

Installation Instructions

18SP525—Install Air Compressor Coolant Plumbing Kit 23528658 on Series 50 or Series 60 Engine

Introduction

Air compressor coolant plumbing kit 23528658 is intended for installation on a Series 50® or Series 60® diesel-fueled engine using a Bendix® Tu-Flo® 750 air compressor, part number 23522123 or 23516841. This kit consists of the items listed in Table 1.

Item No.	Part Number	Qty.	Description
1	8924220	1	Elbow, 90 Degree
2	23528659	1	Hose Assembly (Short)
3	23528660	1	Hose and Tube Assembly (Long)
4	23528937	2	P-Clip, 1/2 In. Dia. Hose
5	11509512	1	Bolt, M8 – 1.25 X 25.0 L.
6	5141766	1	Spacer
7	5114210	1	Bracket, Clip Support (flat)
8	11509511	1	Bolt, M8 – 1.25 X 20.0 L.
9	11507036	1	Nut, M8
10	23526869	1	Fitting, 3-Way Water Pump
11	23511573	1	Plug, 3/4 In. NPTF Pipe
12	23511572	1	Plug, 1/2 In. NPTF Pipe
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Table 1. Components of Kit 23528658

Installation

Install coolant plumbing kit components as follows:



CAUTION:

To avoid injury from hot surfaces, allow engine to cool before removing any component. Wear protective gloves.



CAUTION:

To avoid injury from accidental engine start-up while servicing the engine, disconnect/disable the starting system.

1. With the engine at ambient temperature (cool to the touch) and the starting system disconnected/disabled, drain the engine coolant into a suitable clean container. If the coolant is not to be reused, dispose of it in an environmentally responsible manner, according to state and/or federal (EPA) recommendations.
2. Inspect the area around the rear face of the water pump. The *inboard* 3/4 in.-14 port on the pump *must* be accessible to allow installation of the 3-way tee fitting (item 10).
3. If the inboard 3/4 in.-14 water pump rear face plug is accessible, remove the plug and install the 3-way fitting (Item 10) into the port. The smaller, externally threaded end of the 3-way fitting should point downward when installed. See Figure 1. If this port is occupied, determine if enough space is available to reorient existing plumbing (connected to either port) into the rear of the 3-way fitting when it is installed.
4. Install the removed plug, or the 3/4 in. plug provided (Item 11), into the end of the 3-way fitting.

5. Install the short hose assembly (Item 2) by loosely attaching the 90-degree female-threaded end of the tube to the male threaded end on the 3-way fitting. See Figure 2.
6. Remove the coolant outlet hose between the air compressor and engine cylinder head, along with associated P-clip(s) and securing clamp(s). Discard the hose and clips.
7. Remove the straight coolant-outlet fitting from the air compressor head and install the 90-degree brass elbow provided (Item 1) in its place. Orient the elbow to the 9 o'clock position. See Figure 3.
8. Remove the 45-degree, brass coolant inlet elbow from the left-rear area of the engine cylinder head near the intake manifold. Install the 1/2 in. cylinder head plug provided (Item 12) in its place. See Figure 4.
9. Viewing the engine from the gear case side, determine if the power take-off (PTO) cover plate retaining bolt in the 7 o'clock position is accessible for removal. See Figure 5. Some power steering pump installations may prevent access to this bolt. If this is the case, remove the hydraulic pump, following the manufacturer's recommendations for removal. After removing the 7 o'clock position bolt, mark the bolt head with colored ink and retain for reuse.
10. A guard is installed directly behind the vibration damper. Remove the bolt on the left side of the guard and discard. See Figure 5.
11. Slide the long hose and tube assembly provided (Item 3) behind the crankshaft-mounted vibration damper so that the flexible hose end is on the air compressor side of the engine. See Figure 6.
12. Install the two P-clips provided (Item 4) onto the hose and tube assembly. The curved side of the clips *must* face inboard to ensure the tube is held close against the engine.
13. Loosely connect the hose fitting on the flexible end of the hose and tube assembly to the coolant outlet elbow (Item 1) installed in the air compressor head.
14. Loosely connect the tube fitting on the opposite end of the hose and tube assembly to the female threaded end of the short hose assembly.
15. Insert the longer M8 bolt (Item 5) through the hole on the square side of the clip support bracket (Item 7) and then through the spacer (Item 6). Insert the shorter M8 bolt (Item 8) through the rear hole on the rounded edge of the bracket and through the P-clip. Secure with the M8 nut (Item 9). The rounded side of the P-clip *must* face the engine. Attach this assembly loosely to the left guard support bolt location. Orient the bracket to the 8 o'clock position as viewed from the engine gear case. See Figure 7. Torque bolt and nut to 34 N•m (25 lb-ft).
16. Using the bolt previously removed from the PTO cover plate (and marked with chalk), install the P-clip in the 7 o'clock position on the cover plate. Torque bolt to 34 N•m (25 lb-ft).
17. Secure air compressor cooling system plumbing tightly by applying 54 N•m (40 lb-ft) to the threaded interface between the 3-way fitting and the short hose assembly. Then apply 54 N•m (40 lb-ft) to the threaded connection between the short hose and the long hose and tube assembly. Finally, secure the long hose and tube assembly to the 90-degree elbow on the compressor with a torque of 54 N•m (40 lb-ft).
18. When plumbing installation is complete, review the system to ensure components have adequate clearance with all other parts (belts, bolts, etc.).

