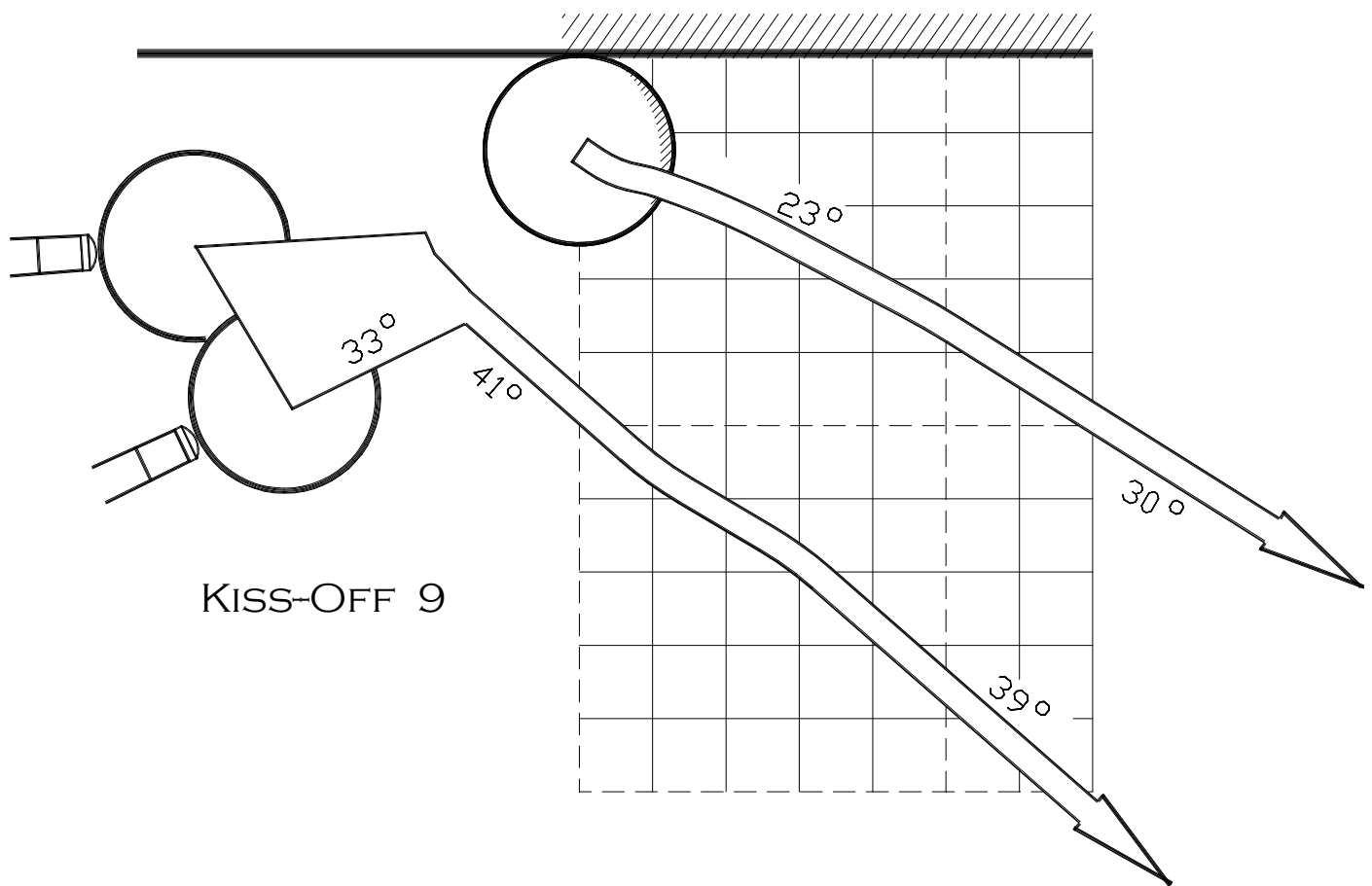


KISS-BACK ANGLZ



KISS-OFF 9

KISS-OFFS REVIZITED

Before we look into Kiss-Backs, let's hav a closer look at Kiss-Offs.

KISS-OFF ANGL

Kiss-Off 9 tryz to show that when the qball-to-yellow-angl is 40° or less uget a very dependabl and friendly kiss-off-angl . The qball's trajectory is 41° for softish shots, and gets narrower for hardish shots, ie 40° then 39° then 38° etc, the angl being mezured from the center of the qball when it leevz the yellow. In fact joining the points where the qball stops givz u a sort of S-bend, as shown.

YELLOW'Z ANGL

Now have a gander at the yellow's rebound-angl. As shown joining the points where the yellow stops givz u a sort of S-bend as well. The yellow's trajectory is 23° for softish shots (ignoring the first bit), and this actually gets wider for hardish shots, ie 30° . The rebound-angl iz actually even more dependabl and friendly than the kiss-off-angl, koz rebound-anglz remain at 30° for all attack anglz between 00° & 120° , az mentioned in Kiss-Off Anglz.

Az uzual, all of these sorts of consideratiionz refer to pozzyz near the top-cushion. Here the nap of the cloth iz south to north. The nap-factor often makes a difference to these rezultz.

With Kiss-Alongz uwill uhavta deal with qball attack anglz of over 33°, ie Kiss-Backs, which iz what we look at next.

KISS-BACK 1

When the qball-to-yellow angl iz 50° (center-to-center), the widest kiss-off-angl iz got from a 7/8th contact on yellow (shown). But the angl iz littl wider than for a 3/4 contact (shown).

The kiss-off-angl for a half-ball contact iz similar (39°) to the standard kiss-off for qball-to-yellow anglz of 40° or less.

KISS-BACK 2

When the qball-to-yellow angl iz 60°, the widest kiss-off-angl iz got from a full-ball contact. But the full-ball kiss-off-angl iz very fragile, if u hit hardish the angl iz reduced, and if harder still the qball actually "goze nowhere" (az shown).

This also applyz to a lesser extent to 15/16ths, and 7/8ths contacts (shown).

