b>«AGR» technology seal: L3 + deflector shield</b></p> <p>L3 type seal for very polluted environments, reinforced by additional protection: zinc plated deflector shield shrunk onto the internal ring and fitted with a lip to seal the contact with the external ring.</p> <p>Available on UC2..AGR and EX2..AGR series, up to 50 mm bore diameter</p>	★★★★★	★★★★★	★★★★★	25%

## DEEP GROOVE BALL BEARINGS

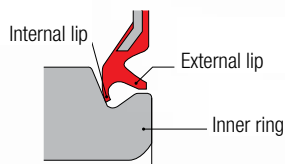
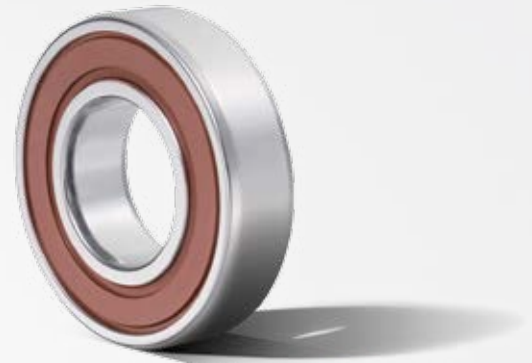
### A wide range of standard bearings ...

In open version or with non contact seals (ZZ shields / LLB seals), the 6xxx series ball bearing range is also available in the LLU or EE sealed version (contact seals).

#### **LLU technology seal:**

**Double lip nitrile contact seal with internal ring groove**

**Operating temperature: from -25°C to + 120°C**



- Excellent sealing due to the axial contact of the internal lip and the narrow passage created by the external lip at the exit from the V groove
  - high performance protection against water and dust
  - effective in retaining the grease inside the bearing
- Available from stock up to 180 mm bore diameter with identical technology whatever the bearing size
- Grease type and packing ratio adaptable to your needs

The LLU seal is recognised on the market and used successfully in numerous industrial applications, including agricultural (balers, combine harvesters)

### ... and solutions developed for the needs of the agricultural world

Reusing the proven LLU technology concept, NTN-SNR developed LLC seals to respond to the specific needs of agricultural applications, such as seed drills or mowers.

#### **LLC seal:**

**Reinforced seal based on the LLU technology concept**



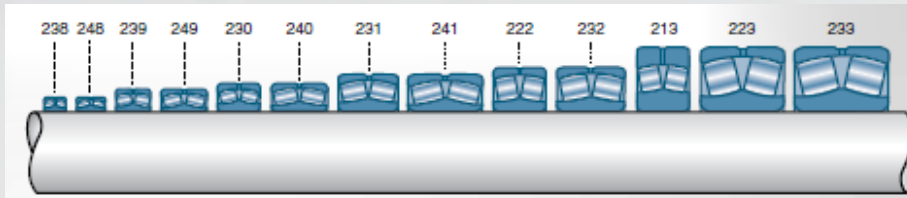
- Double lip nitrile contact seal (from -25°C to + 120°C)
- Internal ring grooves (like LLU seal)
- Overmoulded on a metal structure for protection against projection (earth, pebbles)
  - makes the bearing insensitive to shock
  - limits tearing of the seal caused by winding up plant or synthetic fibres

## SPHERICAL ROLLER BEARINGS

### Higher performance with ULTAGE bearings **ULTAGE®**

Born from the combination of «ULTIMATE» and «STAGE», the ULTAGE label distinguishes the NTN and SNR standard bearings that offer you high performance: longer service life, higher rotation speeds, lower operating costs and a better contribution to safeguarding the environment.

The NTN-SNR spherical roller bearing range benefits from the latest developments in steel and heat treatment, but also from optimisation of the internal design.



**Available range:** from 25 mm to 650 mm bore diameter (cylindrical or tapered)  
**Cage type:** steel (EA suffix) – solid brass (EM) – polyamide (EG15)

ULTAGE spherical roller bearings are particularly suited to balers applications (shaft support) and high power gearboxes.

### ...also in sealed version

For more polluted environments, like combine harvester chain conveyors, ULTAGE spherical roller bearings can be supplied in sealed versions.