NOTICE:

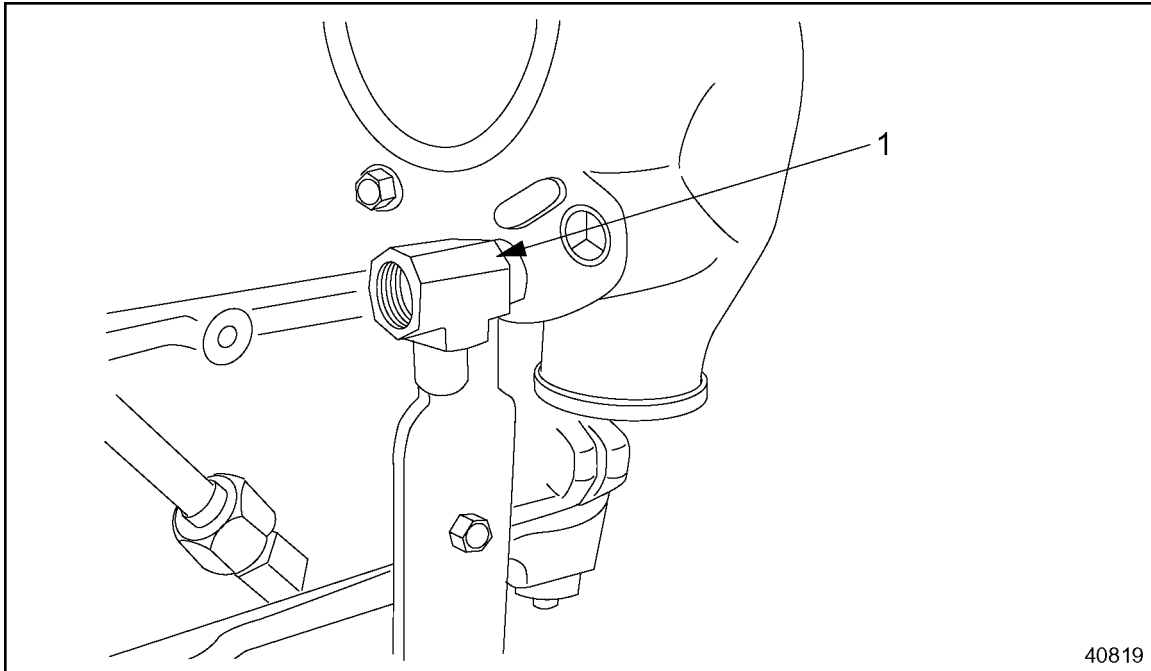
When tightening the connection between the long hose assembly and the 90-degree elbow, ensure no contact can occur between the alternator oil drain hose and the installed hose and tube assembly. When securing the 3-way fitting to the short hose assembly, confirm that hose orientation does not permit contact with the engine water pump inlet hose. Contact between hose/tube surfaces may lead to hose abrasion, which could result in coolant leakage and severe engine damage.

NOTICE:

Improperly installed P-clips may allow contact with the crankshaft-mounted viscous damper, resulting in tube assembly damage.

