



Fisher Engineering

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**90750, 90800, 90850, 90900
93800, 93900, 97400**

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HD2™ and HDX™ Skid Steer Snowplows

HD2 Blade Assembly 90750, 90800, 90850, 90900

HDX Blade Assembly 93800, 93900

A-Frame/Attachment Plate & Hydraulics 97400

Installation Instructions

⚠ CAUTION

Read this document before installing the snowplow.

⚠ CAUTION

See your FISHER® outlet/website for specific vehicle application recommendations before installation.

SAFETY DEFINITIONS

⚠ WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious personal injury.

⚠ CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTE: Indicates a situation or action that can lead to damage to your snowplow and vehicle or other property. Other useful information can also be described.

WARNING/CAUTION AND INSTRUCTION LABELS

Become familiar with and inform users about the warning and instruction labels on the back of the blade.

NOTE: If labels are missing or cannot be read, see your sales outlet.

**Instruction Label
(to be applied by snowplow installer)**

Warning/Caution Label

⚠ WARNING

Lower blade when vehicle is parked.

Do not exceed GVWR or GAWR including blade and ballast.

⚠ CAUTION

Read Owner's Manual before operating or servicing snowplow.

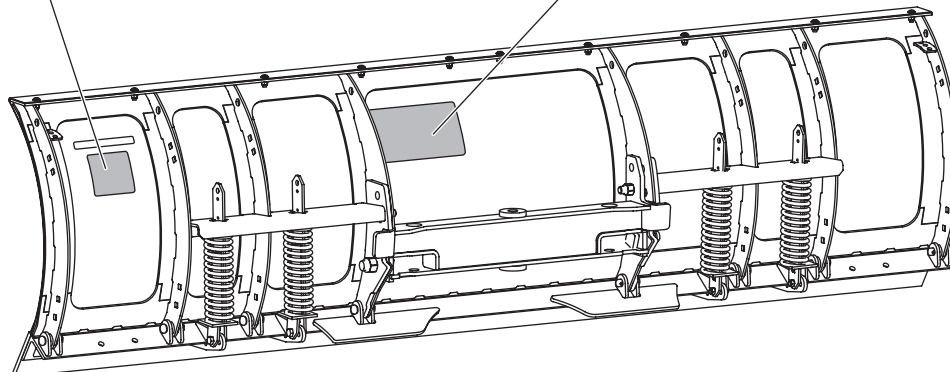
Transport speed should not exceed 45 mph (72 km/h). Further reduce speed under adverse travel conditions.

Plowing speed should not exceed 10 mph (16 km/h).

See your sales outlet/Web site for specific vehicle application recommendations.

Attach	Detach
<p>Read Owner's Manual for Complete Instructions.</p>	<p>Read Owner's Manual for Complete Instructions.</p>
<p>Follow skid steer labeling and Owner's Manual instructions.</p> <ul style="list-style-type: none"> Position the skid steer close to the snowplow and align the mount points on the skid steer plate with the snowplow attachment plate. Tilt the skid steer plate forward and position the top edge of the plate under the receiving pocket on the top edge of the snowplow attachment plate. Slowly raise the arms on the skid steer and tilt the skid steer plate toward the cab until the snowplow attachment plate is flush with the skid steer plate. Turn the engine OFF. Engage both locking levers on the skid steer by rotating each handle 90° into a horizontal position. The skid steer locking levers shall insert into the snowplow lever receiving holes. Attach all hydraulic hoses on the snowplow to the auxiliary hydraulic connections located on the skid steer. On some skid steer models, it may be necessary to initiate an auxiliary hydraulic switch on the skid steer. 	<p>WARNING: Keep fingers away from snowplow and skid steer pinch points.</p> <ul style="list-style-type: none"> Lower the snowplow on a flat, level surface and turn the engine OFF. Disconnect all hydraulic hoses on the snowplow from the auxiliary hydraulic connections located on the skid steer. Disengage both locking levers on the skid steer by rotating each handle 90° into a vertical position. The skid steer locking levers shall withdraw from the snowplow lever receiving holes. Turn the engine ON. Slowly lower the arms on the skid steer and tilt the skid steer plate forward away from the cab until the top edge of the skid steer plate clears the receiving pocket on the top edge of the snowplow attachment plate. Back the skid steer away slowly.

