

# **INTRODUCTION**

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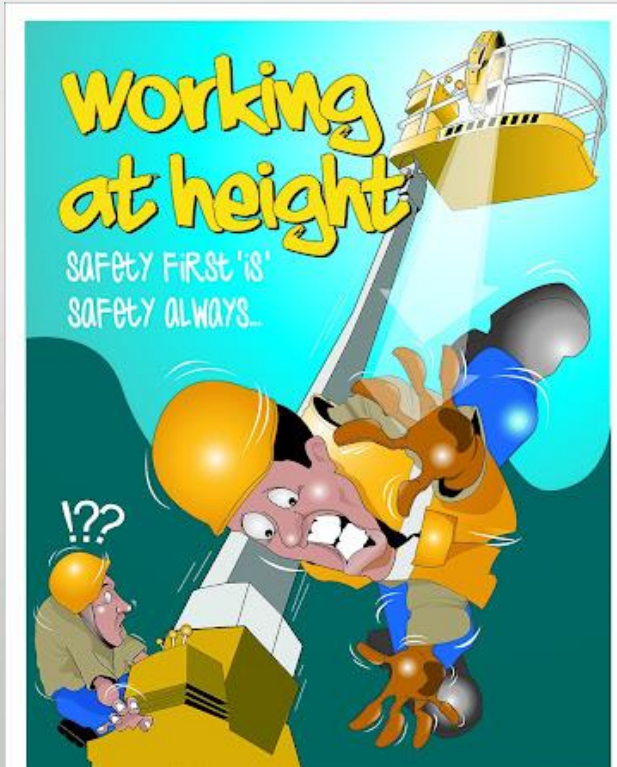
# CONTENTS

**SAFETY TOPIC**

**DOWNHOLE TOOLS (DHT)**

# WORKING AT HEIGHTS

- **WORKING AT HEIGHTS OF MORE THAN 1.8 METERS (6 FT)**
- **THE USE OF APPROVED FALL PREVENTION EQUIPMENT,**
- **FALL ARREST SYSTEMS SECURED TO AN APPROPRIATE ANCHORING POINT**



## Working at Height

Protect yourself against a fall when working at height



- I inspect my fall protection equipment before use
- I secure tools and work materials to prevent dropped objects
- I tie off 100% to approved anchor points while outside a protected area

# DHT – SHIFTING TOOLS

- **SLIDING SIDE DOOR**
- **OTIS 'B' SHIFTING TOOL**
- **OTIS 'BO' SELECTIVE SHIFTING TOOL**

# CIRCULATION DEVICES

## Alternative Names

- Sliding sleeve.
- SSD (SLIDING SIDE DOOR)

- ❑ SSD's are installed in the tubing during well completion to provide a means of communication between the tubing and annulus.

## Functions:

- ❖ Circulation purposes between tubing and annulus.
- ❖ To allow oil and gas flowing from a desired production zone to the tubing string
- ❖ Injection water or gas flowing into reservoir for pressure maintenance or flooding.



# CIRCULATION DEVICES

## **Standard, open down SSD**

- **Otis type XO, Camco.**

## **Larger flow area, open down SSD**

- **Otis type XD. (Used in heavy crude applications or high flow rate wells.)**

## **Open up SSD**

- **Otis XA, Baker 'L'. (Designed for use in heavy mud / thick crude applications.)**

# CIRCULATION DEVICES

- **Operation:**

**SSD's are available from Otis in either jar down to open, or jar up to open designs.**

**installation of plugs, separation tools, and 'X' selective test tools at 'X' profile in their upper bore.**

**WAIT UNTIL THE PRESSURE HAS EQUALISED before continuing jarring.**

**Use shifting tool to open ( 142B0) and close (42B0)**

**Constant monitoring of the surface pressure (lubricator gauge)**

# 'B' SHIFTING TOOL

Known as B-Up/42-B0

- engage to open or close all the Otis SSD's.
- This tool has 2 pin connections to permit either opening or closing of the sleeve by inverting the tool.



