



**SUP-R-FORCE®**

COMPANY INFO  
DRILLING JARS

# Company Information

G-FORCE JARS<sup>®</sup> was founded by staff that has over 50 years of knowledge in down hole tool design. In March of 2010 G-FORCE JARS began manufacturing and renting Coiled Tubing Jars.

In 2012 G-FORCE JARS began developing a Double acting Hydraulic Drilling Jar. The result<sup>®</sup> was the SUP-R-FORCE Drilling Jar that incorporated new technology and surpassed the performance of<sup>®</sup> the existing jars. The SUP-R-FORCE Drilling Jar can be run in all types of wells. They will hit harder, last longer and can be run in both tension and compression.

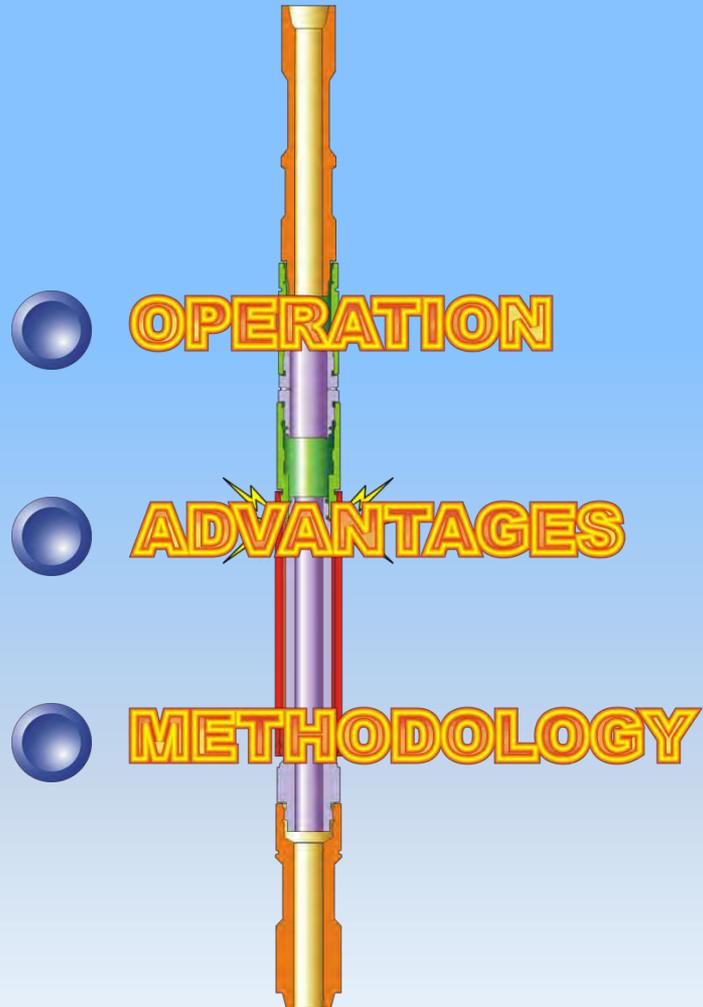
# G-FORCE JARS

G-Force Jars use a piston (metering device) and oil to create a time delay. This time delay allows energy to be stored. Once the energy is stored, the jar piston bypasses creating a hammer-and-anvil effect that imparts an impact load to the end of the tool assembly. As the jar is pulled into tension, a piston moves through a restricted bore containing oil. This process enables the system to store energy and the continued upward pull moves the piston over the step, which releases the stored energy and allows the mass to rapidly accelerate to the top of its stroke. The force supplied depends on the force applied to the tool.