#### ULTAGE sealed spherical roller bearings:

- Seal:** NBR single lip nitrile seal (EE suffix)
- Operating T°:** from -20°C to + 110°C
- Load capacity:** identical to open versions for the same bore diameter
- Misalignment:** up to +/- 0.5° without reduction in performance
- Rotation speed:** see specific catalogue
- Grease:** regreasing option with NTN-SNR Universal Lub grease
- Cage type:** available in EA steel cage version



Available on the **222xx** series (from 25 mm to 100 mm bore diameter)  
Designation: **10X222xxEAW33EE** (xx: bore diameter)  
Other series or other sizes: contact us







# OUR EXPERIENCE

## APPLICATION: PACKER ROLLER OR BAR ROLLER SUPPORT

Reference : EXFE308A05AGR



**Type:**

EX308AGR series insert bearing (without eccentric collar)  
FE series flanged unit in ductile cast iron

**Seal:**

«AGR» technology: nitrile rubber L3 seal + sealed deflector shield

**Grease:**

Klüber Staburags, filling > 60% of free volume

**Cage:**

Pressed steel

### APPLICATION REQUIREMENTS

### ▶ NTN-SNR RESPONSE

- Heavy loads and shocks

- UC3xx series insert (+35% load capacity compared to UC2xx series in 40 mm bore diameter)
- Ductile cast iron bearing unit housings

- Protection against pollution and projection
- Resistance to high pressure cleaning

- «AGR» seal: high performance triple lip seal + additional protective cover

- No regreasing

- Greased for life (filling > 60%)



**SOLUTION CHOSEN**  
by the leaders in power harrows  
and disc harrows



## Increased PRODUCTIVITY

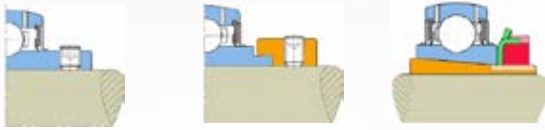
- Self-aligning insert bearings: fixing systems to ease mounting
- Double row angular contact ball bearings: higher working speeds
- Integrated hubs: integrated solutions for easier mounting



## INSERTS BEARINGS

### Fixing systems to ease mounting on the shaft

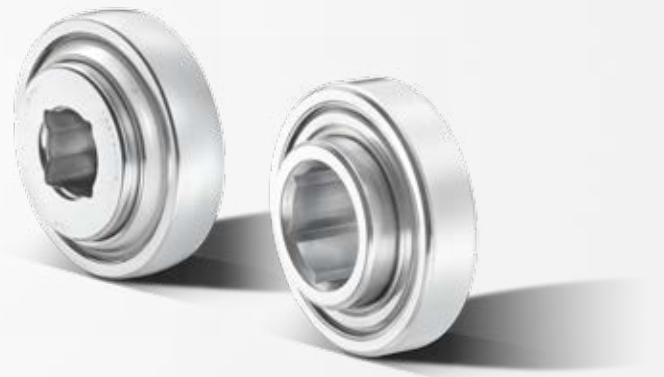
NTN and SNR insert bearings include the methods of clamping to a shaft classically used in the industry, which are:



- Clamping by Allen head grub screw
- Eccentric collar clamping
- Adapter sleeve

For agricultural applications, NTN-SNR also offers a range of insert bearings with square or hexagonal bore for easier mounting and maintenance.

These versions, available with reinforced single lip or triple lip seals, are used in series on baler pressing rollers.



## DOUBLE ROW ANGULAR CONTACT BALL BEARINGS

### The effective solution for disc mower cutting bar

The leader in Europe in vehicle wheel bearings, NTN-SNR possesses over 50 years experience in the design and manufacture of double row angular contact ball bearings (GB type).

Through its compactness, rigidity and ease of mounting the «TwinLine» product line offers an excellent technical base. It has been adapted and raised to the level of fodder harvesting machines, in particular to reach high rotation speeds (> 3000 revs / min).

Our GB «Twinline» bearings have been used successfully for over 3 decades by the world leader in haymaking equipment.



