SNCF LIGHT SIGNAGE

IN RAILWORKS 3

Pack 1

BAL signals

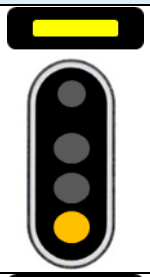
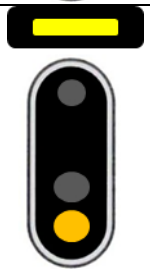
Laurent SIDOT: 3D models
Bernard VILLETARD: scripts

PRESENTATION OF THE PACK

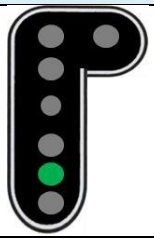
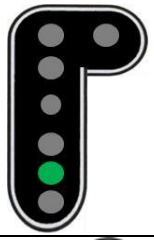
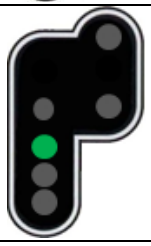
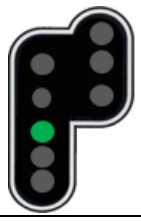
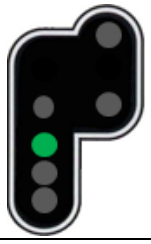
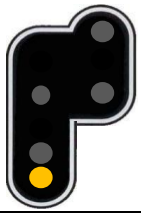
This pack contains essentially signals used in BAL (automatic light block). BAPR and BM signals are the subject of pack 2 already available.

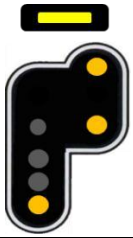
1. TYPES OF SIGNALS PRESENT IN THE PACK:

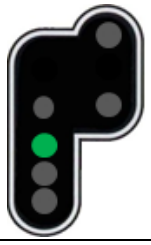
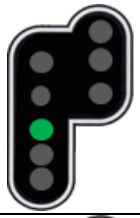
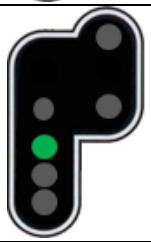
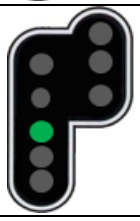
Target type	Signal type	Signal name	Scheme	Number of links maximum
A	Semaphore	TL-SNCF_A		1
B	Square	TL-SNCF_B		5
B	Station exit square	TL-SNCF_B1		5
B	Station entrance square	TL-SNCF_B2		15
B	Turning square	TL-SNCF_B3_2R TL-SNCF_B3_3R		2 3
B	Entrance square of terminus station or general stop station	TL-SNCF_B4		15

Target type	Signal type	Signal name	Scheme	Number of links maximum
B	Station entrance square with yellow stripe	TL-SNCF_B5		15
B	Terminus or stop station entrance square general with yellow stripe	TL-SNCF_B6		15
C	Square with white fire Maneuver	TL-SNCF_C1 TL-SNCF_C2		7
C	Square with white fire maneuver and purple square	TL-SNCF_C3		7
And	F-plate slowdown	TL-SNCF_E1		1
And	Nf plate slowdown	TL-SNCF_E2		5
And	Nf-plate slowdown with purple square	TL-SNCF_E3		5

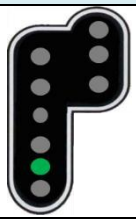
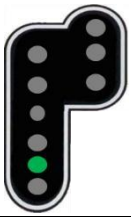
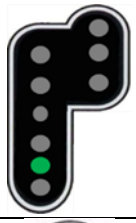
And	Nf station entrance slowdown	TL-SNCF_E4		15

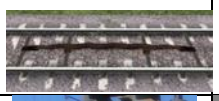
Target type	Signal type	Signal name	Scheme	Number of links maximum
F	NF plate slowdown with white maneuvering light	TL-SNCF_F1 TL-SNCF_F2		7
F	NF-plate slowdown with white fire maneuver and purple square	TL-SNCF_F3		7
G	Slowing reminder 30 or 60 (no slowing down)	TL-SNCF_G1 and G2		5
G	Slowing reminder 30 or 60 (with slowing down)	TL-SNCF_G3 and G4		5
G	Slowing reminder 30 or 60 (without slowing down) with purple square	TL-SNCF_G5		5
G	RR30 for general station entrance	TL-SNCF_G6		15

G	RR30 for station entrance with tape Yellow	TL-SNCF_G7		15

Target type	Signal type	Signal name	Scheme	Number of links maximum
G	RR30 for terminus station entrance or general stop with yellow stripe	TL-SNCF_G8		15
G	Slowing reminder 30 or 60 (no slowdown) for station exit	TL-SNCF_G9 TL-SNCF_G10		5
G	Slowing reminder 30 or 60 (with slowing down) for station exit	TL-SNCF_G11 TL-SNCF_G12		5
G	Deposit entry reminder (no slowing down)	TL-SNCF_GE1		15
G	Deposit entry reminder (with slowing down)	TL-SNCF_GE2		15

H	RR30 or RR60 without slowing down and With white maneuvering fire	TL-SNCF_H1 TL-SNCF_H2		7
H	RR30 or RR60 without slowing down and with white maneuvering fire and purple square	TL-SNCF_H3		7

Target type	Signal type	Signal name	Scheme	Number of links maximum
H	RR30 or RR60 with slowing and with white maneuvering fire	TL-SNCF_H4 TL-SNCF_H5		7
H	RR30 or RR60 with slowing and white fire maneuver and purple square	TL-SNCF_H6		7
H	RR30 or RR60 for exit from the station without slowing down and with white maneuvering fire	TL-SNCF_H7 TL-SNCF_H8		7
H	RR30 or RR60 for station exit with slowing and white maneuvering light	TL-SNCF_H9 TL-SNCF_H10		7
I	Purple square	TL-SNCF_I1 and I2		15
K	Low purple square for sas	TL-SNCF_K1 and K1_P		2

K	**Low purple square for backseed**	**TL-SNCF_K2 and K2_P**		**15**
ID	**Steering indicators**	**TL-SNCF_ID2** **TL-SNCF_ID3** **TL-SNCF_ID4**		**2** **3** **4**
	Bumper lights	**TL-SNCF_Heurtoir_rouge TL SNCF_Heurtoir_violet**		**1** **1**
	Signal crocodiles	**TL-SNCF_CROCODILE_11 at 18 TL-SNCF_CROCODILE_21 to 28**		**1**
Target type	**Signal type**	**Signal name**	**Scheme**	**Number of links maximum**
	TIV crocodile remote diamond	**TL-SNCF_CROCODILE_TIV_Fixe TL-SNCF_CROCODILE_TIV_Mobile**		**1** **1**
	White arrow	**TL-SNCF_Flèche_blanche**		
	Silec pedals	**TL-SNCF_Silec_1** **to** **TL-SNCF_Silec_5** **TL-SNCF_Silec2** **TL-SNCF_Silec3** **TL-SNCF_Silec4**		**1**
	Paulvé pedals	**TL-SNCF_Paulvé_1** **to** **TL-SNCF_Paulvé_5**		**1**

The signals are adapted to dynamic numbering.

The signage of this pack is fully compatible with the light signage of Jean-Yves Mathieu (JYM26) and the light and mechanical signage of Gérard Simon (Geluc).

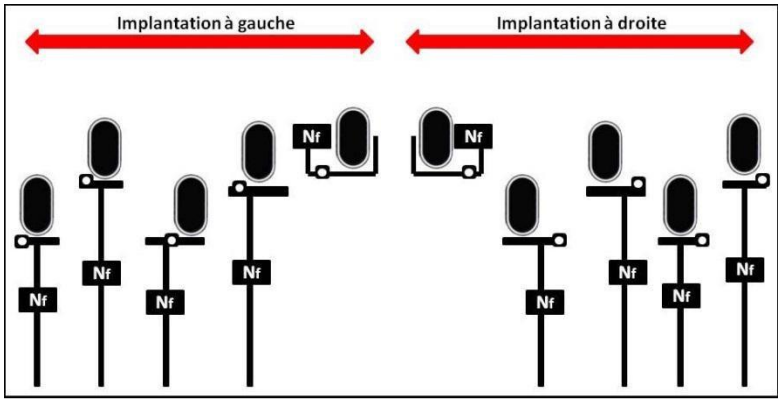
2. <u>SIGNAL</u> NAMES:

The main signals are available in the following versions:

- on mast at normal height,
- on a high mast,
- on flagpole at normal height

- on high flagpole
- on pod

and for implantation on both the left and right of the track. This gives 10 models per signal (diagram below).

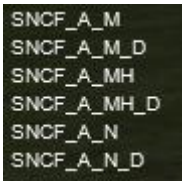


Some signals, other than those stated above, will be declined only on mast at normal height and/or on gondola because the presentation on all types of support is not justified.

The names in the publisher are:

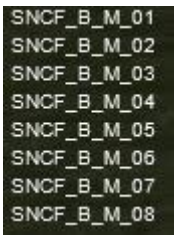
The signal will be under the name TL-SNCF signal name, making it easy to locate it in the editor. This pack can therefore be used in conjunction with the signage of Jean-Yves MATHIEU whose names are preceded only by SNCF_.

Then it is followed by the indications on its support: - M for mast at normal height,
- MD for flag-level mast at normal height,
- MDH for flagpole, - MH for high mast, - N for gondola.



Then it will be followed by _D if this signal is intended to be implanted to the right of the track.

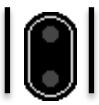
Finally, a number will complete the denomination. This figure represents the number of links (other than link 0) that the signal has. A signal with a link - a signal, a signal with two links - another signal, etc. Each version of the signal has therefore been declined into as many variants as it has been expected to link (maximum 15, a figure that corresponds to a beam of tracks).

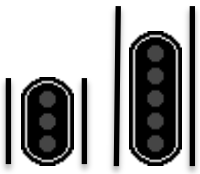
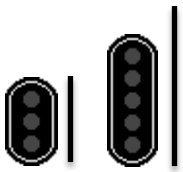
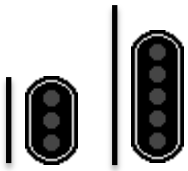
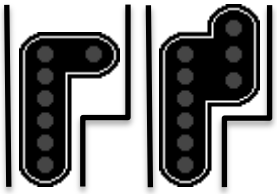
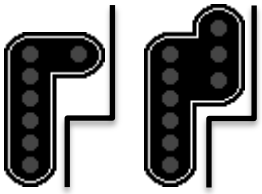
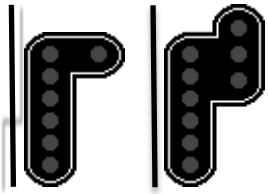
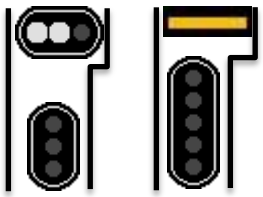
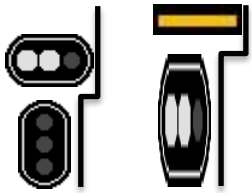
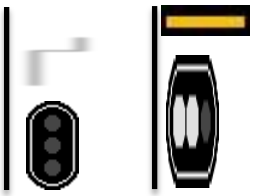
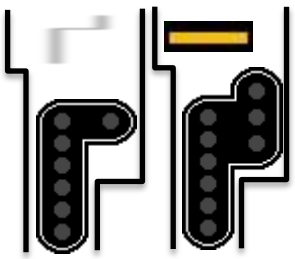
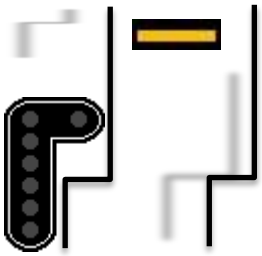
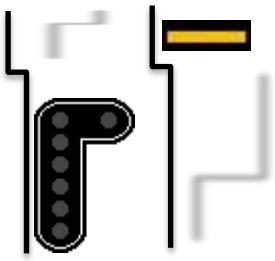


Some signals may be supplemented by an element that characterizes them, such as _2R for a signal with two backlinks.

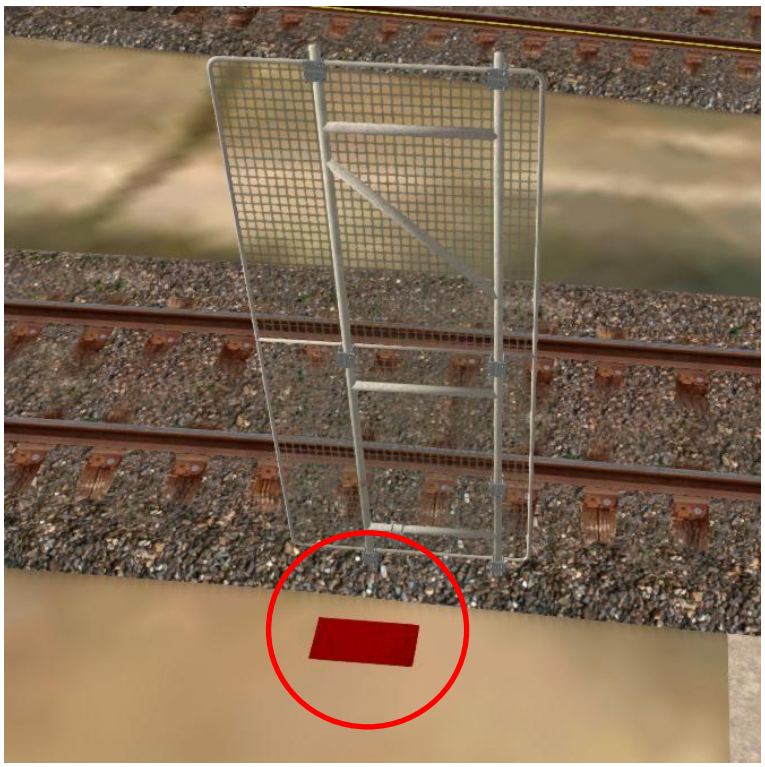
3. CATENARY PROTECTION GRIDS:

This pack also contains catenary protection grids. These grids are to be installed individually on the masts. The aim of this process is not to multiply the number of masts and therefore signals.

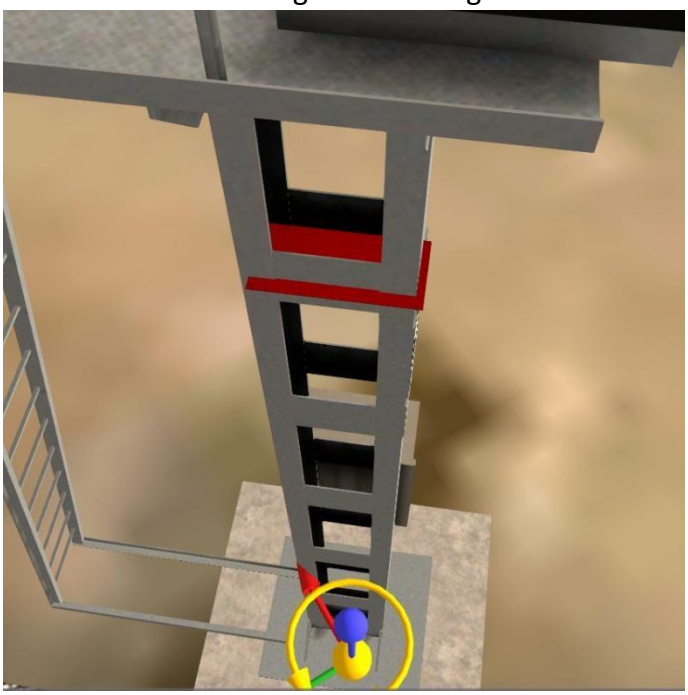
Target type	Double Grilling	Grid on the Right	Grid on the left
I normal			
Right traffic	SNCF_Gril_I	SNCF_Gril_I_D	SNCF_Gril_I_G
Left traffic	SNCF_Gril_I	SNCF_Gril_I_D	SNCF_Gril_I_G

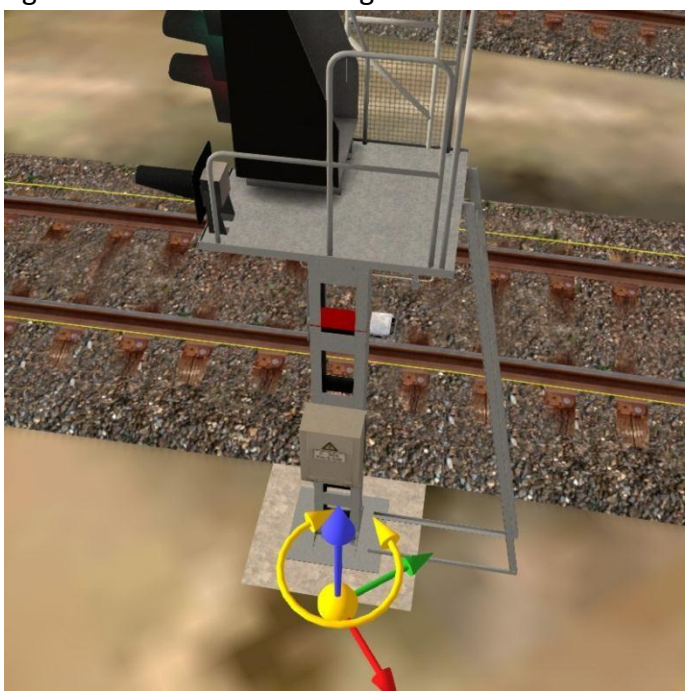
I Flag			
Right traffic	SNCF_Grillage_C_MD	SNCF_Crillage_C_MD_D	SNCF_Grillage_C_MD_G
Left traffic	SNCF_Grillage_C_MG	SNCF_Grillage_C_MG_D	SNCF_Grillage_C_MG_G
A,B,C Normal and Flag			
Signage Right	SNCF_Gril_C_MD	SNCF_Gril_C_MD_D	SNCF_Gril_C_MD_G
Left signage	SNCF_Gril_C_MG	SNCF_Gril_C_MG_D	SNCF_Gril_C_MG_G
E,F,G,H Normal and Flag			
Signage Right	SNCF_Gril_H_MD	SNCF_Gril_H_MD_D	SNCF_Gril_H_MD_G
Left signage	SNCF_Gril_H_MG	SNCF_Gril_H_MG_D	SNCF_Gril_H_MG_G
A,B,C-Accessory ID, BJ... Normal and Flag			
Signage Right	SNCF_Gril_C_MD_Acc	SNCF_Gril_C_MD_Acc_D	SNCF_Gril_C_MD_Acc_G
Left signage	SNCF_Gril_C_MG_Acc	SNCF_Gril_C_MG_Acc_D	SNCF_Gril_C_MG_Acc_G
E,F,G,H - Accessory ID,BJ... Normal and Flag			
Signage Right	SNCF_Gril_H_MD_Acc	SNCF_Gril_H_MD_Acc_D	SNCF_Gril_H_MD_Acc_G
Left signage	SNCF_Gril_H_MG_Acc	SNCF_Gril_H_MG_Acc_D	SNCF_Gril_H_MG_Acc_G

To make it easier for you to position the protective grilles on the signal railings, I've created a little artifice here. (Thanks, Satnur for the idea).



Here's what to do. Align the rectangle at the base of the signal and match it to the signal mast.

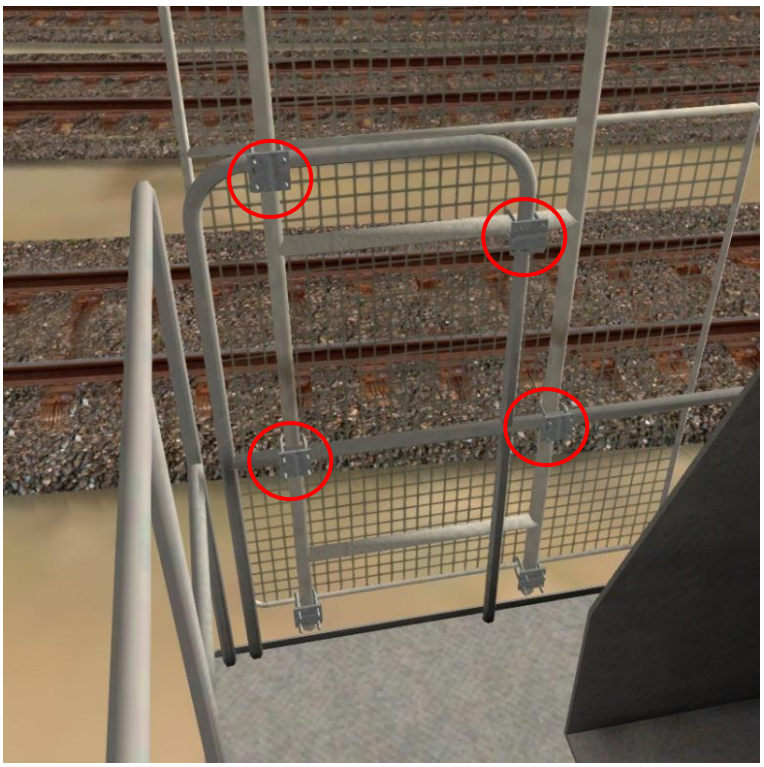




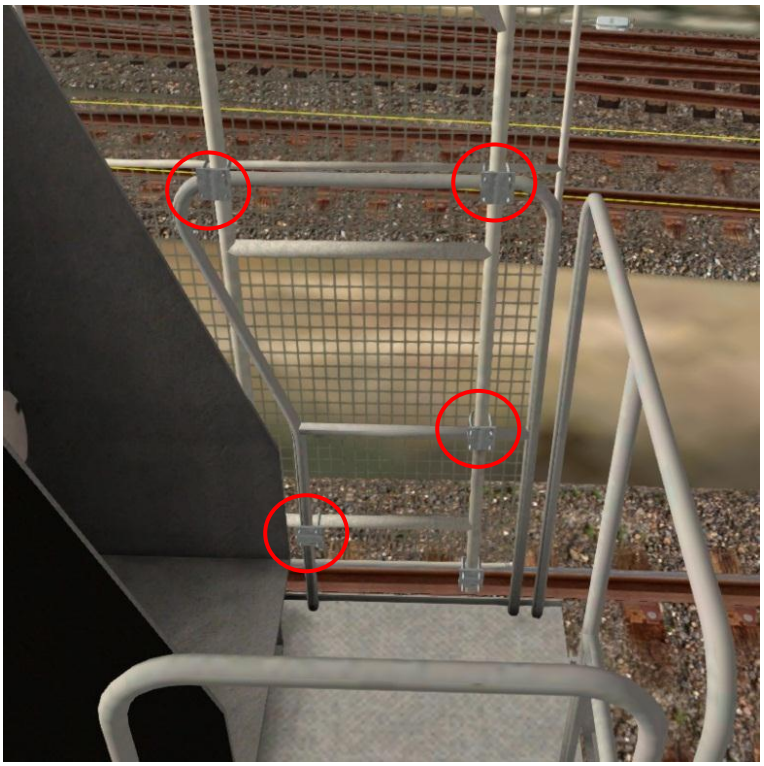
Then adjust the height of the grate on the mast railing. The rectangle must disappear under the signal platform.

Finally, match, as in the images below, the attachment rings to the railing of the mast.

On the Right



Left



4. <u>CHOOSE A SIGNAL:</u> :

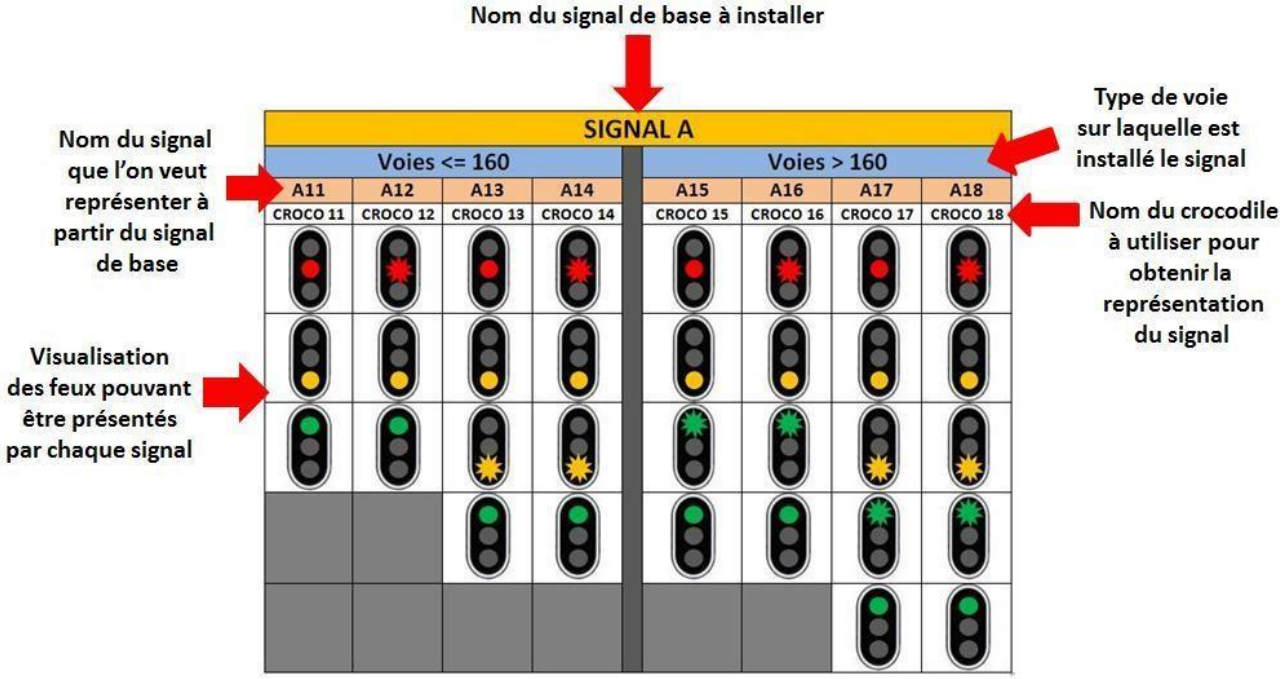
If you look at the number of signals that this pack represents multiplied by the number of links, that would ultimately make more than 5000 signal names that should appear in the editor. For line designers, it would simply be unmanageable. As a result, an artifice was used to reduce the number of signals in the Editor's note.

So basic signals were created. Signals A, B, E1 and E2 and G1 to G4 are basic versions. Each base signal can represent 8 to 16 different signals.

To choose which signal among the 8 possibilities that our basic signal can represent, we will use a device that exists in reality, and which is present necessarily before these signals: the crocodile. Each signal is preceded at 15-20 meters by a crocodile responsible for giving the driver the indication of a "closed signal" or "open signal".

This crocodile will also tell the basic signal, which signal among the 8 possibilities it must represent. For this, the pack comes with 16 different crocodiles named from 11 to 18 and from 21 to 28.

The operating principle is simple. Let's look at the drawing below. We want to represent a semaphore on a mast at normal height and to the left of the track. So we're going to place the SNCF_A_M at the chosen location. Then we look at what kind of track (160 or 160) the signal is. In
depending on the type of track, we will choose the signal to represent. If we only want the 3 lights (signal A11), we will precede signal A by the crocodile 11. If an A13 signal is to be required, signal A will have to be preceded by crocodile 13. For each signal, in this documentation, the name of the crocodile to be associated is marked under the name of each signal. If one forgets to put a crocodile, the signal will be represented as if it were preceded by a crocodile 11 and there will be no sound repetition in the cabin.



Two additional crocodiles called SNCF_CROCODILE_TIV_Fixe and SNCF_CROCODILE_TIV_Mobile come with the pack. They give the indication "closed signal" when the train crosses a fixed diamond remote TIV or when the TIV is presented in the case of mobile IVTs. No TIV is part of this pack. This is simply a bonus that will be useful for creators.

5. REMINDER OF THE LAYING OF LINKS: :

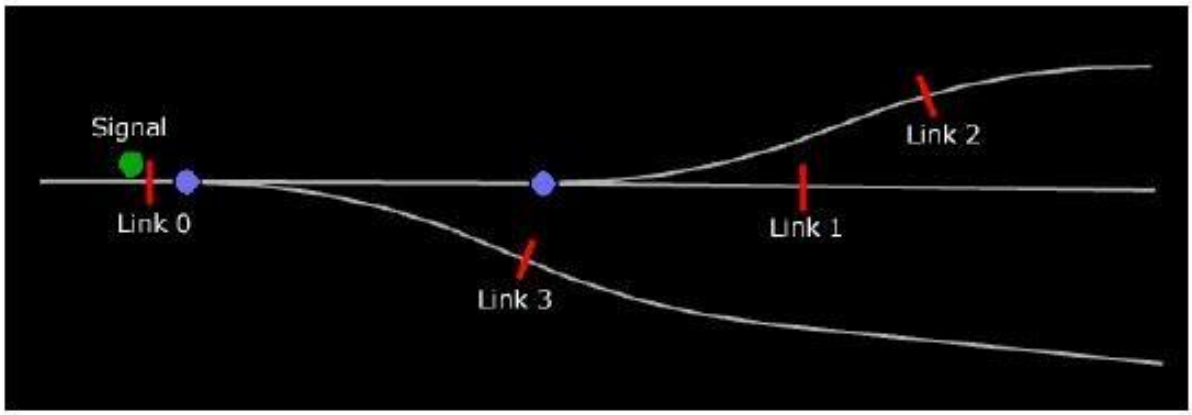
It is important to make sure that all links are in the right place if the signal is to work properly. So when you place a signal, keep in mind the following rules:

- The 0 link of a signal must always be placed on the track near it
- All other links must be placed after link 0 in the direction of walking.
- Type A, E1 signals have only one link. All other signals must have at least two links installed (a link 0 and a link 1)
- Link 1 should normally be installed on the straight lane and other links on the diverging lanes (preferably numbering them from left to right).

- These links must be placed beyond the junctions covered by this signal.
- There should be no other junction between one of these links and the next signal on the route.
- The links of a signal must all face the same direction and you must cross link 0 before the next link.