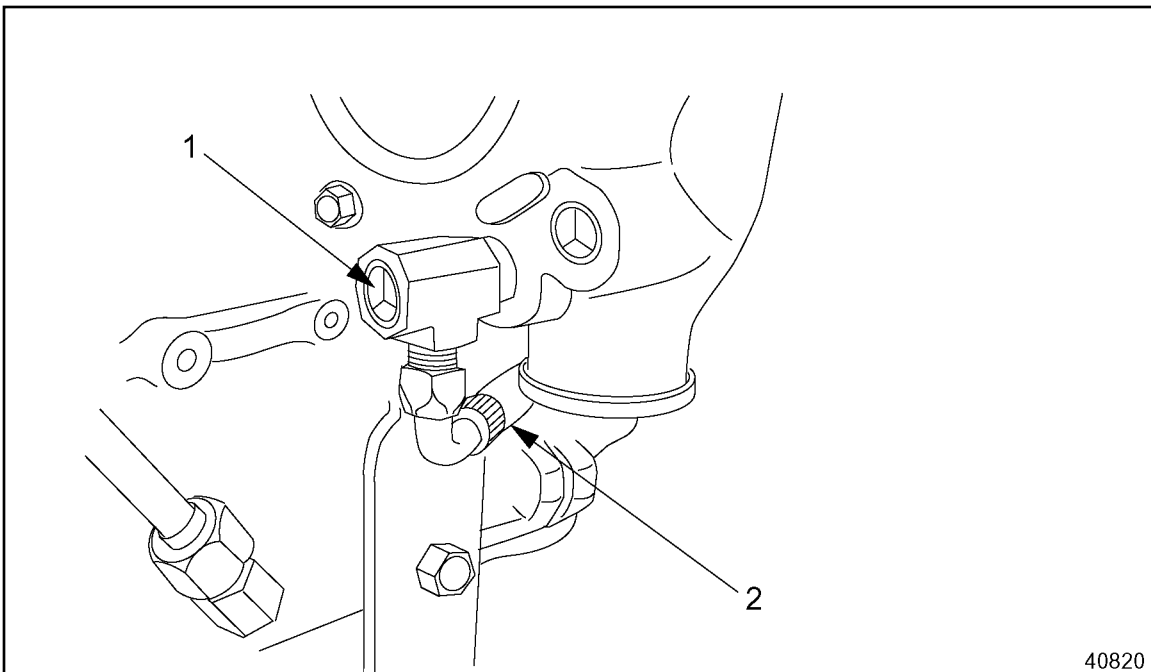
19. Refill the engine cooling system with the required coolant.

20. Reconnect engine-starting power, start the engine, and run it to expel entrapped air and confirm that no leaks exist. Add make-up coolant as required to bring it to the proper level within the engine.



1. Fitting, 3-Way

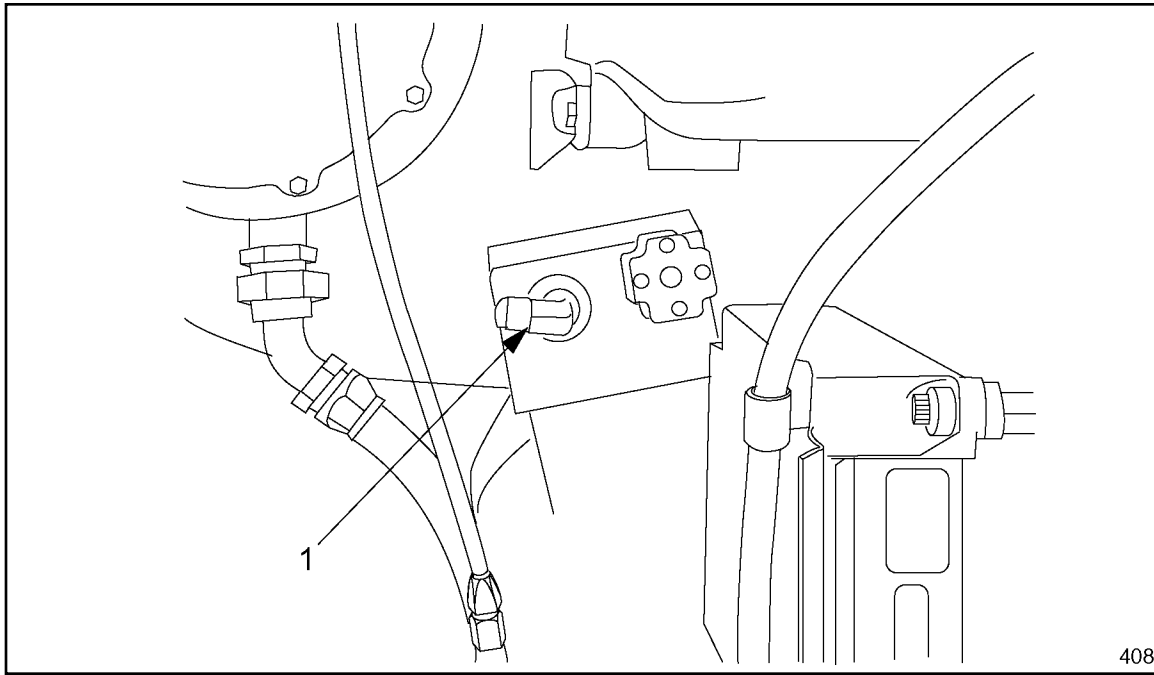
Figure 1. Properly Installed 3-Way Water Pump Fitting