keys facing **DOWN**



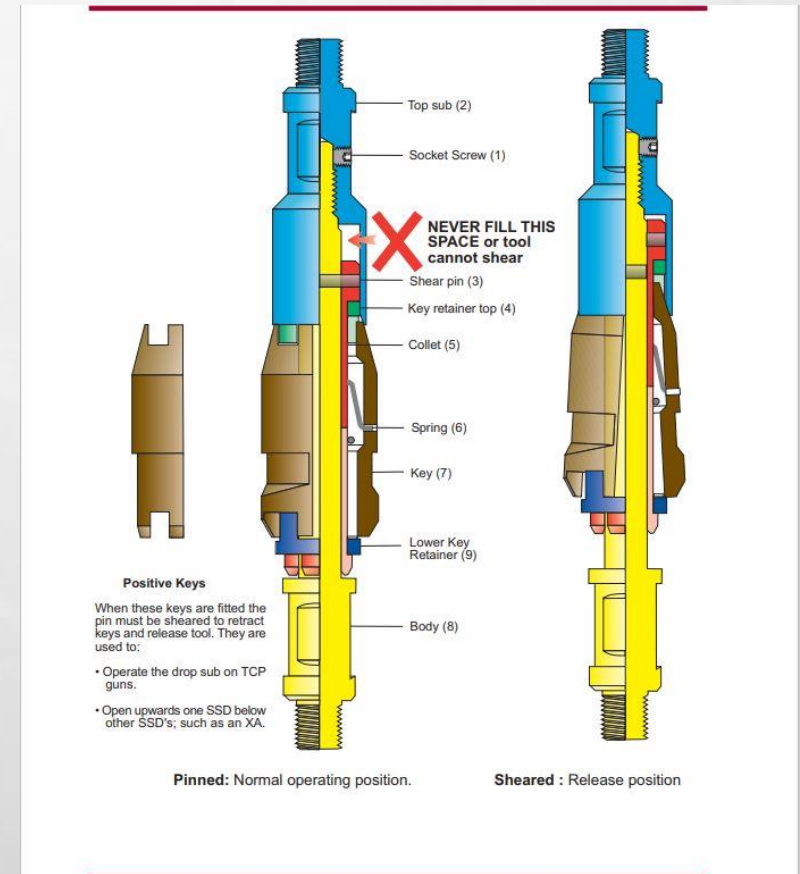
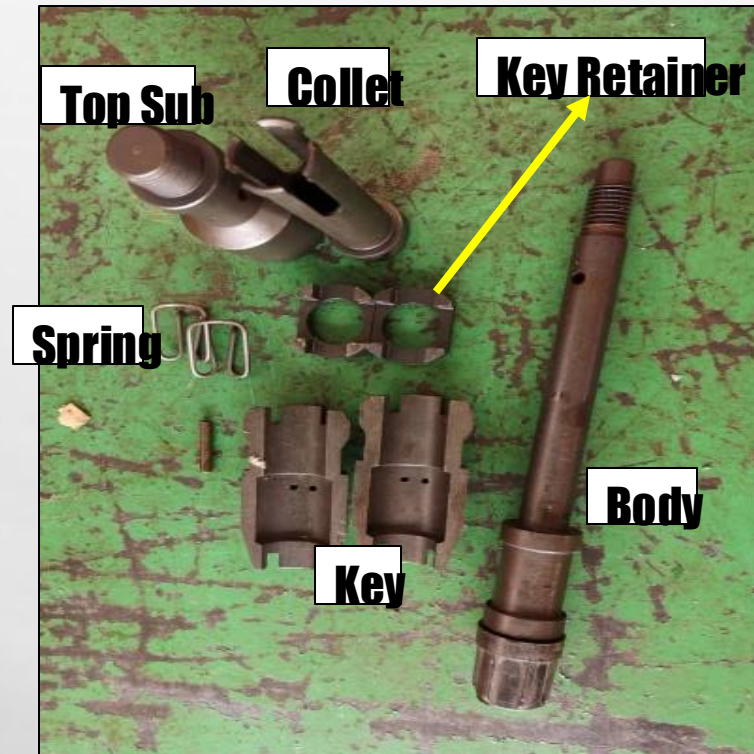
keys facing **UP**

- The tool is designed to release itself only after the sleeve reaches its fully open or closed position.