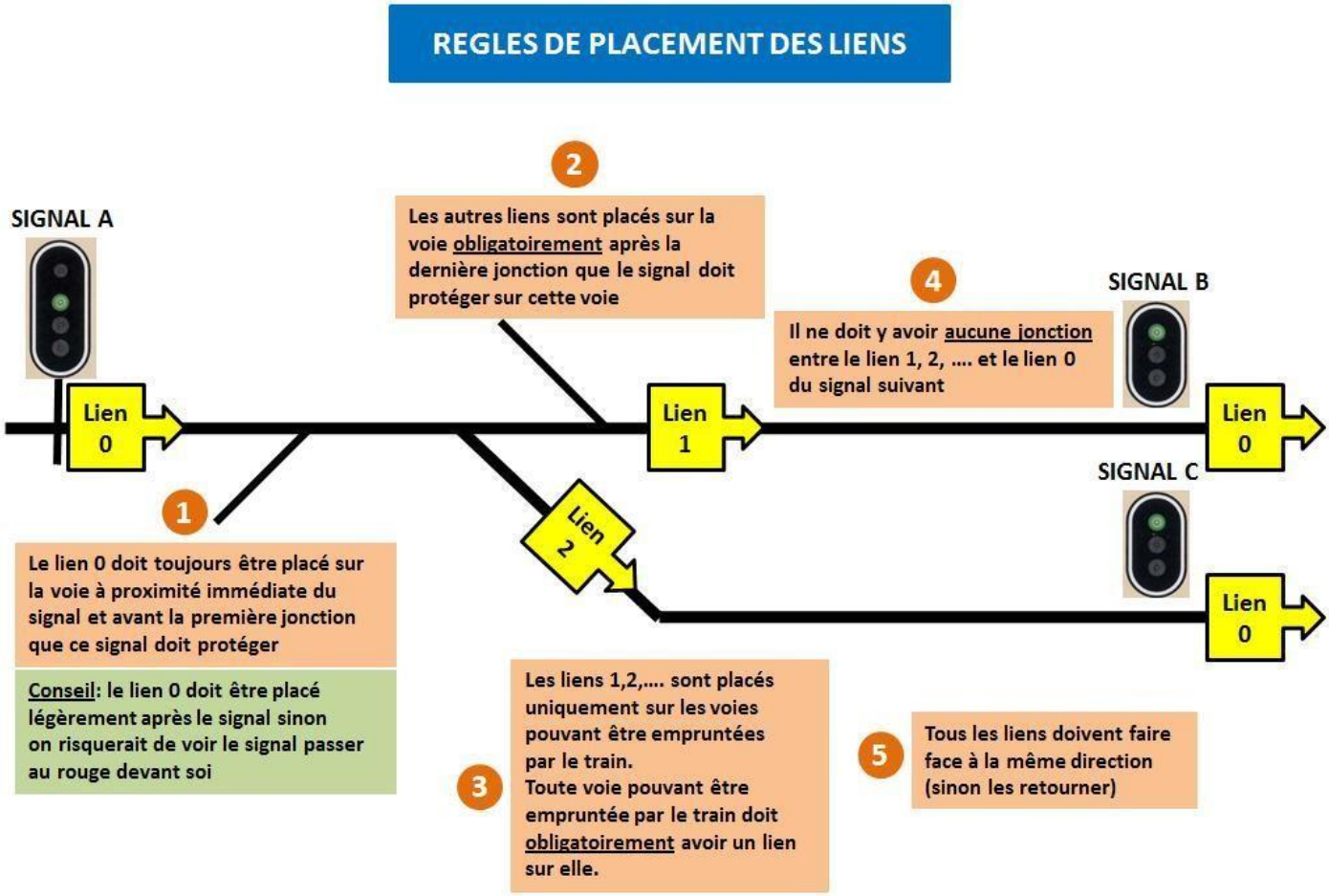
The editor normally places the links in the right direction in relation to the signal. But there can be an error if you place a signal on a curved track at more than 90 degrees. If one of the links is facing the wrong direction, just return it by pressing SHIFT and clicking on this link.

The drawing below shows the correct placement of the links of a signal covering several junctions:

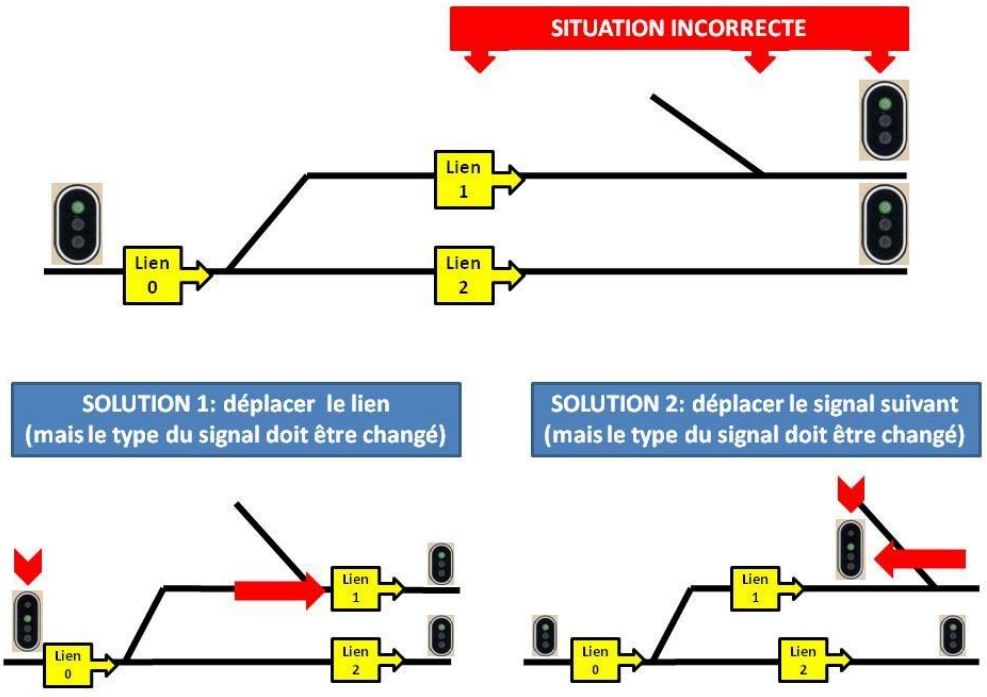


<u>IMPORTANT:</u> It is absolutely useless to position links other than link 0 at the next signal (except in special cases). This space is in any case taken into account by the signal script to ensure the spacing of the trains. The installation will be simpler and clearer.

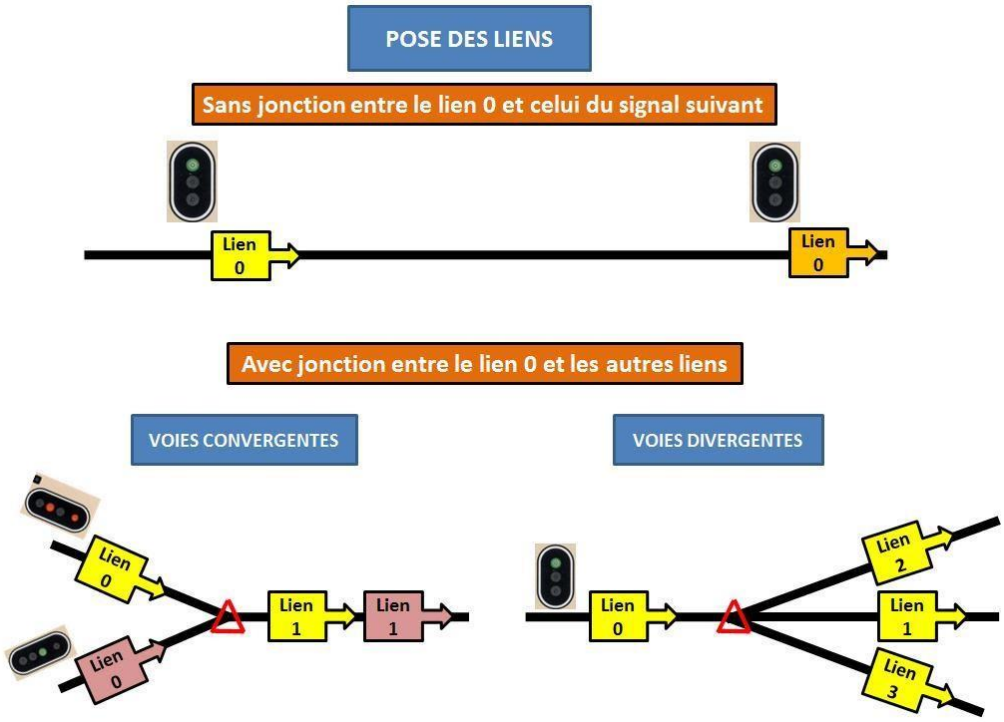
Let's remember the basics of linking:



If a situation is incorrect, it should be corrected:



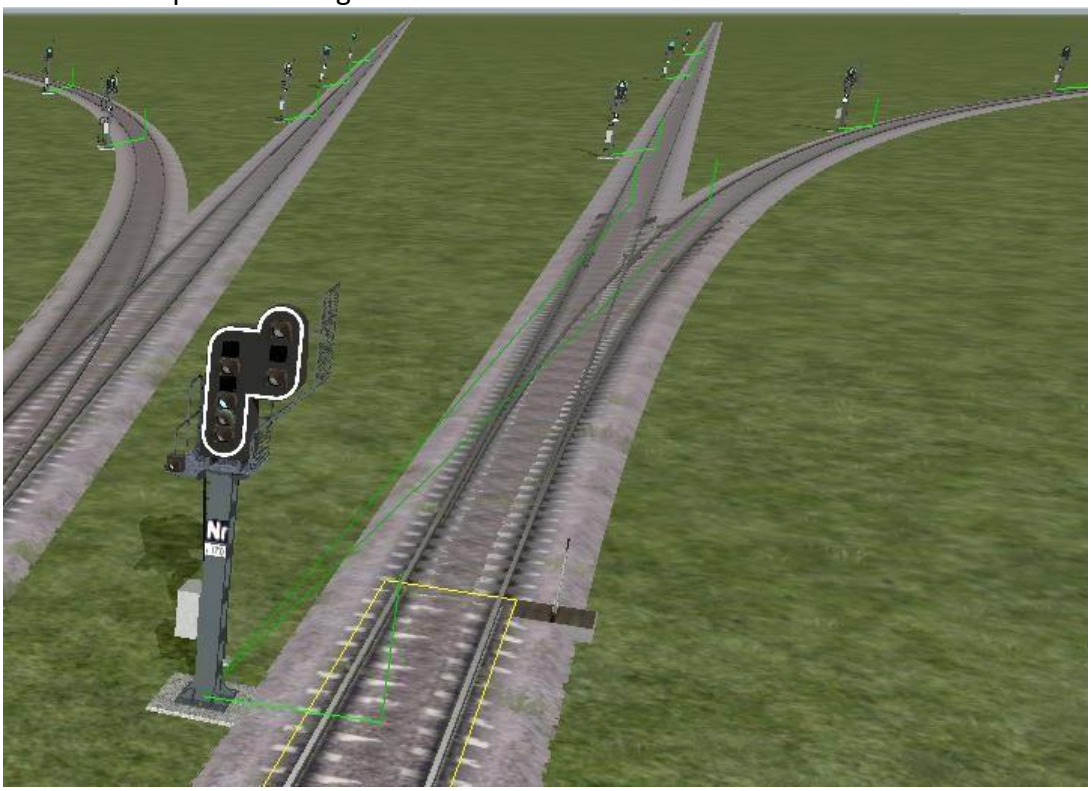
In summary:



Link 0 must be placed slightly behind the signal so that the driver does not see the signal go red as it passes through it.

In the case of converging pathways, links 1 can be placed in any order relative to each other.

To check the laying of links, in editing mode, you have to press the space button 6 times. The position of the links is then shown as below. This can be useful especially when the links of IDs and low CVs need to be framed by those of the protection signal.



GENERALITES ON STATE REPRESENTATION

The **township** is a portion of track that is the basis of the system allowing train spacing, which avoids catch-ups.

Cantonment is the means generally used to ensure the spacing of trains travelling in the same direction on the same track. When a train enters a township, the entrance signal to the township is closed. When the train continuing its march enters the next canton, the entrance signal of the latter is closed while that of the previous canton is open. This is done either manually by exchange of information between station stations or automatically, automatic, thanks to so-called "automatic block" systems using track circuits or axle counters.

"Absolute cantonment" is referred to when one train per canton is admitted (penetration in occupied cantons is prohibited).

"Permissive cantonment" involves admitting a next train to an occupied township, subject to special conditions, including respecting the sight run, i.e. the locomotive engineer must be able to stop his train in the face of any unforeseen obstacles.

The length of the cantons varies depending on the route's use, its operating regime, and the cantonment system. The length of the township ranges from 1500 meters (twice the maximum length of a freight train, which is 750 m), rarely less, on busy stretches of line, to several kilometers (sometimes more than 20 km in manual block). Too long townships greatly reduce the capacity of the line, but their length must be sufficient to allow trains to slow down and stop. In light automatic block, the length of a block should allow trains to stop, resulting in a minimum length of 1500 meters.

In areas with very high traffic density, such as the Paris region, the cantons can be only 700 meters or less. Under these conditions, the signage is adapted. Thus, the use of the flashing yellow light is systematically used.

The flashing red light:

It is represented only to match two situations:

- at the exit of some stations to prevent passenger trains that do not serve the property from stopping,

- ramps, to prevent heavy freight trains from stopping and then restarting.

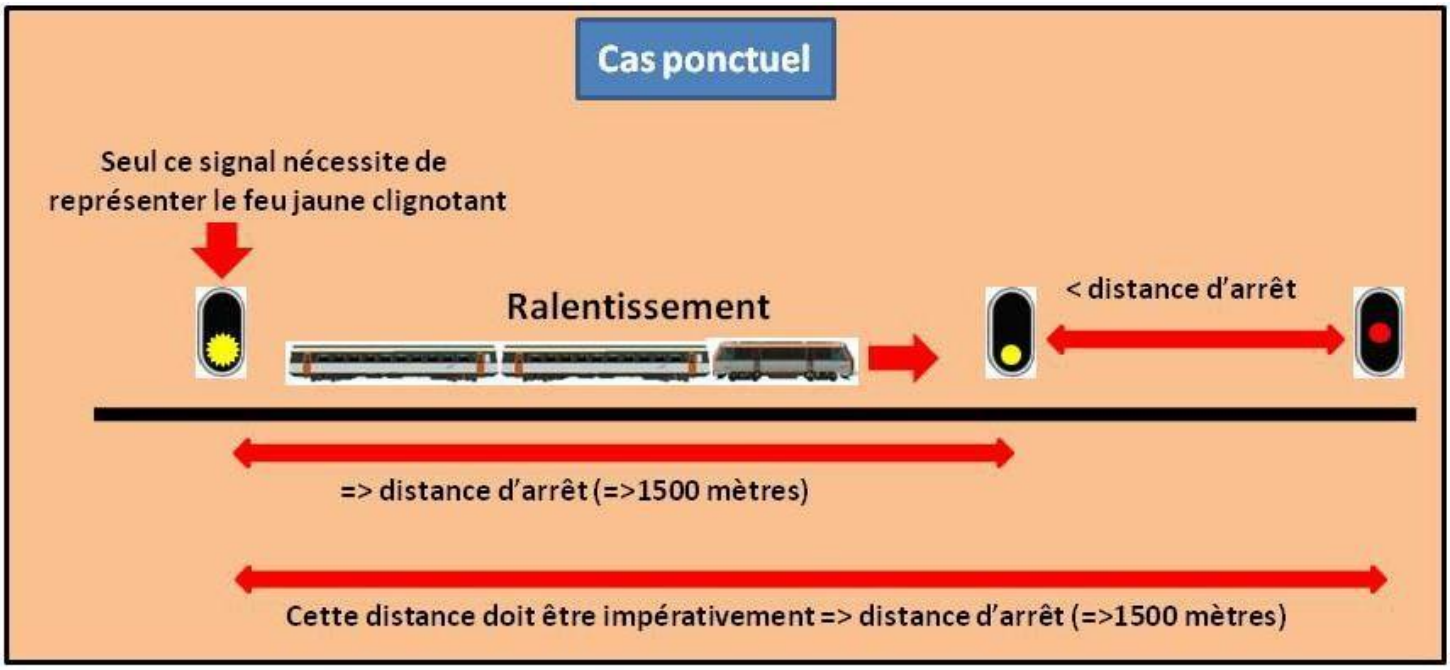
The driver who arrives in front of a flashing red light, can pass it without stopping at the maximum speed of 15 km/h and then continue his progress in the occupied township on sight, nothing stands in the way.

The use of the flashing red light, which is presented for the head of a train in a station or to announce a low-slip square, must be the subject of specific programming, with therefore a specific signal that is not present in this pack.

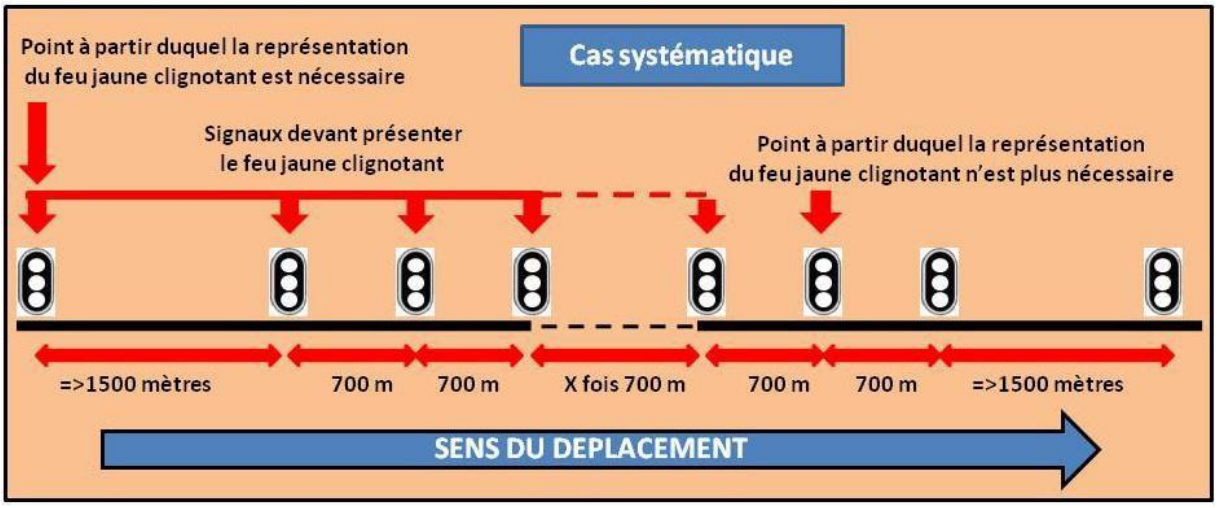
The flashing yellow light:

It is used when the signal that follows it and presents the warning is not within stopping distance of the signal presenting the square or semaphore. The flashing yellow light commands the driver of a train to be able to stop before the signal of stop announced at a reduced distance by the following warning, this distance may be only 500 meters.

It can be used on an ad hoc basis:



It can also be used systematically on lines with very high traffic density (Paris region).



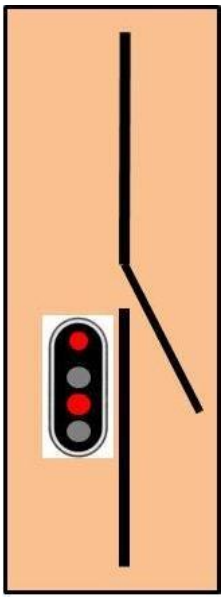
The flashing green light:

It orders the driver of a train with a speed limit of more than 160 km/h to reduce its speed, if necessary, as soon as the signal is passed, so as soon as possible to reduce its speed to 160 km/h, and at the latest at the crossing of the next signal.

The flashing green light pre-announces stop warning signals (such as warning or flashing yellow) or slowdowns (slowing down 30 or 60).

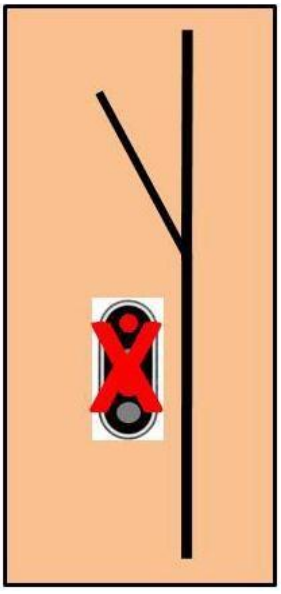
Representation of the square in RailWorks:

The representation of the square poses a problem in RailWorks depending on the type of configuration because of the programming of the scripts.



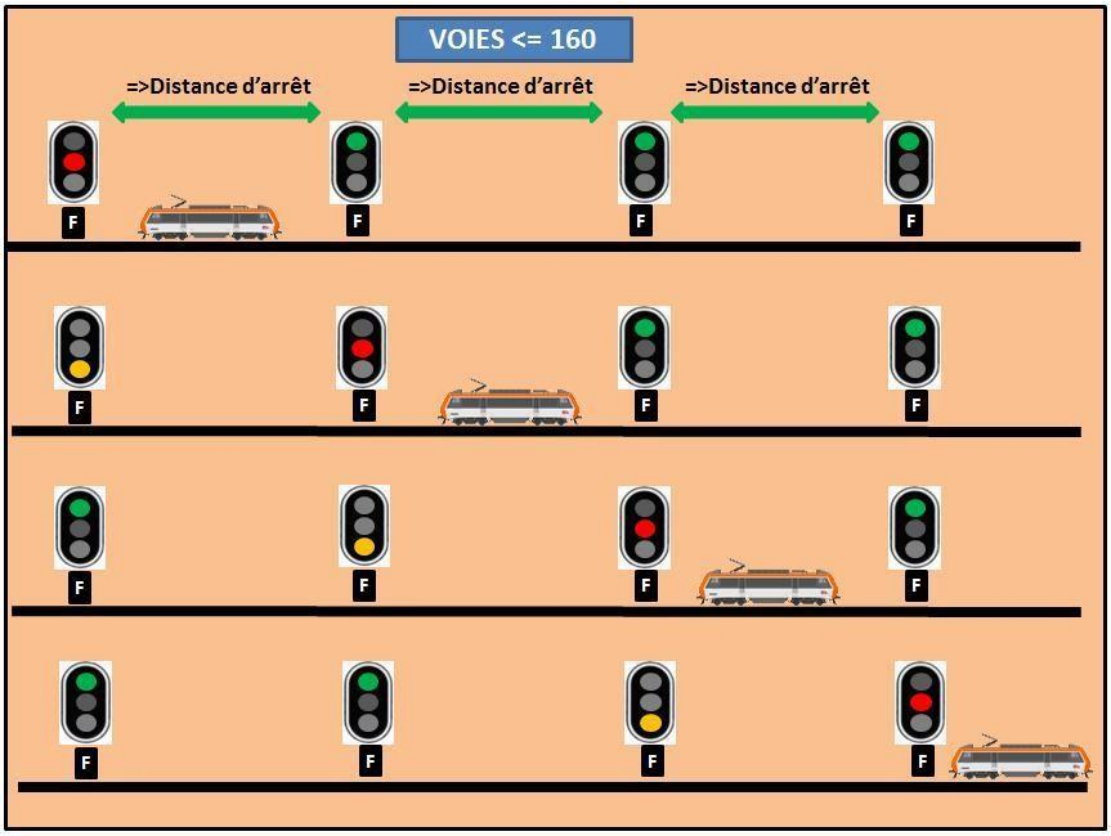
In the case on the left, as there is a break in the track continuity, the signal will be able to display the square correctly.

In the case on the right, there is no break in continuity regardless of the position of the switch, so the signal will never display the square even if it is present on the signal (except during the movement of the hands).

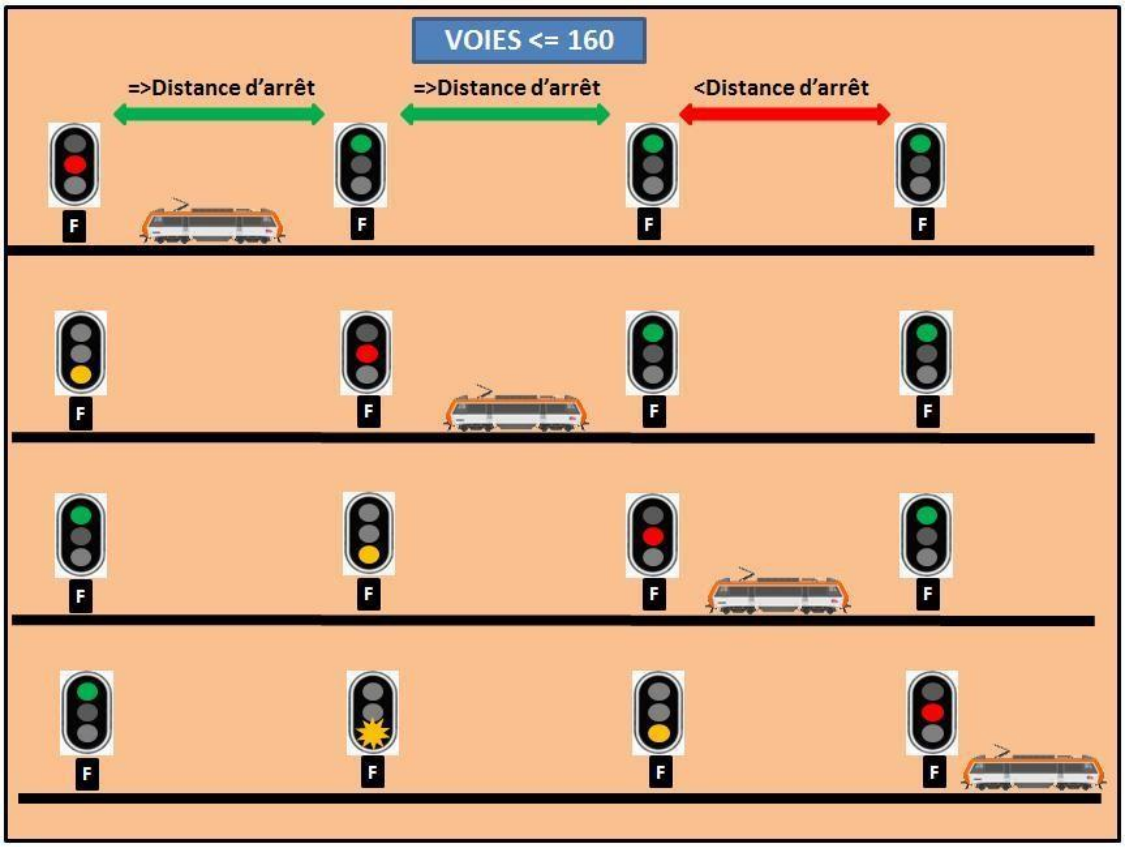


However, in reality, a signal with a square will indeed be installed in this right configuration. RailWorks will therefore have to do the same knowing that the square will never be displayed, but there is no problem with use.

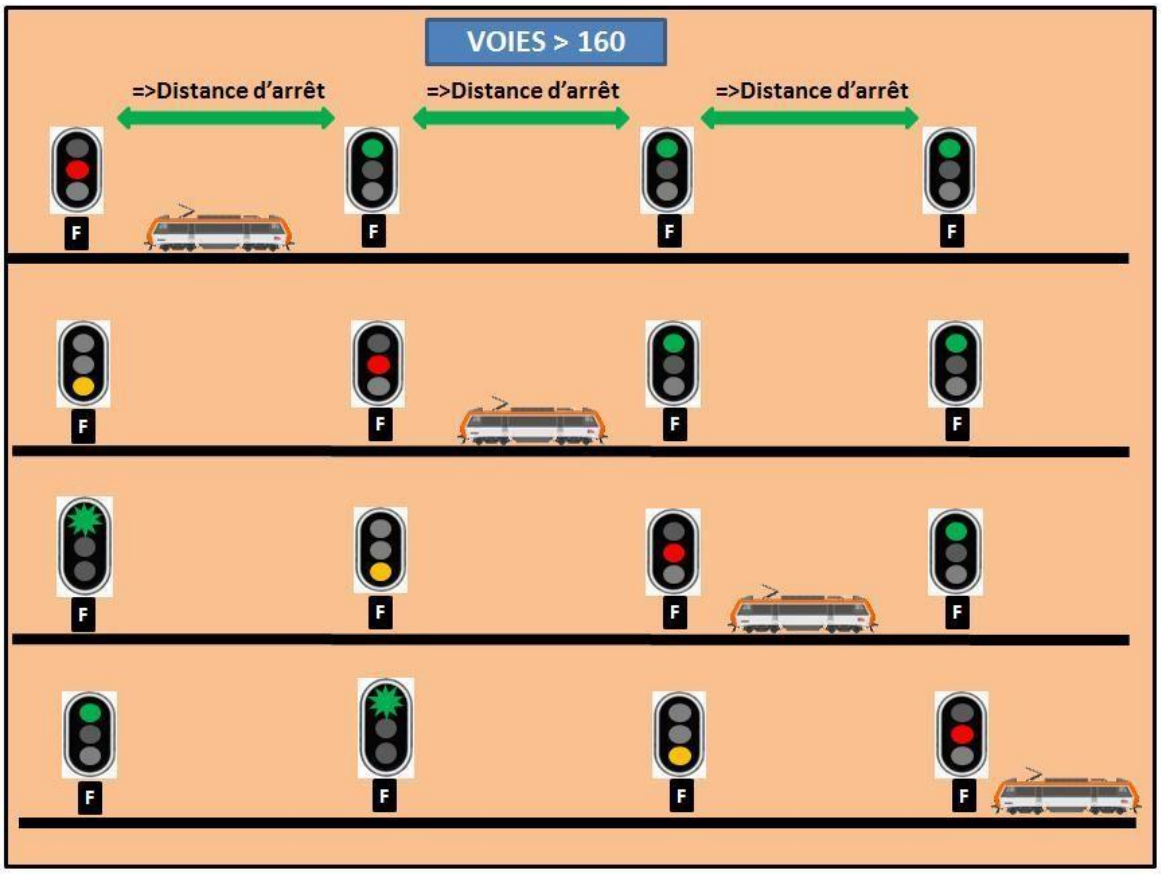
Here is the automatic light block of the unfolding of a sequence with the signals at the next signal's stopping distance on a lane with a maximum operating speed of 160 km/h or less:



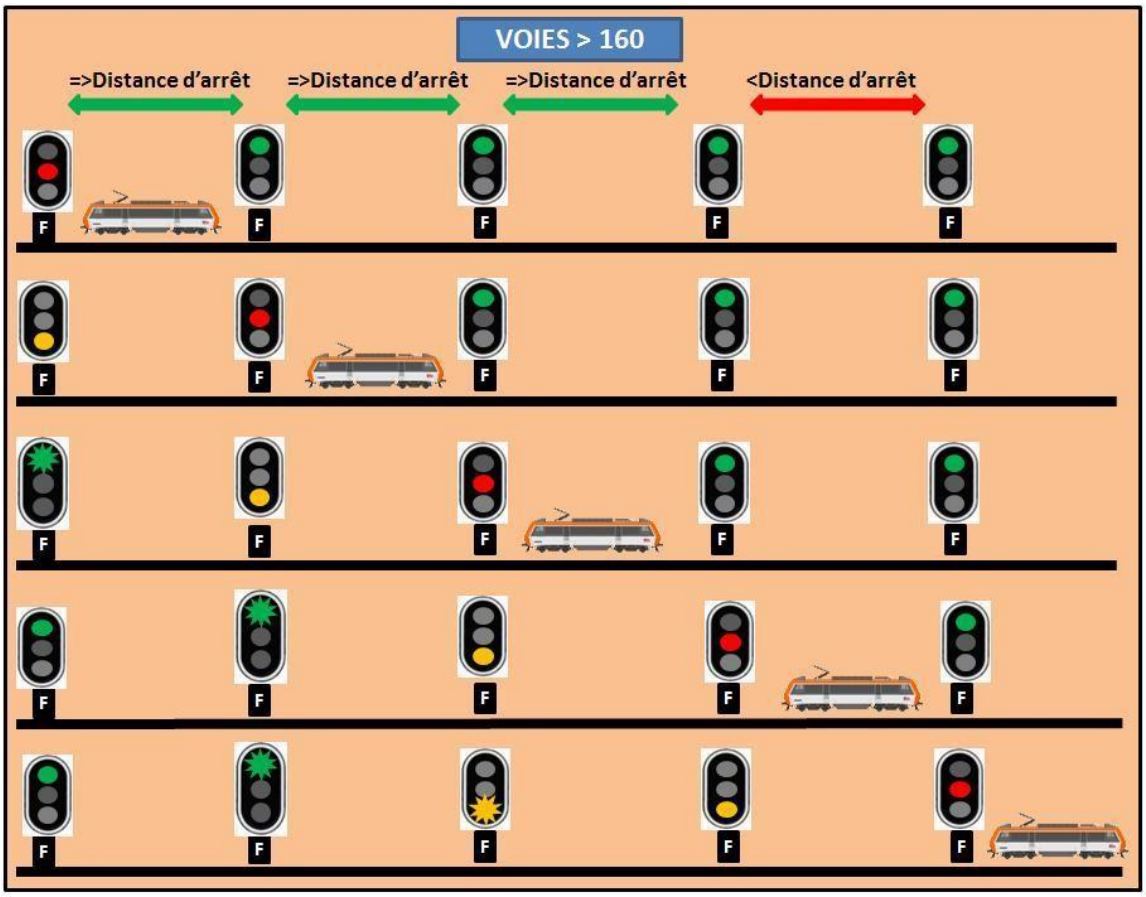
The same sequence with a signal not at a stopping distance from the following signal:



Here is now in automatic light block the unfolding of a sequence with the signals at the next signal's stopping distance on a lane with maximum operating speeds greater than 160 km/h:



The same sequence with a signal not at a stopping distance from the following signal:



COMMON OPERATION A

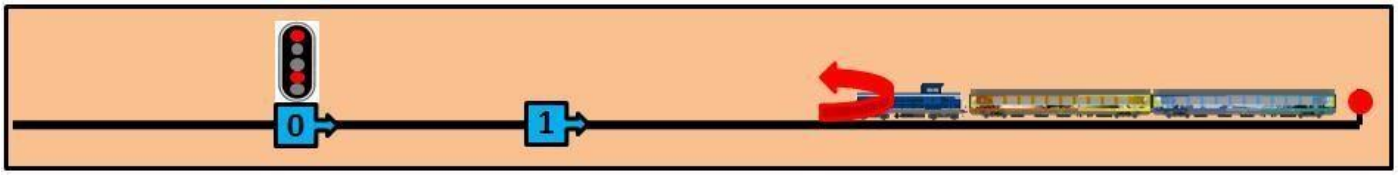
SOME SIGNAL CATEGORIES

Some signals have common operating characteristics. This chapter will therefore expose these different functions to which it will be necessary to refer for the correct use of signals.

