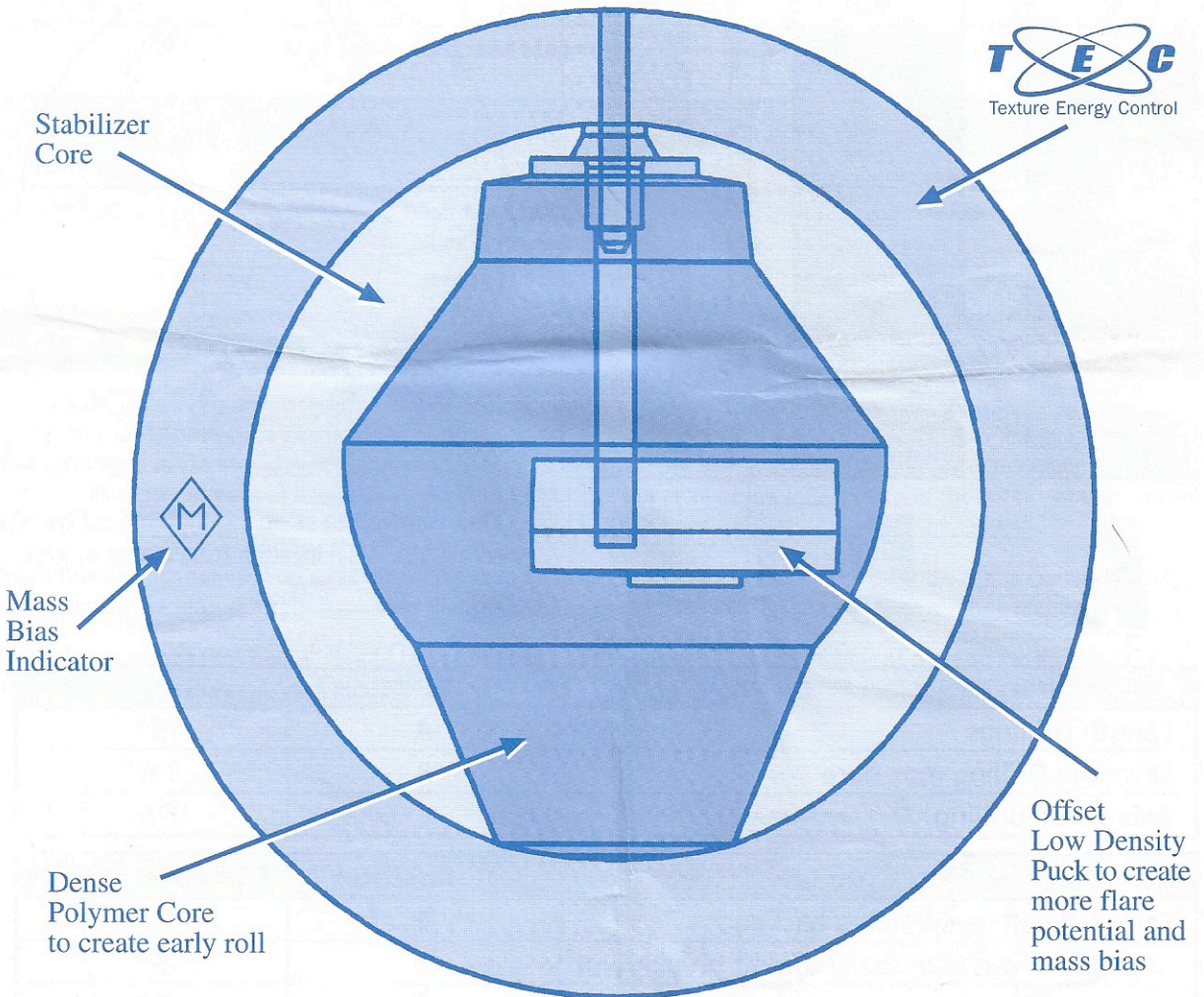




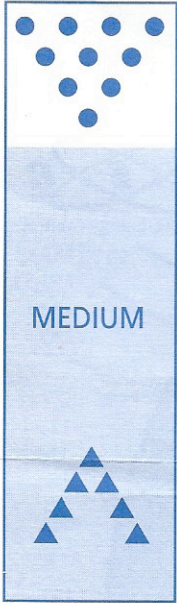
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Suggested Drilling Patterns