# 'B' SHIFTING TOOL

Consists of **8** parts:

- a. Top Sub
- b. Socket Screw
- c. Shear Pin
- d. Key Retainer Top
- e. Collet
- f. Spring
- g. Key
- h. Lower Key Retainer
- i. Body



## Halliburton Otis® B Positioning (Shifting) Tool

Sliding Side-Door (ID)	Part Number	SAP Part Number	Connection	Fishing Neck	Keys Expanded (OD)	Tool (OD)
1.250 in.	42B0119	120057795	5/8 in. 16 UN	1.000 in.	1.488 in. / 1.392 in.	1.240 in.
1.375 in.	42B0180	101059077	5/8 in. 16 UN	1.000 in.	1.718 in. / 1.638 in.	1.366 in.
1.500 in.	42B0245	101059081	15/16 in. 10 UN	1.188 in.	1.629 in. / 1.665 in.	1.490 in.
1.625 in.	42B0121	120057796	15/16 in. 10 UN	1.188 in.	1.992 in. / 1.897 in.	1.615 in.
1.710 in.	42B0237	101059079	15/16 in. 10 UN	1.188 in.	2.156 in. / 2.110 in.	1.690 in.
1.781 in.	42B0117	101059064	15/16 in. 10 UN	1.375 in.	2.177 in. / 2.076 in.	1.750 in.
1.875 in.	42B0116	100008775	15/16 in. 10 UN	1.375 in.	2.210 in. / 2.108 in.	1.840 in.
2.000 in.	42B0159	101015719	15/16 in. 10 UN	1.375 in.	2.494 in. / 2.356 in.	1.840 in.
2.125 in.	42B0159	101015719	15/16 in. 10 UN	1.375 in.	2.494 in. / 2.356 in.	1.970 in.
2.188 in.	42B0118	100008776	15/16 in. 10 UN	1.750 in.	2.592 in.	2.156 in.
2.313 in.	42B0118	100008776	15/16 in. 10 UN	1.750 in.	2.592 in.	2.156 in.
2.562 in.	42B0178	101017053	15/16 in. 10 UN	1.750 in.	3.123 in. / 2.966 in.	2.530 in.
2.750 in.	42B0146	100009659	1 1/16 in. 10 UN	2.313 in.	3.156 in. / 3.015 in.	2.718 in.
2.813 in.	42B0146	100009659	1 1/16 in. 10 UN	2.313 in.	3.156 in. / 3.015 in.	2.718 in.
3.125 in.	42B0204	120057807	15/16 in. 10 UN	1.750 in.	3.604 in. / 3.486 in.	3.060 in.
3.250 in.	42B0208	101059078	1 1/16 in. 10 UN	2.313 in.	3.746 in. / 3.610 in.	3.200 in.
3.313 in.	42B0154	101010055	1 1/16 in. 10 UN	2.313 in.	3.734 in. / 3.616 in.	3.250 in.
3.437 in.	42B0242	101009406	1 1/16 in. 10 UN	2.313 in.	4.08 in. / 4.14 in.	3.410 in.
3.562 in.	42B0242	101009406	1 1/16 in. 10 UN	2.313 in.	4.08 in. / 4.14 in.	3.410 in.
3.688 in.	42B0238	101010057	1 1/16 in. 10 UN	3.125 in.	4.250 in. / 4.150 in.	3.670 in.
3.750 in.	42B0238	101010057	1 1/16 in. 10 UN	3.125 in.	4.250 in. / 4.150 in.	3.670 in.
3.813 in.	42B0238	101010057	1 1/16 in. 10 UN	3.125 in.	4.250 in. / 4.150 in.	3.670 in.
4.000 in.	42B0171	101059073	1 1/16 in. 10 UN	2.313 in.	4.504 in. / 4.360 in.	3.850 in.

# 'B' SHIFTING TOOL

## Operation

**1. Connect tool to the toolstrings. Key facing DOWN/UP**

**2. Run into the SSD and locate.**

**3. Jar against the sleeve in the desired direction. If moving the sleeve up, jars cannot be closed to hit a lick - Run into the SSD from below, adjusting speed to give the desired impact.**

**4. Observe the lubricator gauge pressure CAREFULLY. Stop when the pressure changes and WAIT until the pressure is equalised. The pressure should be fully equalised through the 4 small ports in the sleeve prior to the main flow ports being opened( or close)**

**5. Continue jarring to fully open the SSD. The tool will automatically release when the raised portion of the keys is 'squeezed' by the ID of the polished bore.**