**GB «TWINLINE» bearing:**  
the best in the vehicle industry adapted to the requirements of disc mower cutting bar.

## INTEGRATED HUBS

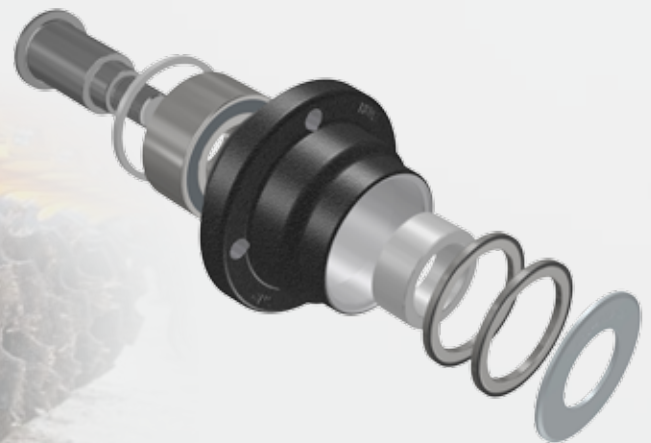
### Compact, integrated solution for easier mounting

For your disc harrows NTN-SNR dedicates integrated hubs obtaining:

- A high performance bearing solution from the vehicle industry
- Easier initial mounting and easier maintenance
- A design adaptable to your design constraints
- Reduction in the number of components to be handled in procurement

#### Hub composition:

- 1 GB «Twinline» bearing equipped with cassette type seals
- 1 ductile cast iron housing
- 1 shaft with or without nut
- Additional cassette type seal for optimum protection of the hub





# OUR EXPERIENCE

## APPLICATION: DISC MOWER CUTTING BAR

Référence : GB44386S01



**Type:**

Double row angular contact ball bearing – sealed

**Dimensions:**

d 35 x D 72 x B 33 (mm)

**Weight:**

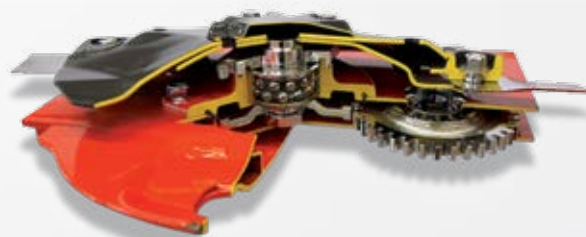
0.570 kg

**Grease:**

Greased for life

**Cage:**

Reinforced polyamide fibre glass



APPLICATION REQUIREMENTS	▶ NTN-SNR RESPONSE
• Easy mounting and maintenance	Preset axial clearance / greased for life
• High cutting speed	Specific cassette seal for rotation speed > 3000 revs/min
• Protection against liquid and solid pollution	«Agri» specific cassette seal



**HIGHER WORKING SPEED**  
and ease of mounting



## Respect for THE ENVIRONMENT

- Bearings with solid lubrication: no grease leakage, no contamination of the external environment
- Centralised greasing: guarantees having the required quantity of grease, in the right place



Experts  
& Tools

## BEARINGS WITH SOLID LUBRICATION

### Solid lubrication: the zero leak and zero maintenance solution

Bearings with solid lubrication are manufactured with a special grease, solidified after injection, whose property is to retain a greater quantity of oil than standard grease, needed for lubrication of the bearing in operation.

#### ITS ADVANTAGES:

- No grease leakage, no contamination of the external environment
- Maintenance free
- Allows an increase in the efficiency of sealed bearings
- Excellent resistance to centrifugal forces and vibrations
- Lower rotation torque than a bearing with standard grease

Available in 3 versions:

- General usage: NTN LP03
- High temperature: NTN LP05
- Food use: NTN LP09 (for use with stainless steel bearings)