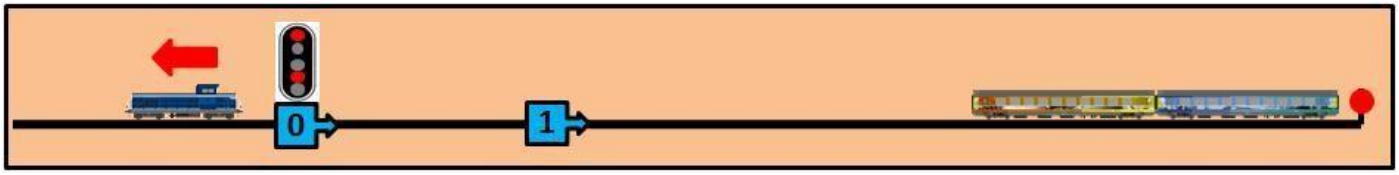
<u>Station entry signals with or without yellow</u> stripes:

In large stations, the signals show the square systematically in place of the semaphore in order to protect the maneuvers. This poses two problems:

1. **In transit stations, there may be a change of engine and, in the terminals, trains are often set up by maneuvering locomotives.**



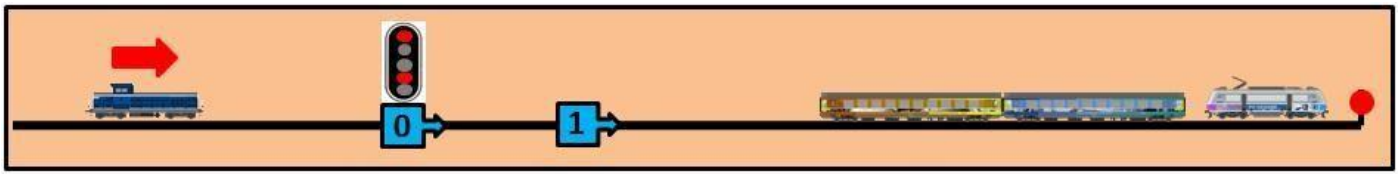
When the engine abandons the train and replays the signal, it will square.



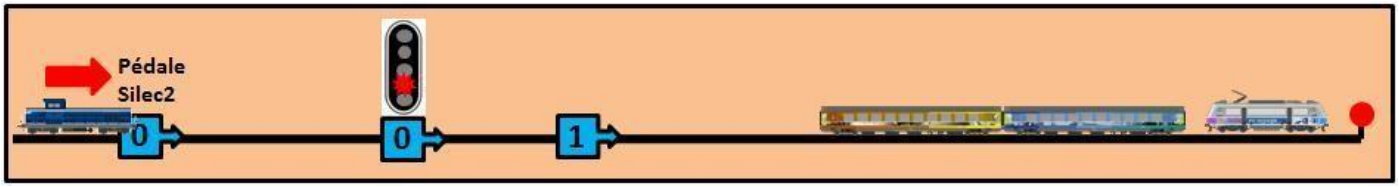
The abandoned train will therefore be protected by a square, which will prevent a motor from coming to it because, if it crosses the square, there will be emergency support and braking.

The signals listed as station entrance (with or without yellow band) have all been programmed so that when one train is abandoned, the engine, passing the signal, puts it in flashing red allowing another engine to come and tackle.

2. **Another problem with the terminals is that when a train has arrived at the dock, the engine stalls, stays on site and another locomotive picks up the train. Under these conditions, the protective signal always presents the square.**



The solution to be used in the terminals but which can also be used **<u>with care</u>** in the crossing stations, is to use the **Silec2 pedal** to place about fifty meters before the crocodile before the square (slightly upstream of the stopping point of the locomotive in front of the signal). By crossing this pedal, if the signal is squared and the connected track occupied under certain conditions, there will be a switch from square to flashing red, allowing the passage of the locomotive.



In order for the permit to pass is granted, it is imperative that the engine has detached from the oar beforehand.

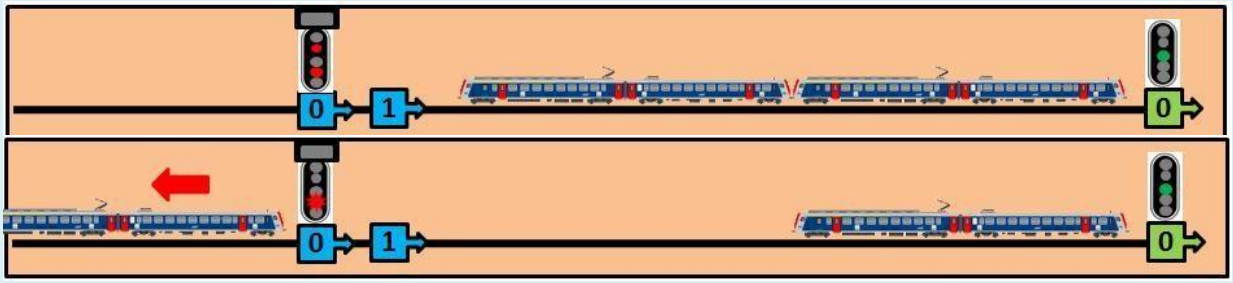
The signals listed as station entrance (with or without yellow band) were also all programmed to be used with the Silec2 pedal.

<u>Warning for script</u> creators:

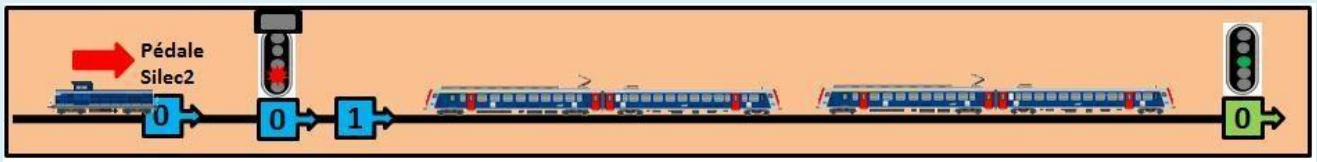
Signal programming under RailWorks has its limits. The following data should be taken into account.

Never put a motor less train in a station at the opening of a scenario protected by these signals.

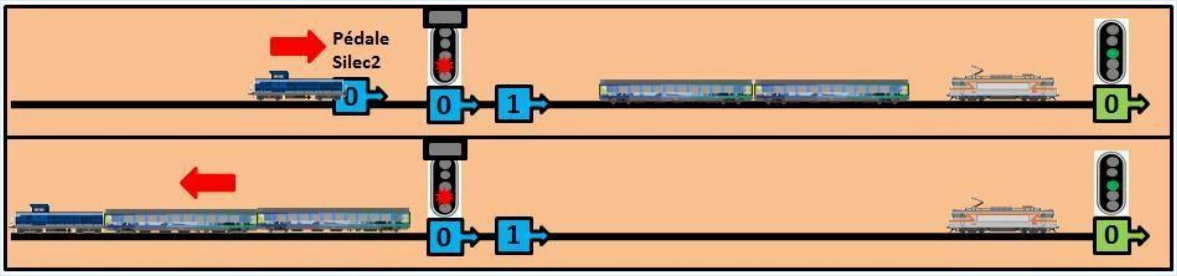
If a two-train automate arrives at the station and dissociates itself. Then a self-propelled leaves the station by crossing the signal, the flashing red light will be presented



Similarly, if two self-propelled vehicles are detached and a motor drives towards this path and crosses Th Silec2 pedal, the signal will also show the flashing red light.



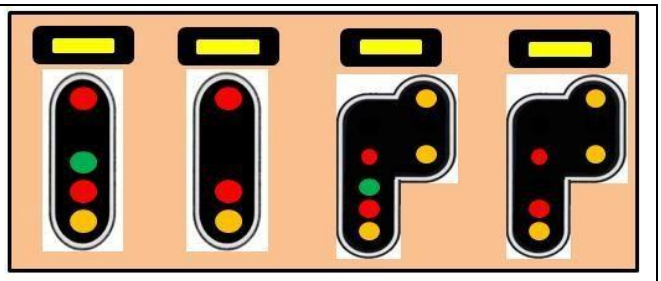
Finally, if a maneuvering locomotive picks up an oar, by re-crossing the signal, the fire will start flashing red instead of the square to protect the engine.



These characteristics must therefore be taken into account in order to establish a scenario and to prevent a train from being confronted with an abnormal situation.

Station entrance signals with yellow stripe:

There are four of these signals.



B5	B6	G7	G8

The yellow stripe is presented in two cases:

- The train is directed to a short, free track,
- a dockside area is occupied by vehicles.

To solve the first case, we will use a Silec pedal that we will lay just before the signal (link 0 of the pedal must be upstream of link 0 of the signal). The Silec pedals are numbered from 1 to 5 and can give access to 5 routes of this type.

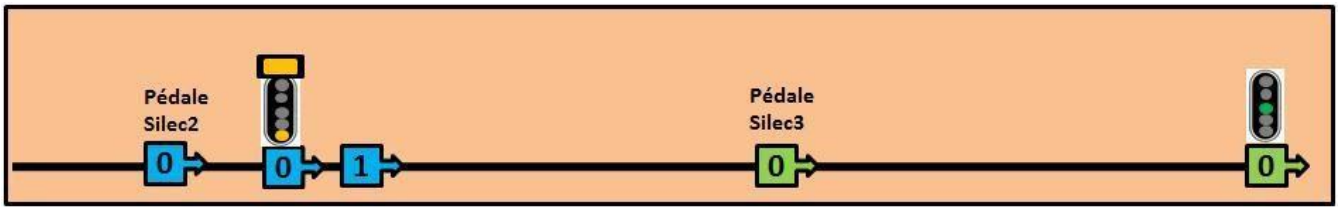
Silec Pedal	1 lane	2 lanes	3 lanes	4 lanes	5 lanes
	**Pédale_Silec_1**	**Pédale_Silec_2**	**Pédale_Silec_3**	**Pédale_Silec_4**	**Pédale_Silec_5**

If you put a pedal Silec_1, it is the link 1 of the signal that will be put on the short track. If you put a pedal Silec_2, it will be the links 1 and 2 of the signal to be positioned on the short tracks, etc.....

The G7 and G8 signals are initially programmed as if they were preceded by a Silec_1 pedal, whereas B5 and B6 signals are not

For B5 and B6 signals, the white band will be presented in conjunction with the warning and for the G7 and G8 signals, they will present the yellow stripe as well as the warning and the RR30.

To solve the second case, it will be called upon a Silec3 pedal to install in the middle of the dock.



The Silec3 pedal is only to be installed on the tracks affected by the presentation of the yellow stripe.

This pedal will define two spaces. When the space furthest from the signal is occupied by a single oar, the yellow stripe and warning will be presented.

The flashing red light or yellow stripe are presented, when the conditions are met, by two means:

- **a movement of the needles towards the path concerned,**
- **the passage of a motor on the Silec2 pedal.**

<u>Signals that may display white maneuvering light and/or flashing white light:</u>

The programming of these signals requires some attention. The setting up of the links is very important for the correct representation of the signal.

The signal preceded exclusively by a crocodile, will not allow the presentation of the white maneuver light (fixed or flashing). In order for the white maneuvering light to be represented, it is necessary to add 1 or 2 pedals to be placed preferentially between the crocodile and the signal.

<u>The flashing white light</u> indicates to the driver that the signal is only open for a small maneuver such as a short service lane. The flashing white light will therefore be presented, whether this type of lane is free or occupied. To obtain 1 to 5 lanes of this type, it will be necessary to implement a pedal type Paulvé.

Paulvé Pedal	1 lane	2 lanes	3 lanes	4 lanes	5 lanes
	**Pédale_Paulvé_1**	**Pédale_Paulvé_2**	**Pédale_Paulvé_3**	**Pédale_Paulvé_4**	**Pédale_Paulvé_5**

If we want only one lane of this type, we will put the pedal Paulvé_1 and link 1 of the signal will be placed on this track. If we want two lanes of this type, we will put the pedal Paulvé_2 and links 1 and 2 of the signal will be placed on these tracks, etc.... Immediately higher links will present normal semaphore fires (semaphore, warning, freeway).

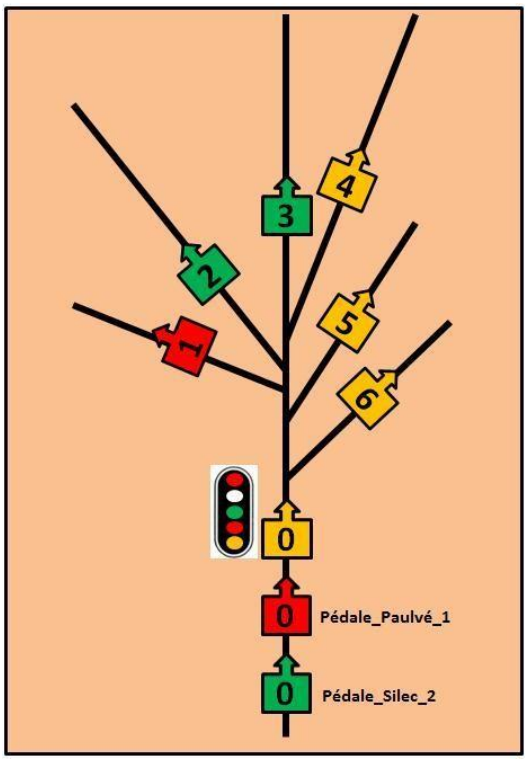
For other access to service lanes, **<u>the fixed white light</u>** will be used: It will be presented when access to the maneuvering lane is free. However, in Railworks, it will present the flashing white light when the track is occupied.

To represent this, we will use the Silec pedals numbered from 1 to 5 and therefore able to give access to 5 routes of this type.

Silec Pedal	1 lane	2 lanes	3 lanes	4 lanes	5 lanes

	**Pédale_Silec_1**	**Pédale_Silec_2**	**Pédale_Silec_3**	**Pédale_Silec_4**	**Pédale_Silec_5**

<u>In the absence of Pedal</u> Paulvé, the signals links concerned will be 1 to 5 depending on the case. Immediately higher links will present normal semaphore fires (semaphore, warning, freeway).



<u>In the case of simultaneous use of Silec and Paulvé pedals</u>, the lowest links will represent the flashing white light, the following links the fixed white light and finally, the other links will present the lights of the semaphore. Here is an example below illustrated by the diagram opposite (**links 1 to 6 are the links of the signal**):

We put a pedal Paulvé_1. This means that there will be only one link that will show the flashing white light. So that will be link 1 of the signal.

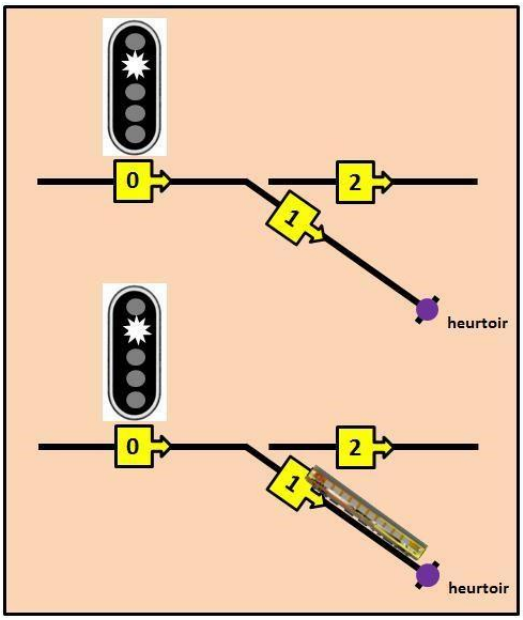
We have also put a pedal Silec_2 which means that there will be two lanes representing the fixed white light. The link numbers of these tracks will immediately follow those of the Paulvé pedal, so in this case the links 2 and 3 of the signal.

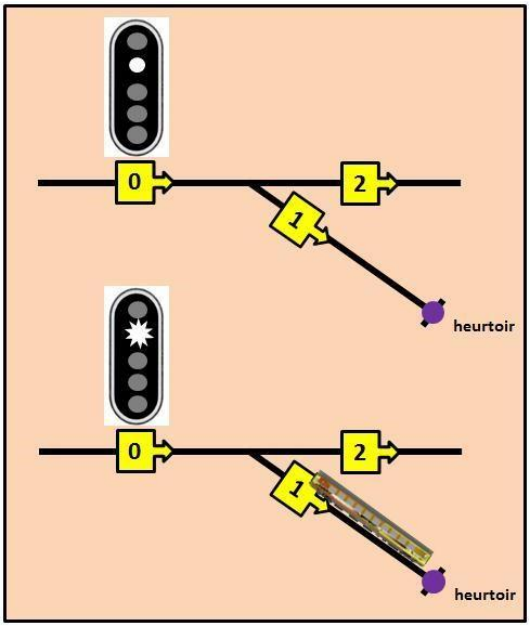
The signals links from 4 will therefore represent the lights of the semaphore.

The order of the link is therefore important and requires a lot of attention.

<u>Using the Paulvé pedal:</u>

<u>Using the Silec pedal:</u>





This process is valid for all signals that may present the white light except for H-signals, which, for reasons of limitation, Programming use a different method .

G signals (with slowing reminder):

G signals are originally intended to have a link on the direct track and other links representing:
- RR30 with crocodiles 11 to 18
- RR60 with crocodiles 21 to 28

But these signals can also show:
- several direct-to-direct links
- several non-homogeneous reminders

The non-homogeneous recall means that if the G signal is used with crocodiles 11 to 18 it presents the RR30 but several links may present the RR60. If the G signal is used with crocodiles 21 to 28, it has the RR60 but several links may show the RR30.

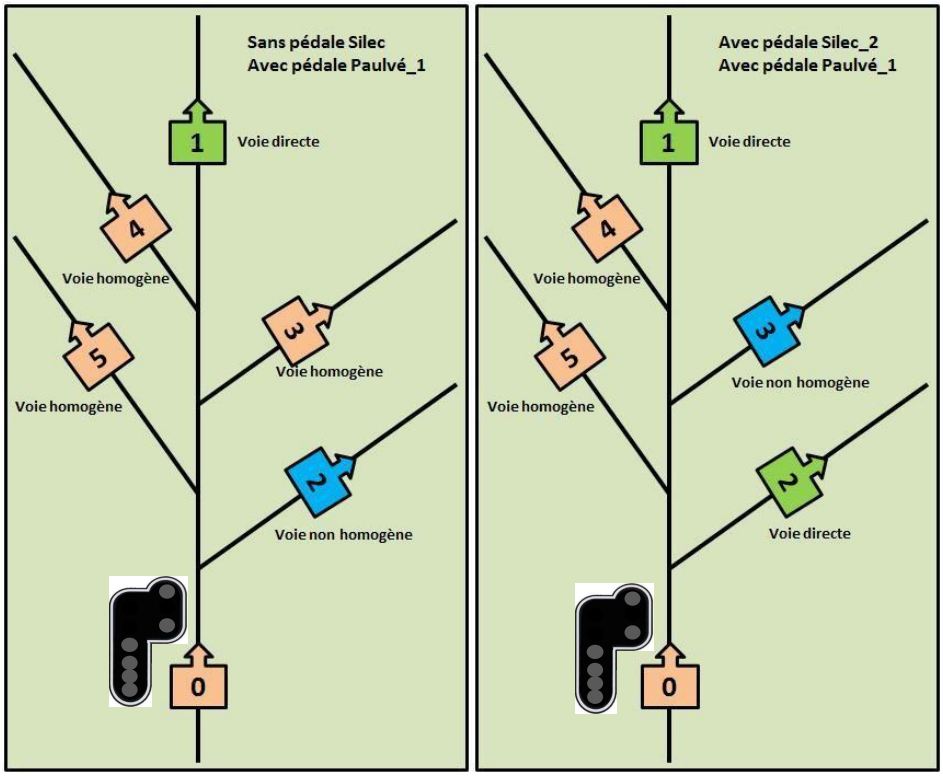
For this, we will adopt the same technique as for white lights.

The Silec pedals will define the number of direct-track links and the Paulvé pedals, the number of links in non-homogeneous tracks.

So, if you install a pedal Silec_2, you will have two direct lanes. If we install a pedal Paulvé_2 we will have two non-homogeneous reminders.

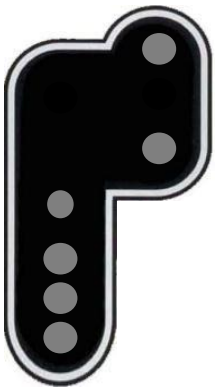
The Silec pedals will cover the lowest links, then will come the links of non-homogeneous reminders and then those of homogeneous reminders.

An example is given below (the links of the Silec and Paulvé pedals are not represented):



The use of the Silec and Paulvé pedals with G signals will remain exceptional.

H signals (with slowing recall and white maneuvering light):



H signals are originally intended to have a link on the direct track and other links representing:

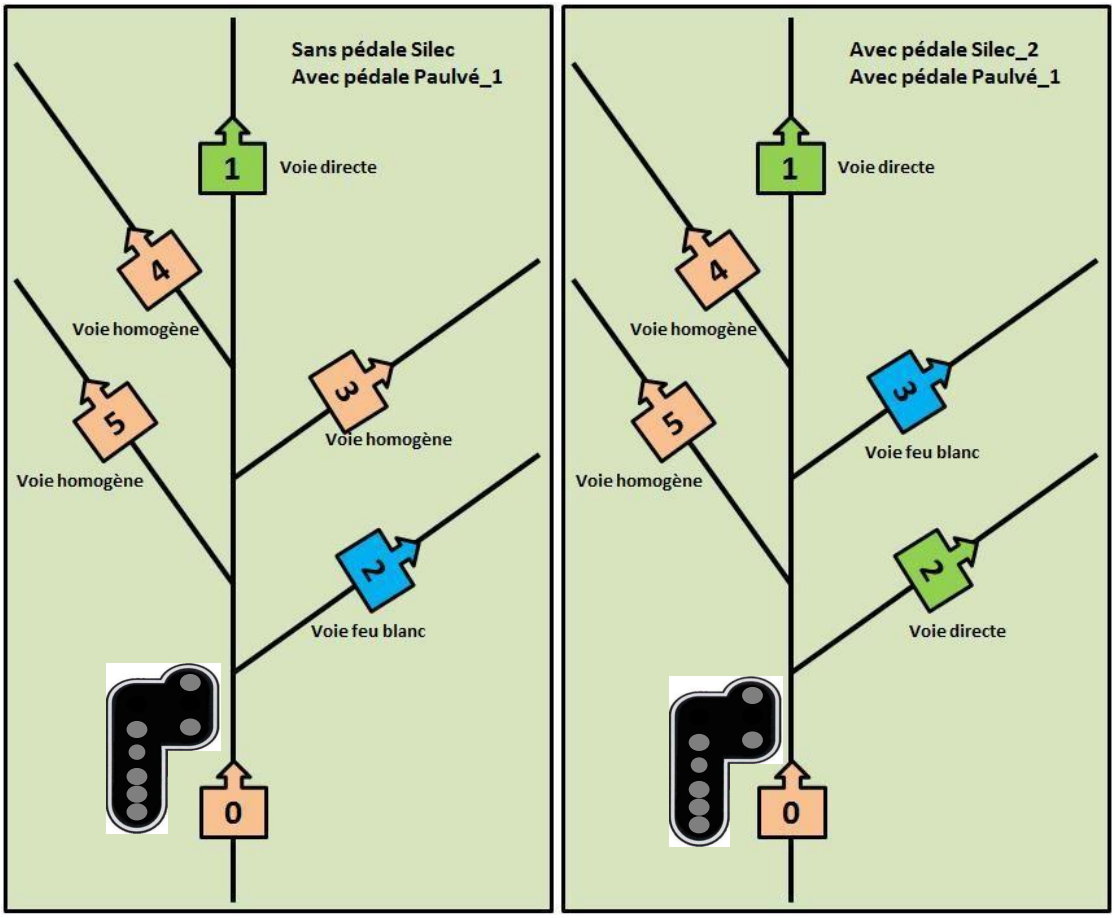
- RR30 with crocodiles 11 to 18
- RR60 with crocodiles 21 to 28

They may present the white maneuvering light.
They cannot present non-homogeneous reminders.

The Paulvé pedals will be used to vary the number of direct routes. This number is by default at 1.

The Silec pedals will be used to routes with the white maneuvering light. This number is by default at 1.

An example is given below (the links of the Silec and Paulvé pedals are not represented):



For limitation reasons, H signals show white light to the maneuvering lanes when the lane is clear and the white light flashing when it is occupied. With the addition of a Silec4 pedal, the signal can present the flashing white light when the lane is clear (short lanes). See how to lay on page 81.

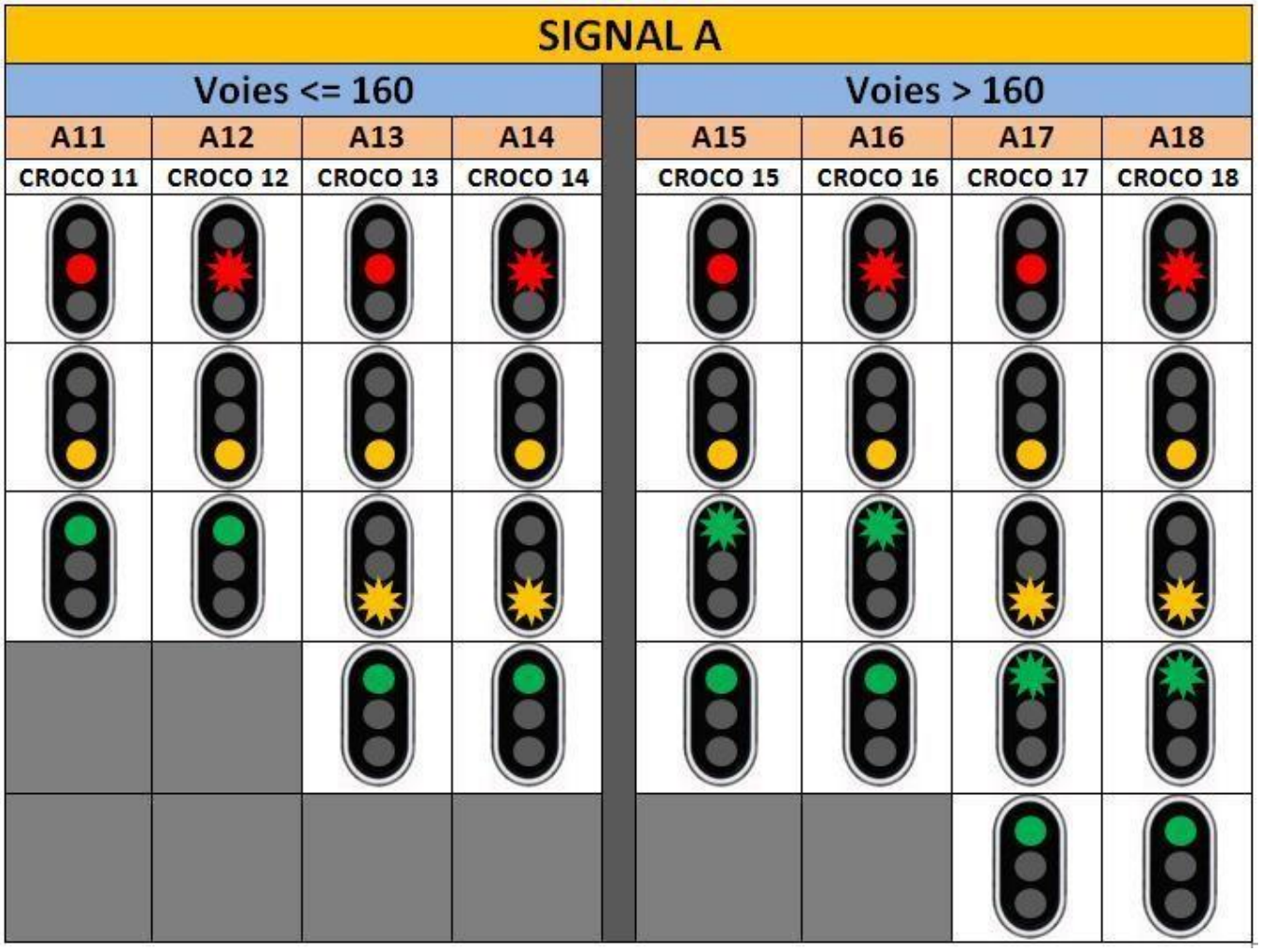
THE SIGNAL

A-panels are used only to ensure train spacing. **There should be no switch between an A signal and the next** signal. A signal A has only a 0 link.