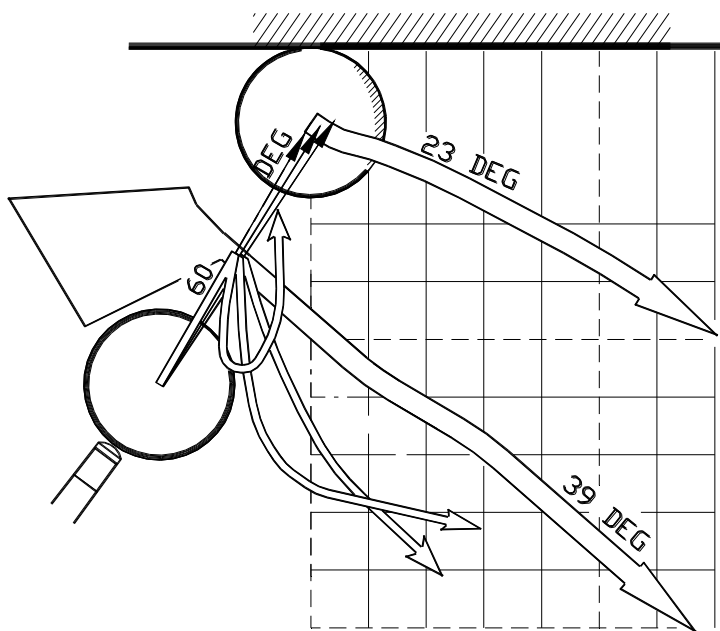
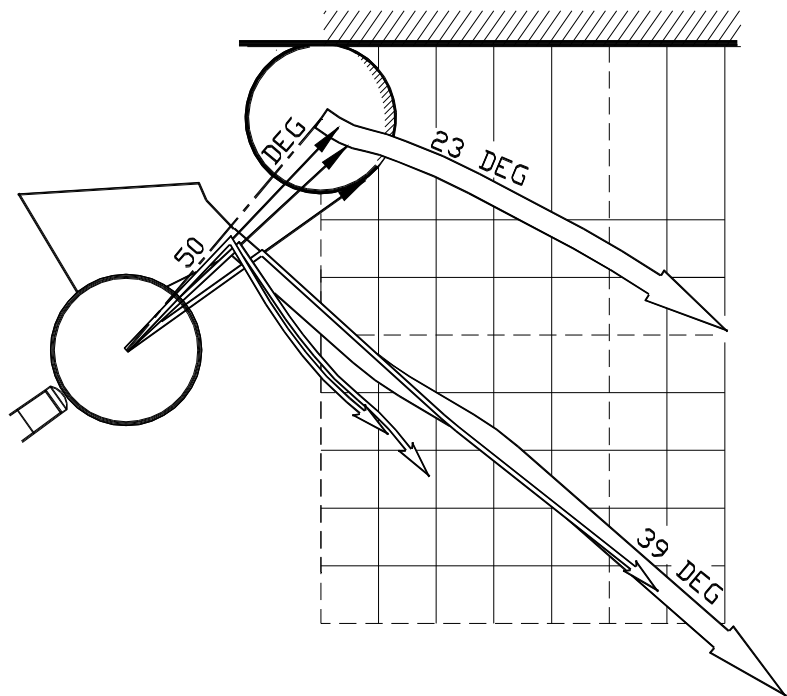
The tracks in 2 and 3 do not show trajectoryz for individual shots. Each track iz gotten by joining all of the stopping placez for a number of shots played at varyus strengths, for any one contact on yellow.

KISS-BACK 3

This showz that once the qball-to-yellow angl iz 50° or more, uken uze check-side or running-side (together with changing the contact on yellow) to place the yellow at a large range of different pozzyz, for any one stopping place of the qball.

But of course none of the yellow pozzyz in this large range ken be off the 23° line. U karnt change this (unless u avoid the full doubl-kiss, perhaps by uzing screw or pique).

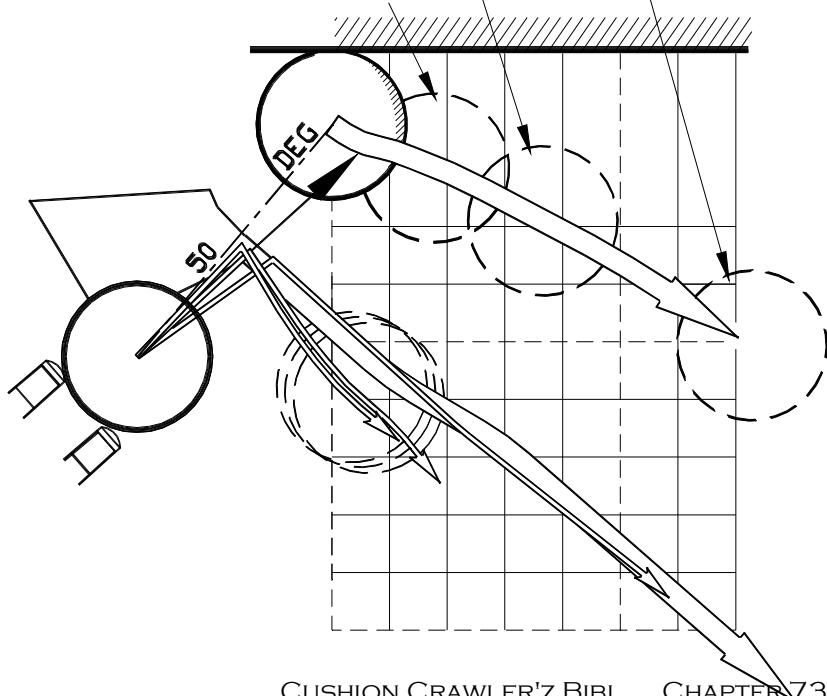
For qball-to-yellow anglz of 40° or less (ie Kiss-Offs), any one stopping place for the qball correspondz with only one stopping place for the yellow. Uzing check-side or running-side will not not overkum this.