**MORE ABOUT  
HYDRAULIC JARS**

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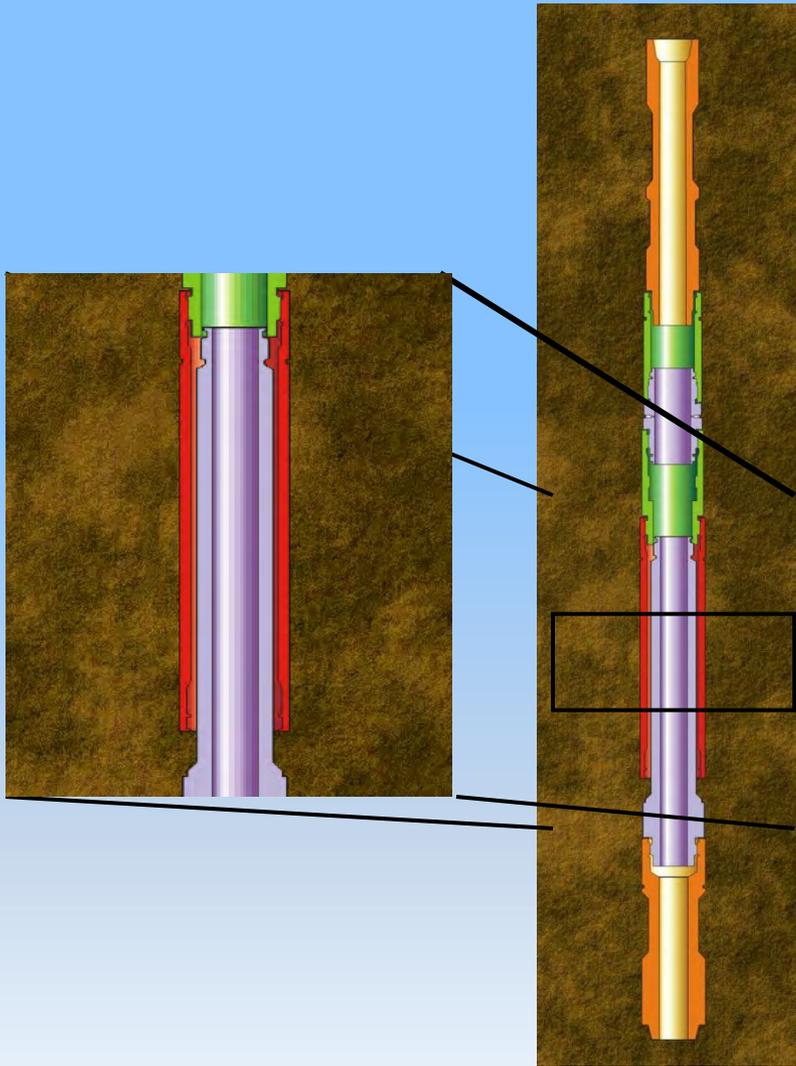
# SUP-R-FORCE<sup>®</sup> Drilling Applications



- Straight Hole
- Directional Hole
- Fishing
- Work Over

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# Hydraulic Jar Methodology

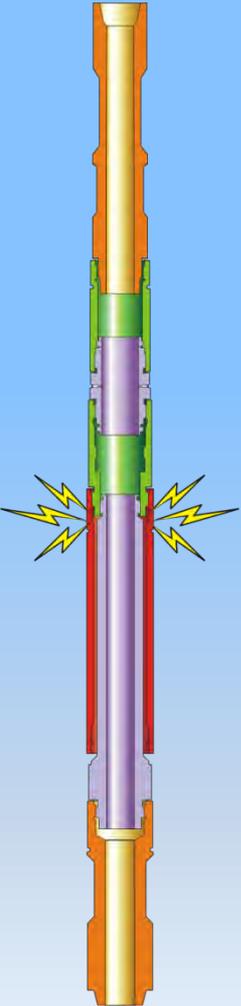


The hydraulic jar utilizes an oil reservoir with some type of metering orifice and a bypass area. When the string becomes stuck, overpull is applied. As the force is applied the sliding mandrel will begin to compress the oil in the reservoir, forcing the oil to bleed off slowly through the metering orifice. This allows time for the drill string to establish the strain energy required for the jarring effect. When the piston on the mandrel comes to the bypass area, the oil bleeds off almost instantly. The hammer then speeds toward the anvil, impacting and transferring the drill strings stored energy to the stuck point.

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# Hydraulic Jar Operation *page-1*

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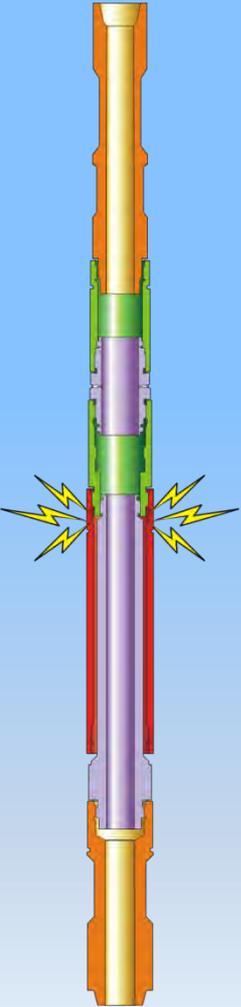
The SUP-R-FORCE JAR is a double acting hydraulic drilling jar. The SUP-R-FORCE JAR is delivered to location in the OPEN position (approximately 29 inches of mandrel exposed) and usually will be open when it is pulled out of the hole.

