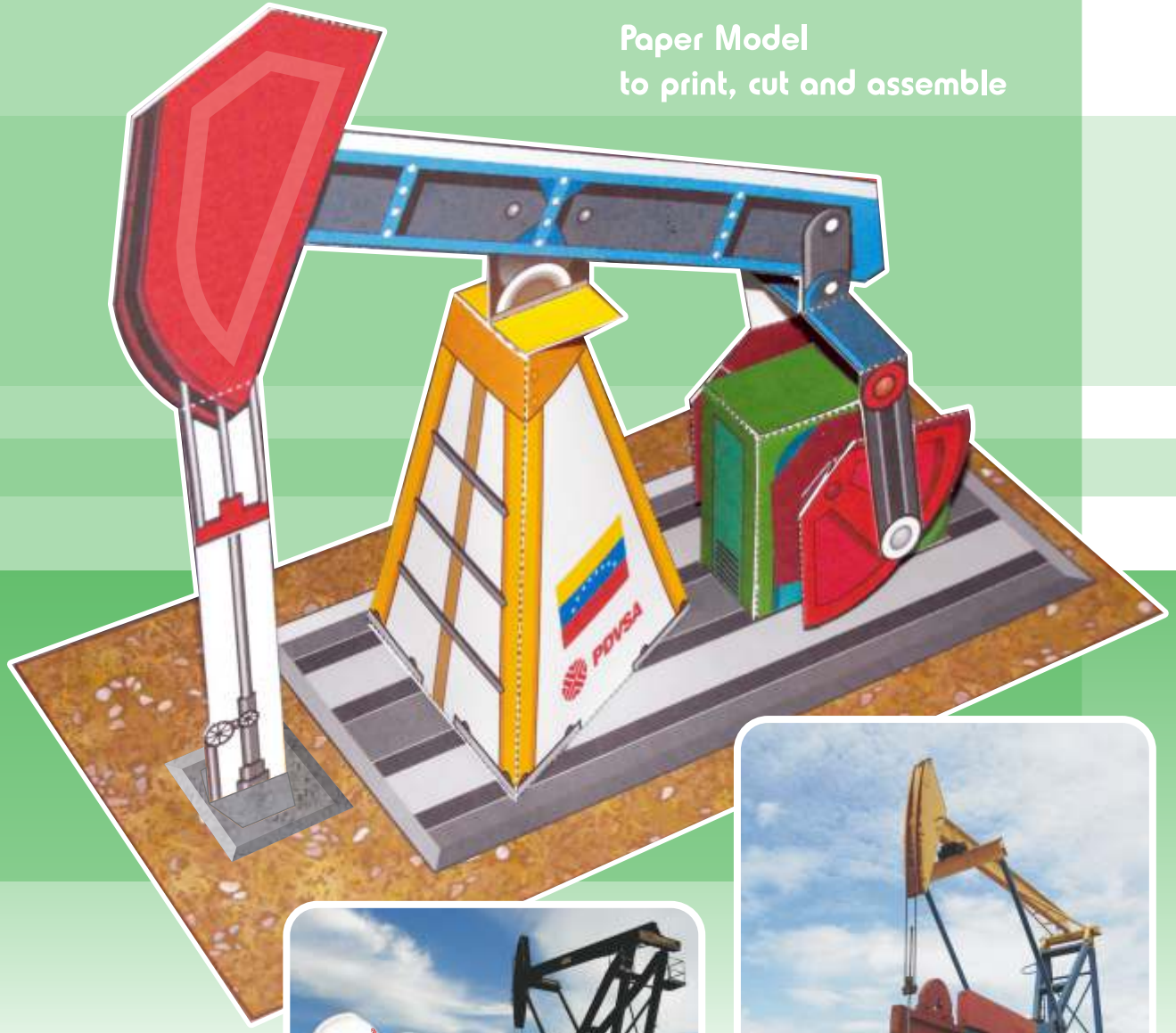
PDVSA

Series LEARNING ABOUT OIL

The Pumping Jack

Paper Model
to print, cut and assemble



Bolivarian Government of Venezuela | People's Ministry of Petroleum and Mining

PDVSA

Serie
APRENDAMOS
DE PETRÓLEO

We, at the People's Ministry of Petroleum and Mining and PDVSA, have undertaken the task of educating Venezuelans, aware of the reasonable and sovereign use of oil, convinced of its strategic value to fight poverty and join peoples.