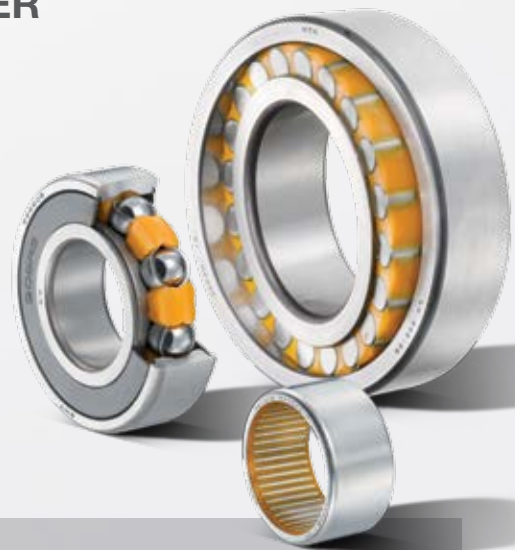
Type (suffix)	LP03	LP05	LP09
<b>Temperature range</b>	from -20°C to +80°C (+60°C continuous)	from -20°C to +120°C (+100°C continuous)	from -10°C to +100°C (+80°C continuous)

### SOLID LUBRICATION IS OFFERED OVER A LARGE PART OF OUR RANGE...

- Ball bearings (6xxx series) and self aligning insert bearings
- Needle roller bearings and cam followers
- Spherical roller bearings

#### ...IN SEVERAL VARIANTS

- Partial («Spot pack») or complete («Full pack») filling
- Bearing in 100Cr6 or stainless steel
- Open or sealed bearings



#### Bearings with solid lubrication

are particularly adapted to applications necessitating prolonged life whilst preserving the external environment.

This is the case for the cam followers used for guiding piston of high density baler.

## CENTRALISED LUBRICATION SYSTEMS \*

### The guarantee of having the necessary quantity of grease in the right place

Good bearing lubrication is essential to prolong its life. Inappropriate lubrication is at the origin of 55% of premature bearing failures.

Centralised greasing is also an effective solution for controlling your grease consumption and avoiding waste.

### Centralised greasing: a response to all your needs

#### ELECTRIC CENTRALISED GREASING

- Independent pump, plugged into the machine,
- Free reservoir filling with filling KIT,
- Easy installation («plug and play»).



#### **BRAVO model:**

- from 1 to 3 pumping elements,
- compatible with greases (NLGI 2 max.) or mineral oils (40cSt min.).

#### **POLIPUMP model:**

- up to 35 pumping elements,
- compatible with greases (NLGI 2 max.).



#### HYDRAULIC CENTRALISED GREASING

- Connection to the machine's hydraulic circuit,
- Functions with 400 g grease cartridges: a simple, clean solution,
- Design and installation based on your specifications,
- Adapted to complex configurations.



### Experts & Tools



Our Experts & Tools division, specialising in maintenance and lubrication solutions, will support you in designing the most suitable installation for your needs, including the choice and supply of all associated items (distributors, hoses, connectors).





# OUR EXPERIENCE

## APPLICATION: FIXED CHAMBER BALERS

### 37 point centralised greasing system



#### Composition:

- 280 bars BRAVO pump
- 1 primary distributor: 4 outlets
- 4 secondary distributors
- Hoses and connectors
- 1 electrical connector

#### Dimensions:

8 m distance between the pump and the furthest point to be greased

APPLICATION REQUIREMENTS	▶ NTN-SNR RESPONSE
<ul style="list-style-type: none"> <li>The required quantity of grease, in the right place - reduced waste</li> </ul>	<ul style="list-style-type: none"> <li>BRAVO pump – capacity 2 kg – 280 bars</li> <li>Precise program – based pump control</li> </ul>
<ul style="list-style-type: none"> <li>Reliable operation</li> </ul>	<ul style="list-style-type: none"> <li>IP65 protection with electronic control and protection in series</li> </ul>
<ul style="list-style-type: none"> <li>Easy to mount on the customer assembly line</li> </ul>	<ul style="list-style-type: none"> <li>Ready to install pump + complete KIT of preconnected hoses and distributors</li> </ul>
<ul style="list-style-type: none"> <li>Specific electrical connector</li> </ul>	<ul style="list-style-type: none"> <li>Installation design based on customer requirement, for more flexibility</li> </ul>



**RESPECT FOR THE ENVIRONMENT:** the required quantity of grease, in the right place



## Resistance to HEAVY LOADS, SHOCKS AND VIBRATIONS

- No compromise in our choice of steels,
- Bearing units: better shock resistance with ductile cast iron housings,
- Tapered roller bearings: case hardened steel available over the whole range,
- Four point contact ball bearing: high rigidity solution for seed drill discs.