The table below shows the eight possibilities for representing an A signal.

A11 to A14 signals are used on lines with a maximum operating speed of 160 km/h or less.

The A15 to A18 signals are used on lines with a maximum operating speed of more than 160 km/h.

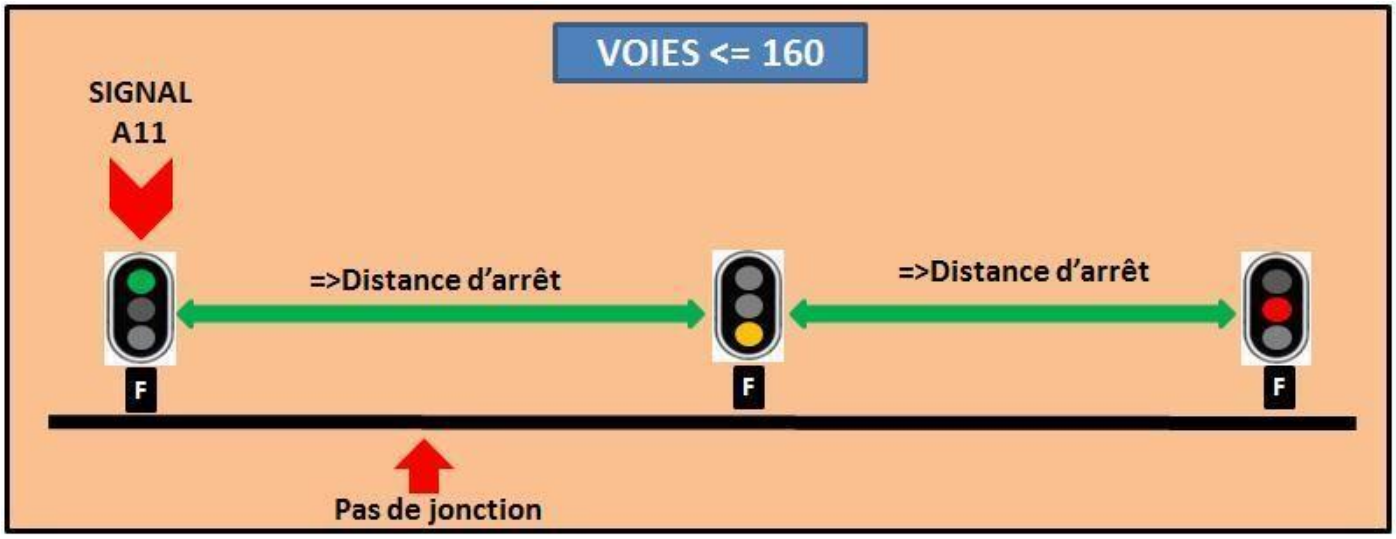


The A12, A14, A16, A18 panels replace the A11, A13, A15, A17 panels respectively under the conditions attached page 17 on the use of the flashing red light.

The use of signal A is shown in the next two pages.

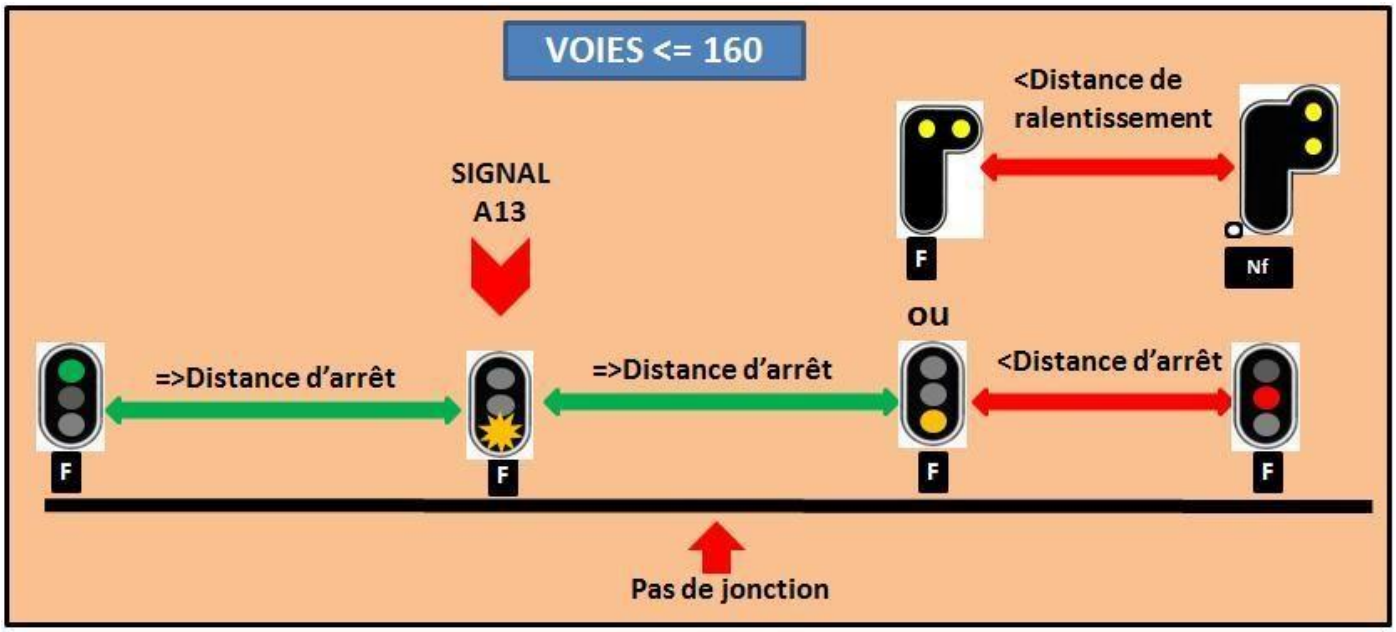
Do not use crocodiles 21 to 28 with this signal.

The A11 signal is used on tracks with operating speeds of 160 km/h or less, when the next signal is within stopping distance of the signal following it.

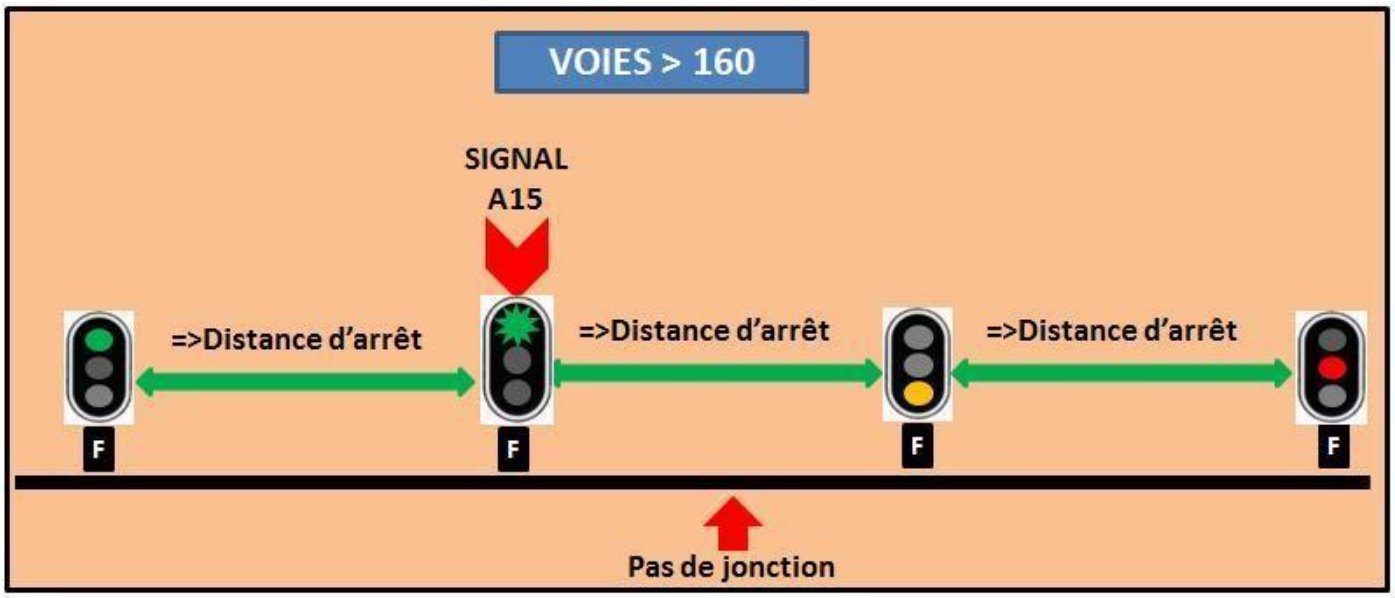


The A13 signal is also used on tracks with operating speeds of 160 km/h or less. It is installed in two cases:

- The signal that follows it is not within stopping distance of the next signal
- the 30-slowing signal that follows it is not a slow distance from the recall 30 it announces, this distance may be only 500 meters.

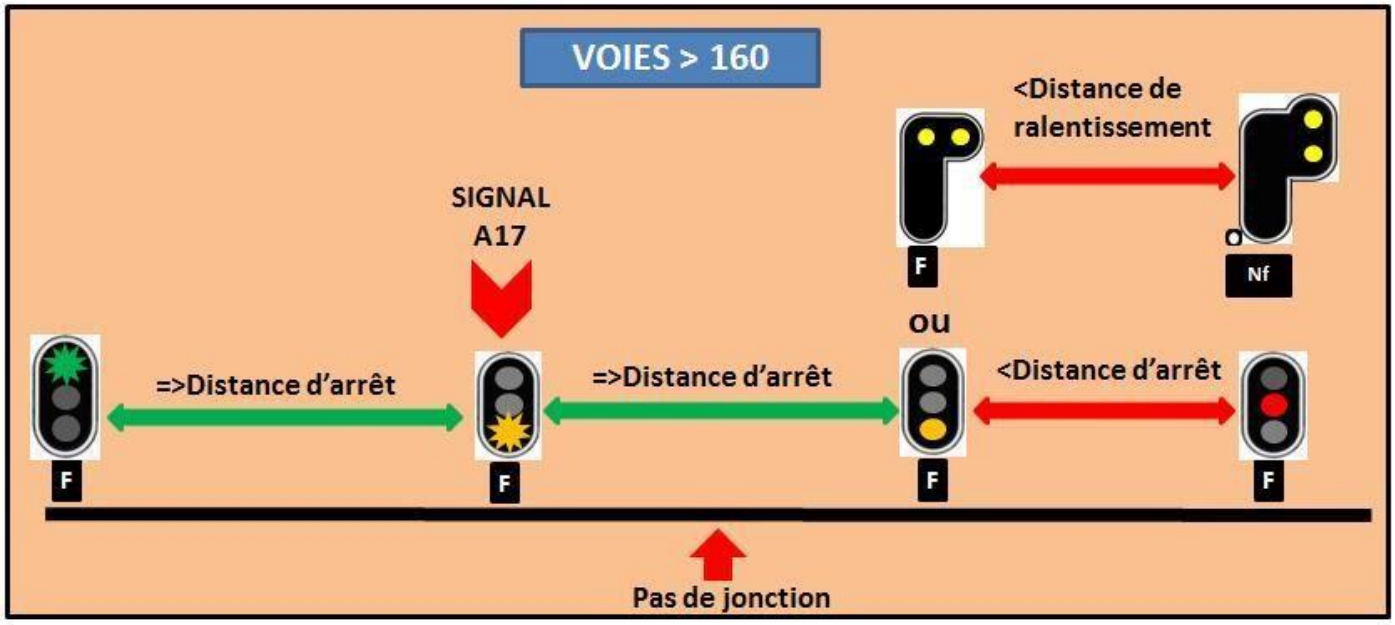


The A15 signal is used on tracks with operating speeds greater than 160 km/h when the next signal is within stopping distance of the following signal.



The A17 signal is also used on tracks with operating speeds of more than 160 km/h. It is installed in two cases:

- The signal that follows it is not within stopping distance of the next signal
- the 30-slowing signal that follows it is not a slow distance from the recall 30 it announces, this distance may be only 500 meters.



LE SIGNAL B

The B panels provide both the spacing of the trains but also the protection of the switches. Therefore, there is always at least one junction between panel B and the next signal.

As with A panels, there are eight possibilities for depicting B-panels that are listed in the table below:

SIGNAL B							
Voies <= 160				Voies > 160			
B11	B12	B13	B14	B15	B16	B17	B18
CROCO 11	CROCO 12	CROCO 13	CROCO 14	CROCO 15	CROCO 16	CROCO 17	CROCO 18
							
							
							
							
							
							

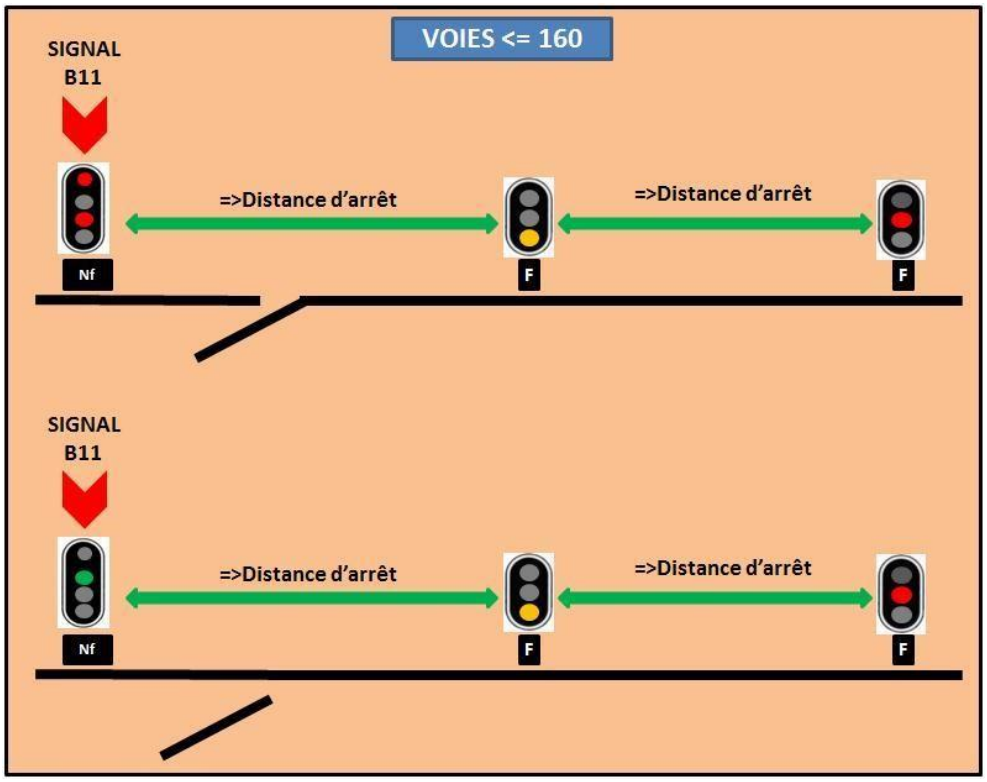
The 3 lower lights (red, yellow, green) ensure the spacing of trains under the same conditions as the A panels. The presentation of the square (the two red lights lit simultaneously) indicates that a junction is not connected.

The B12, B14, B16, B18 panels replace the B11, B13, B15, B17 panels respectively under the conditions attached page 17 on the use of the flashing red light.

The use of signal B is shown in the next two pages.

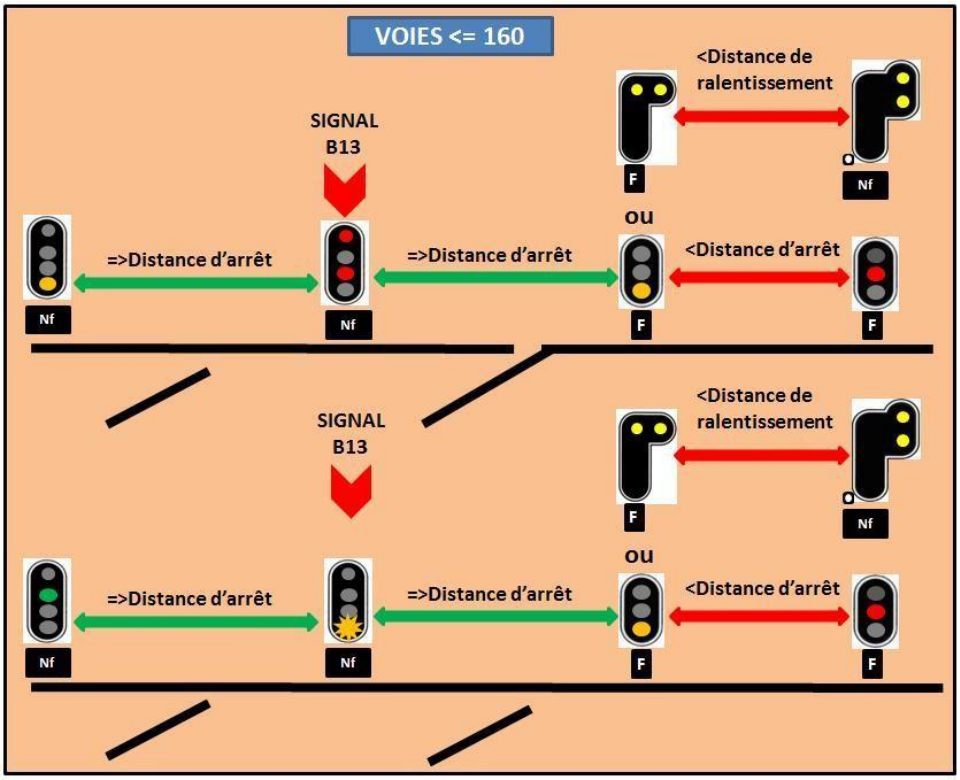
Don't use crocodiles 21 to 28 with this signal.

The B11 signal is used on tracks with operating speeds of 160 km/h or less, when the next signal is within stopping distance of the following signal.

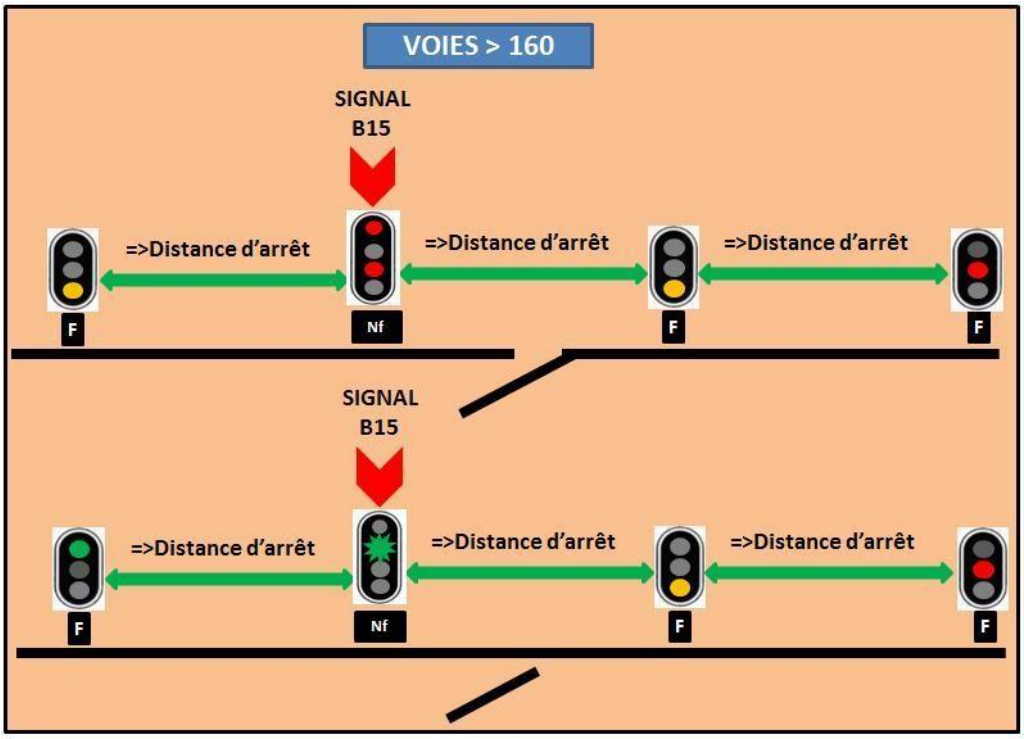


The B13 signal is also used on tracks with operating speeds of 160 km/h or less. It is installed in two cases:

- The signal that follows it is not within stopping distance of the next signal
- the 30-slowing signal that follows it is not a slow distance from the recall 30 it announces, this distance may be only 500 meters.

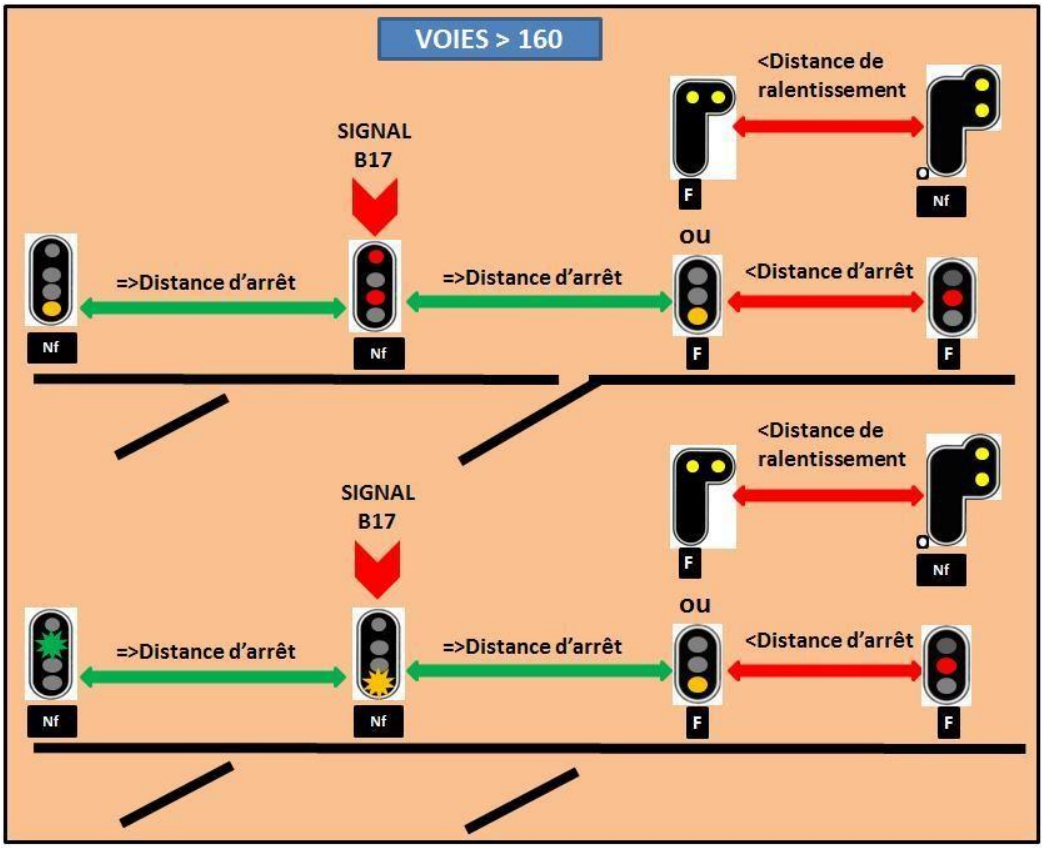


The B15 signal is used on tracks with operating speeds greater than 160 km/h and when the next signal is within stopping distance of the following signal.

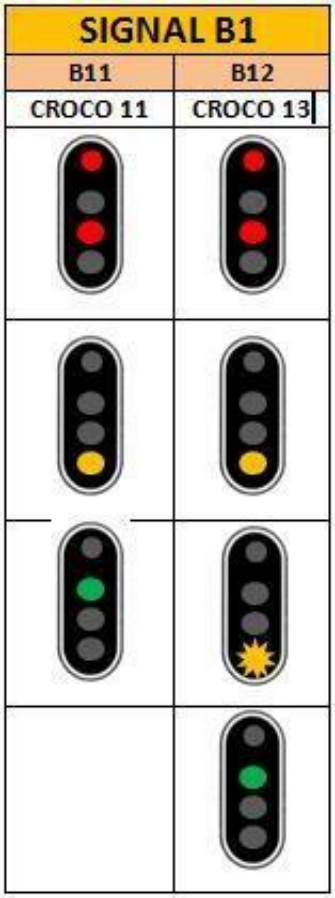


The B17 signal is also used on tracks with operating speeds of more than 160 km/h. It is installed in two cases:

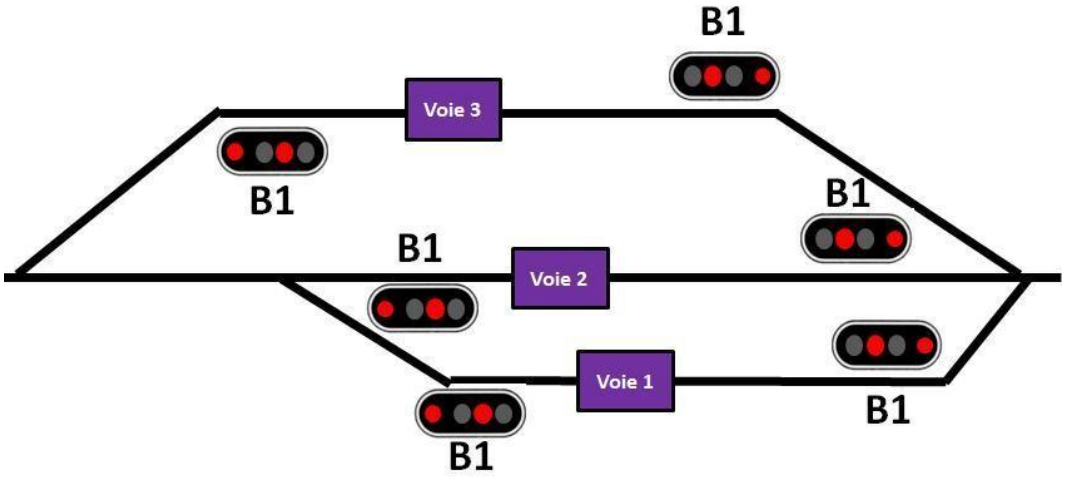
- The signal that follows it is not within stopping distance of the next signal
- the 30-slowing signal that follows it is not a slow distance from the recall 30 it announces, this distance may be only 500 meters.



SIGNAL B1



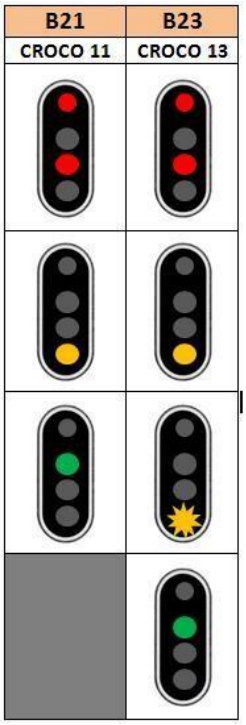
Le signal B1 is used to leave stations of some importance. It does not present the semaphore for the protection of maneuvers.



It makes it possible to turn back the light on the condition that there are not too many distance between link 0 and connected link greater than 0. Indeed, the need to be train starts in mid to cross the connected link so that the signal operation is correct after turning back.

It can be used with crocodiles 11 or 13.

SIGNAL B2



The B2 signal is used at the entrance to stations of some importance. It does not present the semaphore to protect the maneuvers.

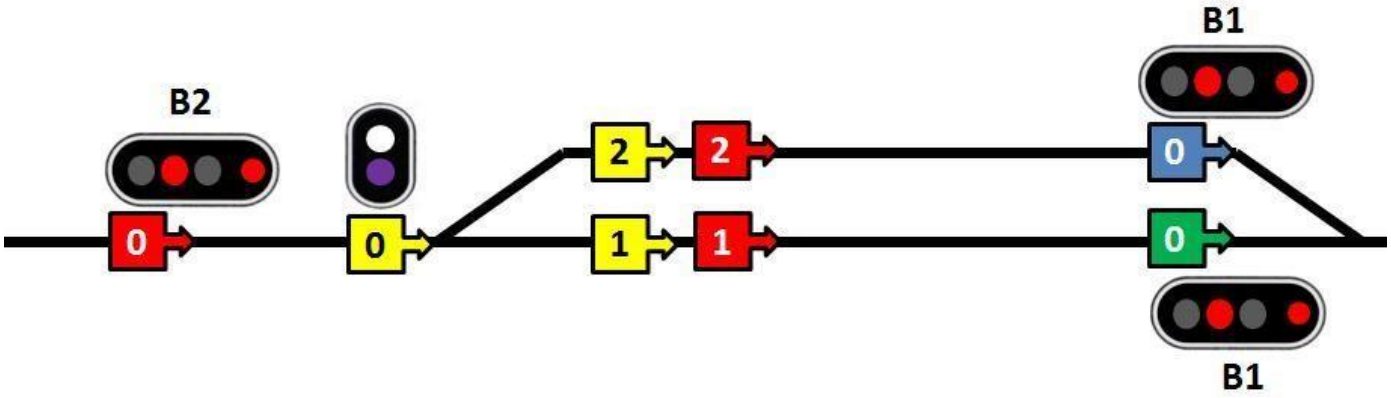
It is also designed to be used jointly and **systematically** with low purple squares.

