### **CHARTS**:

### 1. Length



### 2. Backend Reaction:

10	0
most	least

### 3. Extra Hole Placement :

- A) On the PAP: Reduces flare and smoothes the backend reaction
- B) Inside the PAP: Extra Holes placed inside the PAP or VAL (vertical axis line) enhance the flare potential



## **DRILLINGS** BOWLER'S TRACK A) 6" Pin from PAP • FLARE POTENTIAL: Minimal Flare; All on the PA Backend MASS BIAS POSITIONS AND **REACTION CHARACTERISTICS:**

T

a) Ball Track: Maximum Length (10) Arcing Backend Reaction (3)

- b) Strong: Maximum Length (10) Angular Backend Reaction (4)
- c) Axis Midplane: Maximum Length (10) Controlled Backend Reaction (3)
- GENERAL CHARACTERISTICS: Works best on drier oil patterns. Designed for most length and minimal backend reaction.

## B) 5" PIN FROM PAP

BOWLER'S TRACK c ☆ b VERTICAL AXIS LINE

☆ b

• FLARE POTENTIAL: Medium Flare;

**REACTION CHARACTERISTICS:** 

b) Strong: Moderate Length (8)

GENERAL CHARACTERISTICS:

and moderate backend reaction.

Works best on medium to short oil

patterns. Designed for moderate length

a) Ball Track: Moderate Length (8)

Arcing Backend

Angular Backend Reaction (6)

Reaction (5)

Controlled Backend

Reaction (4)

c) Axis Midplane: Moderate Length (8)

MASS BIAS POSITIONS AND

Late Mid-lane

and Backend

C

VERTICAL AXIS LINE





### C) 4" PIN FROM PAP

• FLARE POTENTIAL: Moderate Flare; Strong Mid-lane and Backend

 MASS BIAS POSITIONS AND **REACTION CHARACTERISTICS:** 

a) Ball Track: Medium Length (6) Arcing Backend (6)

b) Strong: Medium Length (6) Angular Backend (10)

c) Axis Midplane: Medium Length (6) Controlled Backend (7)

• GENERAL CHARACTERISTICS: Works best on medium to heavy oil patterns. Designed for medium length and strong backend reaction.



D) 3" PIN FROM PAP



VERTICAL AXIS LINE

- FLARE POTENTIAL: Maximum Flare; Early to Strong Mid-lane
- MASS BIAS POSITIONS AND **REACTION CHARACTERISTICS:**
- a) Ball Track: Average Length (5) Hard Arcing Backend Reaction (7)
- b) Strong: Average Length (5) Angular Backend Reaction (8)
- c) Axis Midplane: Average Length (5) **Controlled Backend** Reaction (6)

 GENERAL CHARACTERISTICS: Works best on heavy oil patterns. Designed for average length and moderately strong backend reaction.

## E) 2" PIN FROM PAP

- FLARE POTENTIAL: Moderate Flare; Early Mid-lane
- MASS BIAS POSITIONS AND **REACTION CHARACTERISTICS:**
- a) Ball Track: Short Length (3) Arcing Backend Reaction (4)
- b) Strong: Short Length (3) Slight Angular Backend Reaction (5)
- c) Axis Midplane: Short Length (3) Controlled Backend Reaction (3)
- GENERAL CHARACTERISTICS: Works best on medium to heavy oil patterns. Designed for early roll and

average backend reaction.

BOWLER'S TRACK  $\bigcirc$  $\overrightarrow{\mathbf{x}}$ T  $\mathbf{C}^{l}$ b

# G) FULL ROLLER LAYOUTS





## FACTS:



## F) 1" PIN FROM PAP



VERTICAL AXIS LINE

 MASS BIAS POSITIONS AND **REACTION CHARACTERISTICS:** a) Ball Track: Earliest Length (1) Arcing Backend Reaction (1)

Early

VERTICAL AXIS LINE

b) Strong: Earliest Length (1) Slight Angular Backend Reaction (8)

• FLARE POTENTIAL: Minimal Flare;

c) Axis Midplane: Earliest Length (5) Controlled Backend Reaction (6)

### • GENERAL CHARACTERISTICS: Works best on medium to heavy oil patterns. Designed for earliest roll and minimal backend reaction.



The following Layout Guide is designed to give you several options for the layout of your new Roto Grip Ball.

**1. Pin Distances:** Pin Distance from the PAP (Positive Axis Point) determines the amount of flare and the part of the lane where the ball will maximize its flare for that particular layout.

**2.** Mass Bias: Position of the Mass Bias is used as a fine tuning agent for ball reaction enhancement.

**3. Extra Hole Placement :** Placement of an Extra Hole may be required for certain drillings in this guide to achieve legal static balance (see X-Hole chart).