**6. The tool should be passed completely through the SSD 3 times to check the SSD is fully open (or closed).**

**7. Pull out of the hole and VISUALLY CHECK THE TOOL HAS NOT SHEARED. If sheared, repin & rerun. The sleeve may not fullt close/open**

# 'BO' SELECTIVE SHIFTING TOOL

**Known as B-Down/142-BO**

- **To 'selectively' open XO and XD SSD's by passing through the upper sleeve.**
- **It will only shift sleeves downwards, and should never be inverted (hence only one pin end) as it could get stuck below a tight sleeve.**
- **These tools are designed for tubing strings with multiple sliding side-door devices of the same size.**
- **This tool does not have a shear pin and automatically release itself.**



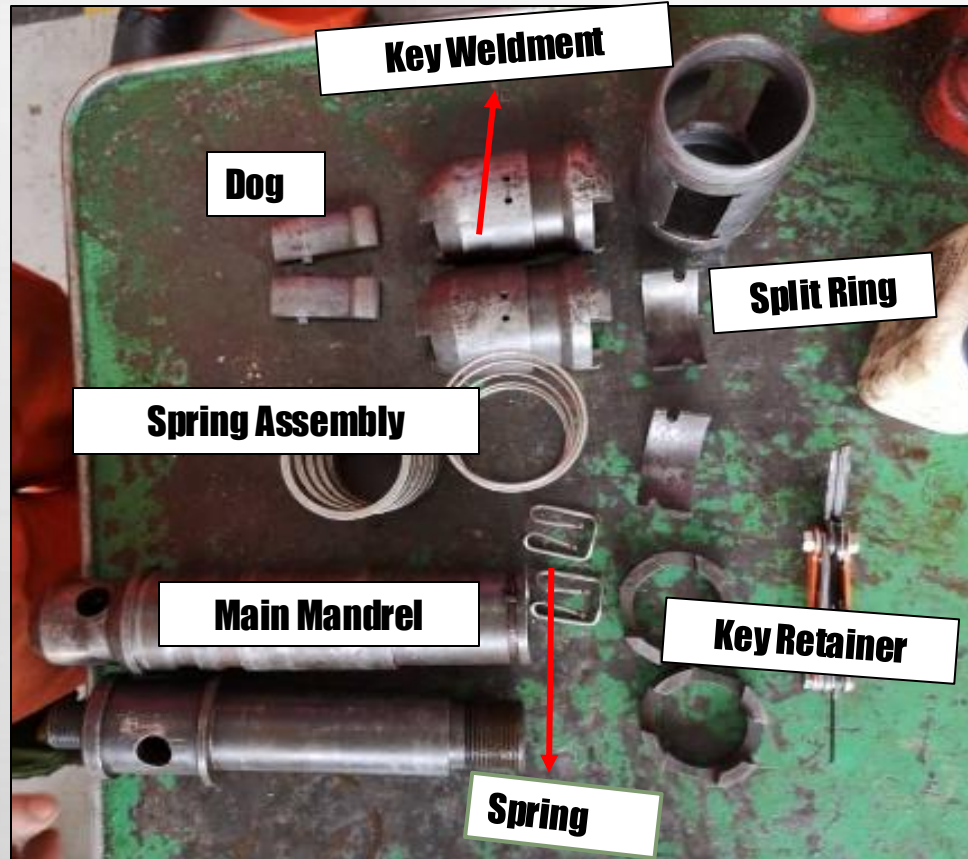
# 'BO' SELECTIVE SHIFTING TOOL



**A: Selective:** Shifting keys retracted to pass the upper SSD's locator dogs extended to locate the packing bore.

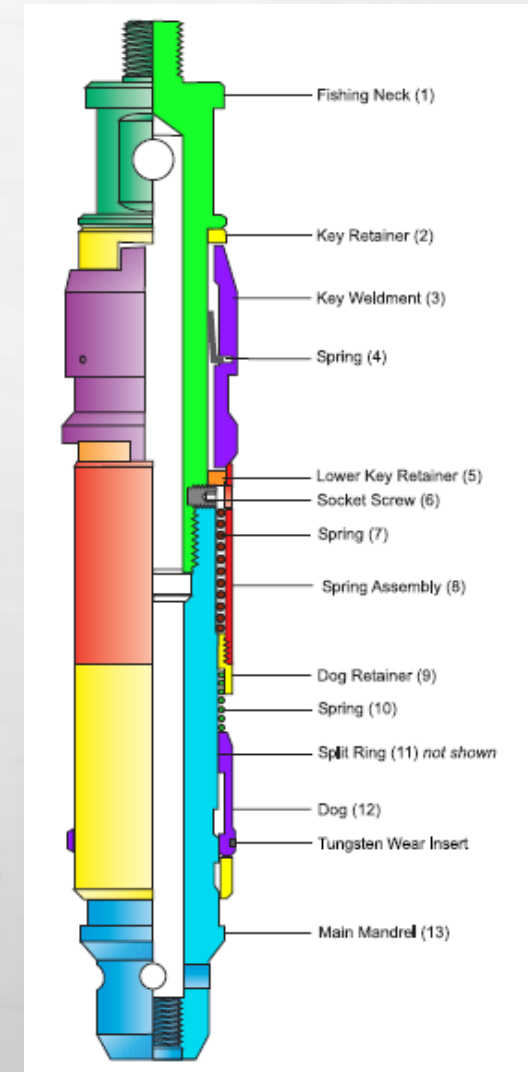
**B: Non-Selective:** Shifting keys extended to locate in the SSD.

# 'BO' SELECTIVE SHIFTING TOOL



Consists of **12** parts:

- 1) Fishing neck
- 2) Key Retainer
- 3) Key Weldment
- 4) Spring
- 5) Lower Key Retainer
- 6) Socket Screw
- 7) Spring
- 8) Spring Assembly
- 9) Dog Retainer
- 10) Spring
- 11) Split Ring
- 12) Dog
- 13) Main Mandrel



# 'BO' SELECTIVE SHIFTING TOOL

## Operation

The tool is run in **SELECTIVE** to below the SSD to be shifted.