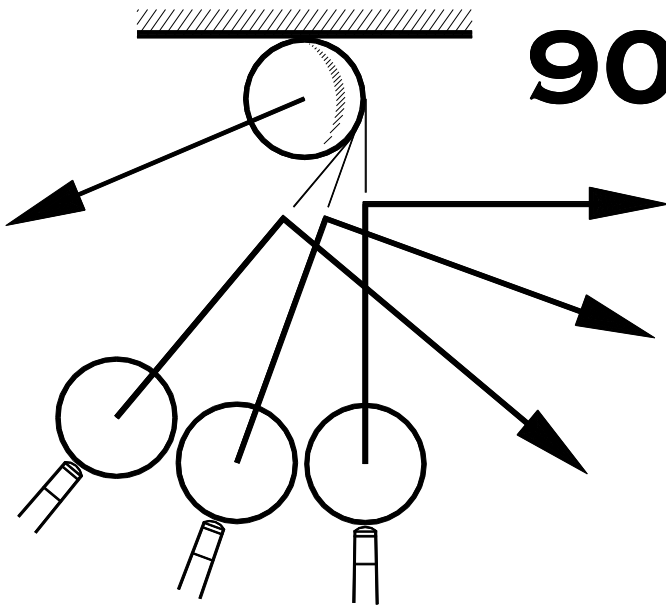


THIN 3/4 & CHECK

THICK 3/4 & RHS

THICK 3/4 & CHECK





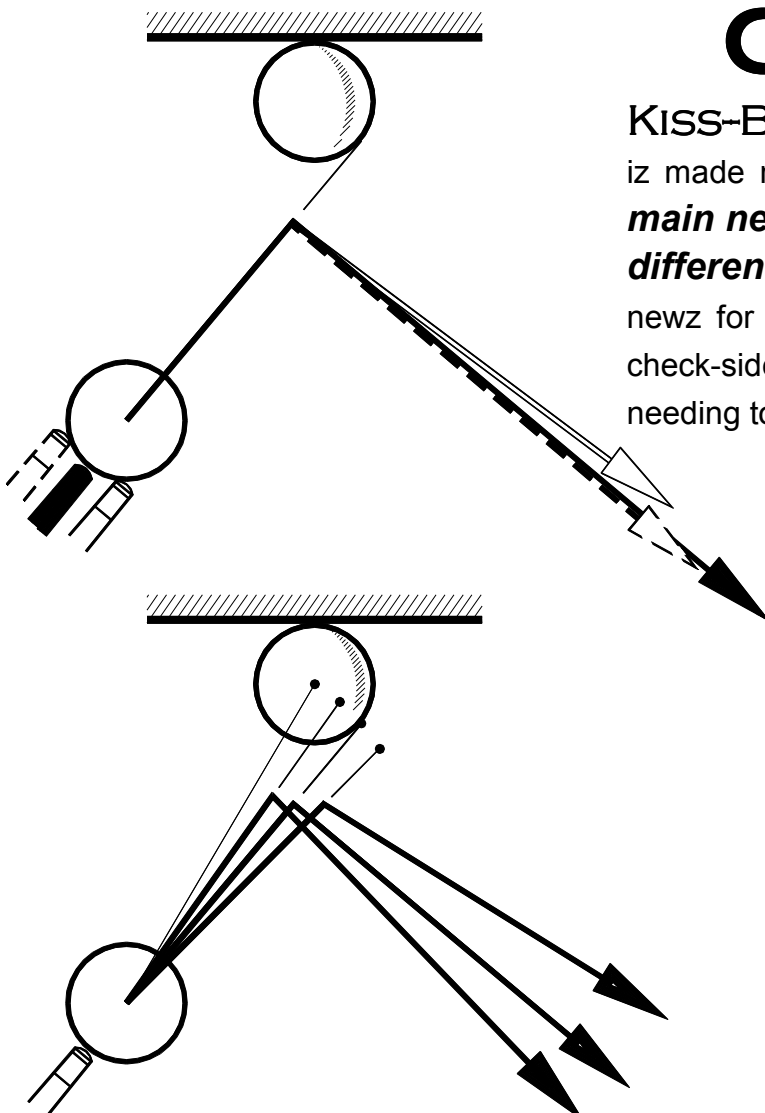
90° KISS-BACKS

KISS-BACK 4 We all know that the natural half-ball deflexion angl iz a relyabl 35°, near'nuff. This iz probably what makes English billiardz the game that it iz.

But few know that the natural half-ball kiss-back angl iz a relyabl 90°, near'nuff.

The drawing showz three 90° kiss-backs for 3 attack anglz -- each for a half-ball contact. This iz good newz for cushion-krawlerz -- it ken help heaps for judging some of our cannonz.

This 90° iz not mezured from a line joining the centerz of the 3 ballz -- it iz a 90° bend in the actual trajectory taken by the qball -- so u might havta uze yor imagination a bit. I don't remember seeing any of this 90° sort of stuff in any book. Altho, az uzual, CD Locock, Side & Screw, 1901, haz about the best effort, in a chapter on Kiss Strokes. I seem to recall Ron Cole telling me that he heard Bob Marshall talking about this 90° stuff. Perhaps Bob got it from Wally. Hmmmmmm.



CHECK-SIDE

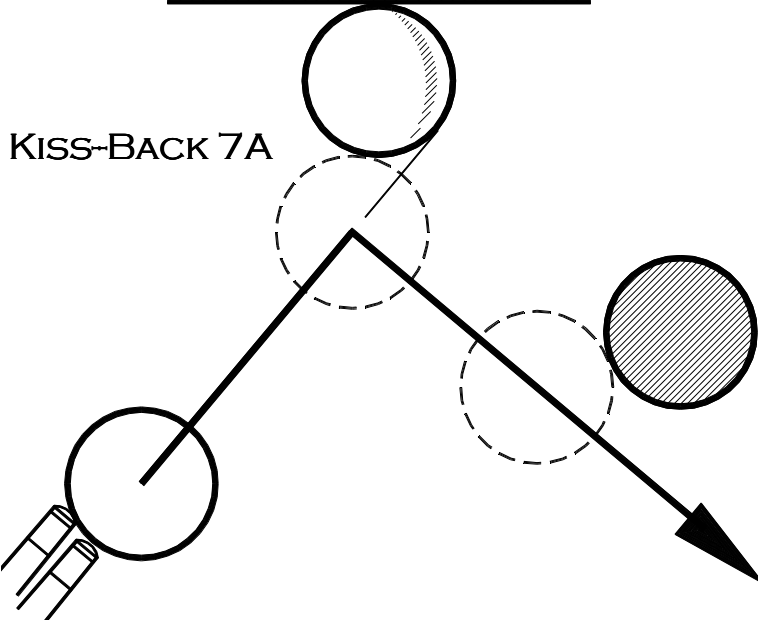
KISS-BACK 5 Here we show that the 90° angl iz made narrower by uzing running-side. ***But, the main newz iz that check-side duznt make any difference to the 90° angl.*** This iz more good newz for us cushion-krawlerz. Koz now we ken uze check-side to moov the yellow further east, without needing to worry about any increased angl.