We are positive that getting on the activities carried out by PDVSA to turn oil and gas into gasoline, computer items, toys and a wide array of useful goods will make us more careful and watchful of whatever is said and done in our oil industry.

For such purposes, we are handing in you the Series "Learning about oil," composed of simple, ready-to-assemble models of oil operations.

This time, we are providing you with The Pumping Jack. We are certain that as soon as you finish off, you will have discovered, along with us, one of the so many wonderful worlds of the oil industry.

How to use this material.

- Print the cover, the text information and the instructions to assemble the model, on bond paper.
- On a printer that accepts cardboard, print the parts of the model and its base. Use letter-size bristol cardboard.

The Pumping Jack

Oil or gas initially emerges from oil wells in a natural way under the bottom hole pressure. However, the initial pressure lessens with the reservoir production. Therefore, several techniques need to be applied in order to extract the oil from the wells. One of these techniques includes mechanical pumping by using a walking beam.

WHAT IS A PUMPING JACK?

A Pumping Jack is a tool used in the oil field. It is also known as “nodding donkey or horsehead pump”. It forms part of the mechanical pumping technique, which helps to take oil out from the bottom to the surface.

HOW DOES ITS PUMPING SYSTEM WORK?

This pumping technique uses an engine, which creates a seesaw movement of the sucking rods.

WHEN WAS THE FIRST PUMPING JACK USED IN VENEZUELA?

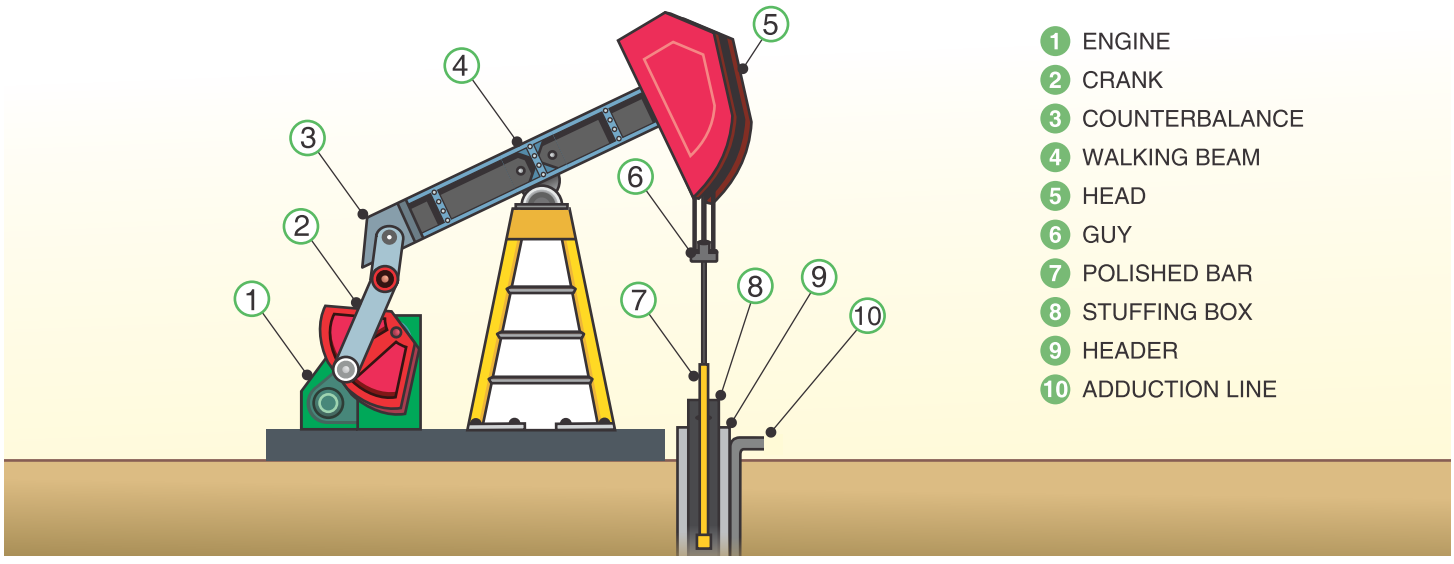
The first pumping jack ever used in the Venezuelan oil history was deployed in 1880 by La Petrolia del Táchira, an oil drilling company organized by Venezuelan entrepreneurs
It was brought in from the United States and hauled by mules to the drilling place. In Lake Maracaibo, the first pumping jack was used in 1923 to drill a well one kilometer to the east of the Los Barrosos 2 well, Cabimas, Zulia state.