U.S. Patents 5,638,818; 5,899,007; 6,353,470; 6,468,549; 6,526,877; 6,711,837; 6,928,757; 6,944,976.
 7,400,058; 7,681,154; 7,727,576; 7,797,859; CAN Patents 2,184,922; 2,225,783; 2,354,257; 2,350,038; 2,632,102; 2,630,552; and other patents pending.



SAFETY PRECAUTIONS

Improper installation and operation could cause personal injury and/or equipment and property damage. Read and understand labels and the Owner's Manual before installing, operating or making adjustments.

⚠ WARNING

Lower the blade when the vehicle is parked. Temperature changes could change hydraulic pressure, causing the blade to drop unexpectedly or damaging hydraulic components. Failure to do this could result in serious personal injury.

⚠ WARNING

The driver shall keep bystanders clear of the blade when it is being raised, lowered or angled. Do not stand between vehicle and blade or within 8 feet of a moving blade. A moving or falling blade could cause personal injury.

⚠ WARNING

Keep hands and feet clear of the blade and A-frame when mounting or removing the snowplow. Moving or falling assemblies could cause personal injury.

⚠ WARNING

Do not exceed GVWR or GAWR including the blade and ballast. The rating is found in the OEM's owner's manual.

⚠ WARNING

Remove blade assembly before placing vehicle on hoist.

HYDRAULIC SAFETY

⚠ WARNING

Hydraulic fluid under pressure can cause skin injection injury. If you are injured by hydraulic fluid, get medical attention immediately.

- Always inspect hydraulic components and hoses before using. Replace any damaged or worn parts immediately.
- If you suspect a hose leak, DO NOT use your hand to locate it. Use a piece of cardboard or wood.

PERSONAL SAFETY

- Remove the ignition key and put the vehicle in park or in gear to prevent others from starting the vehicle during installation or service.
- Wear only snug-fitting clothing while working on your vehicle or snowplow.
- Do not wear jewelry or a necktie, and secure long hair.
- Wear safety goggles to protect your eyes from battery acid, gasoline, dirt and dust.
- Avoid touching hot surfaces such as the engine, radiator, hoses and exhaust pipes.
- Always have a fire extinguisher rated BC handy, for flammable liquids and electrical fires.

FIRE AND EXPLOSION

⚠ WARNING

Gasoline is highly flammable and gasoline vapor is explosive. Never smoke while working on vehicle. Keep all open flames away from gasoline tank and lines. Wipe up any spilled gasoline immediately.

Be careful when using gasoline. Do not use gasoline to clean parts. Store only in approved containers away from sources of heat or flame.

CELL PHONES

A driver's first responsibility is the safe operation of the vehicle. The most important thing you can do to prevent a crash is to avoid distractions and pay attention to the road. Wait until it is safe to operate Mobile Communication Equipment such as cell phones, text messaging devices, pagers or two-way radios.

VENTILATION

WARNING

Vehicle exhaust contains lethal fumes. Breathing these fumes, even in low concentrations, can cause death. Never operate a vehicle in an enclosed area without venting exhaust to the outside.

BATTERY SAFETY

CAUTION

Batteries normally produce explosive gases, which can cause personal injury. Therefore, do not allow flames, sparks or lit tobacco to come near the battery. When charging or working near a battery, always cover your face and protect your eyes, and also provide ventilation.

- Batteries contain sulfuric acid, which burns skin, eyes and clothing.
- Disconnect the battery before removing or replacing any electrical components.

NOISE

Airborne noise emission during use is below 70 dB(A) for the snowplow operator.









VIBRATION

Operating snowplow vibration does not exceed 2.5 m/s² to the hand-arm or 0.5 m/s² to the whole body.

TORQUE CHART

CAUTION

Read instructions before assembling. Fasteners should be finger tight until instructed to tighten according to the torque chart. Use standard methods and practices when attaching snowplow, including proper personal protective safety equipment.