ERRORZ

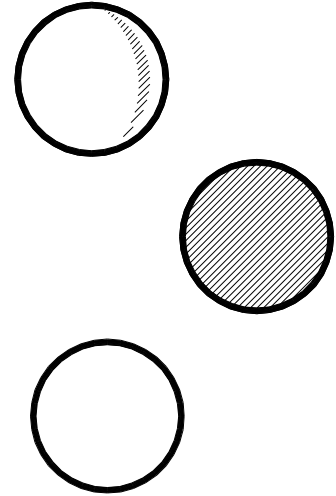
KISS-BACK 6 Here we show that hitting the yellow three-quarter-ball givz a larger kiss-back angl (say 95°). And hitting the yellow quarter-ball givz a narrower kiss-back angl (say 80°). So, any error in contact ken rezult in a fairly large departure from yor intended angl. So be careful.

This ken be a worry when uzing check-side or running-side -- koz then it iz difficult to aim accurately --- yhe squirt ken vary a lot -- - plus the problem of a mini-miscue --- all affecting the contact. Hmmmmmmm.

USING THE FRIENDLY HALF-BALL 90° KISS-BACK ANGL



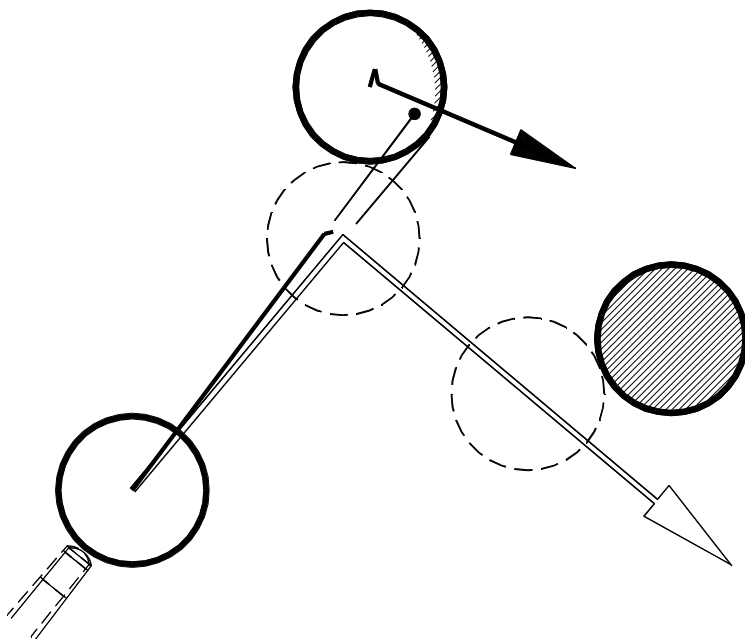
LEEVE 7B



In 7A we ken see that a half-ball kiss-back will giv a thinnish contact on red, which iz good, koz we want the qball to finish south of red. We ken also see that it would be a good idea to send the yellow az far east az possibl. So we elect to uze some check-side -- we know that check-side will maximize the moovment of yellow to the east -- & we know that check-side will not affect the 90° kiss-back angl. So, we play the shot & get the leev shown in 7B, perfikt.

In 7A, if the red woz a littl further south, then a half-ball contact on yellow would hav rezulted in the qball hitting red fullish. To avoid that, we would hav played a thick half-ball on yellow, uzing feel etc to judge how thick the thick. And we probably wouldnt hav needed any check-side.

OFF THE CUSHION



KISS-BACK 8 In Kiss-Back 7A, if the yellow were a coupl of mm off the cushion we could ignore it, there wouldn't be any great need to make any allowance in aim etc. But here in Kiss-Back 8 the 3 ballz hav the identical dispozition to 7 except that they are all 10mm further from the cushion. However, we ken still play a similar shot to Kiss-Back 7, & get a similar rezult. We pretend that the yellow iz on the cushion -- all we need do iz aim further left, instead of half-ball. The xtra thickness in aim on yellow needz to be equal to the distance between the yellow & cushion.

CHECK SIDE If we wish to uze som check-side (not shown), we should actually aim a littl less thick than this (not shown).

THICK KISS-BACK

KISS-BACK 9 Here iz 7A again, xcept that the qball & red are closer to yellow, & the red iz further west. The 90° kiss-back arrow for a ½ ball contact iz shown, & the kiss-back arrow for a ¾ ball contact. This time a ½ ball kiss-back will contact red too thickly. A ¾ ball kiss-back would be ok, but the yellow would go too far east (not shown). We ken play slightly thicker than ¾ ball, with some running-side (not shown). The running-side would keep the yellow from leaking too far east, & the thick contact would regain the angl lost by izing running-side. But, if u are game, u ken play nearer 7/8th ball, az shown, with lots of running-side, az shown, to get the perfikt rezult shown.

SHORT-SIGHTED

KISS-BACK 10 Here iz 9 again, xcept that the qball iz closer to yellow. The 90° kiss-backs for a ½ ball contact & a ¾ ball are shown again. This time, in theory, there iz no gain by hitting the yellow thick. What's going on??

It's that **Deflexion Angl Paradox** again, only in reverse. Az **Geza Gazdag** sez, the ballz are short-sighted. The xtra angl of kiss-back for a three-quarter-ball contact iz eroded by the xtra angl needed to re-aim. If we moovd the qball even closer to yellow, the three-quarter-ball kiss-back angl may actually be less than the half-ball kiss-back angl. No wonder we wonder.