This jar can be run in tension or compression. When in tension the jar should be run above the weight transition zone. NOTE: Always allow 20% available bit weight below the jar.

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# Hydraulic Jar Operation *page-II*

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## OPERATION OF THE DRILLING JAR:

**UP STROKE:** Pull on string until jar setting is reached and jar will trip.

**RECOCK JAR:** Slack off on drill string until STROK-LOK<sup>®</sup> setting is reached. This should be slightly below the weight of the string above the jars. (Approx: 10,000 lbs). There usually will be a noticeable sign such as a bobble on the weight indicator needle when the STROK-LOK setting is reached.

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# Hydraulic Jar Operation *page-III*

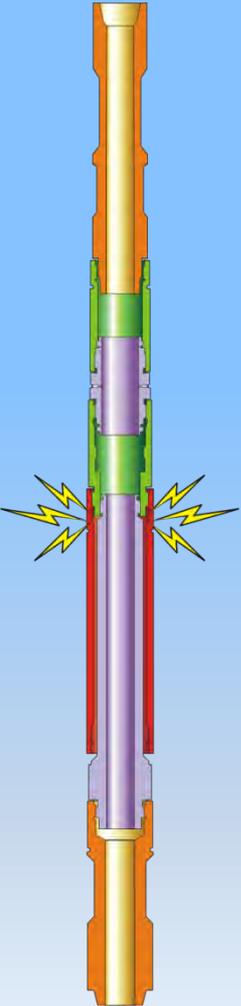
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## EXAMPLE FOR UPWARD TRIPPING OF JAR

BASIS=260,000 lbs.= Total indicator weight  
(string, block, hook, swivel)

-40,000 Bottom hole assembly below the jar  
220,000 Weight of string above the jar  
+96,000 Over Pull  
316,000  
+20,000 Hole drag picking up  
336,000 Indicator reading to trip jar

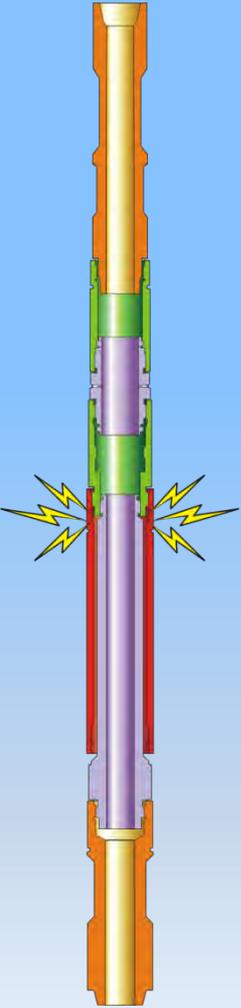
NOTE: Probably will have to slack off to 200,000 or 220,000 to cock or engage the STROK- LOK setting of the jar for another upward blow.



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# Hydraulic Jar Operation *page-IV*

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**DOWN STROKE:** Slack off string until STROK-LOK setting<sup>®</sup> is reached (Approx: 10,000 lbs) then continue slacking off to jar down.

**RECOCK JAR:** Pick drill string up until slightly above weight of drill string above the jar is reached. Free travel will be noticed and also a slight bobble on weight indicator when the STROK-LOK setting<sup>®</sup> is reached.