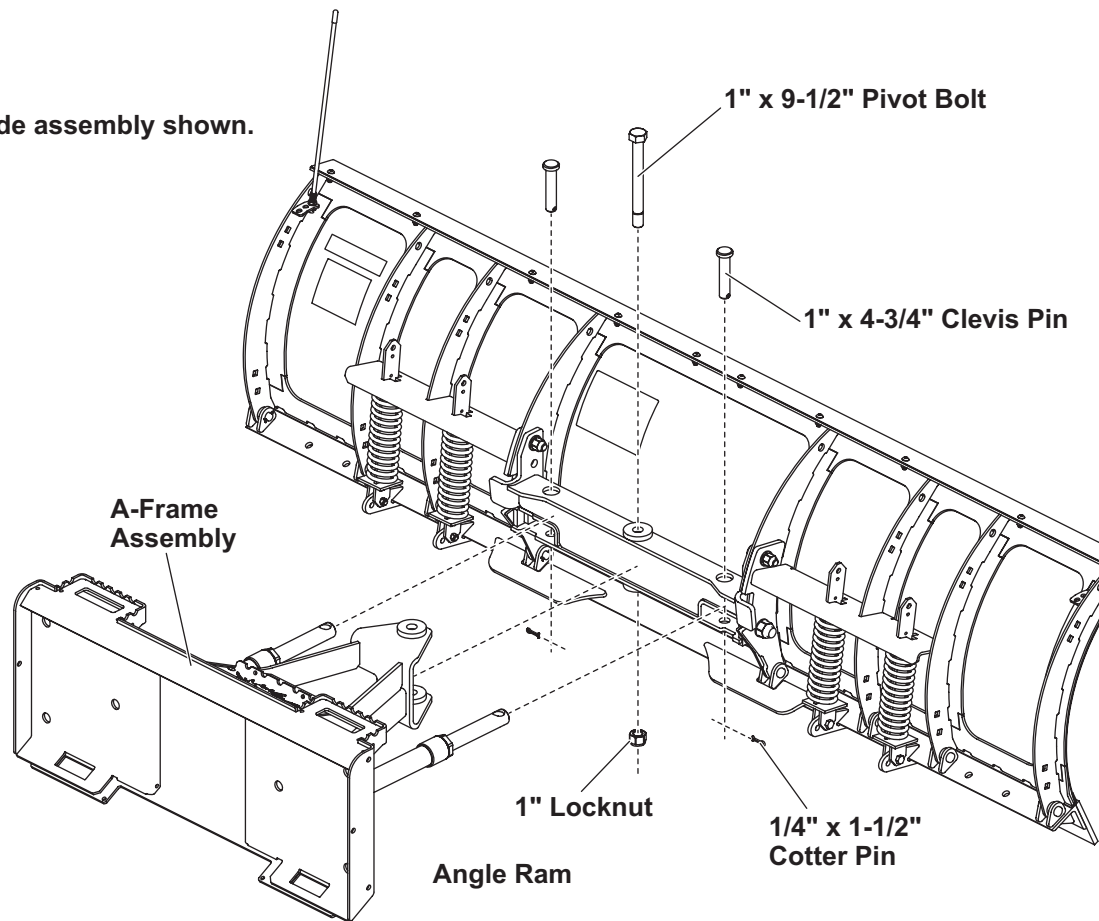
Recommended Fastener Torque Chart					
Inch Fasteners Grade 5 and Grade 8					
Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	 Grade 5	 Grade 8		 Grade 5	 Grade 8
1/4-20	8.4	11.9	9/16-12	109	154
1/4-28	9.7	13.7	9/16-18	121	171
5/16-18	17.4	24.6	5/8-11	150	212
5/16-24	19.2	27.3	5/8-18	170	240
3/8-16	30.8	43.6	3/4-10	269	376
3/8-24	35.0	49.4	3/4-16	297	420
7/16-14	49.4	69.8	7/8-9	429	606
7/16-20	55.2	77.9	7/8-14	474	669
1/2-13	75.3	106.4	1-8	644	909
1/2-20	85.0	120.0	1-12	704	995
Metric Fasteners Class 8.8 and 10.9					
Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	 Class 8.8	 Class 10.9		 Class 8.8	 Class 10.9
M6 x 1.00	7.7	11.1	M20 x 2.50	325	450
M8 x 1.25	19.5	26.9	M22 x 2.50	428	613
M10 x 1.50	38.5	53.3	M24 x 3.00	562	778
M12 x 1.75	67	93	M27 x 3.00	796	1139
M14 x 2.00	107	148	M30 x 3.50	1117	1545
M16 x 2.00	167	231	M33 x 3.50	1468	2101
M18 x 2.50	222	318	M36 x 4.00	1952	2701
These torque values apply to fasteners except those noted in the instructions.					