SCREW

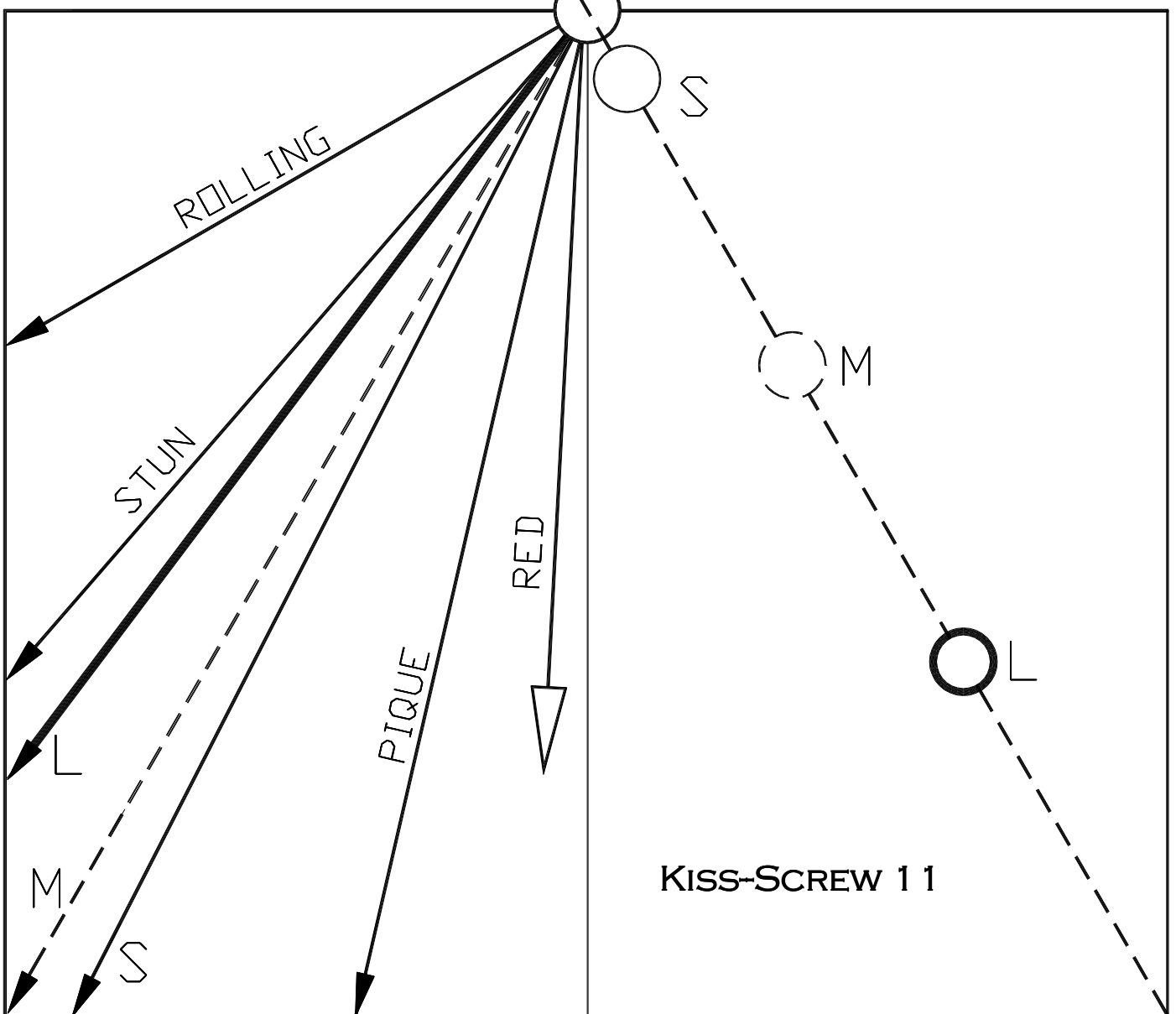
Luckily, when u get so close to yellow that the Deflexion Angl Paradox bites u, u are uzually close enuff to play with soft-screw. So, az shown, we decide on a thick-half-ball contact on yellow, with deep soft- screw, with a touch of running-side. The running-side makes it eezyr to aim, & here givz an accurate travel for the qball on its journey to the yellow i think, but pleez yaself. The rezult iz perfikt az uzual. Notice that koz the screw robz some of the doubl -kiss the yellow kumz out lower than its uzual 1 in 2 -- a bonus.

PERFIKT POZZY

If the red were further west or south, we would need to uze a pique-shot to get good . But don't fall for the trap of thinking that one needz to get perfikt pozzzy -- all u need iz better pozzzy. Don't play a risky shot to get perfikt pozzzy, when u ken play a shot u know, if this improovz the pozzzy.