Common Lane Conditions

Medium Lane Condition



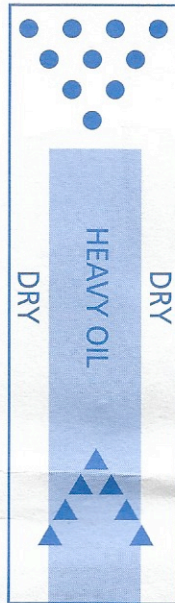
A

Gutter to Gutter Condition



B

Wet/Dry Condition

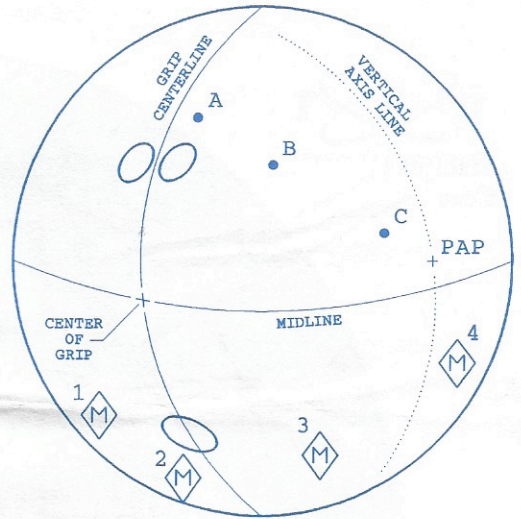


C

PAP-Positive Axis Point


- Pin Positions: A, B or C

Mass Bias  Positions: 1, 2, 3, 4





This illustration is an example of a layout with a 5½" PAP location from center of grip.



Ball Reaction From Pin	Pin Position	Distance to PAP
Length Drillings	A	5"
Leverage Drilling max flare	B	3¾"
Axis or roll drilling	C	1½"

Ball Reaction from Mass Bias	 Position	Distance to PAP
Early roll with even arcing backend	4	3"
Medium length with sharp turn at break point	3	5"
Length with strong curve	2	7"
Length with hook and set motion	1	9"



 is Mass Bias Indicator

Preferred Lane Condition	Pin Position	 Position	Distance from Pin x  to PAP	Front End Reaction	Back End Reaction	Flare 1=Min 10=Max	Suggested Pin Out
Medium	A	2	5" x 7"	Max Length	Smooth Curve	5	1" - 5"
Medium	A	3	5" x 5"	Max Length	Strong Hook	5	2" - 5"
Medium/Dry Backends	A	1	5" x 9"	Max Length	Hook and Set	5	2" - 5"

Recommended for common lane conditions and bowlers with high rotation rates.

Preferred Lane Condition	Pin Position	 Position	Distance from Pin x  to PAP	Front End Reaction	Back End Reaction	Flare 1=Min 10=Max	Suggested Pin Out
Heavy	B	2	3 ³ / ₈ " x 7"	Med Length	Curve	7	2" - 4"
Heavy	B	3	3 ³ / ₈ " x 5"	Med Length	Strong Hook	10	1" - 5"
Heavy	B	4	3 ³ / ₈ " x 3"	Med Length	Roll	7	2" - 4"

May hook early and stop for bowlers with higher revs.

Preferred Lane Condition	Pin Position	 Position	Distance from Pin x  to PAP	Front End Reaction	Back End Reaction	Flare 1=Min 10=Max	Suggested Pin Out
Extreme Wet-Dry	C	2	1 ¹ / ₂ " x 7"	Early Roll	Roll or Arc	1	0" - 2"

Caution: A bowler with a high track might roll over the finger holes with this layout. Least hooking of all drillings.