1. Plug

2. Hose Assembly

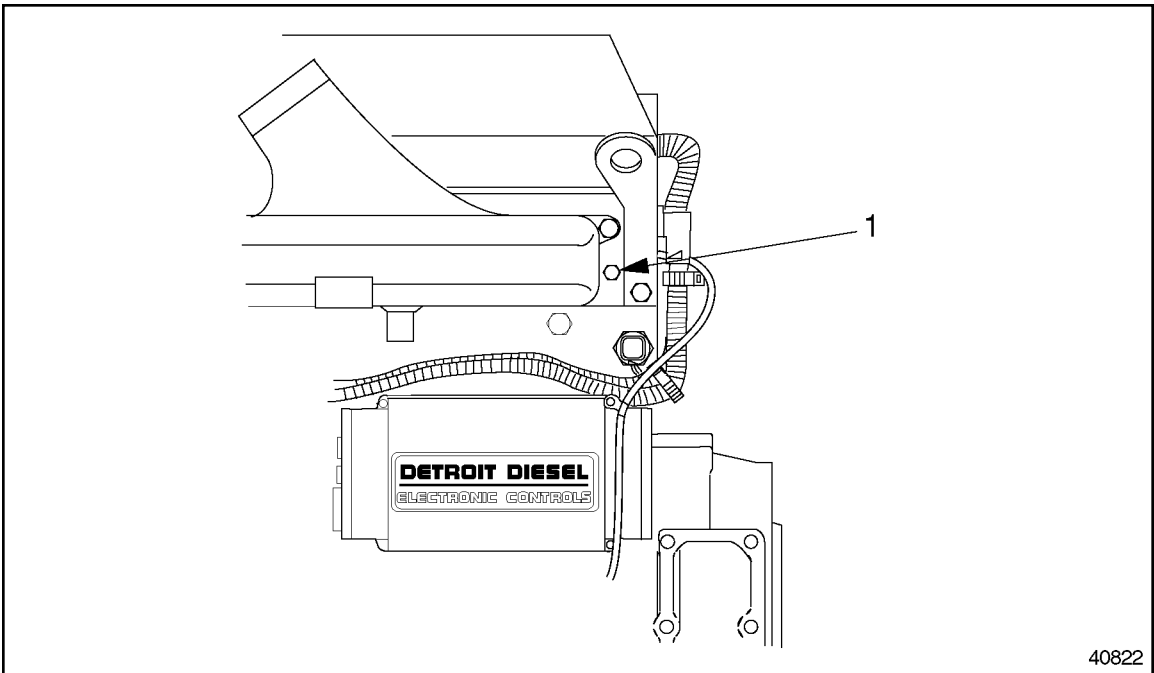
Figure 2. 3-Way Fitting with Hose Assembly and Plug Installed