KISS

SCREWZ

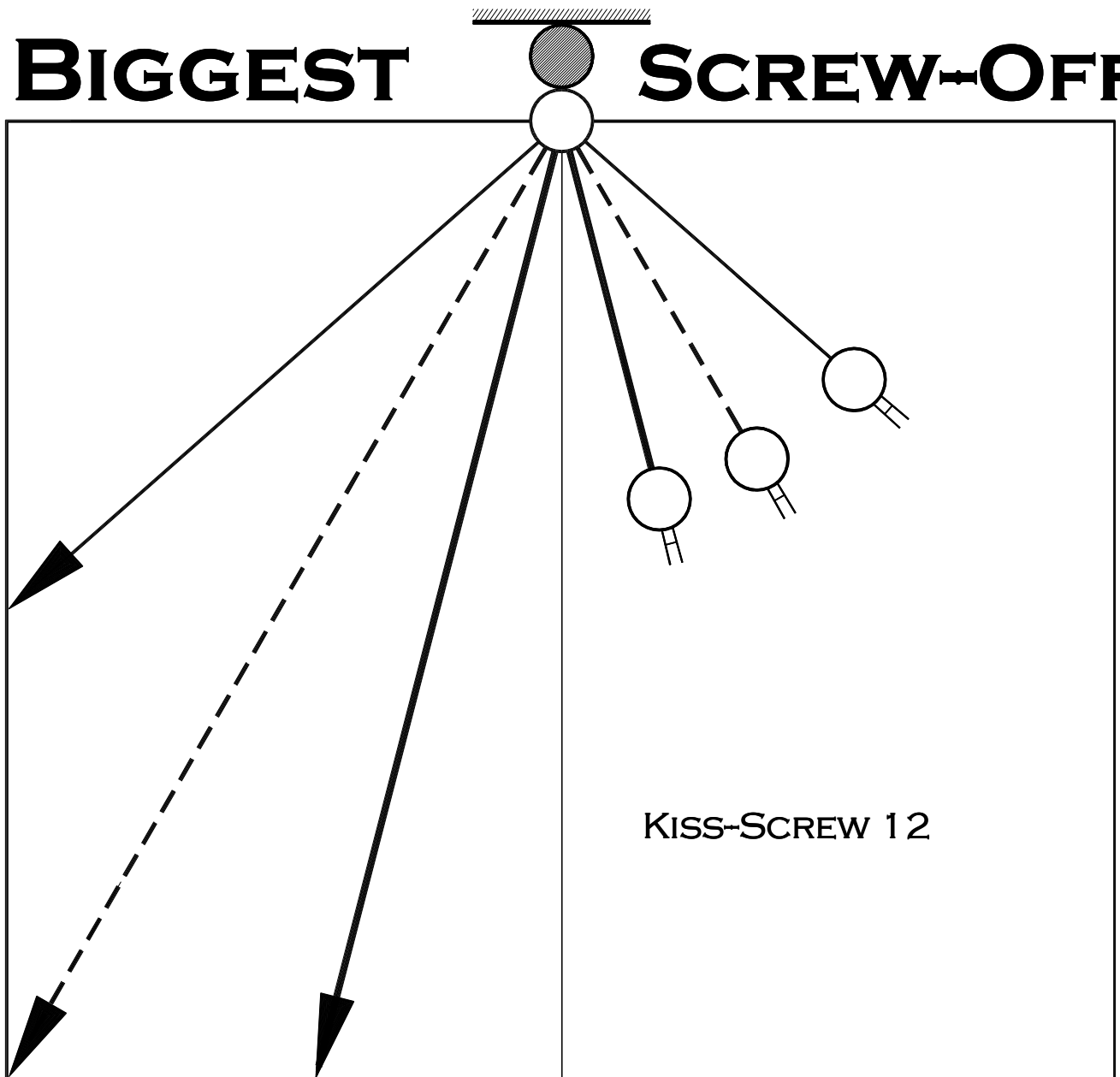


Whats the difference between a Kiss-Screw & a Screw-Kiss -- about \$10. But seriously, folks -- we need to look into these Kiss-Screwz more closely. Kiss-Screw 11 showz the results of half-ball contacts uzng screw. These screwz are from short-range, medium range & long-range -- here i meen the range between *qball* & red. We also show the results of stun, pique, & rolling. The red iz hard-up, & we also show the *qball* at the moment of contact. For each of these, if u make accurate half-ball contact, the red kumz back just inside the 90° line, az shown.

Az karnt be seen, for the medium-range screw, the kiss-off angl equalz the attack-angl, ie 30° & 30°, or 60° & 60°, depending on how u mezure them. These medium-range attack & kiss-off trajectoryz are shown by the broken-linez.

However, a short-range screw ken giv a slightly better angl, az shown. And a long-range screw givz less angl. So, judging Kiss-Screwz ken be a worry, for long-range cannonz at least. They depend so much on how good u & yor cue are, & on the range etc -- but mainly they depend on yor accuracy. Short-range nursery cannonz are less of a worry -- u would uzually uze feel for these, i think, altho knowledge of these sorts of Kiss-Screw anglz won't hurt.

BIGGEST SCREW-OFF



Further to Kiss-Screw 11. I havnt dunn many tests, but, it appearz that, for a half-ball contact, u get the biggest Kiss-Screw angl when u aim az if to hit the red at 90° into the cushion. So, for our half-ball contact, any smaller or larger attack angl yieldz a smaller kiss-back angl.

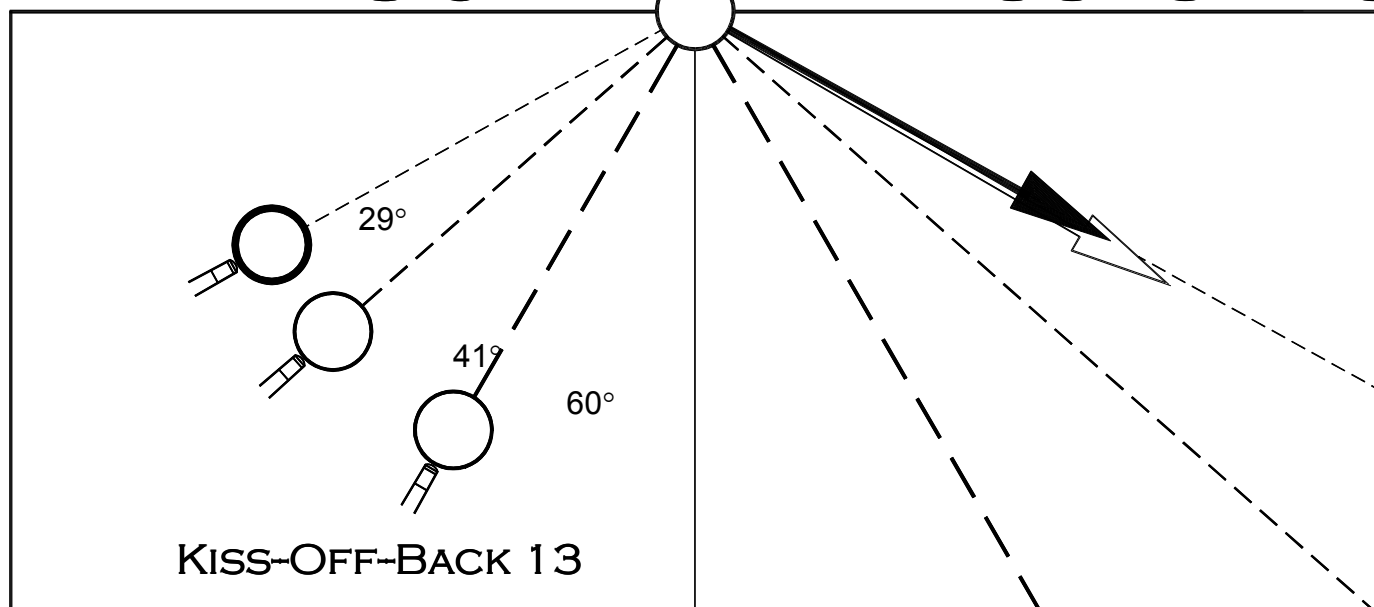
And, this probably goze for all contacts. The angl of attack that drivez the red at 90° iz the attack that givz the biggest kiss-back angl. And, for medium-range, this biggest kiss-back angl, iz actually equal to the attack-angl. We are talking about uzing maximum screw, albeit perhaps softish. Like we sed earlyr, for short-rangez, the kiss-back angl might be more than the attack-angl. Here in Kiss-Screw 12, we try to show that, for medium-range Kiss-Screwz, the kiss-back angl equalz the attack-angl, if u aim so az to drive the red at 90° (this medium range attack & kiss-off are shown by the broken linez). The red iz hard-up, & we also show the qball at the moment of contact.

So, this iz another reference for when cushion-krawlerz want to judge any Kiss-Screw. Hence, when u step up to a similar shot, the following thorts might go throo yor head.