It can be used to make turns under the same conditions as the B1 signal.

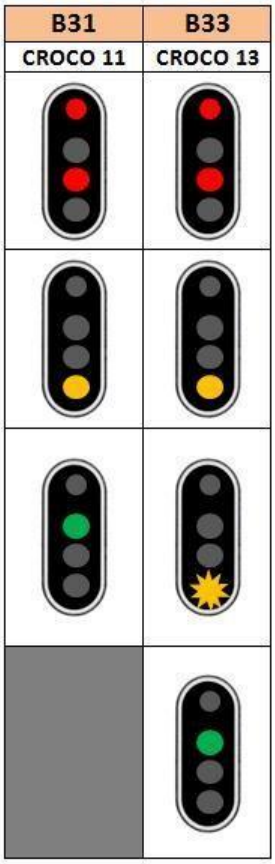
It can be used with crocodiles 11 or 13.

This signal may present the flashing red light under the conditions mentioned on page 21. It can therefore also be used in conjunction with the Silec2 pedal.

When used in conjunction with a low purple square, the B1 signal links should frame those of the low purple square as in the drawing below.



SIGNAL B3



The B3 signal is used to perform turn-back maneuvers. If the distance between link 0 and the connected link is too long (if there is no beginning of the connected link), when you turn back on another lane and the switch returns to the initial position, our starting signal stays red. So, we need a specially designed signal for this purpose.

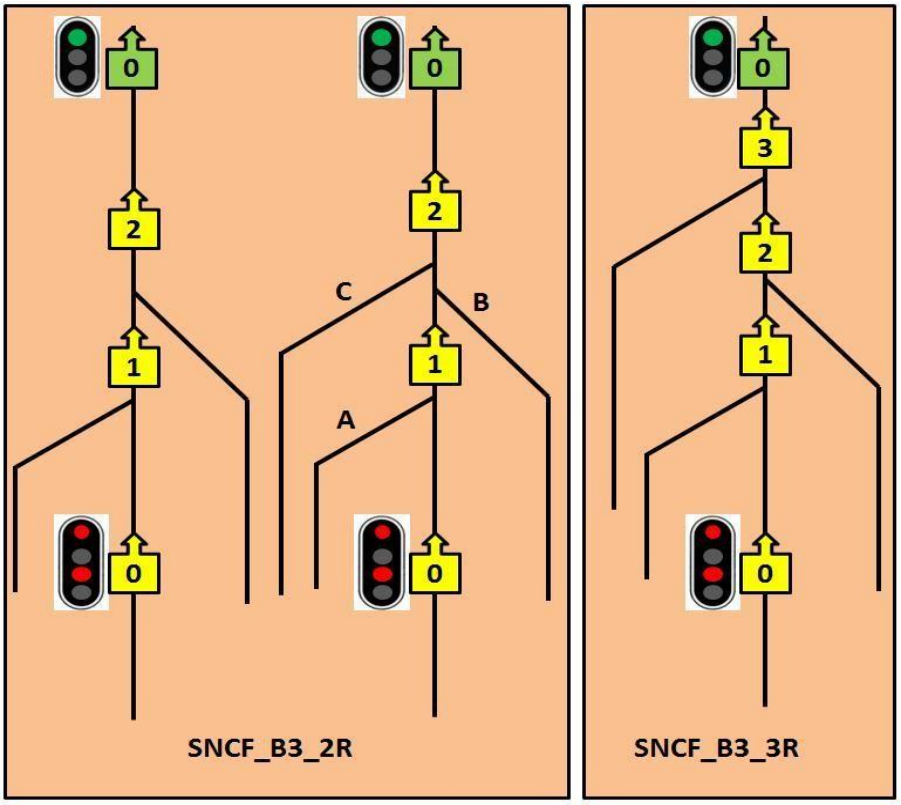
Like the B1 and B2 signals, it does not present the semaphore to protect the maneuvers.

This pack contains two back-up signals: - with
two backlinks - with three backlinks.

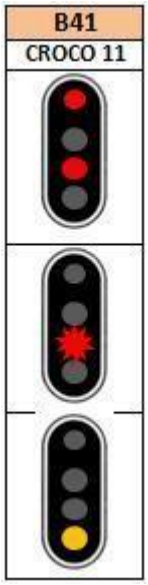
A link is placed after the switch giving access to a back-up route. We see in the drawing below, rectangle of the center, that the B way is not a backward route and we will therefore place the link after the C-track, which is a backwards route.

<u>Warning:</u> it is imperative to put a link after the last switch, whether this switch gives access to a back-up route or not.

It can be used with crocodiles 11 or 13**.**



SIGNAL B4



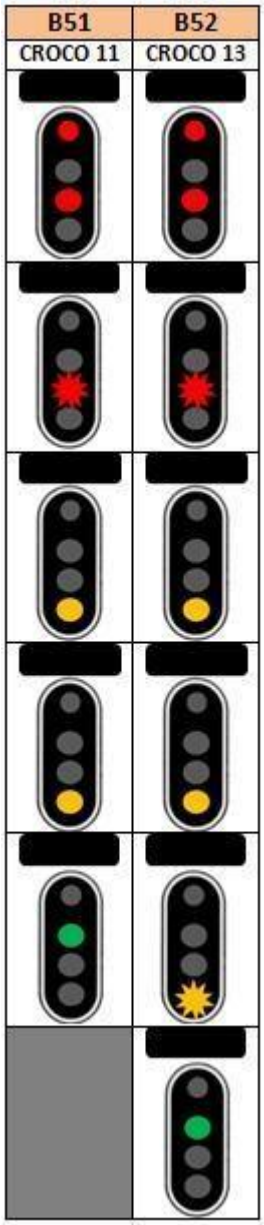
The B4 signal is used at the entrance to the terminals or general stop stations. It does not present the semaphore to protect the maneuvers. It shows the flashing red light under certain conditions.

It is also designed to be used in conjunction with low purple squares.

It is used with crocodile 11.

This signal may show the flashing red light. It can also be used in conjunction with the Silec2 pedal. Refer to the chapter "Functioning common to certain categories of signals."

SIGNAL B5



This signal shows the yellow stripe.

The B5 signal is used at the entrance to the crossing stations. It does not present the semaphore to protect the maneuvers. It shows the flashing red light under certain conditions.

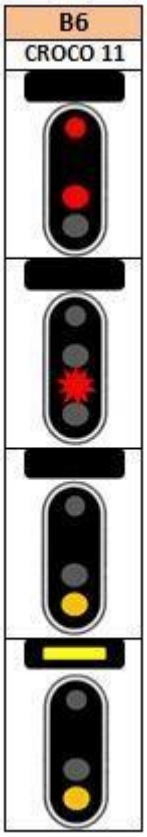
It is also designed to be used in conjunction with low purple squares.

It is used with crocodiles 11 and 13.

This signal may show the flashing red light. It can also be used in conjunction with the Silec2 pedal. Refer to the chapter "Functioning common to certain categories of signals."

For the use of the yellow stripe and the correct laying of links, also refer to the chapter "Functioning common to certain categories of signals."

SIGNAL B6



This signal shows the yellow stripe.

The B6 signal is used at the entrance to the terminals or general stop stations. It does not present the semaphore to protect the maneuvers. It shows the flashing red light under certain conditions.

It is also designed to be used in conjunction with low purple squares.

It is used with crocodile 11.

This signal may show the flashing red light. It can also be used in conjunction with the Silec2 pedal. Refer to the chapter "Functioning common to certain categories of signals."

For the use of the yellow stripe and the correct laying of links, also refer to the chapter "Functioning common to certain categories of signals."

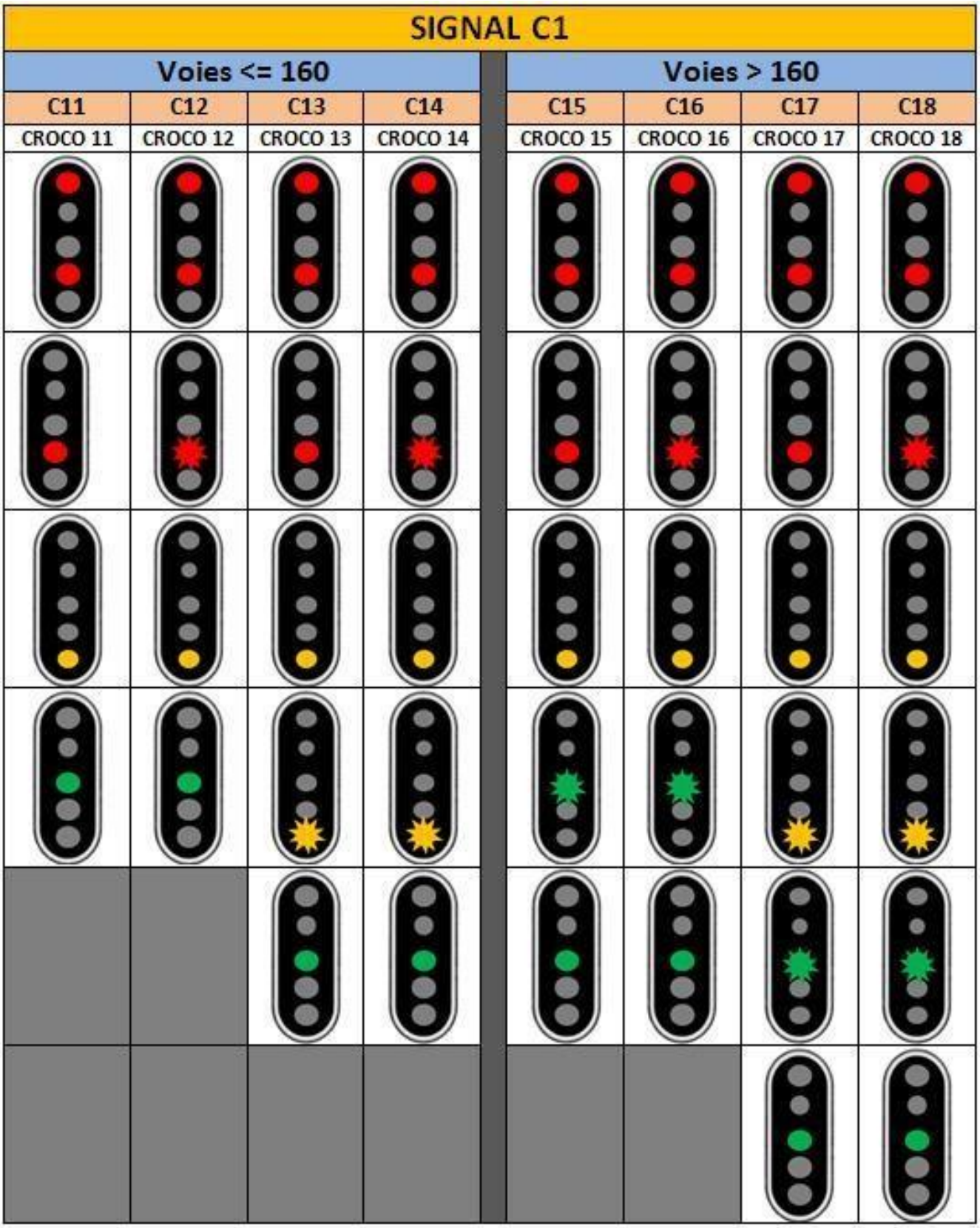
SIGNALS C

There are three C signals called C1, C2 and C3.

The C1 signal presents square and semaphore while the C2 signal only has the square. The latter is therefore intended for stations of some importance. The C3 signal shows the purple square and the semaphore. It is therefore intended for service lanes leading to the main tracks.

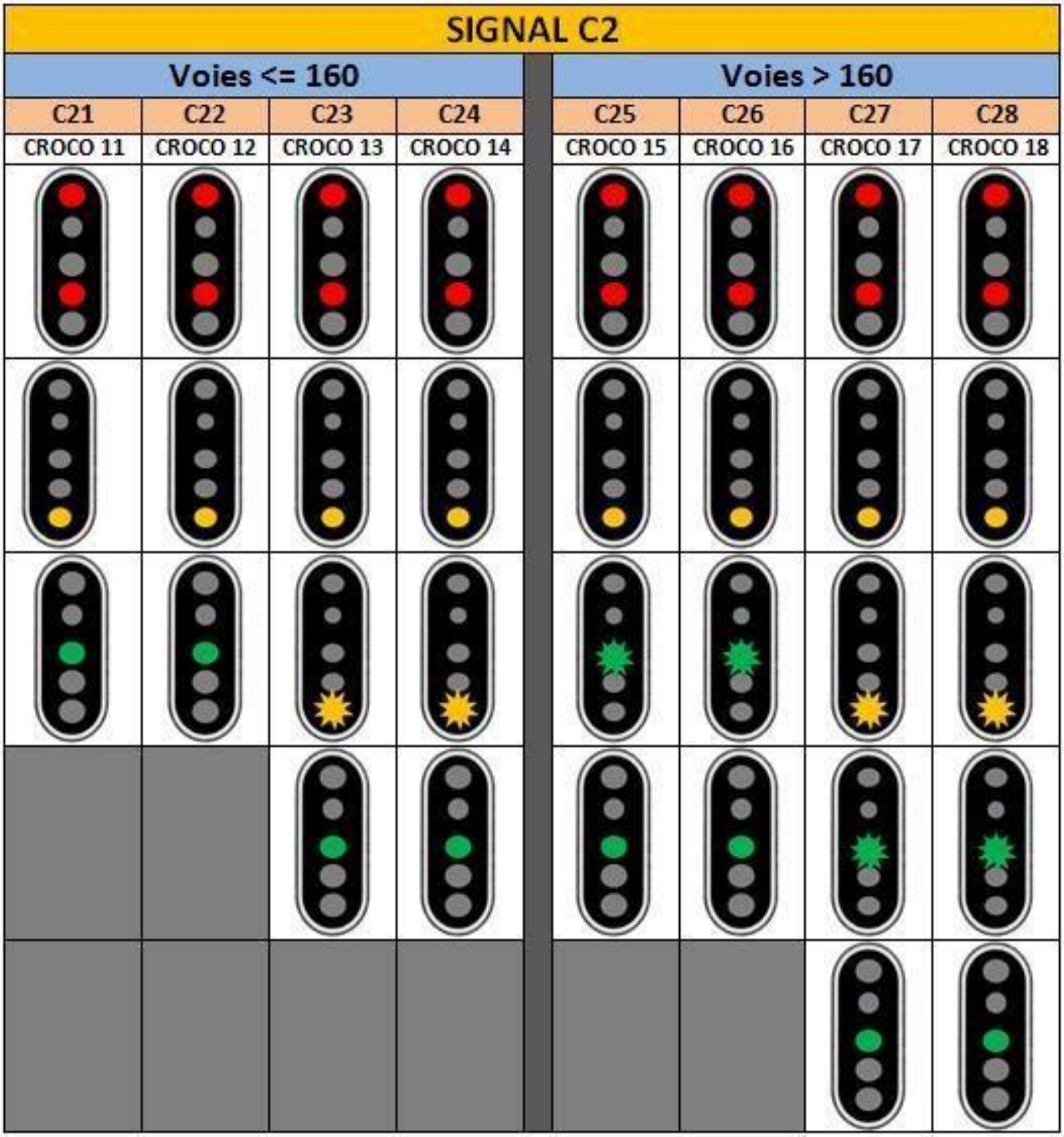
They present (in addition to the square, semaphore, warning, free lane) the white maneuvering light (fixed or flashing).

For the use of the white maneuvering light and the correct laying of the links, refer to the chapter "Functioning common to certain categories of signals."



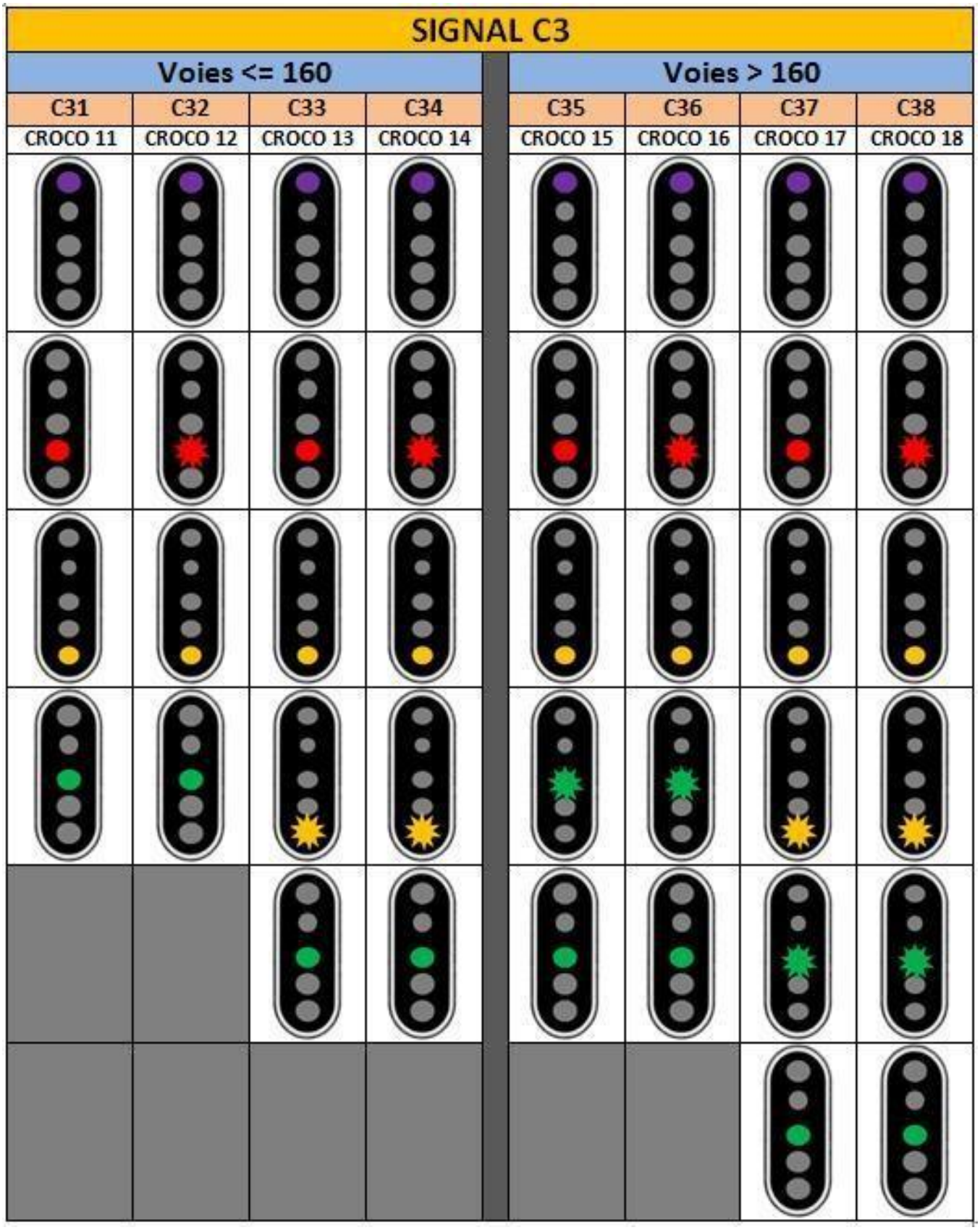
C11 to C18 signals are used under the same conditions as B11 to B18 page 31 signals, respectively.

The C2 signal is identical to the C1 signal except. that it does not present the semaphore.



C21 to C28 signals are used under the same conditions as B11 to B18 page 31 signals, respectively.

The C3 signal is identical to the C1 signal except that it presents the purple square instead of the red square.



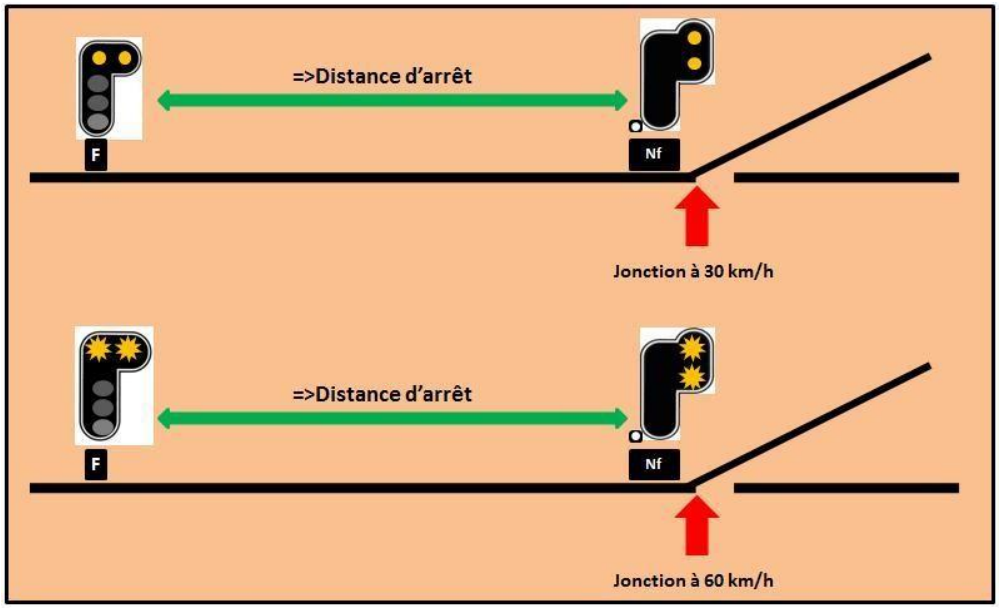
C31 to C38 signals are used under the same conditions as B11 to B18 page 31 signals, respectively.

SIGNALS E

E-panels are used to announce 30 or 60 slowdown recalls.

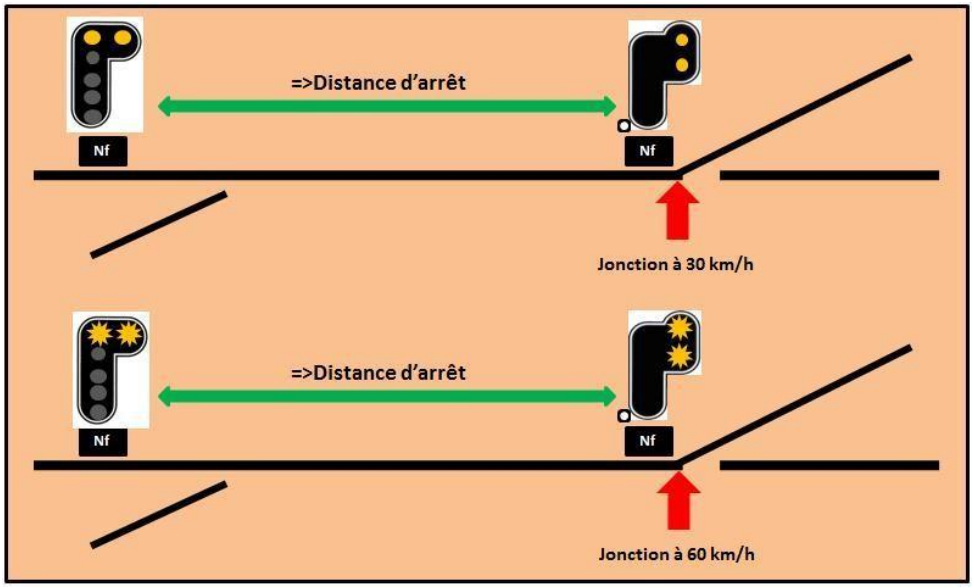
They are found with either the letter "F" or the letter "Nf."

E-panels with the letter F are installed when there is no connection between this panel and the recall that follows it. They have only one link (link 0)



E panels bearing the letter Nf are installed when there is a junction to be protected between this sign and the recall that follows it. They have at least two links.

Whether they carry the letter F or Nf, they are normally installed at a minimum distance from the slowing of the recall that follows them.

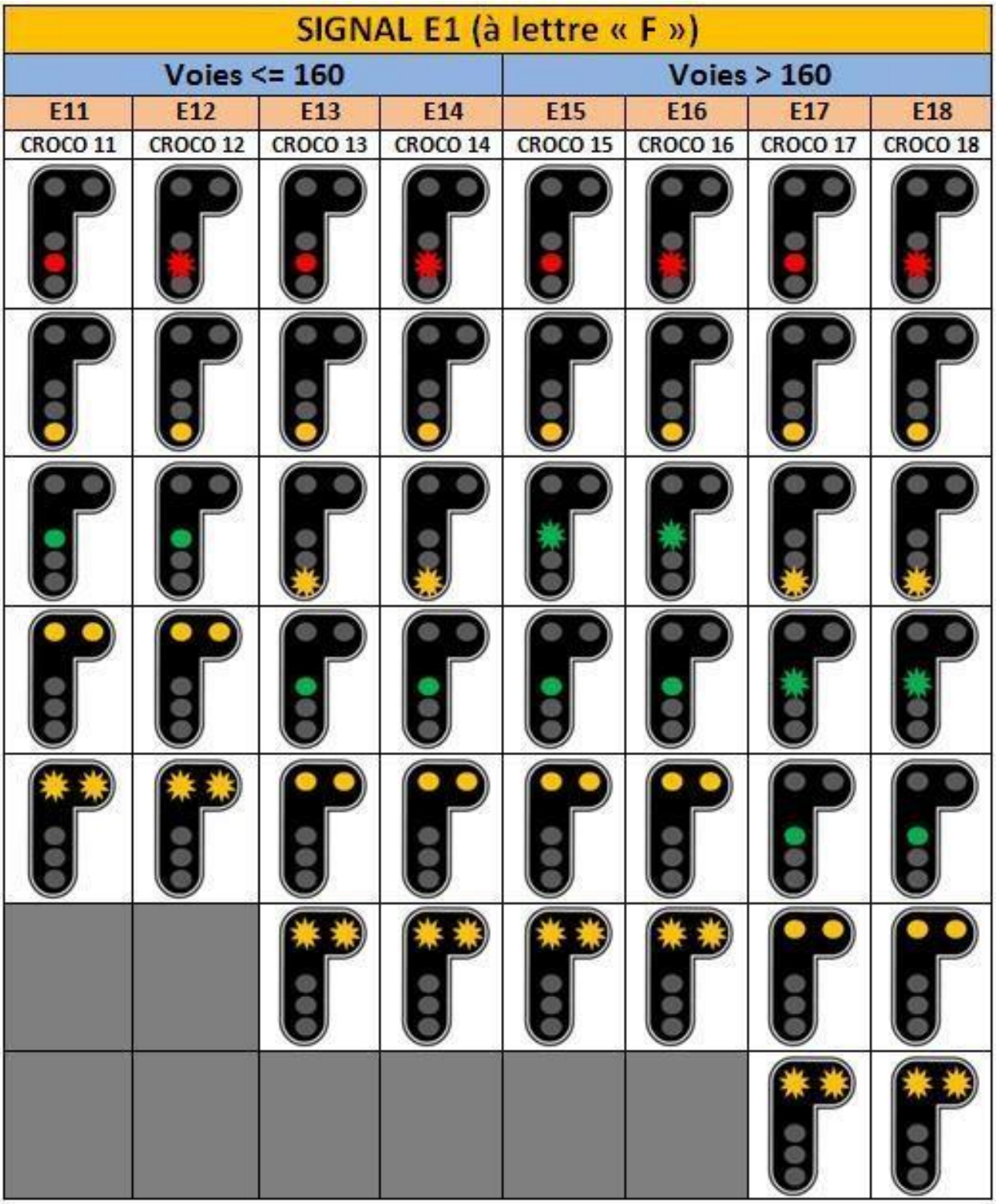


In addition to the 30 or 60-slowdown, they carry:

- the three colors of the semaphore to ensure the spacing of the trains if they carry the letter F, - the three colors of the semaphore as above plus the square if they carry the letter Nf.

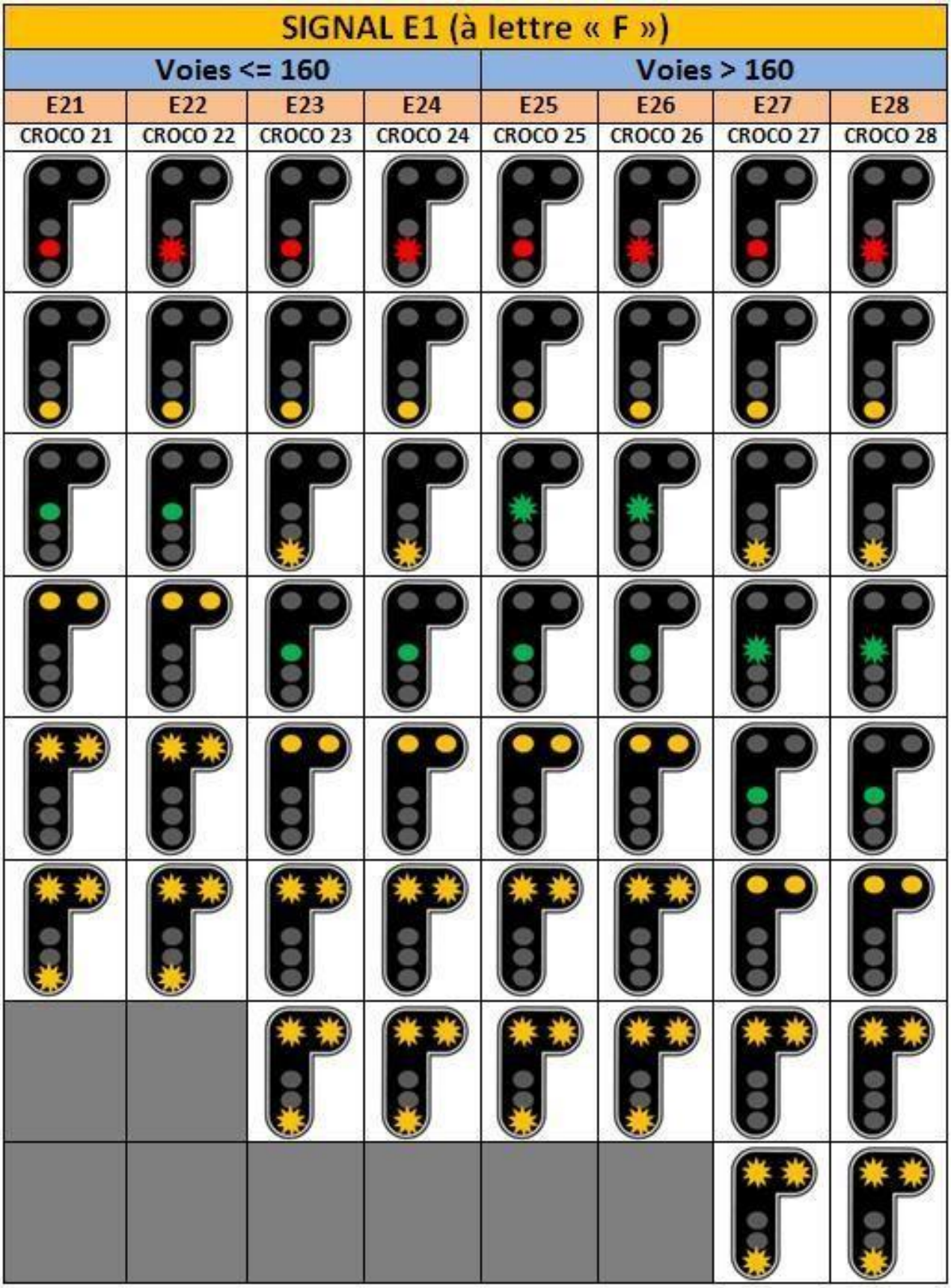
They are intended to be used indiscriminately in front of a recall 30 or 60. If the next signal is a 30 recall, they will show the 30 slowdown, if instead the recall is a 60 recall, they will show the 60 slowdown.