## CHOICE OF STEELS

NTN-SNR makes no compromises in the choice of steels, an essential component in the reliability and longevity of our bearings, and uses only extreme purity vacuum degassed steels.



On all our ranges, 100 years experience in improving materials are a guarantee of confidence, in all operating conditions:

- Heavy loads,
- Shock and vibrations,
- Pollution,
- Degraded lubrication.

For type 100Cr6 through hardened steels or 4T case hardened steels, but also for cast iron housing of bearing units, our specifications and approval processes guarantee the best performance, adapted to each product range.

## BEARING UNITS

### Ductile cast iron housings to increase shock resistance

As a complement to the great diversity of bearing unit housings available in FG20 or FG25 grey cast iron, we offer ductile cast iron versions on request (included for small runs).

#### Ductile cast iron:

- Spheroidal graphite cast iron (example: EN-GJS-500-7),
- Bearing units: from + 30 to + 80 % compared to grey cast iron housings,
- Better shock resistance.

This material is perfectly suited to applications subject to high stone projection such as support rollers on disc harrows , power harrows and seed drills.



**Note:** pillow blocks housing and flanged housing are also available in stainless steel or thermoplastic versions for food applications.



## TAPERED ROLLER BEARINGS

One of the largest ranges on the market...

NTN-SNR offers one of the largest ranges of single row tapered roller bearings, for both METRIC and INCH dimensions.

To respond to the needs of the leaders in vehicle, agricultural and construction equipment transmissions, NTN-SNR has developed high performance case hardened steel bearings, now available for the majority of the range.



...available in case hardened steel

### «4T» case hardened steel

«4T» bearings are particularly suitable for operation in the presence of shocks, due to:

- A case and surface hardened layer for longer life
- Greater core resilience for better shock absorption



#### To identify an NTN-SNR case hardened steel bearing:

Prefix **4T-**  
Ex : 4T-32011X  
4T-JLM104948/JLM104910

#### Range available in case hardened steel:

##### METRIC dimensions:

- Standard up to ~ 70 mm bore diameter
- As option above this

##### INCH dimensions:

- 100% of the range



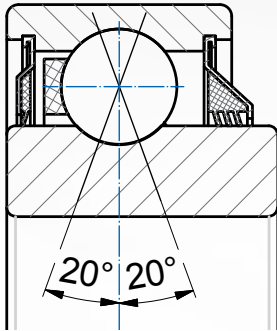
«4T» tapered roller bearings are perfectly adapted for power harrow tine supports.



## 4-POINT CONTACT BALL BEARINGS

### High rigidity for your seed drill discs

NTN-SNR has developed 4 point contact ball bearings to respond to the specific needs of seed drill discs, which are:



- High rigidity, a guarantee of the accuracy of sowing and the durability of the disk
- Compact design to participate in limiting on board masses

This 4-point contact design provides increased reliability compared to radial contact versions.

#### Product that can be adapted to your specifications in terms of:

- Dimensions
- Type of sealing
- Grease quantity and type
- Interchangeability with market solutions

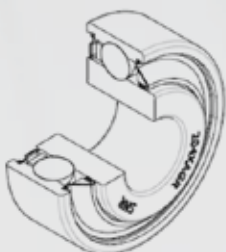




# OUR EXPERIENCE

## APPLICATION: SEED DRILLS DISC

Reference : 204XAGR



**Type:**

4-point contact ball bearings with 3 lips seal on one side

**Dimensions:**

d 16.027 x D 45.225 x B 15.494 / 18.669 mm

**Weight:**

0.120 kg

**Grease:**

Shell Alvania RL3, filling from 60 to 80 %

**Cage:**

Glass fibre reinforced polyamide

### APPLICATION REQUIREMENTS

### ▶ NTN-SNR RESPONSE

• Rigid disc and compact design

4-point contact ball bearings

• Protection against pollution

High performance triple lip seal

• No regreasing

Greased for life (filling > 60%)

• Universal spare part

The 204XAGR replaces all solutions on the market



**HIGH RIGIDITY**  
Compact design



**NTN**® **SNR**®

[www.ntn-snr.com](http://www.ntn-snr.com)



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The NTN-SNR range for agricultural machinery



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