If it iz a longish-range to the red, the kiss-back angl will be less-ish.
If u are driving the red thinner than 90° to the cushion, the kiss-back angl will be less-ish.
If u are driving the red thicker than 90° to the cushion, the kiss-back angl will be more-ish.
If u are hitting softish, or with less screw, the kiss-back angl will be less-ish.

30°

KISS-OFFS



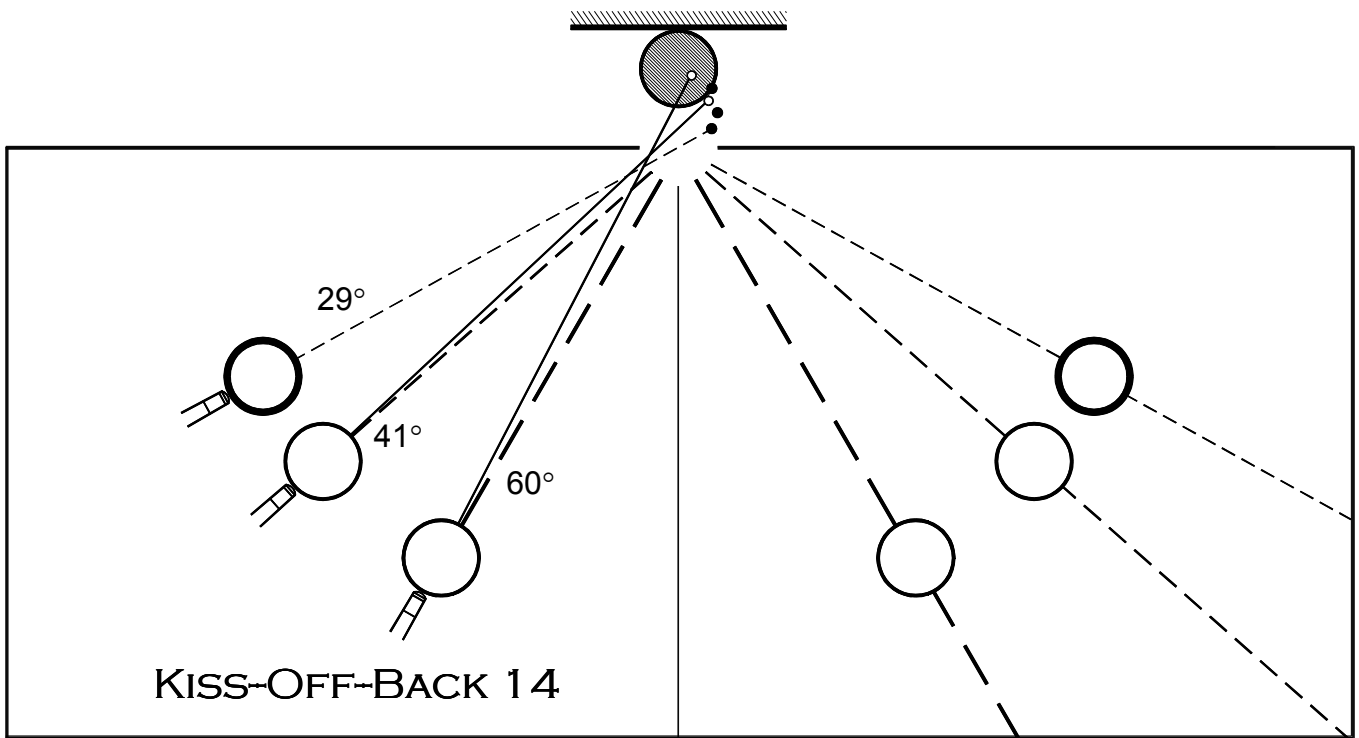
There iz a fairly goodish reference that cushion-krawlerz ken uze for judging kiss-offs & kiss-backs for **slowish rolling** cannonz off the red on the cushion.

If u aim to hit the red at 90° to the cushion, there are some fairly reliabl kiss-off-backs, az shown in Kiss-Off-Back 13. The red iz hard-up, & we also show the qbball at the moment of contact.

- For an attack-angl of 60° (in which case the contact iz half-ball), the kiss-off iz near'nuff 30°, az shown by the white arrow.
- For an attack-angl of 41° (in which case the contact iz a quarter-ball), the kiss-back angl iz near'nuff 30°, az shown by the white arrow.
- **For an attack angl of 29° (in which case the contact iz 1/8th ball), the kiss-off angl iz near'nuff equal, ie 29°, az shown by the black arrow.**
- So, theze 3 attacks, & the attacks in between (29° to 60°), all giv a similar kiss-off. Don't forget, here we are talking about driving the red (slowly) at 90° into the cushion.
- Attack-anglz finer than 29° (not shown) rezult in a wider kiss-off, but less than 29°. What i mean iz that say the attack iz 15°, then the kiss-off iz say 25° (not shown).
- Attack-anglz thicker than 60° (not shown) rezult in a narrower kiss-off, but wider than 29°. What i mean iz that say the attack iz 75° (not shown), then the kiss-off iz say 50°.

The only attack-angl that givz an equal kiss-off iz 29°. Here we are hitting the red at 90° into the cushion, with slowish roll on the qbball. For attack-anglz largerer than 29° the kiss-off angl iz lesserer than the attack-angl -- i think the less iz at a max when the attack-angl iz 60° (the loss iz 30°). After that, the loss lessenz, so that at 90° the loss iz zero again, ie the kiss-off equalz the attack. When the qbball & the third ball (yellow here, not shown) are the same distance from the cushion, it iz eezy to see what iz needed. But, when the qbball iz much closer to the red the difference in the 2 legz of the cannon makes it difficult to see whether the necessary angl iz equal. Then the best way iz to line up the stroke (ie az if to make the red drive square to the cushion), & then hav a look at the line of yor cue. The line of the cue ken more eezyly be compared to the line to the yellow -- iz the attack angl more or less than the angl to the yellow?? -- thusly uken re-aim to get the needed rezult.

KISS-OFF EQUALZ ATTACK



Here we look at what contact iz needed if we want the kiss-off angl to equal the attack-angl. The red iz on the cushion, & here we are talking about a slowly rolling qball, with no sidespin.

Here we are looking at the same 3 qballz that we had in Kiss-Off-Back 13. There they were going to drive the red at 90° into the cushion, by contacting the red an $1/8^{\text{th}}$ ball, a $1/4$ ball, & a $1/2$ ball. But here, we don't care what angl we drive the red, nor what the contact needz to be, az long az the Kiss-Off-Back angl equalz the attack-angl.