The first pumping jack in Barinas plains was installed in 1947 and designated Silvestre II.

WHEN WAS THE FIRST PUMPING JACK MADE IN VENEZUELA?

Lagoven, a former PDVSA subsidiary, operated the first pumping jack made in Venezuela in 1983.

Pumping jack frame



DOTTED LINES
Show the area that needs to be **folded.**

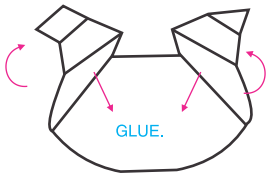
SOLID LINES
Show the area that needs to **cut out.**

HOW TO ASSEMBLE THE PUMPING JACK

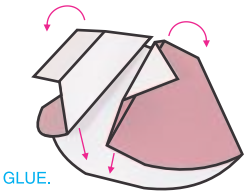
- Before cutting the pieces out, go over all the fold lines with the tip of an exhausted ballpoint pen and a rule. This will help you fold the pieces.
- Cut out every piece; arrange them in your workplace in alphabetical order (each piece has an identity letter).
- Fold each piece.
- Carefully read the directions before starting.
- Take your time to assemble each piece, following the steps.
- Once the model is over, glue it on its base; the base is overleaf.
- You can glue the base on a piece of cardboard, polyethylene, or MDF, of 23 x 30 cm to make it steadier.

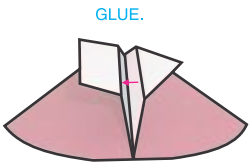
1 "A" Pieces. LEFT AND RIGHT.

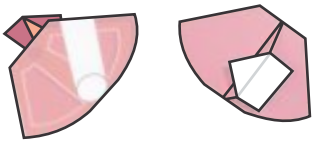
FOLD THE SIDES INWARD.



FOLD THE FLAPS OUTWARD.



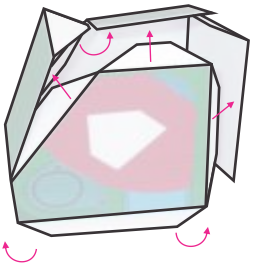




ASSEMBLE THE OTHER PIECE IN THE SAME WAY.

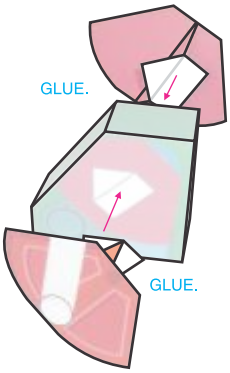
2 "B" Piece. ENGINE.

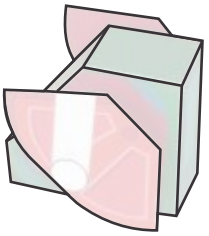
FOLD THE SIDE FLAPS AND ASSEMBLE THE PIECE.



FOLD THE LOWER FLAPS INWARD.

3 STICK EACH "A" PIECE ON THE SIDES OF THE ENGINE BASE, ONE TO THE LEFT, ANOTHER TO THE RIGHT, AS SHOWN IN THE FIGURE.





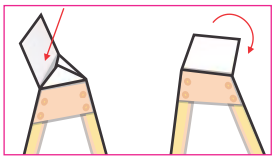
A VIEW OF THE COMPLETED PIECE.