BLADE AND A-FRAME ASSEMBLY

NOTE: For easier assembly, skid steer and all snowplow components should be on a smooth, level, hard surface, such as concrete.

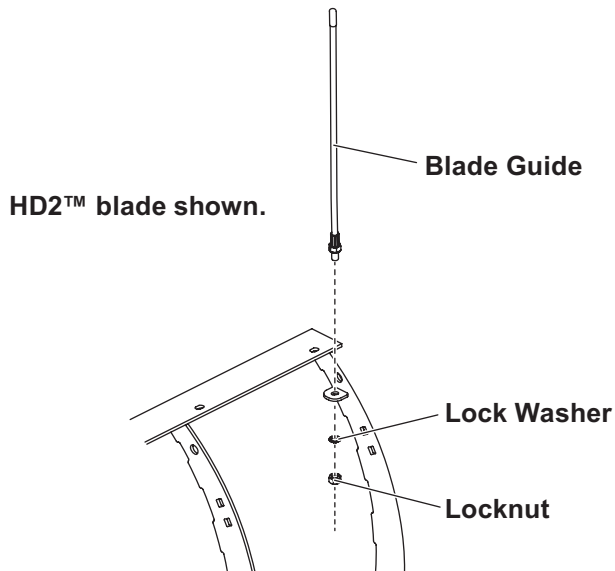
1. Set aside the blade guides and parts bag.
2. Remove the packaging hardware. Remove the blocking and hardware securing the A-frame to the pallet.
3. Align the pivot-bolt hole on the A-frame with the pivot-bolt hole on the blade.
4. Install the 1" x 9-1/2" pivot bolt from the top. Secure with a 1" locknut and tighten as much as possible while still allowing the A-frame to pivot.
5. Remove the protective packaging from the angle rams.
6. Align the angle ram rods with the angle ram holes on the blade. Attach using two 1" x 4-3/4" clevis pins, installed from the top. Secure with 1/4" x 1-1/2" cotter pins. Discard the flat washers packaged with the clevis pins and cotters.

HDX™ blade assembly shown.



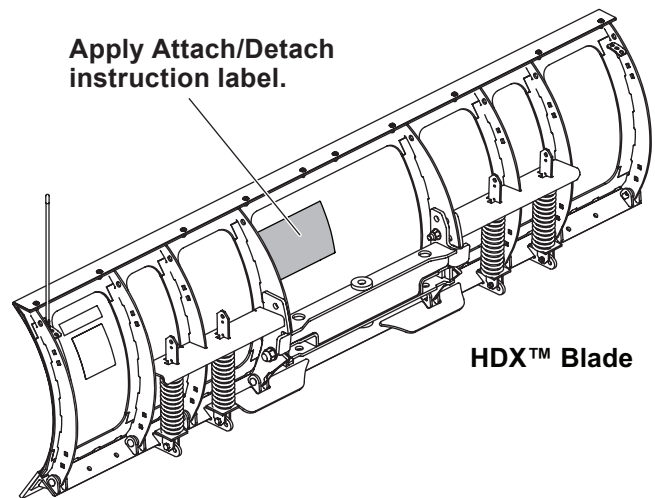
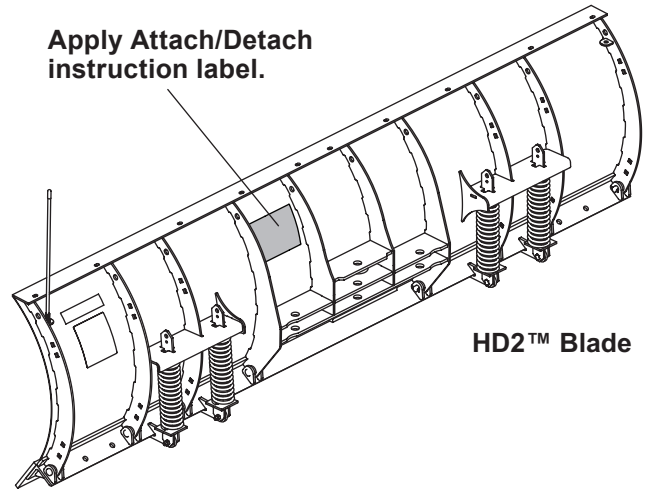
7. Install the blade guides.