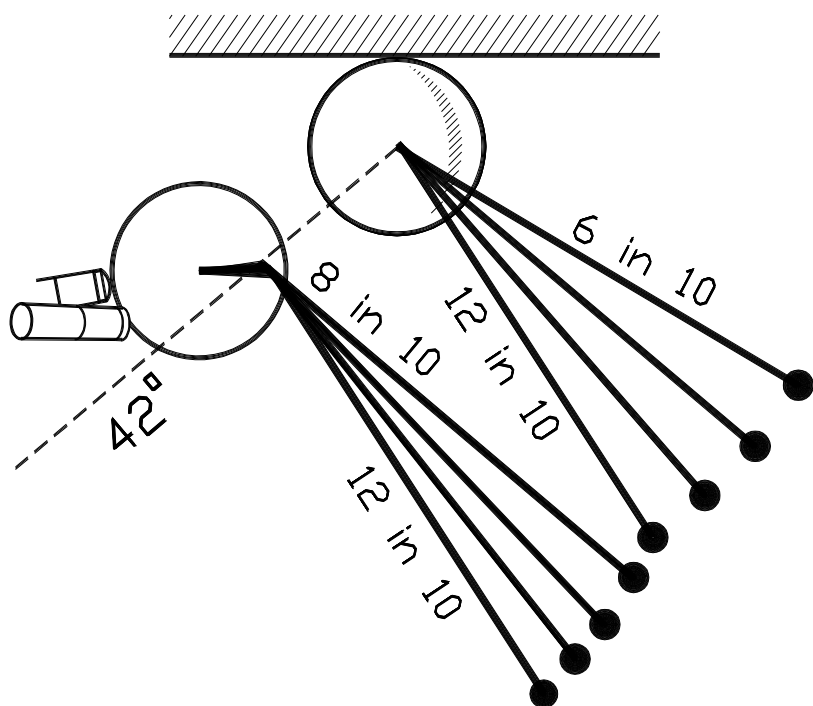
$1/8$ BALL We start by looking at the $1/8^{\text{th}}$ ball. This ownz an attack-angl of 29° , & we already know that this $1/8^{\text{th}}$ contact givz a Kiss-Off-Back angl of 29° . So, no need to alter anything here.

$1/4$ BALL Nextly, we look at the $1/4$ ball contact. This iz 41° . Here, trial & error showz that the needed contact, to giv a 41° Kiss-Off-Back angl, iz a littl finer than half-ball. Just by the way, from earlyr on, we already know that a half-ball contact would giv a 90° deflection, ie a Kiss-Off-Back angl of 49° .

$1/2$ BALL Thirdly, we look at the $1/2$ ball contact. This iz 60° . Here, the needed contact iz almost $7/8^{\text{th}}$ ball -- to giv a 60° Kiss-Off-Back angl. So, the needed contact to giv an equal angl ken be drastic. Xcept for the 29° case, where we simply aim to drive the red (slowly) at 90° into the cushion.

But, at our uzual nursery range, ie uzually less than 2 ballz distance, judging the needed contact iz not so difficult. Anyhow, practice will giv u the needed feel&judgement.

WIDENING THE YELLOW'Z REBOUND ANGL

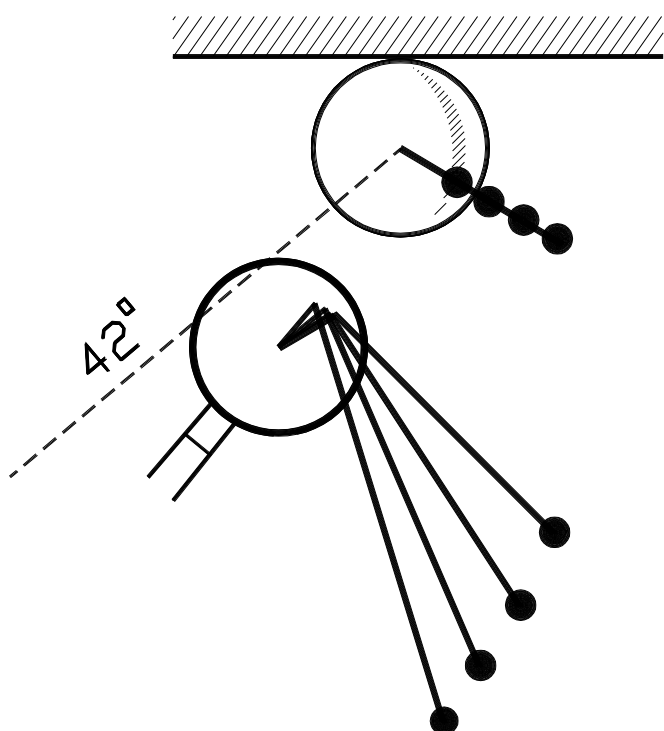


KISS-OFFS KEN DO

We know that the yellow kissez out at **6 in 10**, & the qball kissez off at **8 in 10** -- for slowizh pace. Here we are talking about the qball contacting the yellow thicker than $\frac{1}{4}$ ball & thinner than $\frac{5}{8}$ ball -- not to be confuzed with some of the recent pagez where the contacts hav been somthing else, or where we hav been uzing screw.

Ok, for these $\frac{1}{4}$ ball to $\frac{5}{8}$ ball contacts -- if u uze running-side the yellow'z rebound angl, & the qball'z kiss-off-angl, inkreec a bit. And if u uze soft-screw -- theze anglz inkreec much morso.

If u arrange the contacts so that the qball & yellow remain close together for all such kiss-offs - - the yellow won't rebound more than say 12 in 10 -- & the qball more than say 12 in 10 allso. When i say -- remain close together -- i meen that the qball & yellow moov off at the same speed, & hence stop at the same time. Thusly, itz a bit eezyr to inkreec the yellow'z rebound angl than it iz to inkreec the qball'z kiss-off-angl.



KISS-BACKS NO KEN DO

Kiss-Backs are different to Kiss-Offs.

The **qball kiss-back angl** ken be much **widened** uzing skrew -- but there will be zero inkreec in the **yellow'z rebound-angl** (az shown).

Here we arnt talking about arranging the contacts so that the ballz remain close together -- koz this iz impossibl -- koz (a) koz of the difference in the anglz taken, & (b) koz the yellow duznt roll az far az the qball.