4 "C" Piece. PUMPING JACK LEGS.

FOLD THE LOWER FLAPS INWARD.

FOLD THE TRIANGULAR FLAPS.

FOLD AND GLUE THE SQUARE FLAP.

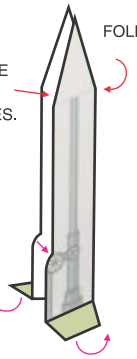


A VIEW OF THE COMPLETED PIECE.

5 "D" Piece. PUMPING LINE.

FOLD THE PIECE.

GLUE THE SIDES.

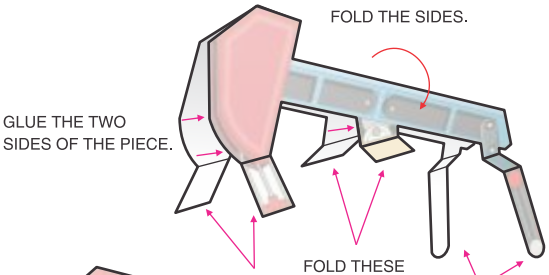


FOLD THE LOWER FLAPS OUTWARD.

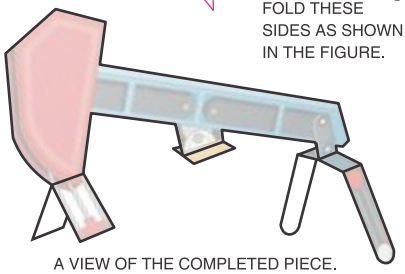
6 "E" Piece. PUMPING JACK BODY.

FOLD THE SIDES.

GLUE THE TWO SIDES OF THE PIECE.



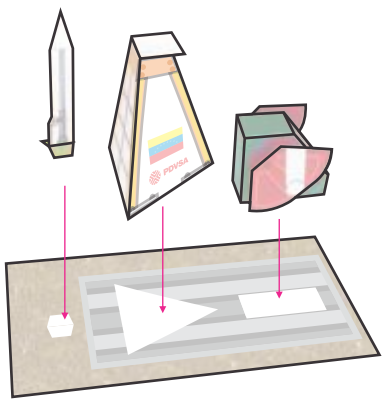
FOLD THESE SIDES AS SHOWN IN THE FIGURE.



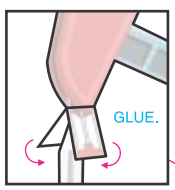
A VIEW OF THE COMPLETED PIECE.

7 "F" Piece. PUMPING JACK BASE.

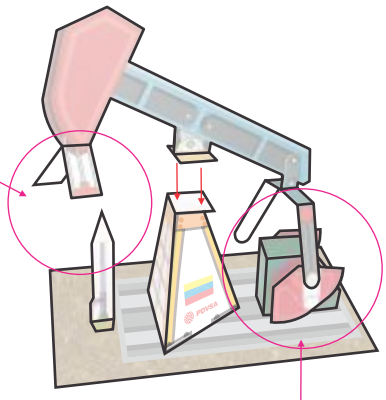
STICK THE PIPELINE, THE LEGS AND THE ENGINE ON THEIR RESPECTIVE SPOTS.

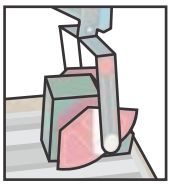


8 LAST, GLUE THE PUMPING JACK BODY ON THE LEGS, AS SHOWN IN THE FIGURE. THE BOXES MUST MATCH.



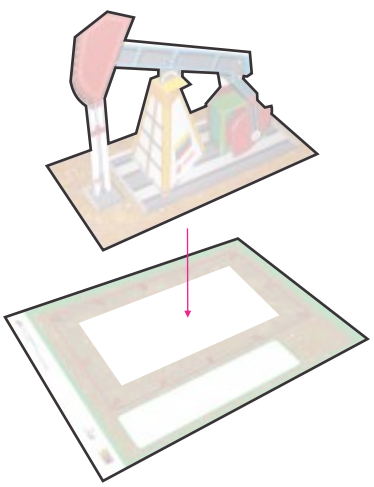
GLUE THE PIPELINE TOP BETWEEN THE FLAPS.