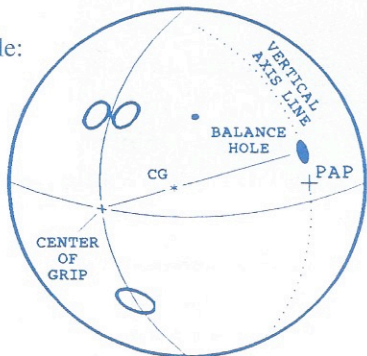
Surface

The Total Chaos™ comes out of the factory with a compound finish. This smooth surface retains energy in the front of the lane and promotes a sharper turn at break point. For earlier hook the ball can be sanded. For more length and a stronger backend finish, the surface can be polished. A polished or compound surface can be adjusted with scotchbrite to get additional length from the smooth surface but achieve enough friction at the break point to control the ball reaction.

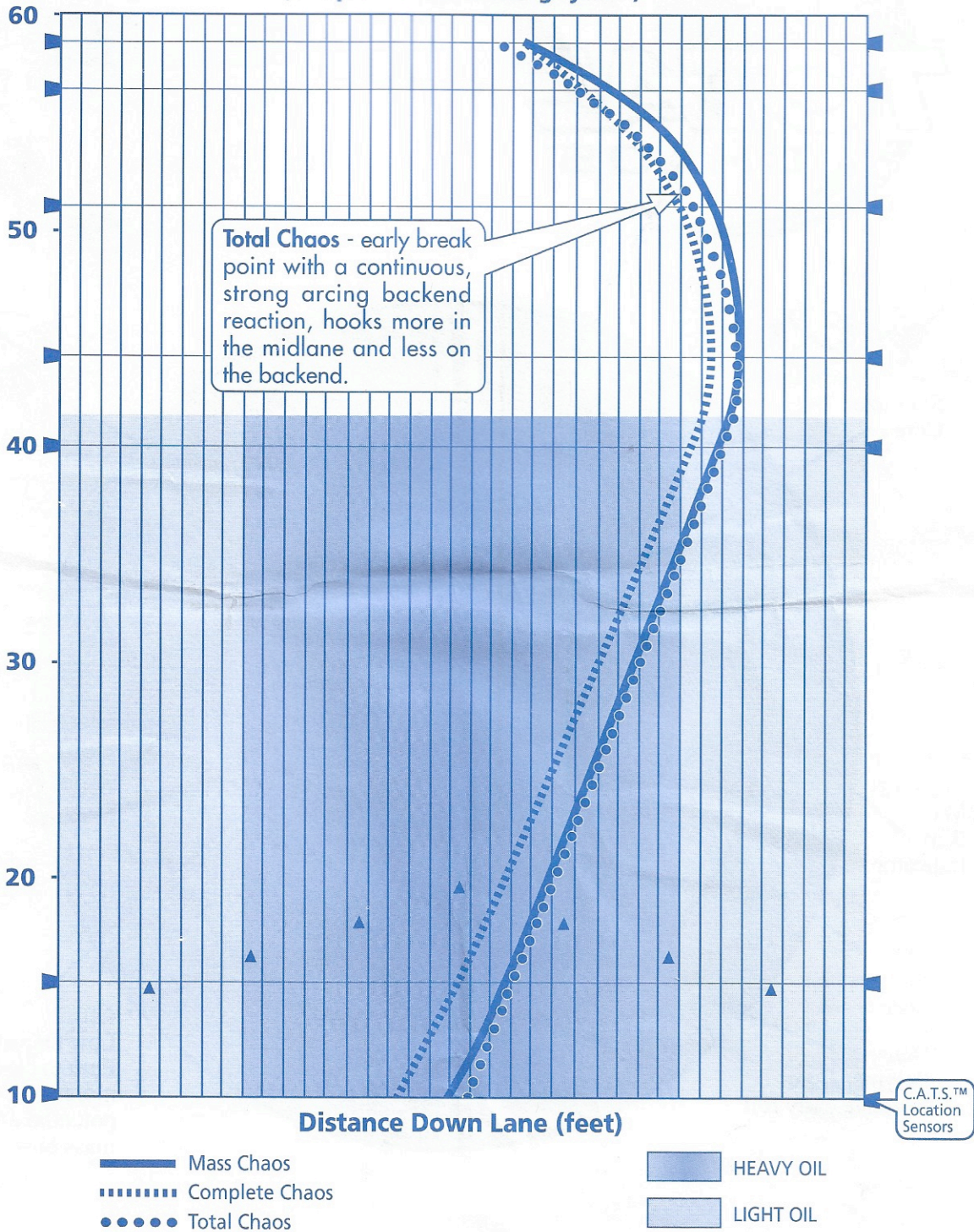
Remember to position pin on or above a line drawn from the PAP to the finger holes. If the pin is moved closer to the center of the grip, it might flare over the finger holes for high track players.