The E1 signal with crocodiles 11 to 18 can't show the 60-plus yellow flashing..



The E12, E14, E16, E18 signals replace the E11, E13, E15, E17 signals respectively under the conditions set on page 17 on the use of the flashing red light.

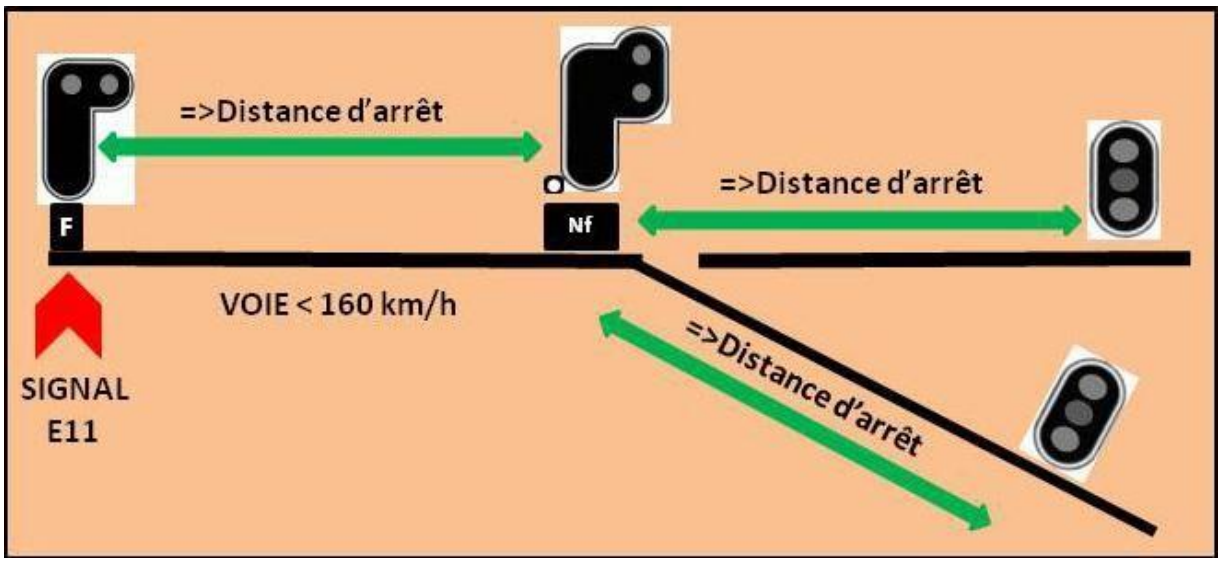
The E1 signal with crocodiles 21 to 28 can present the slowing 60-yellow flashing.



The E22, E24, E26, E28 signals replace the E21, E23, E25, E27 signals respectively under the conditions set on page 17 on the use of the flashing red light.

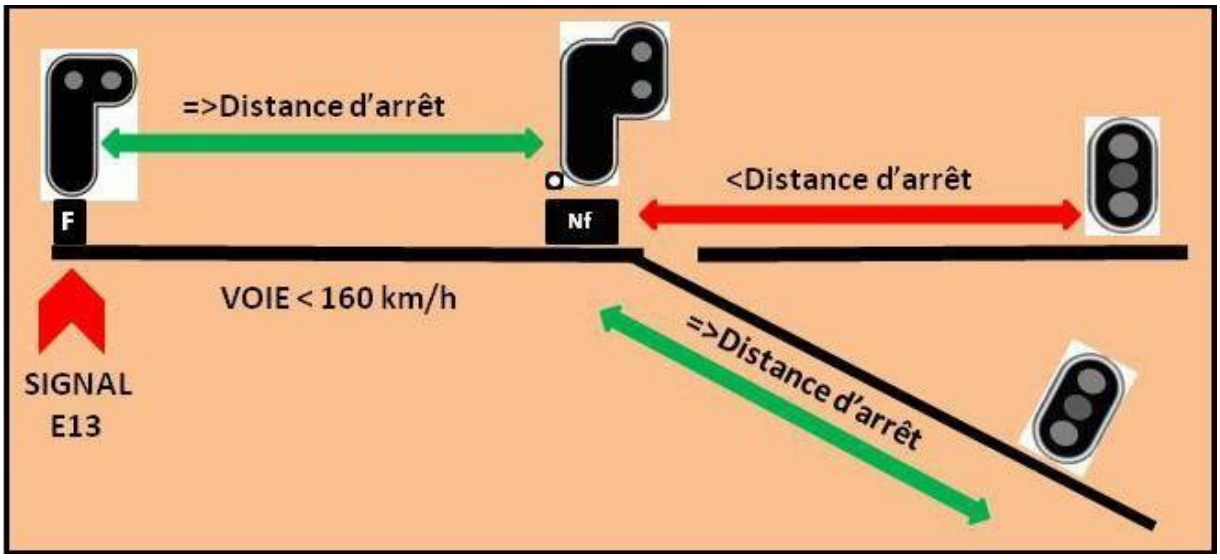
The use of the E1 signal is shown in the next four pages.

The E11 signal is used on tracks with maximum operating speeds of 160 km/h or less when the signal following the recall is at a stopping distance on both the direct lane and the deviated track.

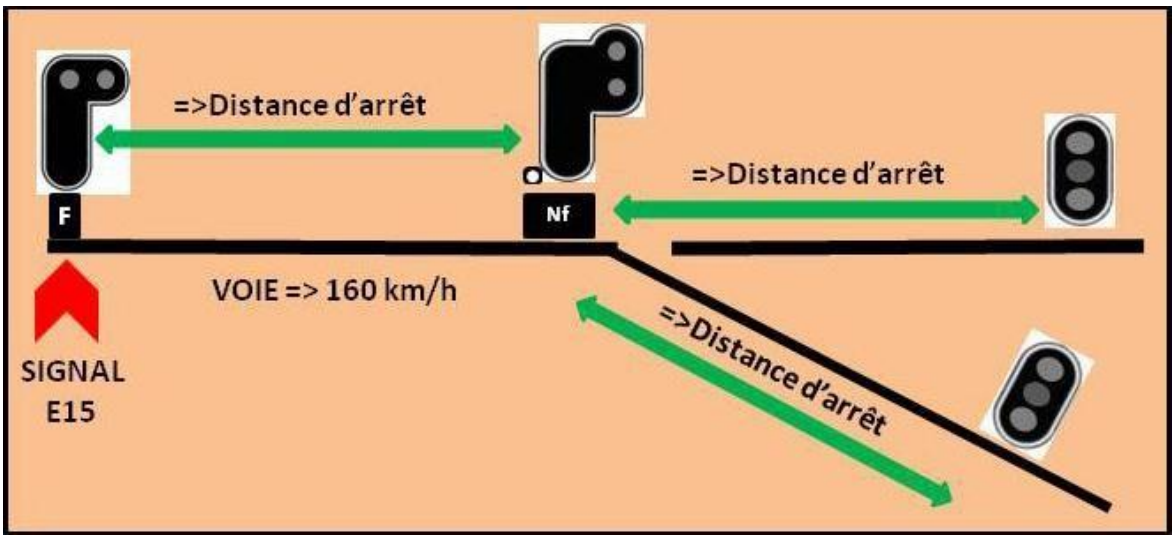


The E13 signal is used on tracks with maximum operating speeds of 160 km/h or less when the following two cases are completed:

- on the direct track the signal following the recall is not at a stopping distance, - on the deflected lane, the signal following the recall is at a stopping distance.

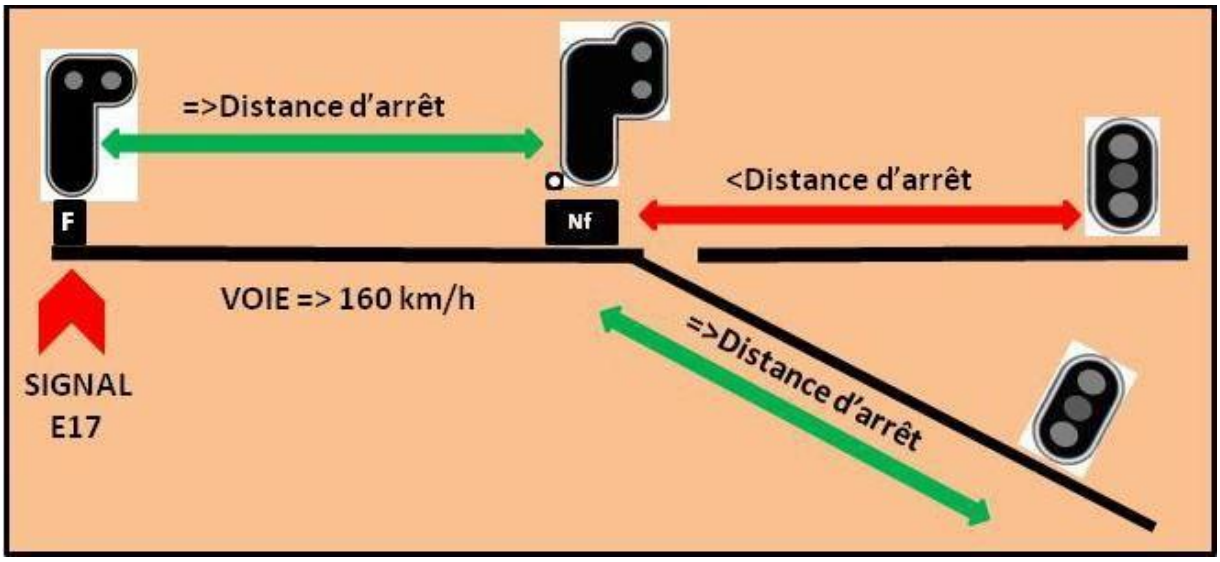


The E15 signal is used on tracks with maximum operating speeds greater than 160 km/h when the signal following the recall is at a stopping distance on both the direct and deflected lanes.



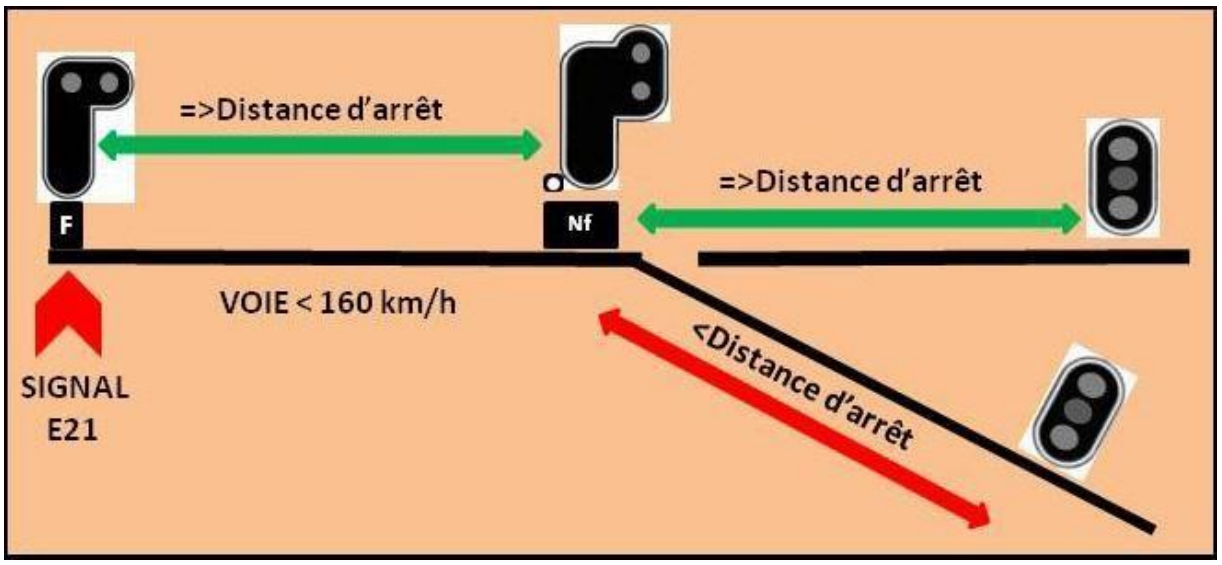
The E17 signal is used on tracks with maximum operating speeds greater than 160 km/h when the following two cases are completed:

- on the direct track the signal following the recall is not at a stopping distance, on the deflected lane, the signal following the recall is at a stopping distance.

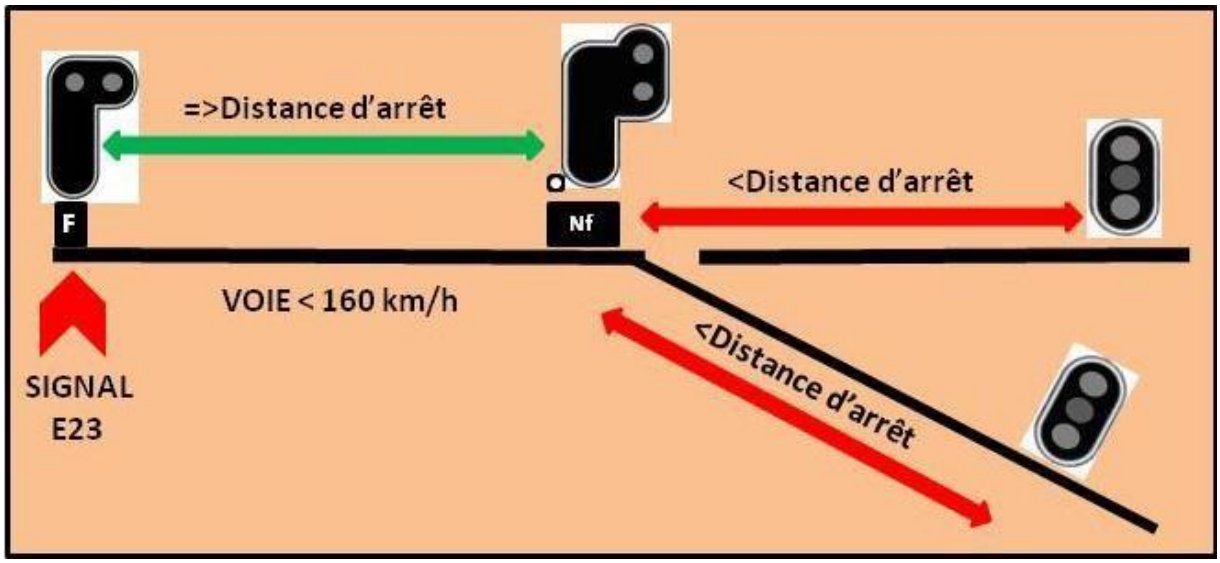


The E21 signal is used on tracks with maximum operating speeds of 160 km/h or less when the following two cases are completed:

- on the direct track the signal following the recall is at a stopping distance,
- on the deviated lane, the signal following the recall is not within stopping distance.

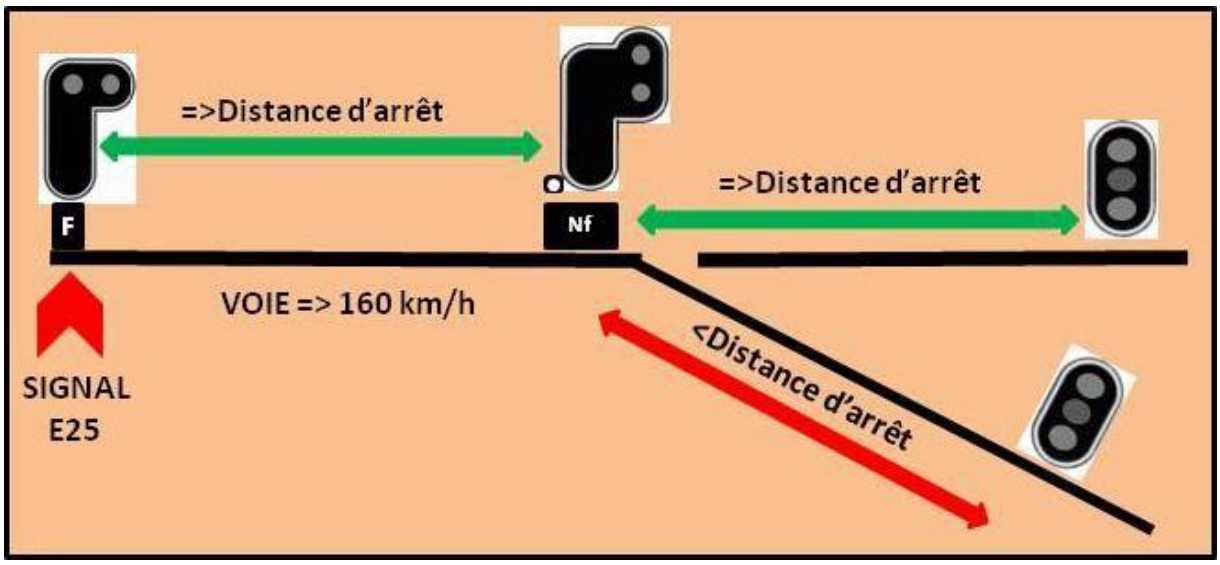


The E23 signal is used on tracks with maximum operating speeds of 160 km/h or less when both on the direct track and on the deviated track the signals are not within stopping distance of the recall.

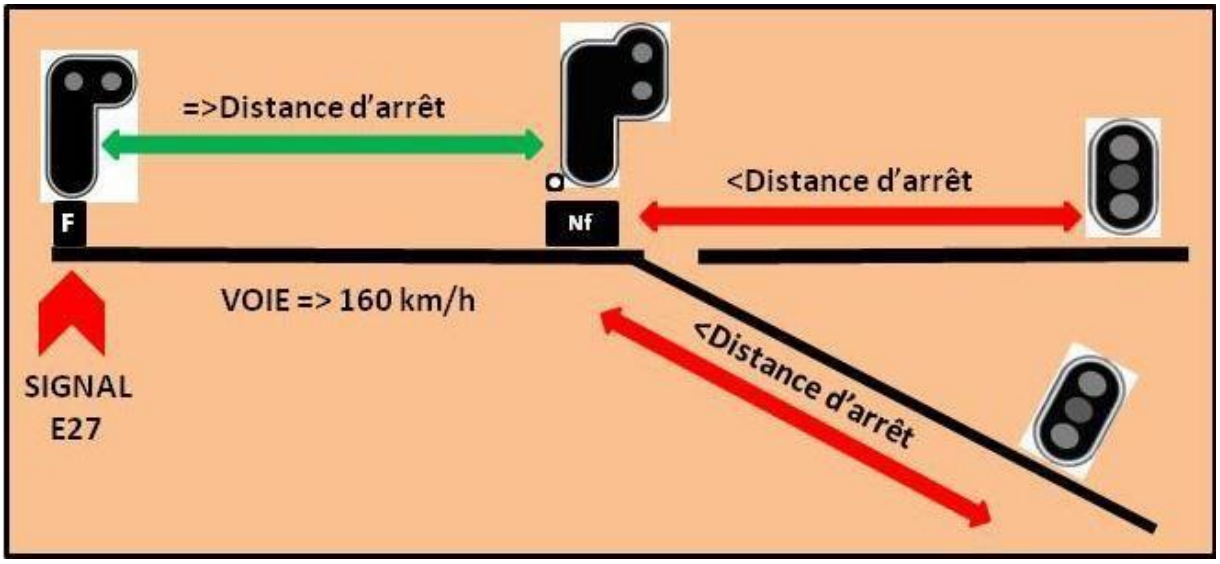


The E25 signal is used on tracks with maximum operating speeds greater than 160 km/h when the following two cases are completed:

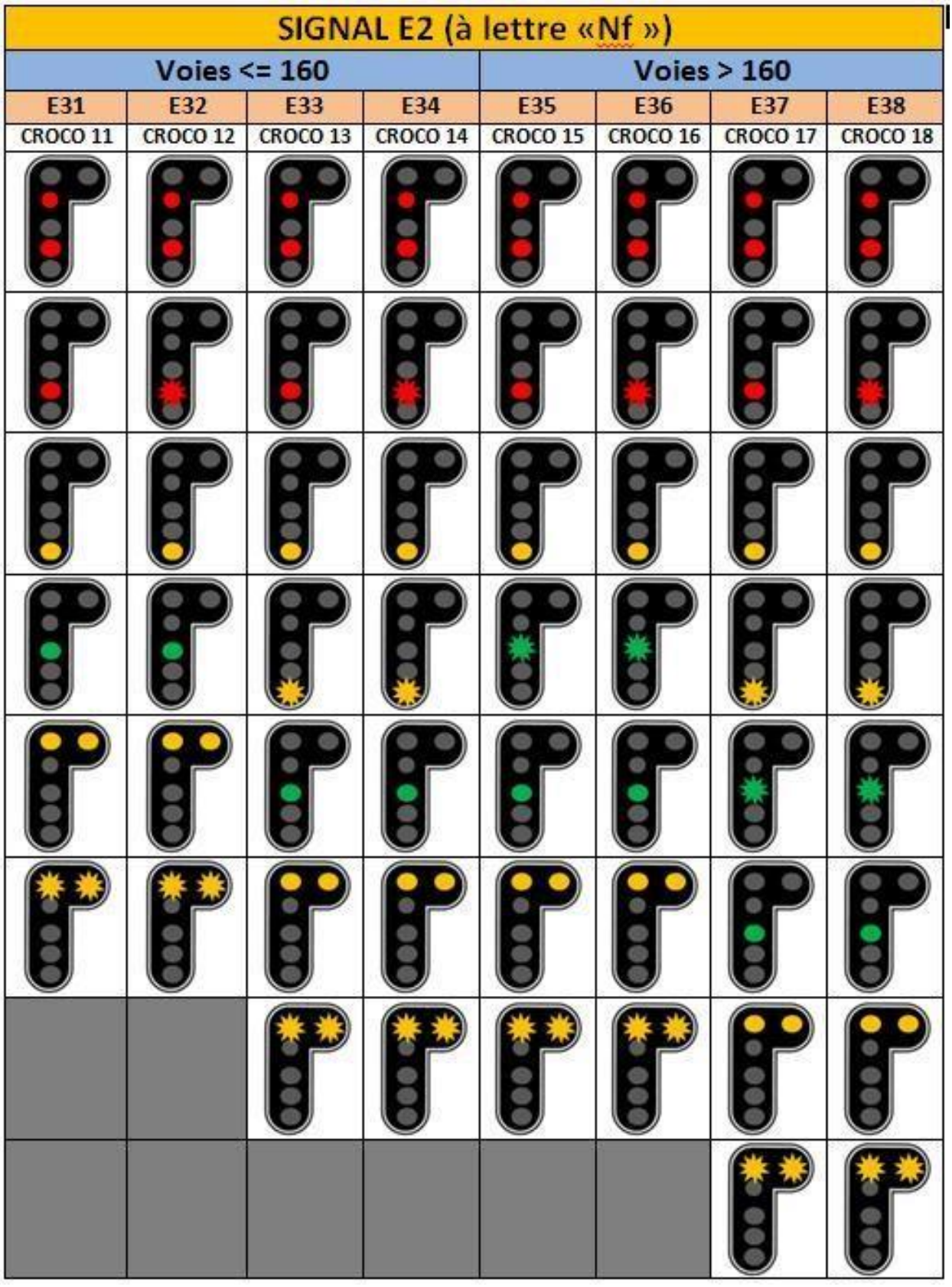
- on the direct track the signal following the recall is at a stopping distance,
- on the deviated lane, the signal following the recall is not within stopping distance.



The E27 signal is used on tracks with a maximum operating speed of more than 160 km/h when both on the direct track and on the deviated track the signals are not within stopping distance of the recall.

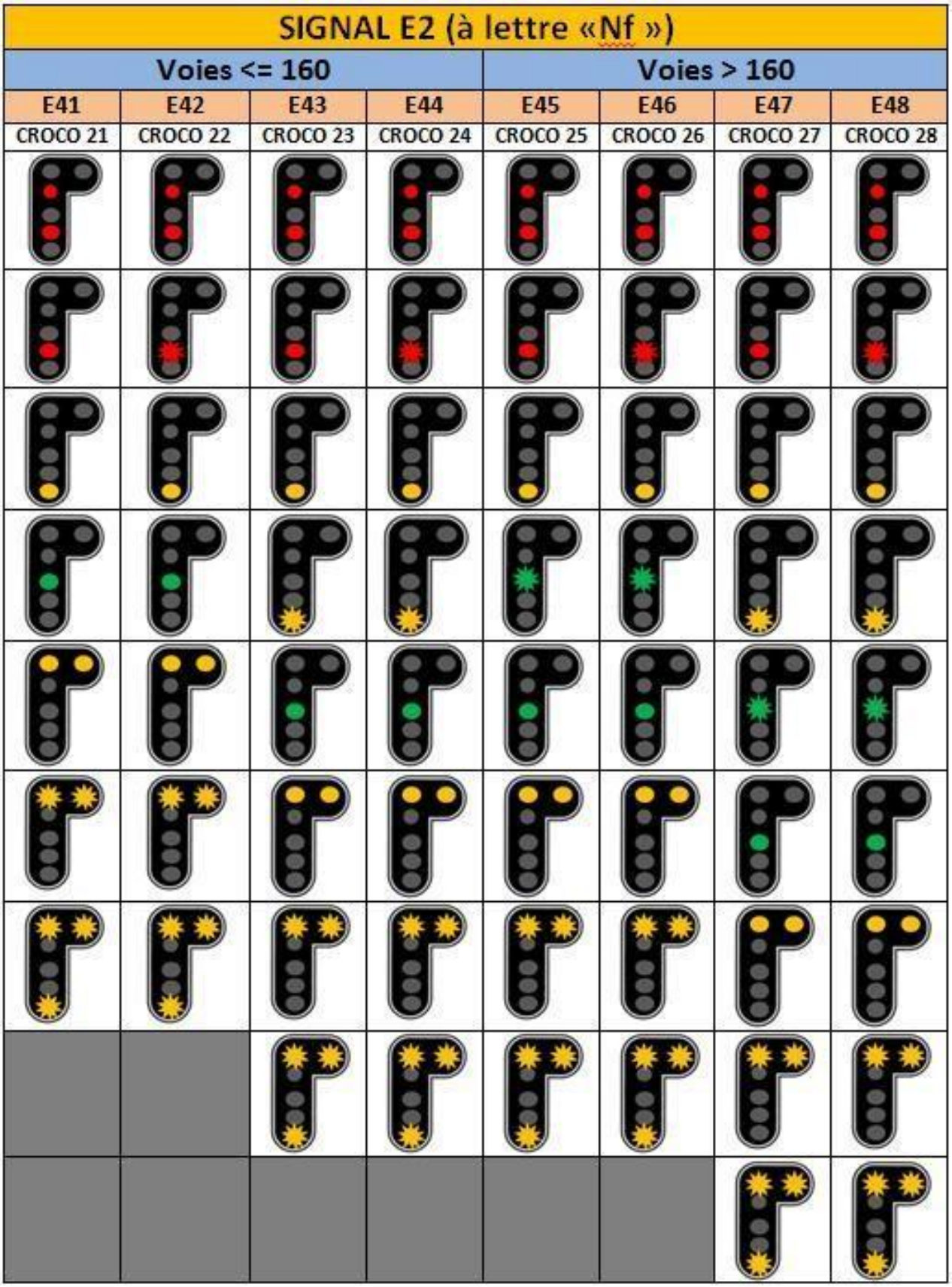


The E2 signal carries the letter Nf because it protects one or more junctions while being able to announce a slowdown 30 or 60**.** With crocodiles 11 to 18, this signal may not show the 60-yellow flashing slowdown.



The E32, E34, E36, E38 signals replace the E31, E33, E35, E37 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The E2 signal with crocodiles 21 to 28 may show the slowing 60-yellow flashing.

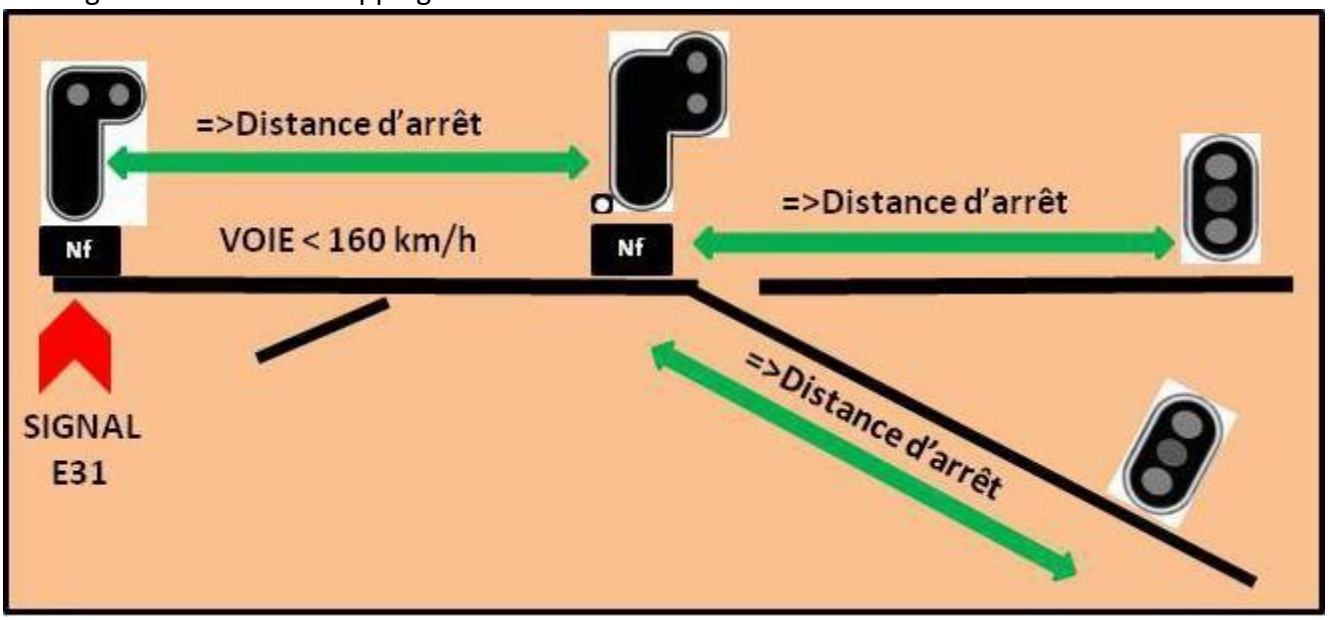


The E42, E44, E46, E48 signals replace the E41, E43, E45, E47 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The use of the E4 signal is shown in the next four pages.