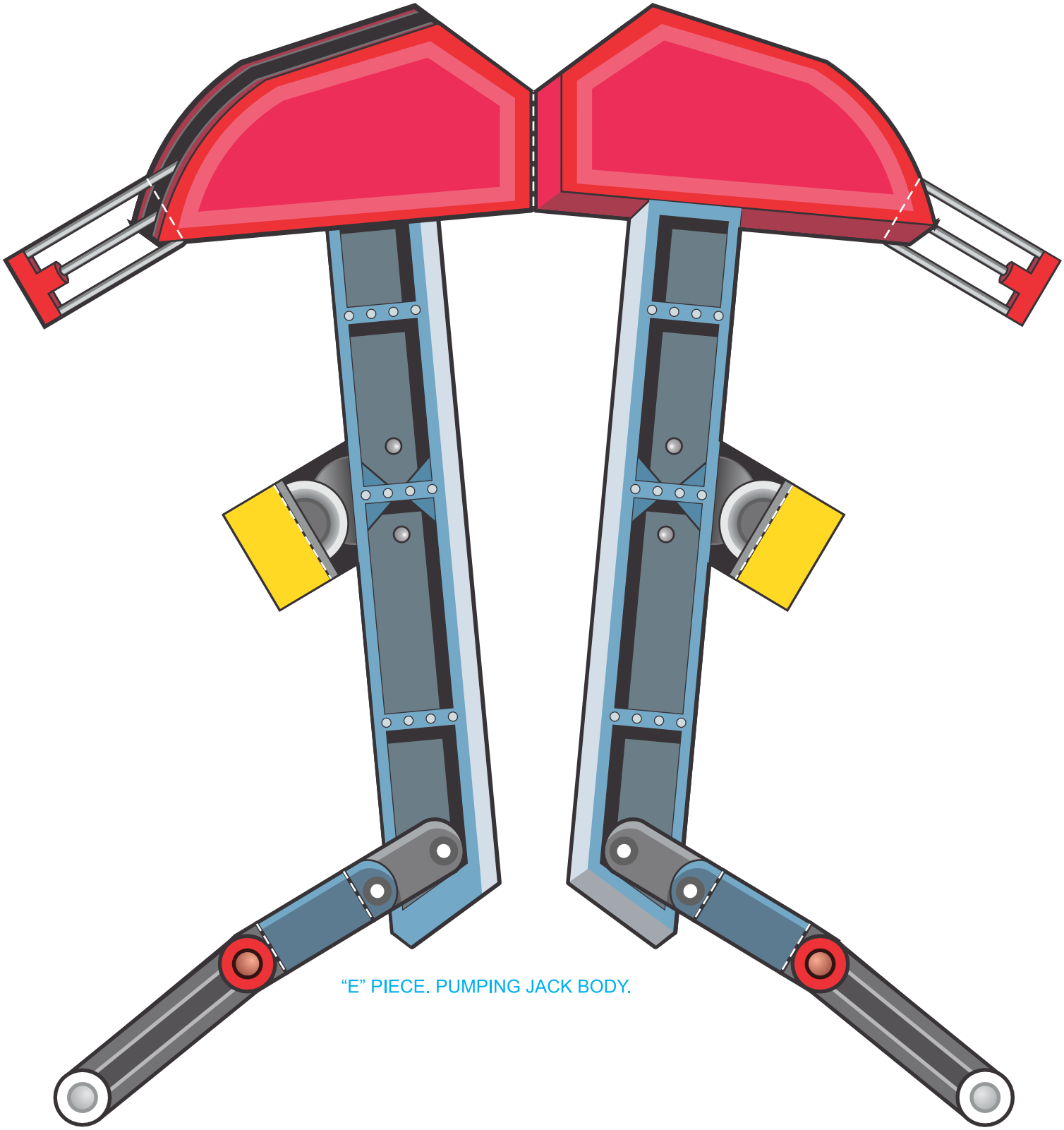




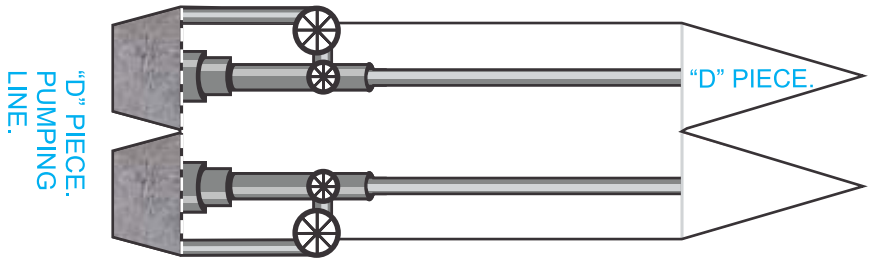
GLUE THE BODY ARMS ON THE ENGINE SIDES.