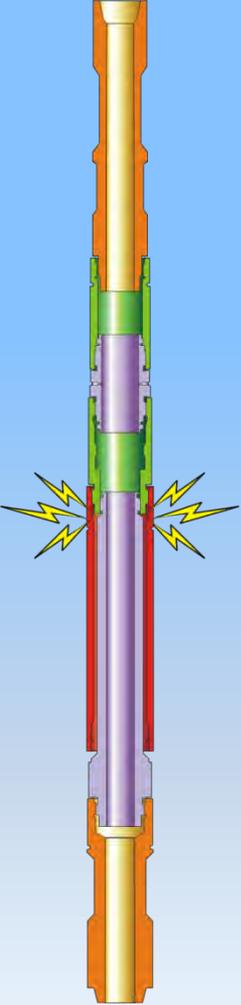
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# Hydraulic Jar Operation *page-V*

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## EXAMPLE FOR DOWNWARD TRIPPING OF JAR

BASIS=260,000 lbs.= Total indicator weight  
(string, block, hook, swivel)

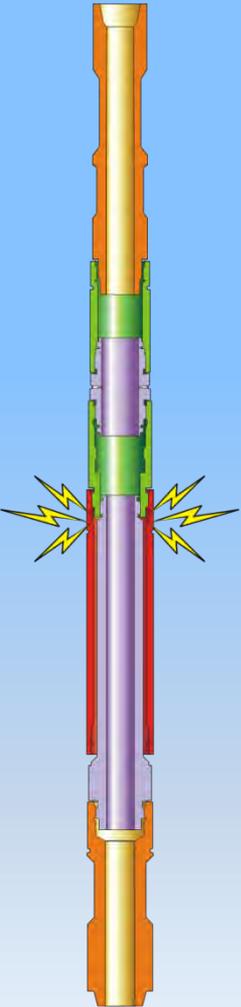


260,000	Total Indicator Weight
-40,000	Weight below jar
220,000	Weight above the jar
-38,000	Jar setting for downward blow
182,000	
-20,000	Hole drag
162,000	Indicator reading to trip jar downward

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# Hydraulic Jar Operation *page-VI*

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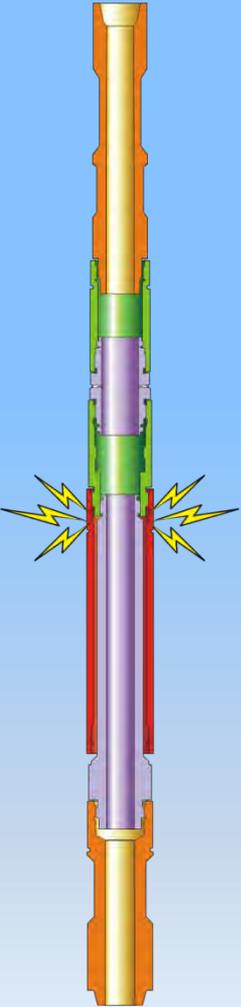


NOTE: Probably need to pick up to 230,000 to 250,000 to recock jar. The down stroke to reach STROK-LOK<sup>®</sup> setting is not as noticeable in most cases as the up stroke of the jar. In many cases, particularly in deep holes and with small jars, the down tripping can be detected by the weight indicator only jar's STROK-LOK<sup>®</sup> setting is reached. Also, Pump pressure affects the downward jar motion. ALWAYS shut down pumps before attempting to jar down.

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# SUP-R-FORCE<sup>®</sup> Advantages *page-1*

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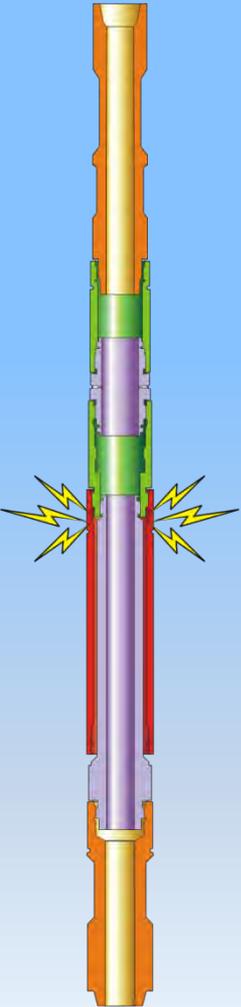


- **High over-pull capability (with additional safety factor)**
  - Greater than conventional jars of the same size
- **Longer free stroke**
  - No other jar has a greater free stroke
- **Higher impact capability**
  - It can hit harder than any other jar the same size
- **Hydraulic timer is self-compensating for hole temperature**
  - Resulting in more consistent pull times
- **Mechanical up cocking lock prevents accidental cocking of the up jar section and firing of the down jar section**
- **Lock is adjustable from 5,000 lbs. up to any practical maximum**

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# SUP-R-FORCE<sup>®</sup> Advantages *page-II*