For HDX™ applications where the blade attack angle will be changed from the 65° factory setting, install the blade guides *after* adjusting the attack angle. (See "HDX Blade Angle Adjustment.")



8. Apply the supplied skid steer attach/detach instruction label on the back of the blade in the position shown below.

Thoroughly clean and dry the blade surface area before applying the label.

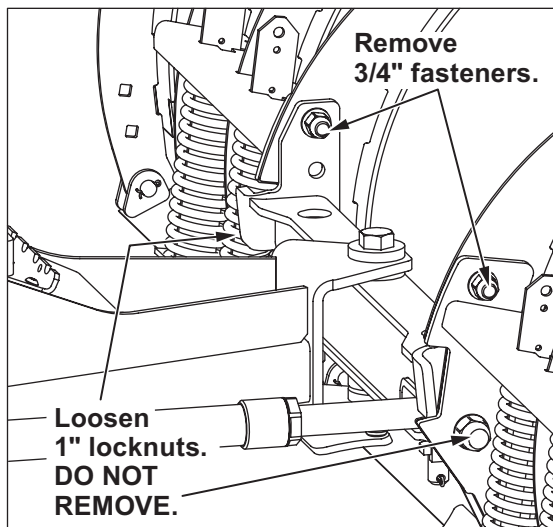


HDX™ BLADE ATTACK ANGLE ADJUSTMENT

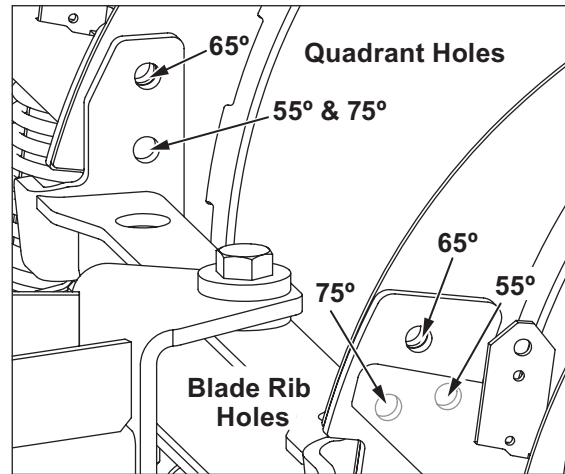
The HDX blade features a bolted connection between the quadrant and the main blade that allows adjustment among three attack angles—55°, 65° and 75°. It is factory set at 65°.

The snowplow does not need to be attached to the vehicle to perform this adjustment.

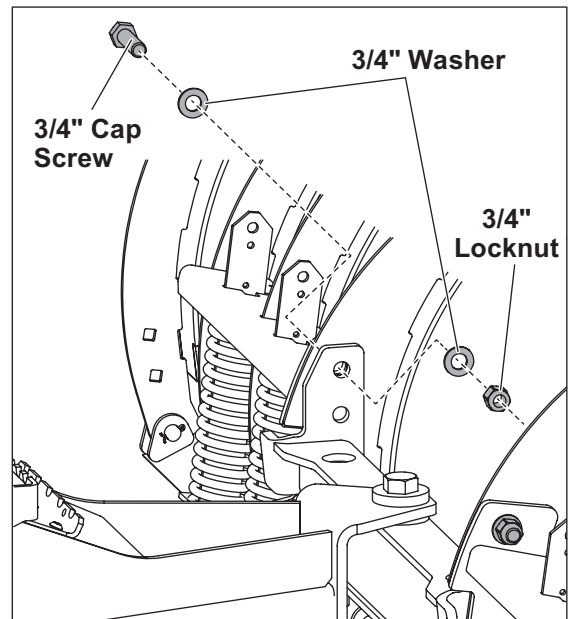
1. To adjust the attack angle, loosen (DO NOT REMOVE) the lower quadrant 1" locknuts. Remove the upper quadrant 3/4" locknuts, washers and cap screws.