9 STICK THE MODEL ON ITS BASE. THE BASE IS OVERLEAF.



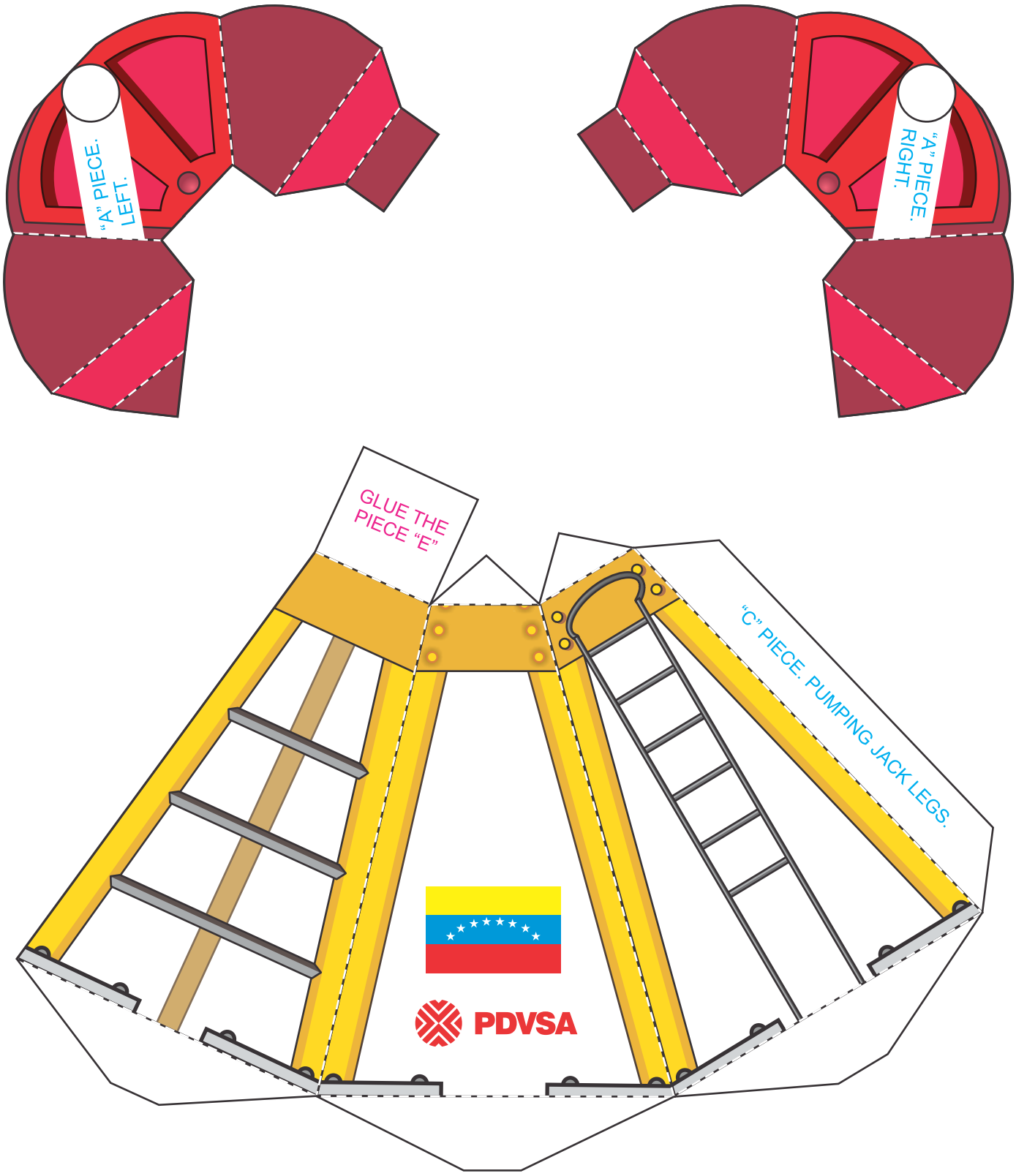


"E" PIECE. PUMPING JACK BODY.



"D" PIECE.

"D" PIECE. PUMPING LINE.