3. Sit down in the SSD and jar down. **OBSERVE EQUALISATION PROCEDURES - AS FOR THE 'B' SHIFTING TOOL.**

5. Check by passing 3 times through the SSD.  
6. Pull out of the well.

2. Pull upwards through the SSD to trip to **NON-SELECTIVE.**

4. When the SSD has moved fully, the tool will automatically pass through the SSD.

## Halliburton Otis® BO Downshift Selective Positioning Tool

Sliding Side Door ID	Part Number	SAP Part Number	Connection	Fishing Neck	Keys Expanded (OD)	Tool (OD)
1.500 in.	142B06	101038100	15/16 in. 10 UN	1.187 in.	1.694 in.	1.410 in.
1.875 in.	142B04	100008500	15/16 in. 10 UN	1.375 in.	2.161 in.	1.843 in.
2.188 in.	142B015	101323317	15/16 in. 10 UN	1.750 in.	2.592 in.	2.171 in.
2.313 in.	142B03	100008499	15/16 in. 10 UN	1.750 in.	2.592 in.	2.280 in.
2.562 in.	142B014	101038097	15/16 in. 10 UN	1.750 in.	2.966 in.	2.500 in.
2.750 in.	142B01	100008498	1 1/16 in. 10 UN	2.313 in.	3.076 in.	2.720 in.
2.813 in.	142B016	101038098	1 1/16 in. 10 UN	2.313 in.	3.015 in.	2.780 in.
3.313 in.	142B011	101038095	1 1/16 in. 10 UN	2.313 in.	3.616 in.	3.250 in.
3.437 in.	142B012	101038096	1 1/16 in. 10 UN	2.313 in.	4.080 in.	3.410 in.
3.688 in.	142B010	101038094	1 1/16 in. 10 UN	2.313 in.	4.080 in.	3.620 in.
3.813 in.	142B02	101038099	1 1/16 in. 10 UN	2.313 in.	4.158 in.	3.750 in.
4.562 in.	142B09	101038101	1 1/16 in. 10 UN	3.125 in.	4.928 in.	4.500 in.