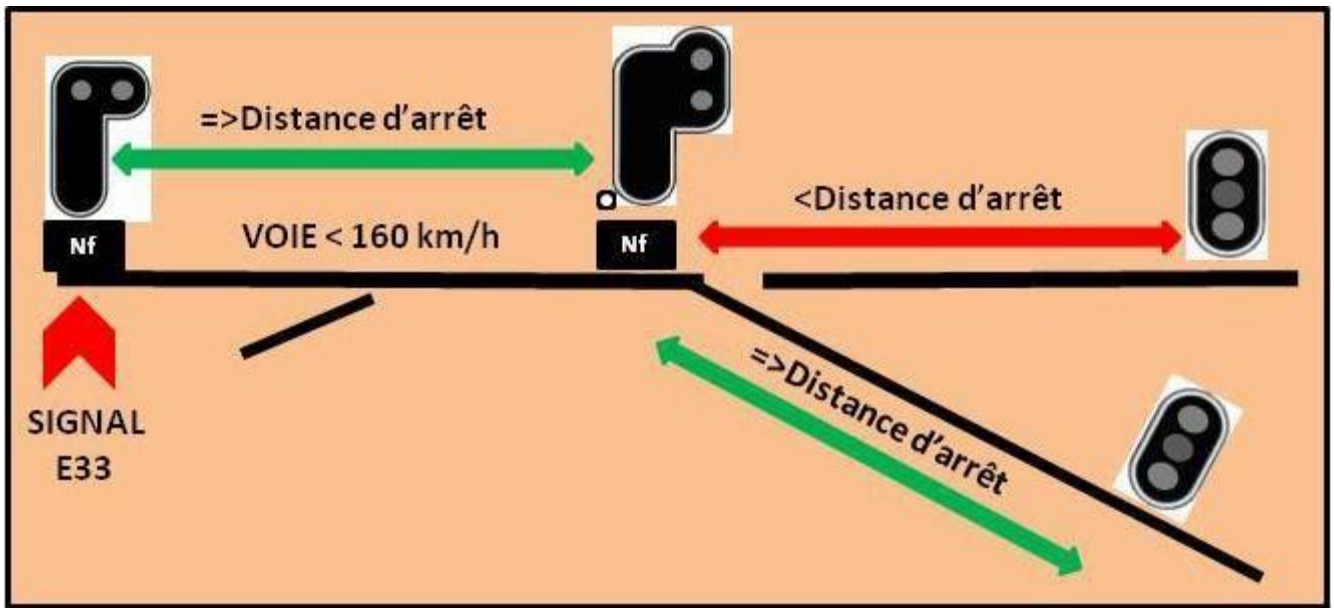
The E32, E34, E36, E38 signals are used strictly in the same situation as the E12, E14, E16, E18 signals respectively except that between the slowdown and the recall, there are one or more junctions to protect.

The E31 signal is used on tracks with maximum operating speeds of 160 km/h or less when the signal following the recall is at a stopping distance on both the direct lane and the deviated track.

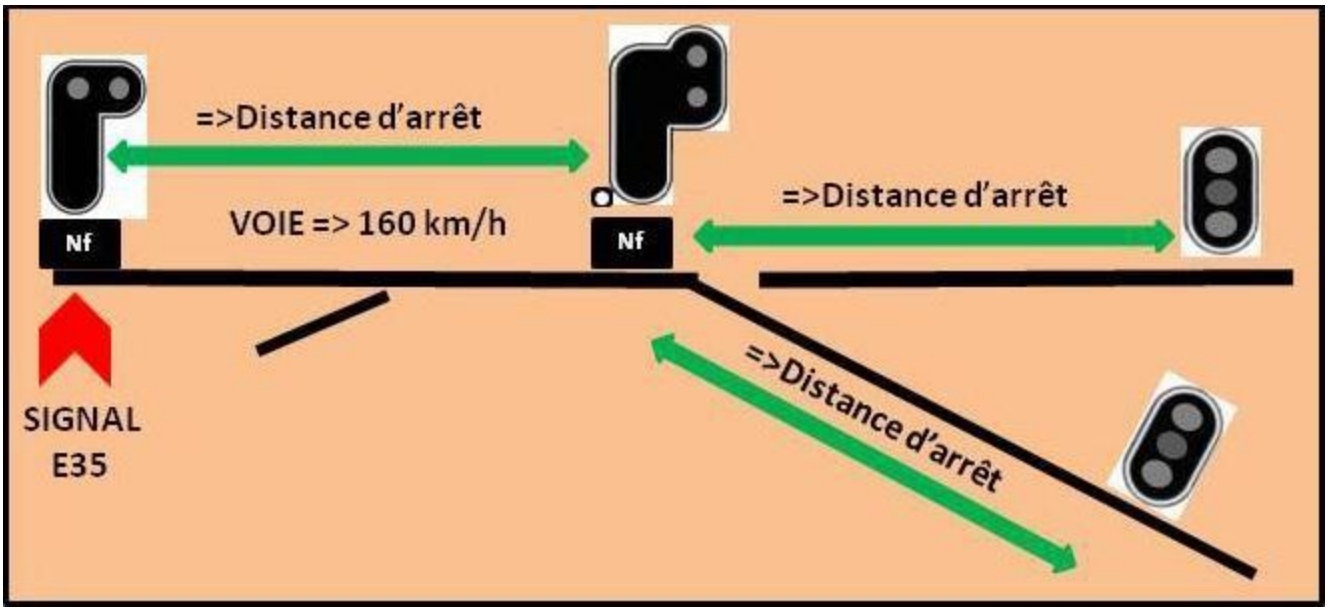


The E33 signal is used on tracks with maximum operating speeds of 160 km/h or less when the following two cases are completed:

- on the direct track the signal following the recall is not at a stopping distance, on the deflected lane, the signal following the recall is at a stopping distance.

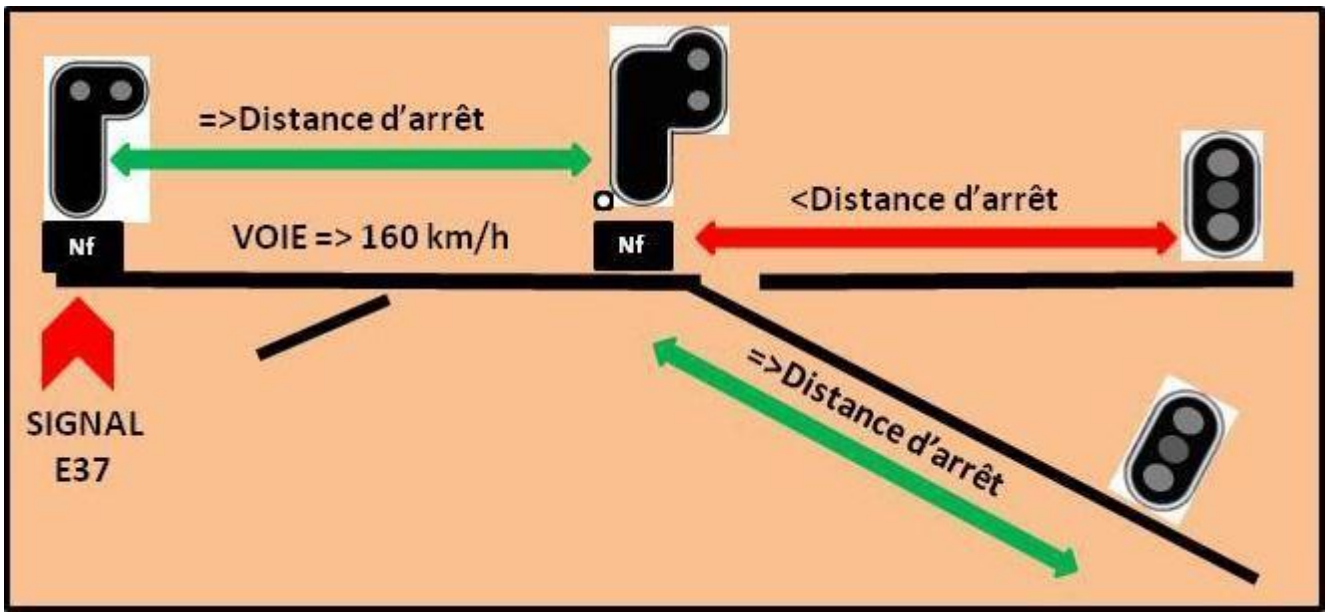


The E35 signal is used on tracks with maximum operating speeds greater than 160 km/h when the signal following the recall is at a stopping distance on both the direct and deflected lanes.



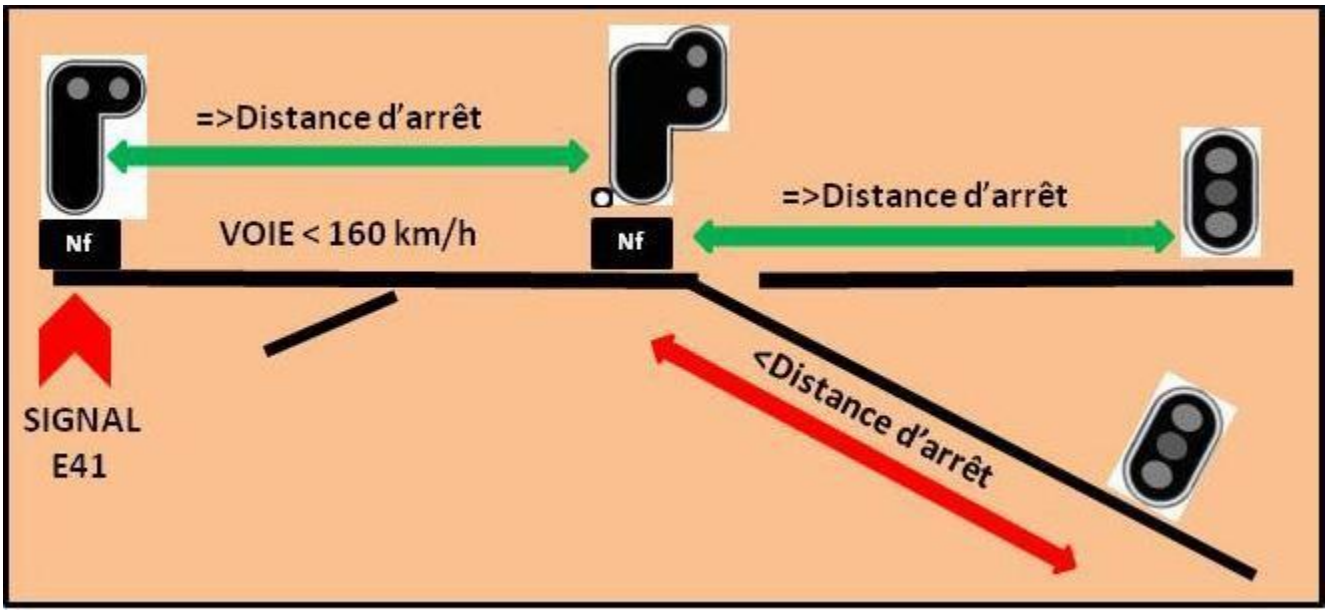
The E37 signal is used on tracks with maximum operating speeds greater than 160 km/h when the following two cases are completed:

- on the direct track the signal following the recall is not at a stopping distance, on the deflected lane, the signal following the recall is at a stopping distance.

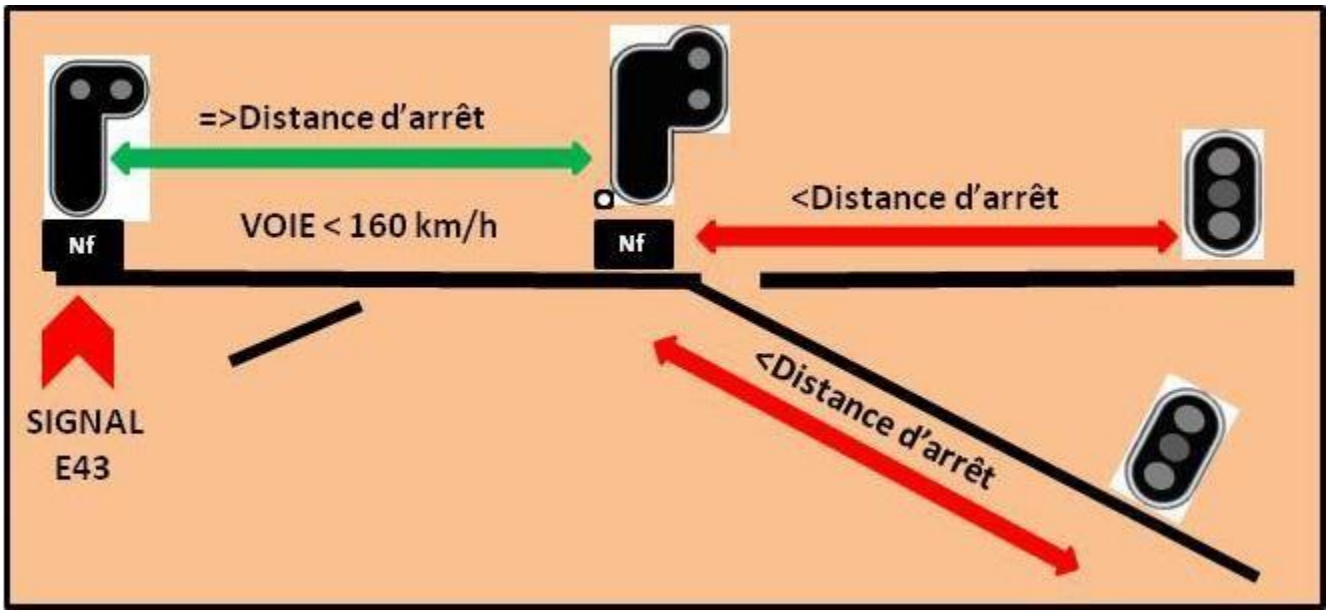


The E41 signal is used on tracks with maximum operating speeds of 160 km/h or less when the following two cases are completed:

- on the direct track the signal following the recall is at a stopping distance,
- on the deviated lane, the signal following the recall is not within stopping distance.

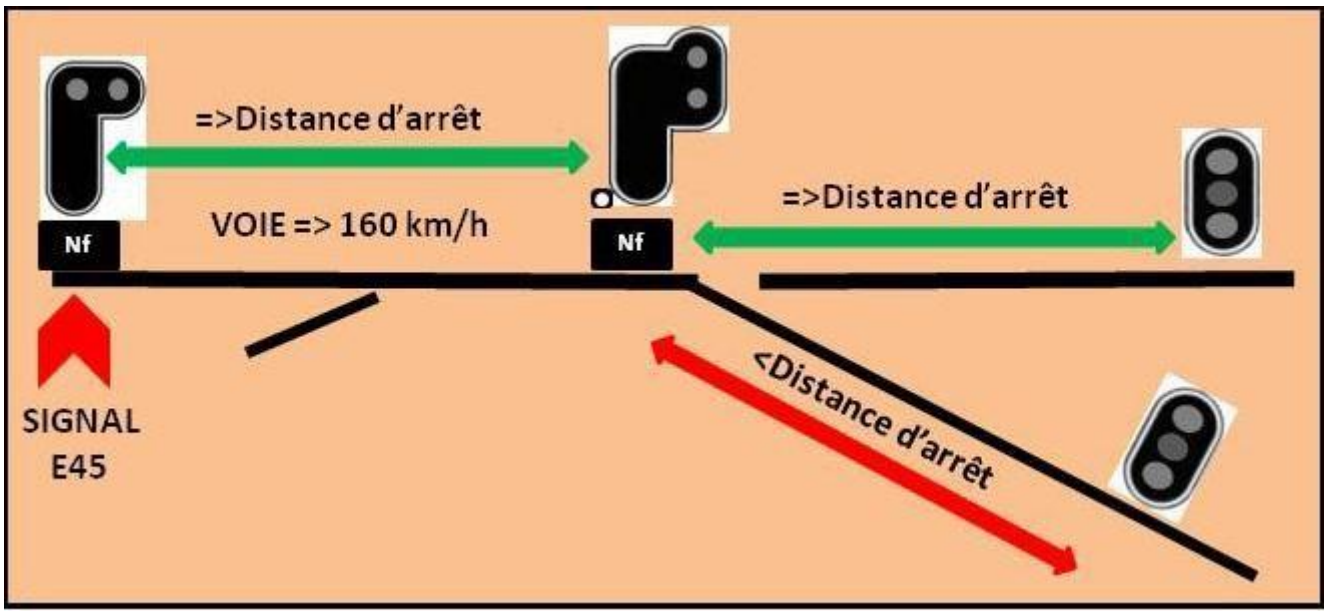


The E43 signal is used on tracks with maximum operating speeds of 160 km/h or less when both on the direct track and on the deviated track the signals are not within stopping distance of the recall.

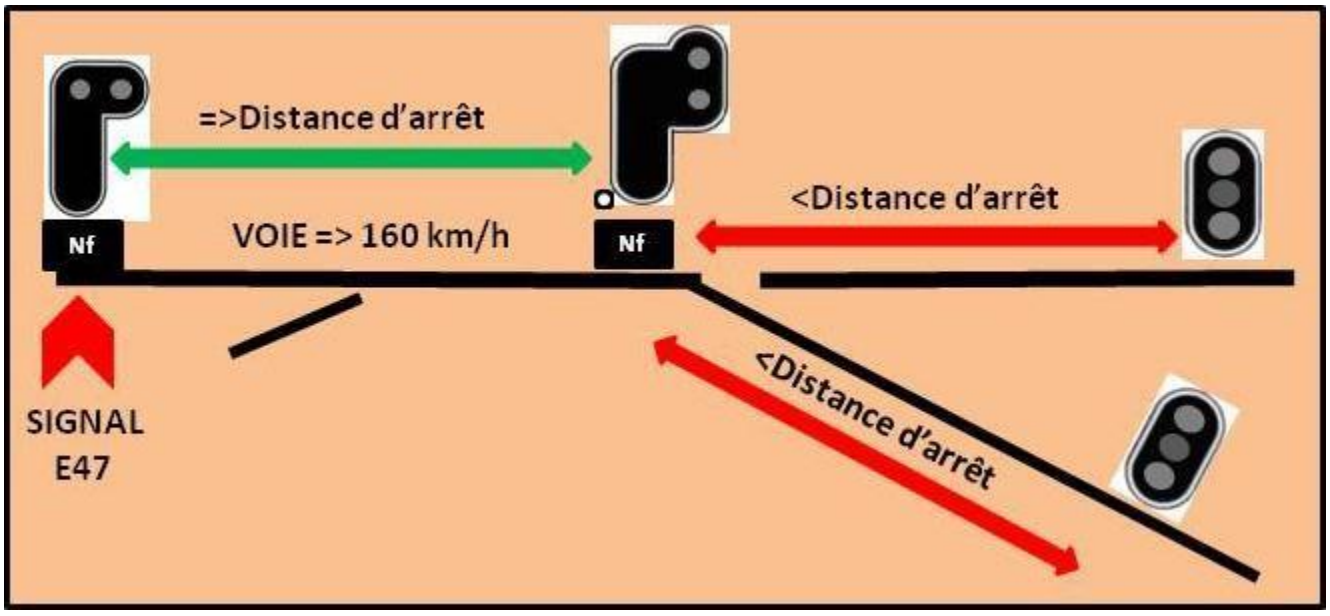


The E45 signal is used on tracks with maximum operating speeds greater than 160 km/h when the following two cases are completed:

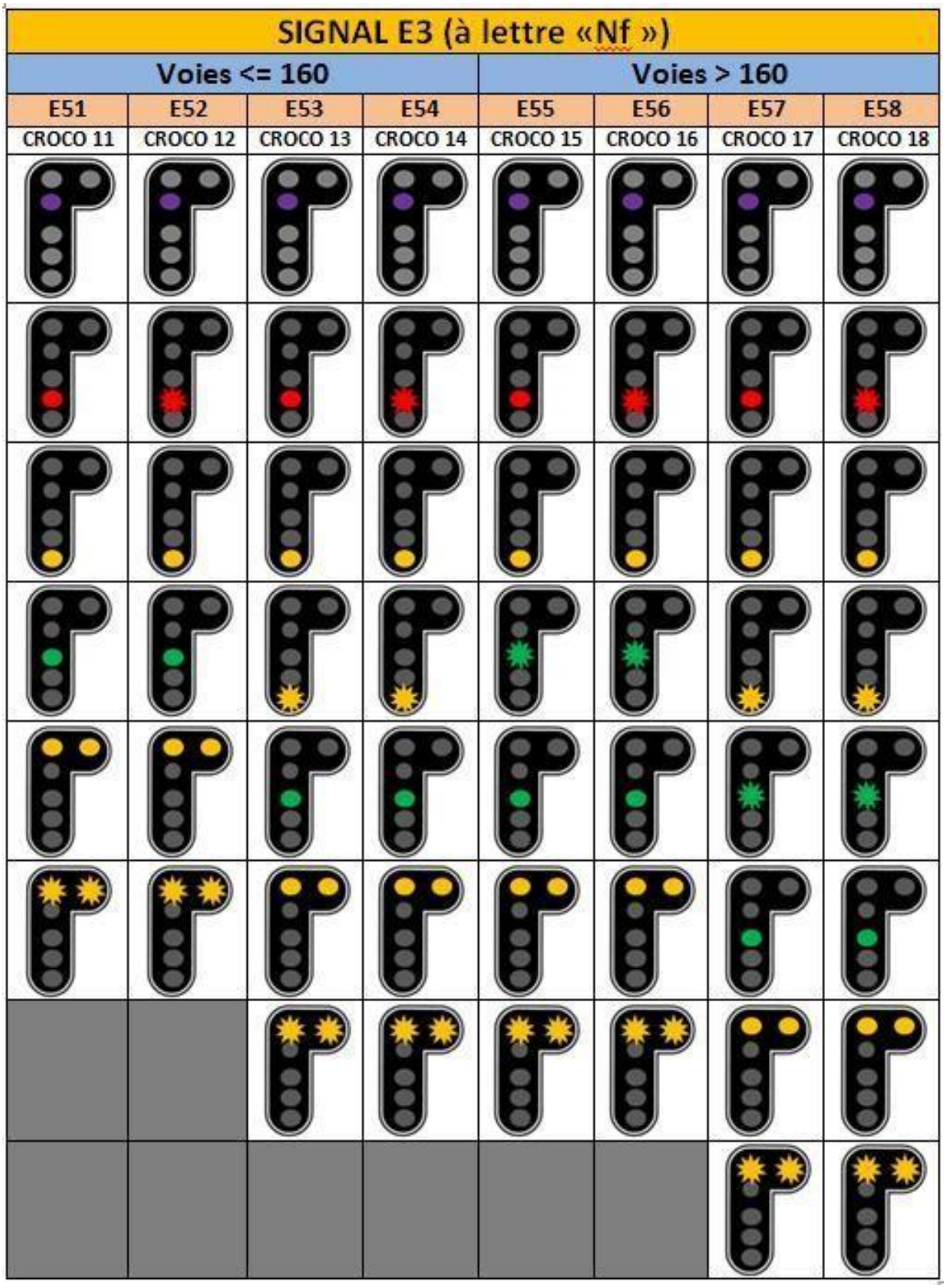
- on the direct track the signal following the recall is at a stopping distance,
- on the deviated lane, the signal following the recall is not within stopping distance.



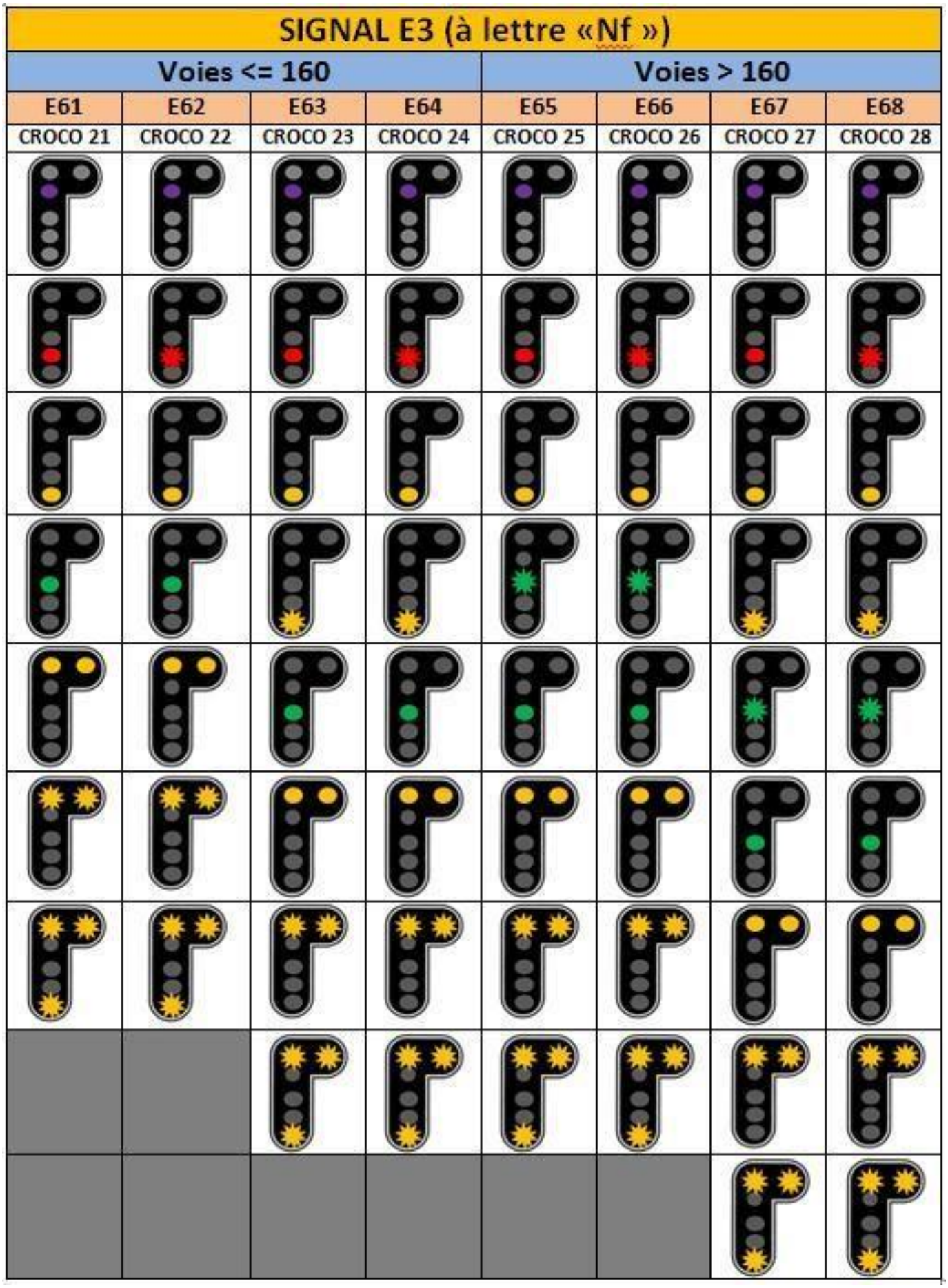
The E47 signal is used on tracks with a maximum operating speed of more than 160 km/h when both on the direct track and on the deviated track the signals are not within stopping distance of the recall.



The E3 signal has the same lights and conditions as the E2 signal except that the red square is replaced by the purple square. It is therefore used on service lanes leading to main lanes.



Crocodiles 11 to 14 are preferred for this type of signal.



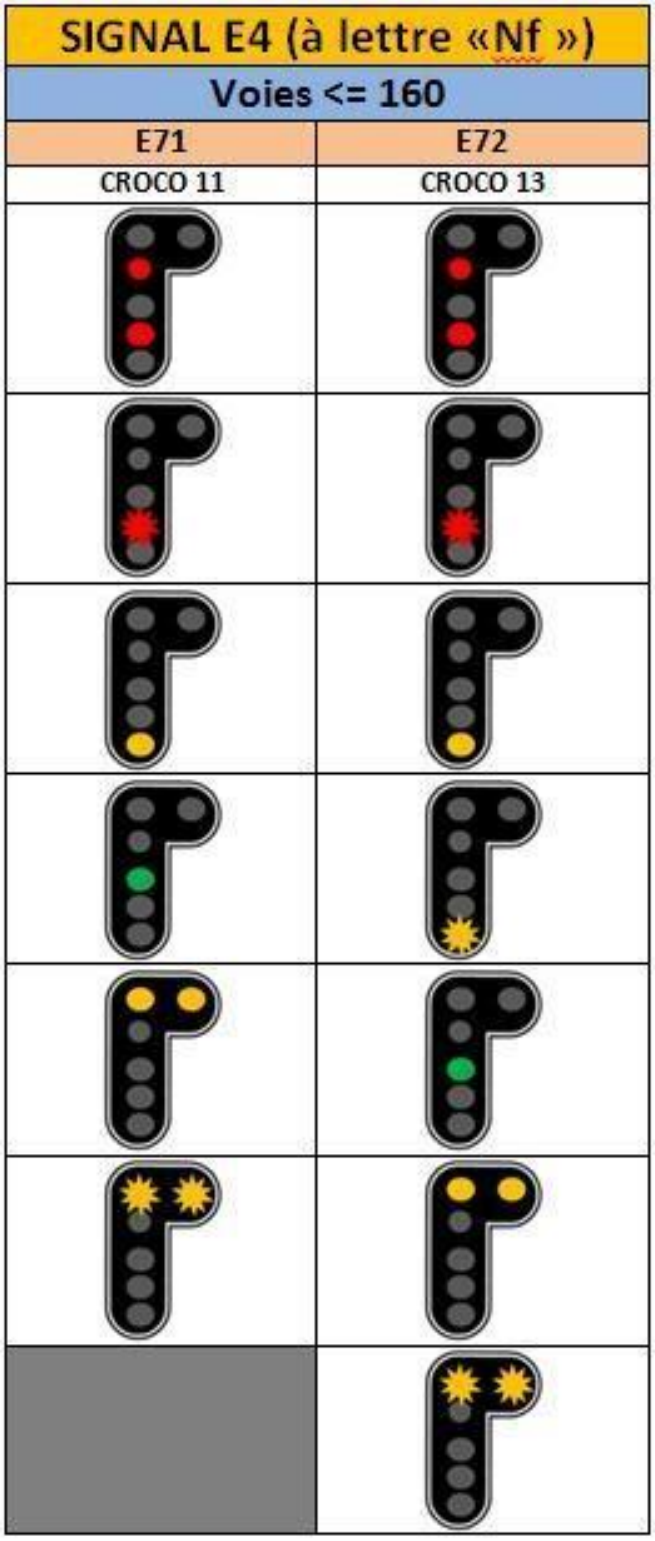
Crocodiles 21 to 24 are preferred for this type of signal.