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1. Elbow, Coolant Outlet

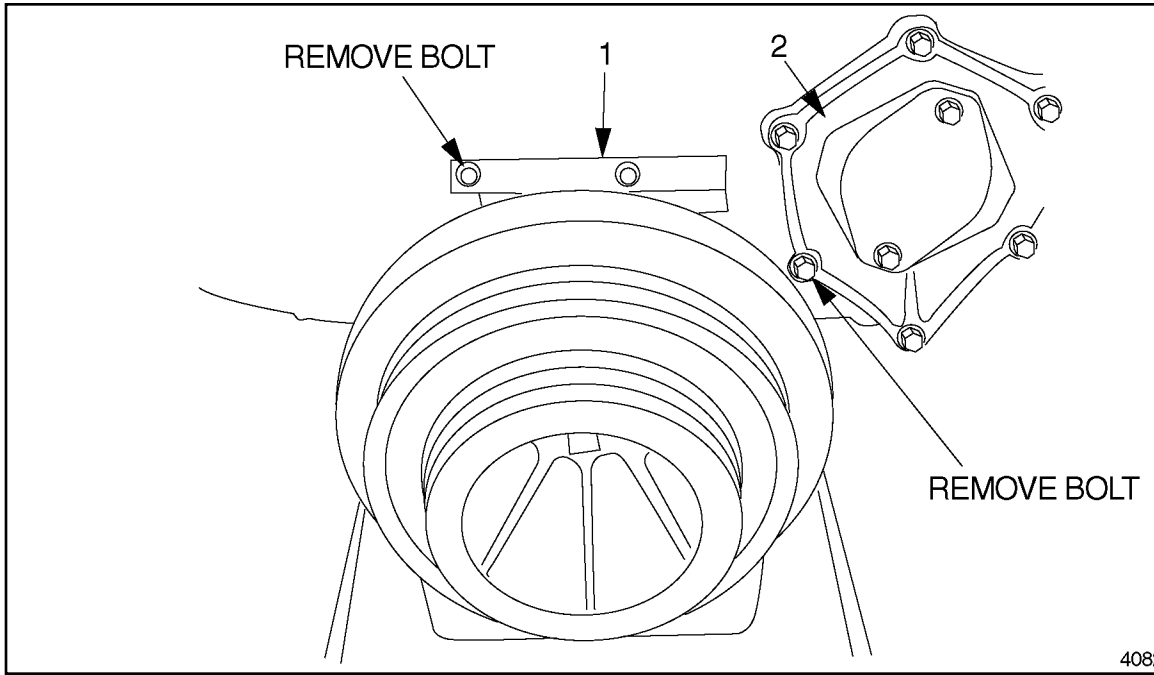
Figure 3. Properly Installed Elbow



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1. Plug

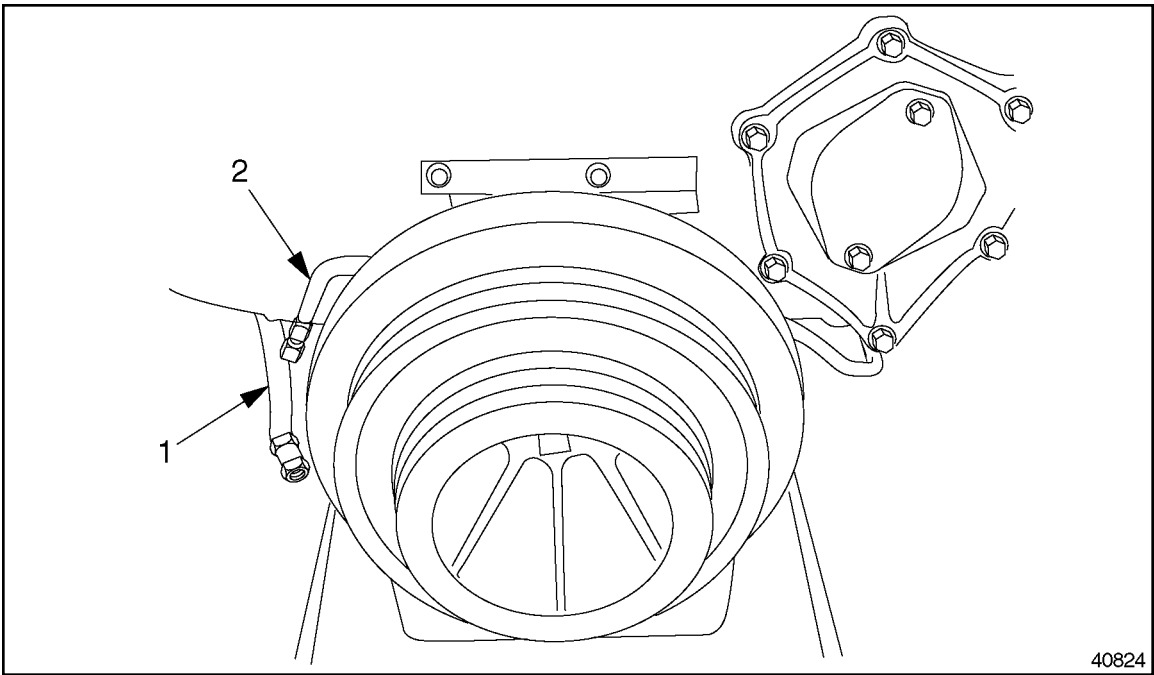
Figure 4. Properly Installed Plug



1. Guard

2. Power Take-Off Cover Plate

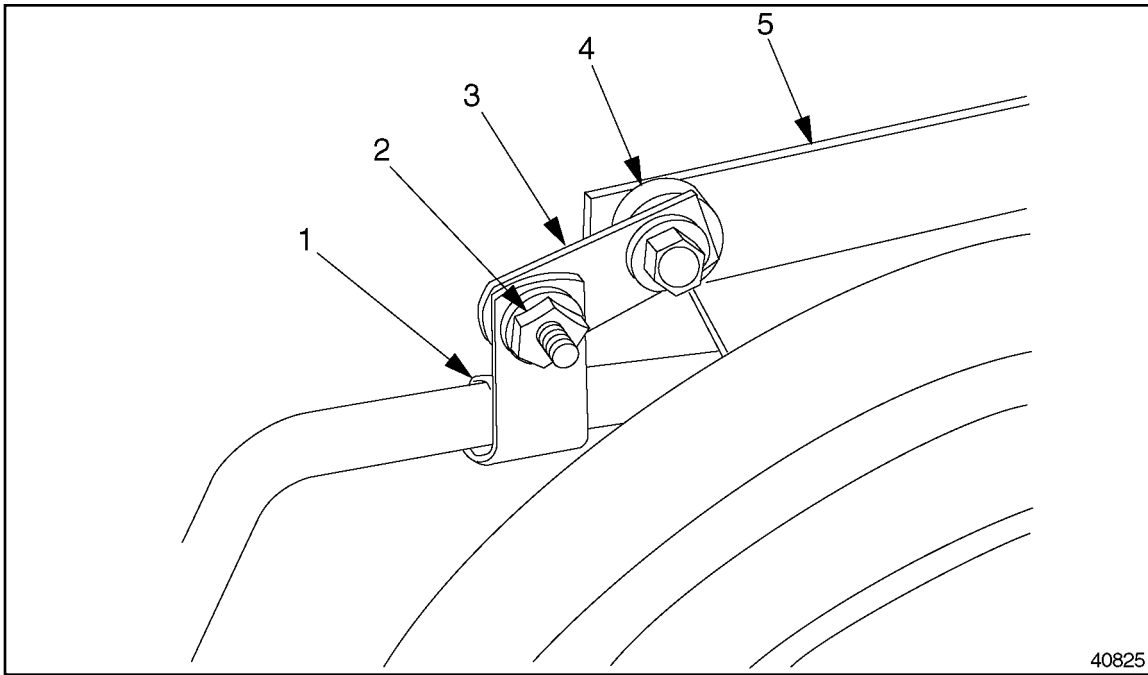
Figure 5. Locations of Removed Bolts



1. Short Hose Assembly

2. Long Hose and Tube Assembly

Figure 6. Hose and Tube Assembly Location



- 1. P-Clip
- 2. Nut
- 3. Support Bracket
- 4. Spacer
- 5. Guard

Figure 7. Properly Installed P-Clip and Clip Support Bracket (Curved Side of Clip Faces Engine)

DETROIT DIESEL



13400 Outer Drive, West, Detroit, Michigan 48239-4001
Telephone: 313-592-5000
www.detroitdiesel.com

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