# “X’ SHIFTING TOOL

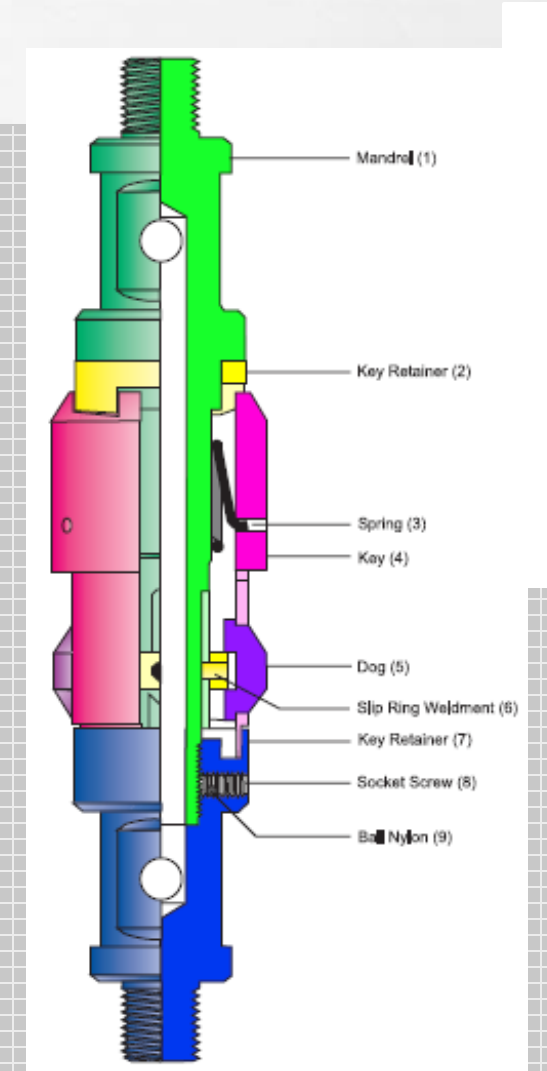
- **To locate and either open or close a typical Halliburton style sliding side door (XA / XO SSD).**
- **It is changed from the selective to the nonselective position by the up-down movement of the shifting tool through the sleeve.**
- **The chosen sliding sleeve can be shifted to open or closed position without shifting the other sleeves.**
- **The chosen sliding sleeve can be shifted to open or closed position without shifting the other sleeves.**
- **The dogs can be moved to a position close to the 90-degree shoulder of the key by picking up the tool string, and lowering it again to cycle the tool into a non-latching position.**



# “X” SHIFTING TOOL (CONT.)

Consists of **9** parts:

- a. Mandrel
- b. Key Retainer
- c. Spring
- d. Key
- e. Dog
- f. Slip Ring Weldment
- g. Key Retainer
- h. Socket Screw
- i. Ball Nylon



**Source: Parveen  
Slickline Tools**

<b>SSD I.D. (in)</b>	<b>F/N.O.D. (in)</b>	<b>Connection</b>	<b>Part No. 'B'</b>	<b>Part No. 'BO'</b>	<b>Part No. 'X'</b>
1.375	1.000	5/8 - 11 UNC	175-137	289-137	288-137
1.500	1.187	15/16 - 10 UN	175-150	289-150	288-150
1.625	1.187	15/16 - 10 UN	175-162	289-162	288-162
1.710	1.187	15/16 - 10 UN	175-171	289-171	288-171
1.781	1.375	15/16 - 10 UN	175-178	289-178	288-178
1.875	1.375	15/16 - 10 UN	175-187	289-187	288-187
2.125	1.375	15/16 - 10 UN	175-212	289-212	288-212
2.188	1.750	15/16 - 10 UN	175-218	289-218	288-218
2.313	1.750	15/16 - 10 UN	175-231	289-231	288-231
2.562	1.750	15/16 - 10 UN	175-256	289-256	288-256
2.750	2.313	1-1/16 - 10 UN	175-275	289-275	288-275
2.813	2.313	1-1/16 - 10 UN	175-281	289-281	288-281
3.125	1.750	15/16 - 10 UN	175-312	289-312	288-312
3.313	2.313	1-1/16 - 10 UN	175-313	289-313	288-313
3.437	2.313	1-1/16 - 10 UN	175-343	289-343	288-343
3.688	3.125	1-1/16 - 10 UN	175-368	289-368	288-368

A black and white portrait of Steve Jobs, looking thoughtfully at the camera with his hand on his chin.

**DIMENSION BID. THE BEST !!!**

“

*Don't let the noise of others' opinions drown out your own inner voice*

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**Thank You**