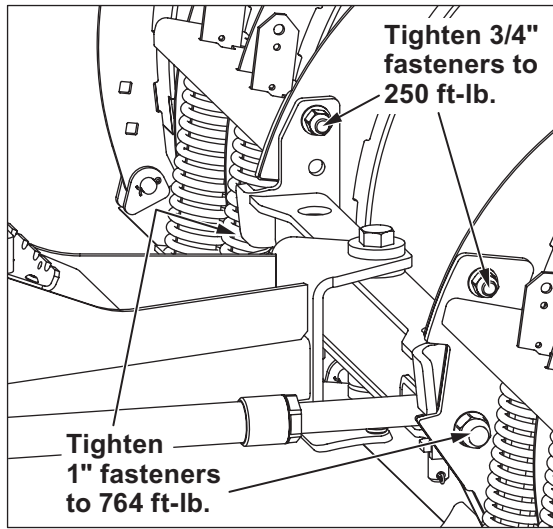
2. Align the desired attack angle holes in the quadrant and blade.



3. Reinstall the upper quadrant fasteners on both sides of the quadrant.



4. Tighten the upper and lower fasteners as shown.

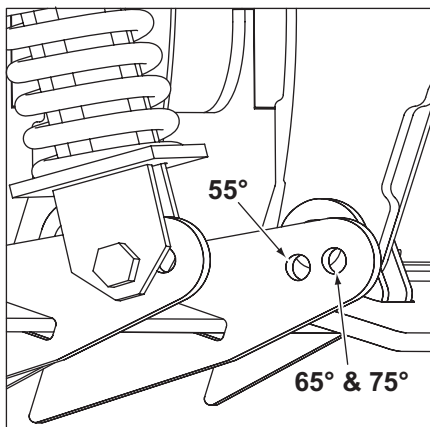


NOTE: Lower 1" locknuts must be torqued to 764 ft-lb and the upper 3/4" locknuts must be torqued to 250 ft-lb.

⚠ CAUTION

Servicing the trip springs without special tools and knowledge could result in personal injury. See your authorized outlet for service.

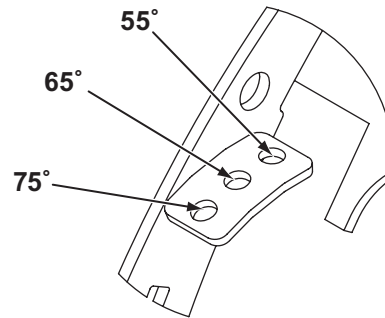
5. When the attack angle has been changed to or from 55°, the lower mounting position of the trip springs must be changed as shown.



6. A special spring removal tool (PN 20043-1) must be used to safely make this adjustment. NEVER ATTEMPT SPRING REMOVAL WITHOUT THE SPECIAL TOOL. Follow the instructions in the spring tool kit for proper tool usage.

NOTE: If the springs are not adjusted to match the attack angle setting, blade damage may occur.

7. Install the blade guides in the mounting holes that match the selected blade attack angle.



HDX™ Accessories Adjustments

When the blade attack angle is changed, the angle setting for blade wings, shoes and back drag edge accessories must also be adjusted. Follow the instructions supplied in the accessory kit.

OWNER'S MANUAL PACKET

If the completed snowplow will be delivered immediately, the Owner's Manual should be reviewed with and given to the purchaser according to the snowplow checklist.

If the snowplow is completed prior to delivery to the purchaser, attach the Owner's Manual Packet to the step plate for safekeeping.

Fisher Engineering reserves the right under its product improvement policy to change construction or design details and furnish equipment when so altered without reference to illustrations or specifications used. Fisher Engineering or the vehicle manufacturer may require or recommend optional equipment for snow removal. Do not exceed vehicle ratings with a snowplow. Fisher Engineering offers a limited warranty for all snowplows and accessories. See separately printed page for this important information. The following are registered (®) or unregistered (™) trademarks of Douglas Dynamics, LLC: FISHER®, HD2™, HDX™.

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