If a balance hole is required, it should be positioned on a line drawn from the center of the grip through the C.G. and located at the intersection with vertical axis line.

Example:



C.A.T.S.™ Results (Computer Aided Tracking System)







Technical Ball Information

	Rg (X-Axis) (16 Pounds)	Differential Rg (16 Pounds)	Hook Rating (Boards of Hook)	TEC™ Rating*	
				(End of Oil)	(End of Lane)
Total Chaos	2.512	0.040	23	10	35
Mass Chaos	2.559	0.058	23	7	36
Complete Chaos	2.539	0.069	25	9	37
Extreme Chaos	2.565	0.043	22	8	35

All balls were tested with "out-of-box" finish.

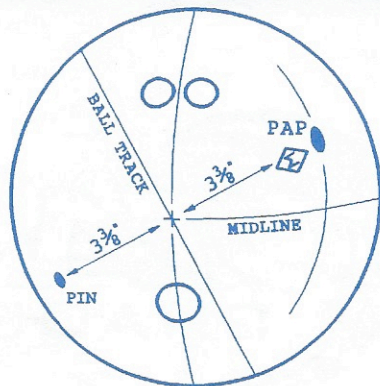
*TEC™ rating is the percent decrease in kinetic energy. The TEC™ rating is an indication of the energy transferred from kinetic (forward velocity) to rotational (hook). The higher the TEC™ rating the more hook up to that area of the lane. The TEC™ rating of 10 at the end of the oil for Total Chaos means it hooked earlier than the other Chaos'. The 35 TEC™ rating at the end of the lane means the Total Chaos hooked a little less on the backend because it hooked more in the midlane for a controllable reaction.

 now comes in multi-color. Total Chaos™ is Columbia's latest  ball designed to roll early with a strong break point. It features the first multi-color  (Texture Energy Control) cover with microscopic balloons for added hook in oil. The ball design started with the highly successful Pulse core. A low density, internal puck was offset from the core center to create mass bias on the opposite side of the puck. This low density puck also gave the advantage of creating more differential Rg from the original Pulse core. This increased differential Rg, along with the more aggressive  shell, results in the same early roll of the original Pulse but with a sharper turn at the break point and more backend hook.

Things to Remember

1. Any of the drillings can be drilled back to negative side-weight for earlier roll and less backend.
2. C.G. is defined as center of gravity.
3. PAP is defined as Positive Axis Point.
4. Recognize that all illustrations shown are for right-handers. Reverse for left-handers.

Full Roller Drillings



Maximum hook and flare to create strong backend. Put pin and $\diamond 3\frac{3}{8}$ " from center of grip and $\diamond 2\frac{1}{2}$ " above midline. Use 3+" pin out balls.

TOTAL CHAOS™



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