"A" PIECE. LEFT.
"A" PIECE. RIGHT.
GLUE THE PIECE "E"
"C" PIECE. PUMPING JACK LEGS.
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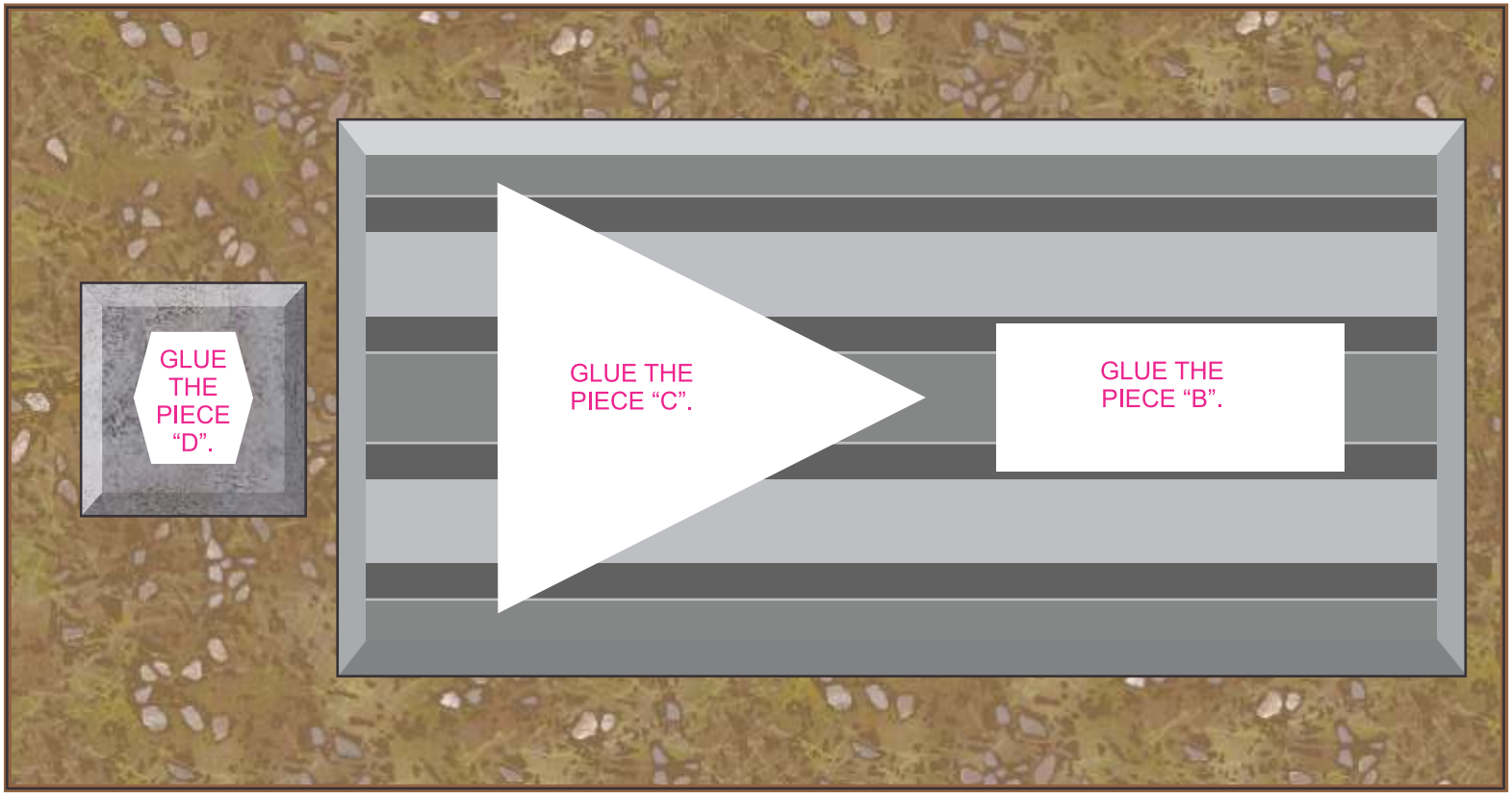
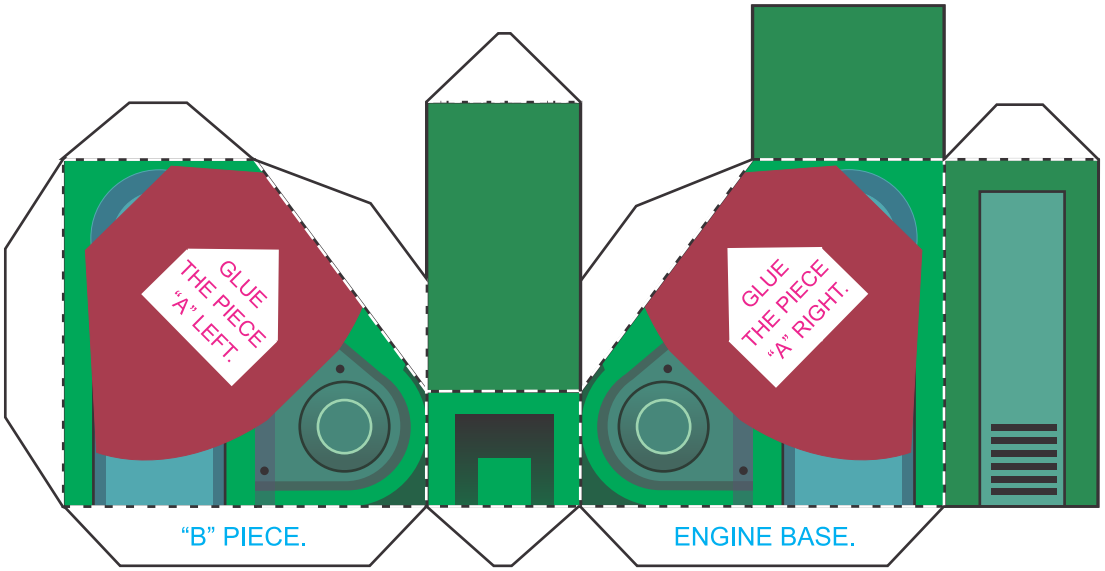


"F" PIECE. PUMPING JACK BASE.



"B" PIECE. ENGINE BASE.

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AREA TO GLUE
THE PUMPING JACK

The pumping jack

The **Pumping Jack** is a very representative equipment of the world oil industry. It is not used anymore and has been replaced with a device called **Christmas tree** (named this way because of its shape and the large amount of valves).

Once the well is drilled, experts remove the derrick and deploy the **Christmas tree**.
The Christmas tree is used to measure and control the oil coming from the well to collection sites.