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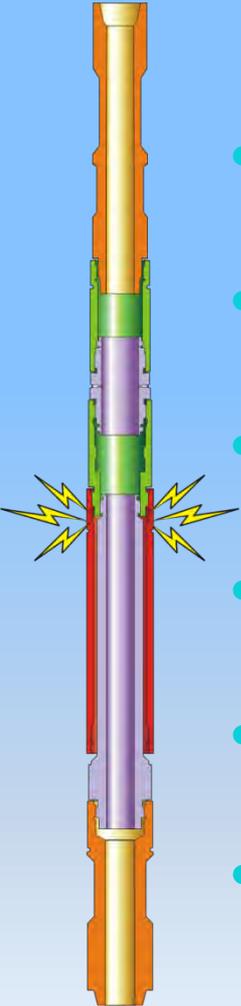


- Jar has rugged V-packing for extended service
- Jar can be used for high temperature service with minimum packing changes
- Jar has high tensile strength for higher impact service capability
- Tapered end connections allow jar to transverse smaller hole radii as well as reduce fatigue damage to the tool
- Optional “ZIP” lift or elevator lift shoulders available on upper end of jar for ease of use
- Jar is fully pressure balanced against hydrostatic pressure
- Jar’s large pump open area allows the tool to be run in compression
  - Jar will not automatically cock or fire with the pumps in normal drilling

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# SUP-R-FORCE<sup>®</sup> Advantages *page-III*

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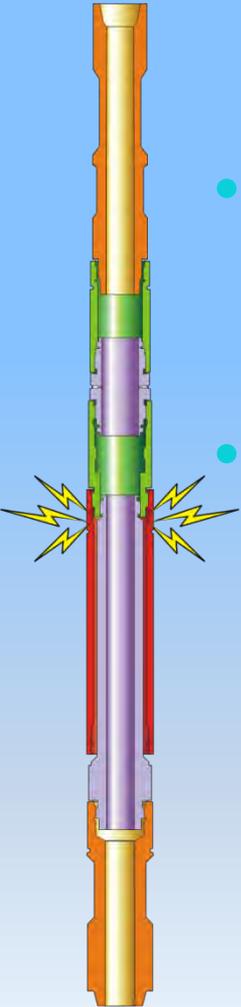


- **Hydrostatic pressure strengthens jar**
  - More over-pull capability with increasing hole depth
- **Splines are constantly engaged**
  - No rotary slack to cause directional drilling problems
- **Straight push and pull operation for easy jar operation**
  - Torque trapped in drill-string doesn't effect jar operation
- **Large through bore for passage of instruments**
  - Negligible pressure drop through jar
- **Redundant dynamic packing to prevent washouts and provide long down-hole service**
- **Massive over-pull failure results on internal washpipe collapse**
  - No parting of tool and no washout (Jar acts as a bumper sub)

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# SUP-R-FORCE<sup>®</sup> Advantages *page-IV*

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- **Packing is preloaded to prevent low pressure leakage and seal compression set problems**
  - **Seals maintain sealing capability at any pressure (including at zero pressure)**
- **All connections, shoulders and tensile/torque carrying parts are a fatigue resistant design. Additionally, the parts are cold worked to provide additional fatigue resistance (shot peened)**

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<b>COMPLETE ASSEMBLY</b>	SF475	SF650	SF800
<b>Jar O.D.</b> inches (mm)	4.812 (122.224)	6.5 (165.100)	8 (203.200)
<b>Jar I.D.</b> inches (mm)	2.25 (57.150)	2.75 (69.85)	3" (76.20)
<b>Standard Connection</b>	3 1/2 IF	4 1/2 XH or IF	6 5/8 Reg
<b>Overall Length "Open"</b> Feet (mm)	30 ft (9,144)	32 ft (9,754)	32 ft (9,754)
<b>Maximum Pull Load</b> lbs	100,00	200,000	350,000
<b>Up Stroke (inches)</b> <b>Down Stroke (inches)</b>	9" 9"	9" 8"	9" 8"
<b>Tensile Strength</b> lbs	525,000	1,000,000	1,750,000
<b>Torsional Strength in Splines</b> ft/lbs	40,000	91,000	125,000
<b>Pump Open Area</b> Sq. inches	11.13	20.60	28.27
<b>Total Stroke</b> inches	34"	29"	29"
<b>Tool Weight</b> lbs	1800	2600	3800