The E4 signal is used at the entrance to stations of some importance. It does not present the semaphore to protect the maneuvers.

It is also designed to be used in conjunction with low purple squares.

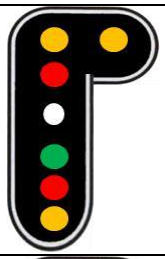
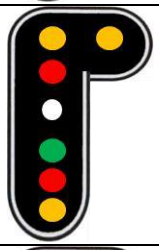
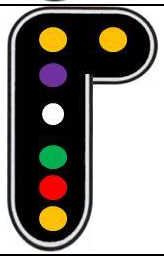
It can be used with crocodiles 11 and 13.

This signal may present the flashing red light under the conditions mentioned on page 21. It can therefore also be used in conjunction with the Silec2 pedal. Refer to the chapter "Functioning common to certain categories of signals."



F SIGNALS

There are three F signals called F1, F2 and F3. They show the slowing 30 or 60 but also the white fire maneuver.

F1		The F1 signal can show the square and the semaphore. So we're going to find it in small stations.
F2		The F2 signal shows the square. However, it does not present the semaphore. So we're going to find him outside the larger stations.
F3		The F3 signal shows the purple square and the semaphore. So we're going to find it on service lanes that provide access to main lanes.

For the use of the white maneuvering light and the correct laying of links, refer to the chapter "Functioning common to certain categories of signals."

For the presentation of the other lights:

- F1 and F2 signals, apart from the white maneuvering light, are used strictly under the same conditions as the E2 signal using crocodiles 11 to 18 and 21 to 28. Refer to this signal pages 52 and 53 to learn about the various possibilities of presenting the lights. I remind you that the F2 signal does not present the semaphore.

- The F3 signal, apart from the white maneuvering light, is used strictly under the same conditions as the E3 signal using crocodiles 11 to 18 and 21 to 28. Refer to this signal pages 58 and 59 to learn about the various possibilities of presenting fires in connection with crocodiles.

SIGNALS G

G panels are of two types:

- or they don't have the 30 or 60-slowdown,
- either they show the 30 or 60-slowdown when followed by a slowdown reminder on the direct track.

In all cases they present the 30 or 60-slowing reminder to the deviated lane.

G signals are originally intended to have a link on the direct track and other links representing:

- RR30 with crocodiles 11 to 18
- RR60 with crocodiles 21 to 28

But these signals can also show:

- several direct-to-direct links
- several non-homogeneous reminders

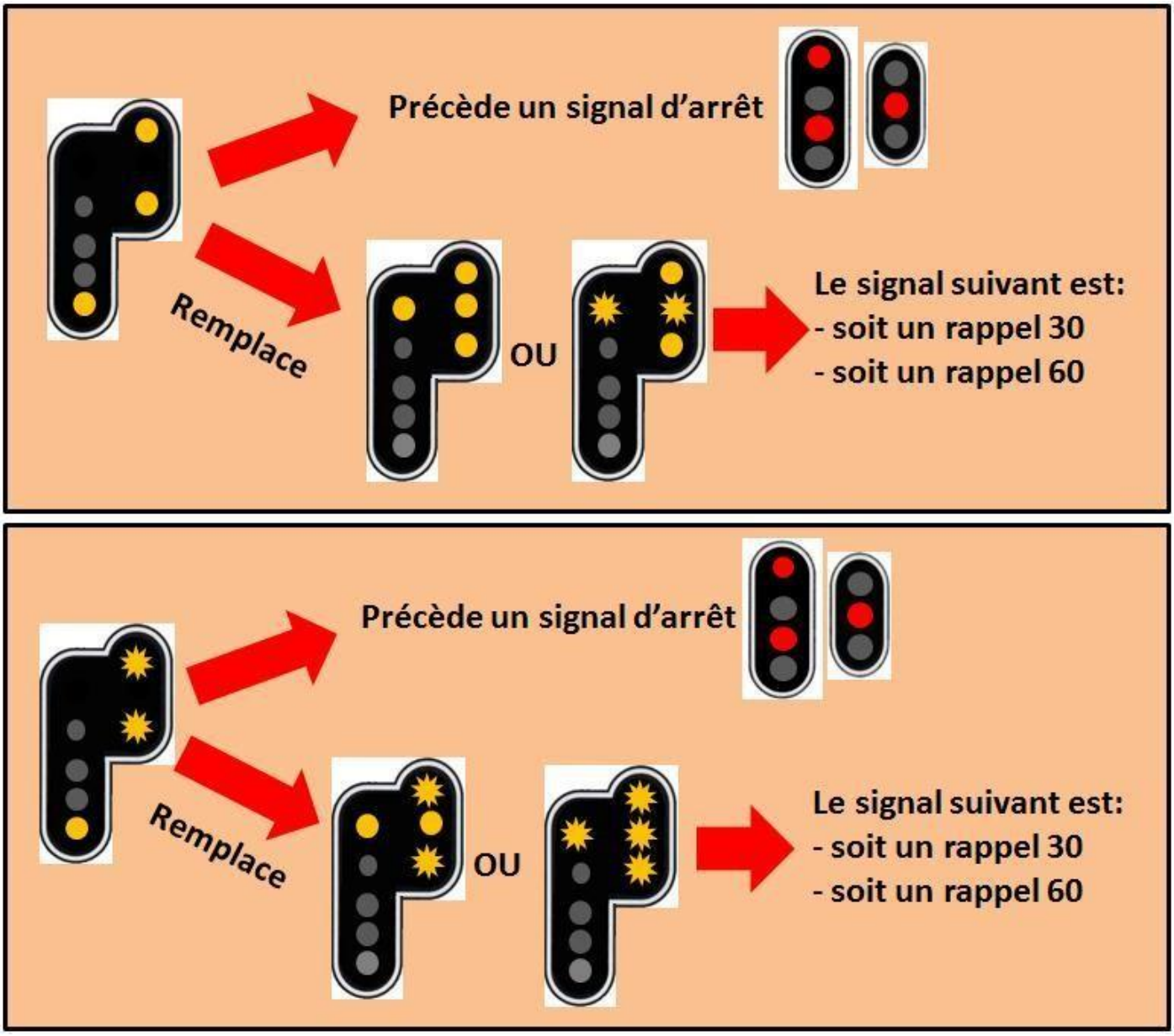
For the use of these latter features, refer to the chapter "Functioning common to certain categories of signals."

SIGNALS G1 AND G2 without slowing down

On the direct track, they <u>are never followed</u> by a slowing reminder.

On the other hand, on the deviated lane or lanes, they can be followed by a recall 30 or 60.

The various aspects of the presentation of the RR30 combined with the warning or the RR60 combined with the warning are synthesized in the diagram below.

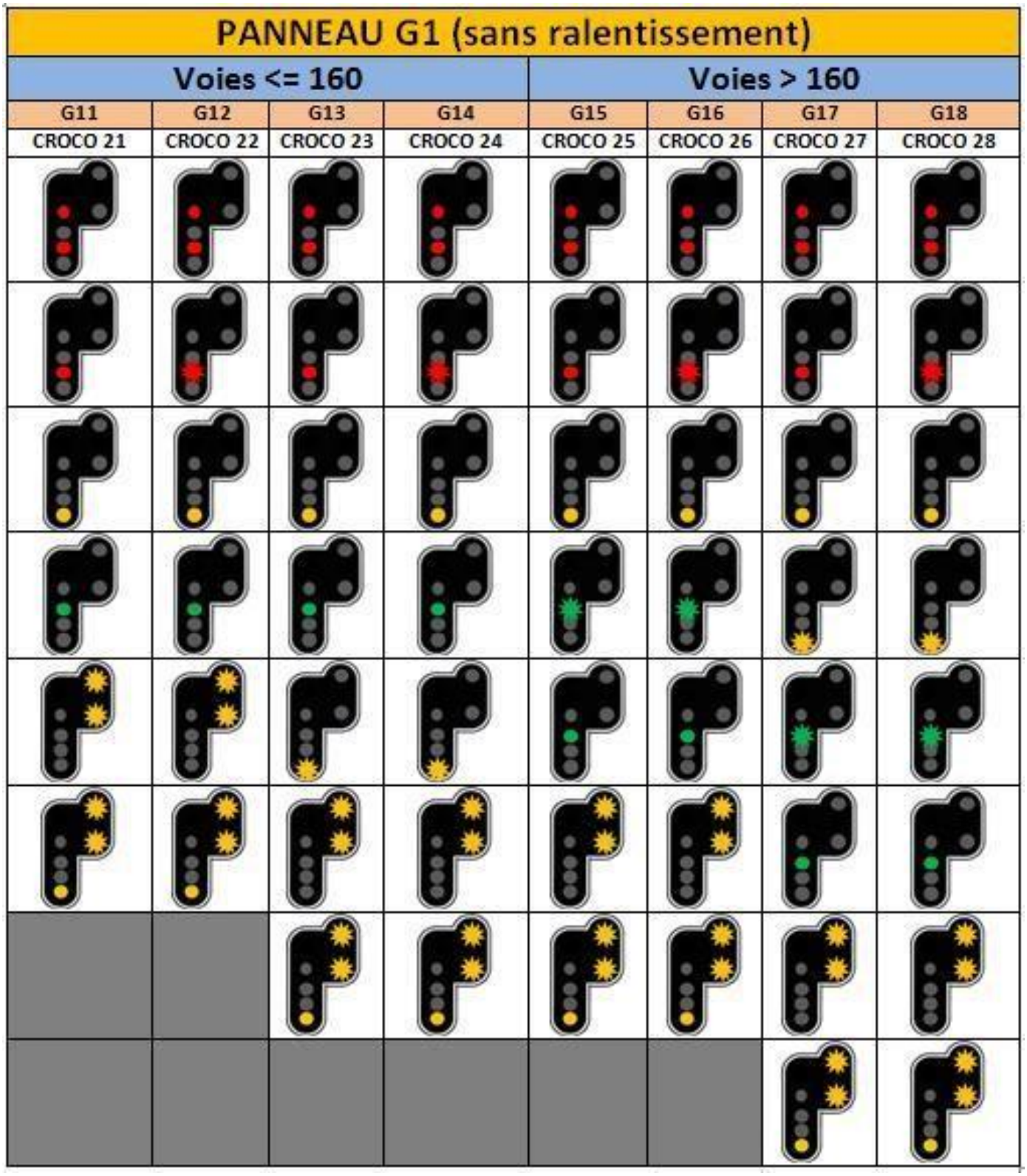


The G1 signal on the deviated track is the RR (30 or 60) and the RR (30 or 60) - warning. This signal is not followed, on the direct track, by a slowing reminder when this may be the case on the deviated lane.

The 30-slowing recall is shown when using crocodiles 11 to 18.

The G12, G14, G16, G18 signals replace the G11, G13, G15, G17 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The 60 slowing recall is shown when using crocodiles 21 to 28.



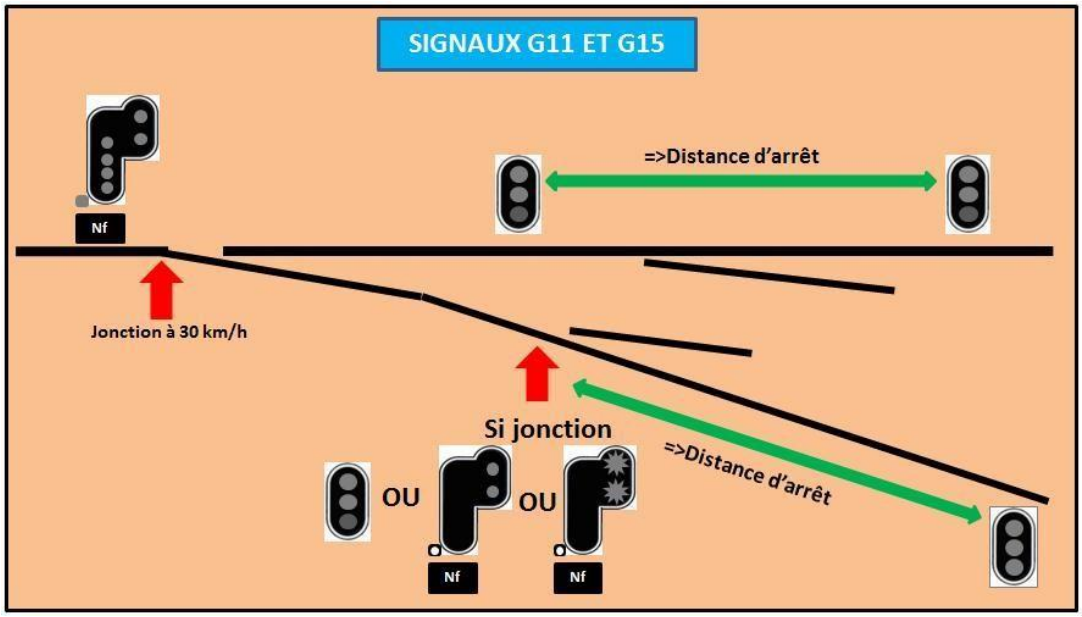
The G22, G24, G26, G28 signals replace the G21, G23, G25, G27 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The use of the G1 signal is shown next page.

The G11 and G15 signals:

The following signal, both on the direct track and on the deflected track, is itself followed by signals at a stopping distance.

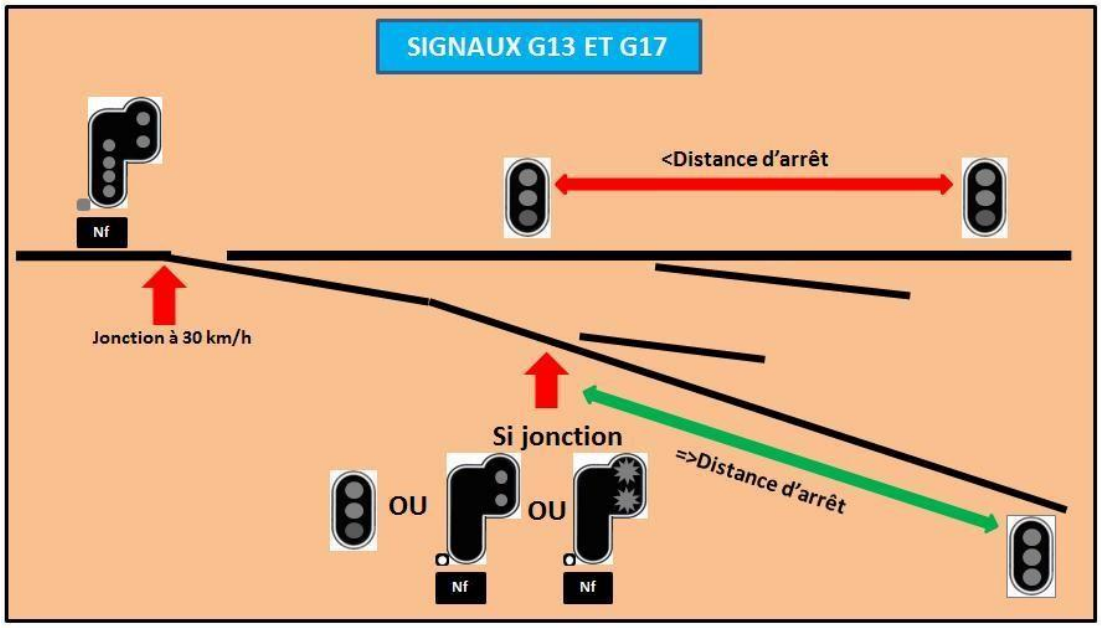
The G11 signal is used on tracks with maximum operating speeds of less than 160 km/h, while the G15 signal is used on tracks with maximum operating speeds above 160 km/h.



The G13 and G17 signals:

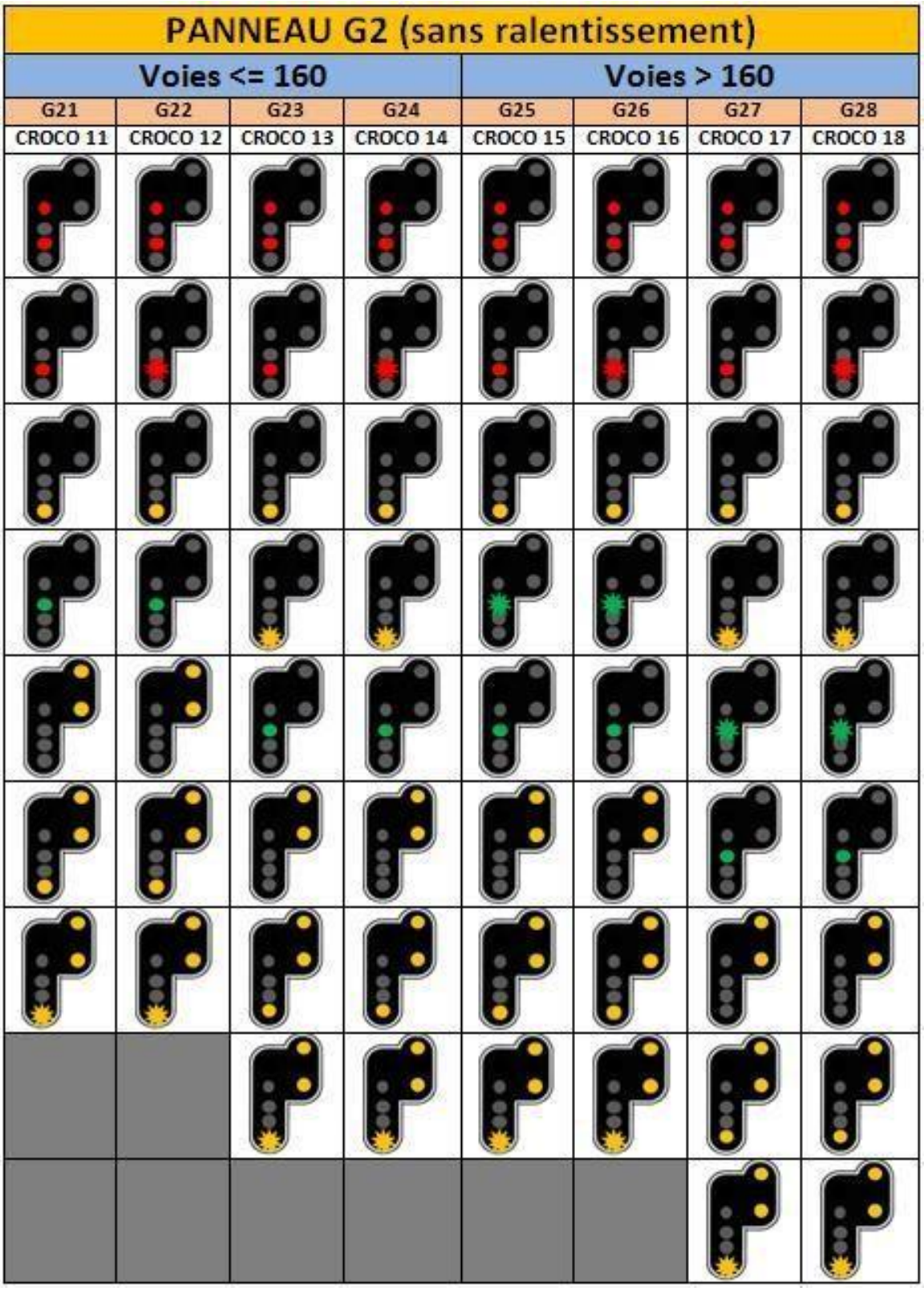
The signal that follows it on the direct track is itself followed by a signal that is not located at a stopping distance. The signal that follows him on the deflected lane is itself followed by a signal that is located at a stopping distance.

The G13 signal is used on tracks with maximum operating speeds of less than 160 km/h, while the G17 signal is used on tracks with maximum operating speeds above 160 km/h.



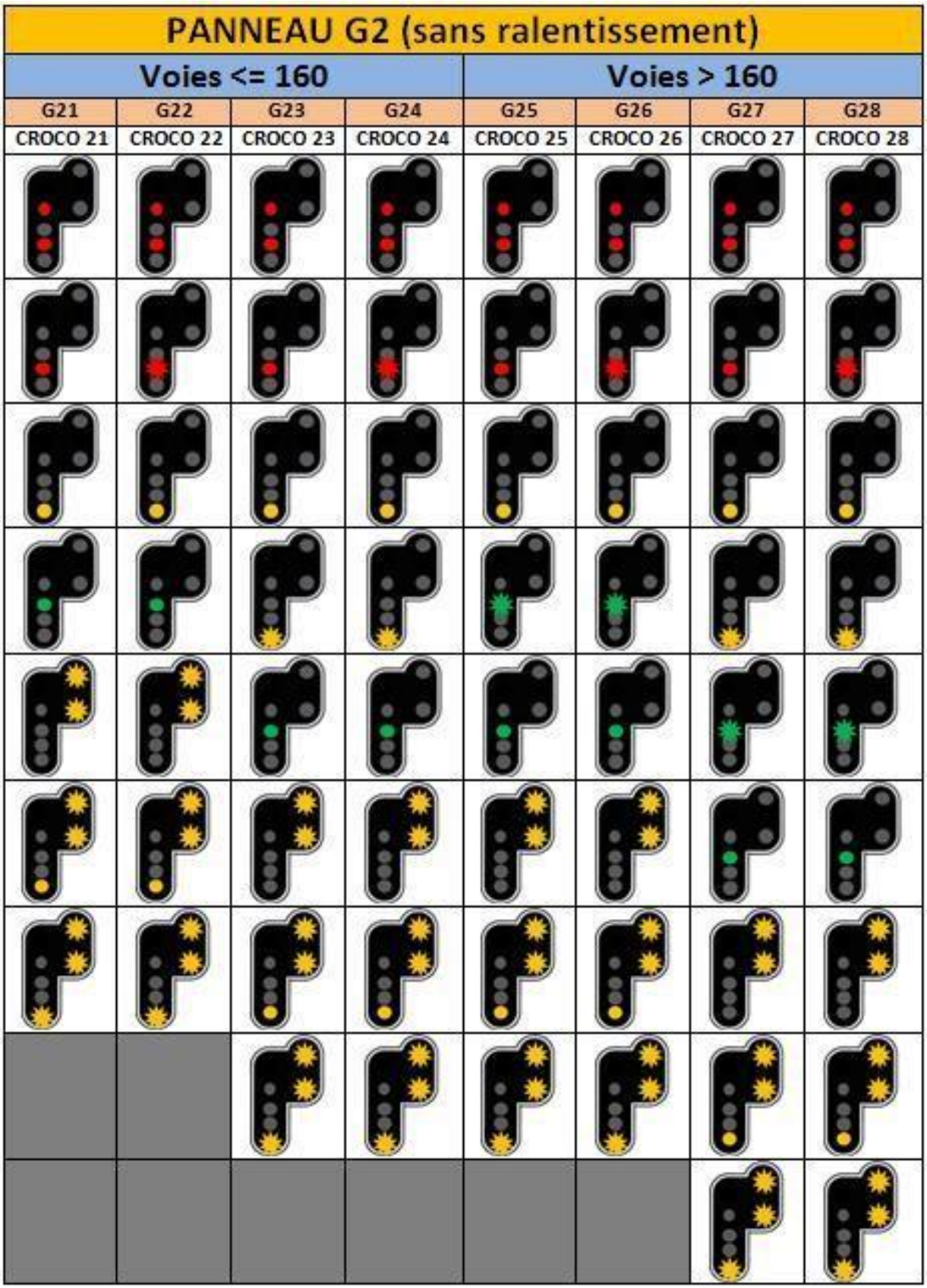
The G2 signal on the deviated track the RR (30 or 60), the RR (30 or 60) - warning and the RR (30 or 60) - warning - RR (30 or 60) with flashing yellow. This signal is not followed, on the direct track, by a slowing reminder when this may be the case on the deviated lane.

The 30-slowing recall is shown when using crocodiles 11 to 18.



The G22, G24, G26, G28 signals replace the G21, G23, G25, G27 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The 60 slowing recall is shown when using crocodiles 21 to 28.



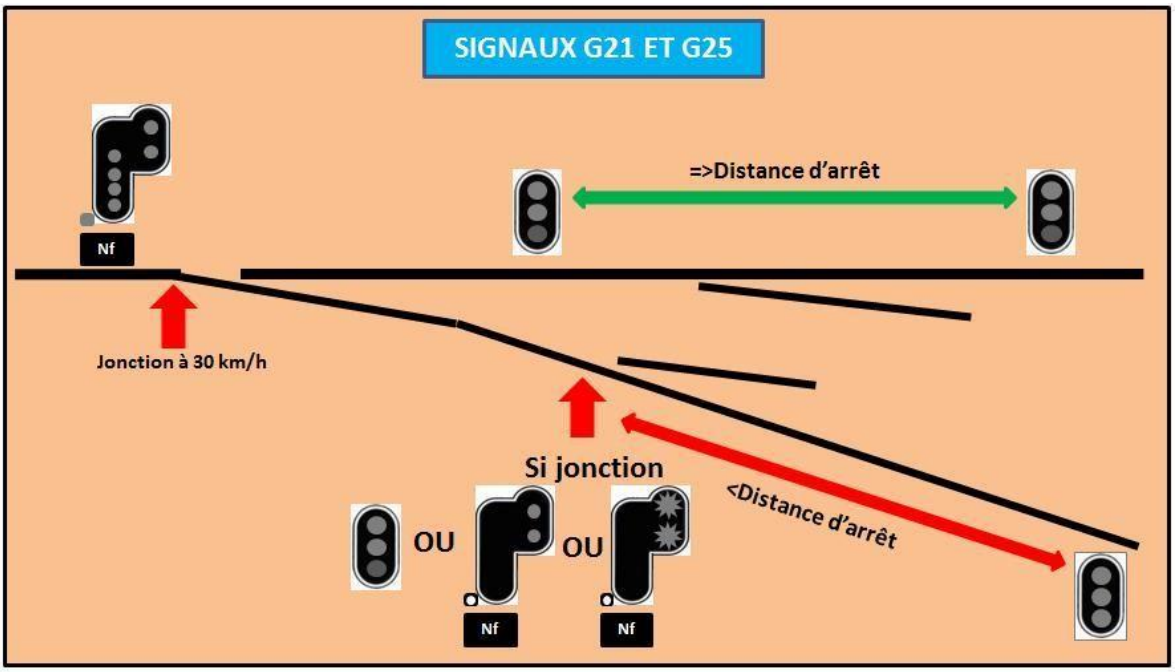
The G22, G24, G26, G28 signals replace the G21, G23, G25, G27 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The use of the G2 signal is shown next page.

The G21 and G25 signals:

The signal that follows it on the direct track is itself followed by a signal that is at a stopping distance.
The signal that follows him on the deflected track is itself followed by a signal that is not located at a stopping distance.

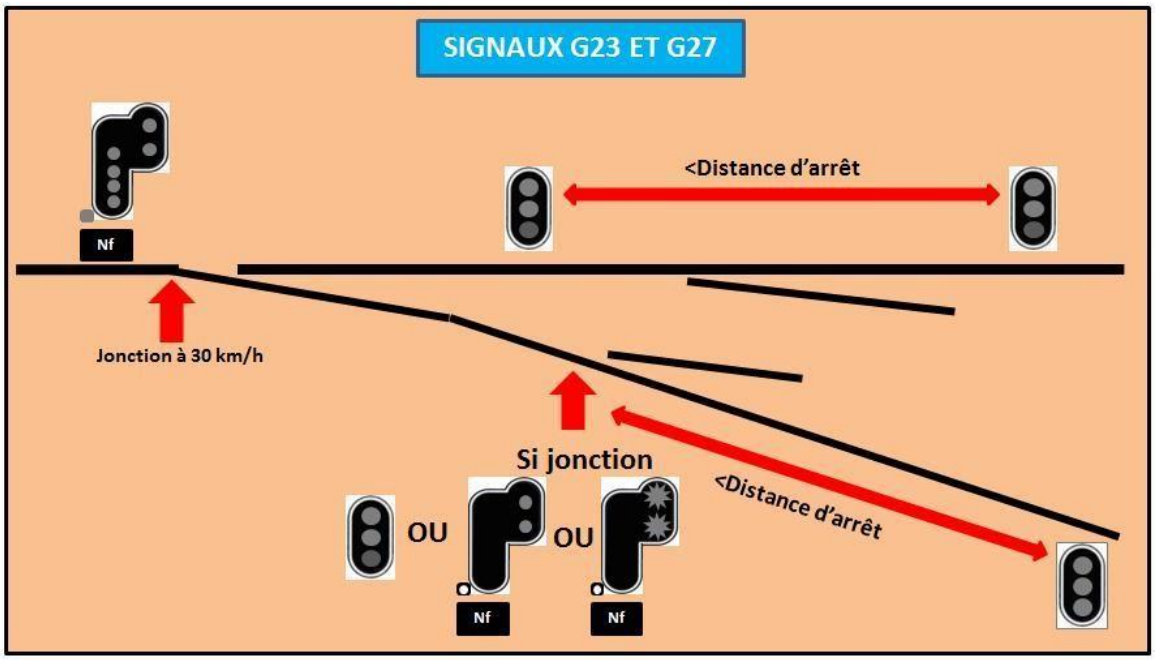
The G21 signal is used on tracks with maximum operating speeds of less than 160 km/h, while the G25 signal is used on tracks with maximum operating speeds above 160 km/h.



The G23 and G27 signals:

The signal that follows it on the direct track is itself followed by a signal that is not located at a stopping distance. The signal that follows him on the deflected track is itself followed by a signal that is not located at a stopping distance.

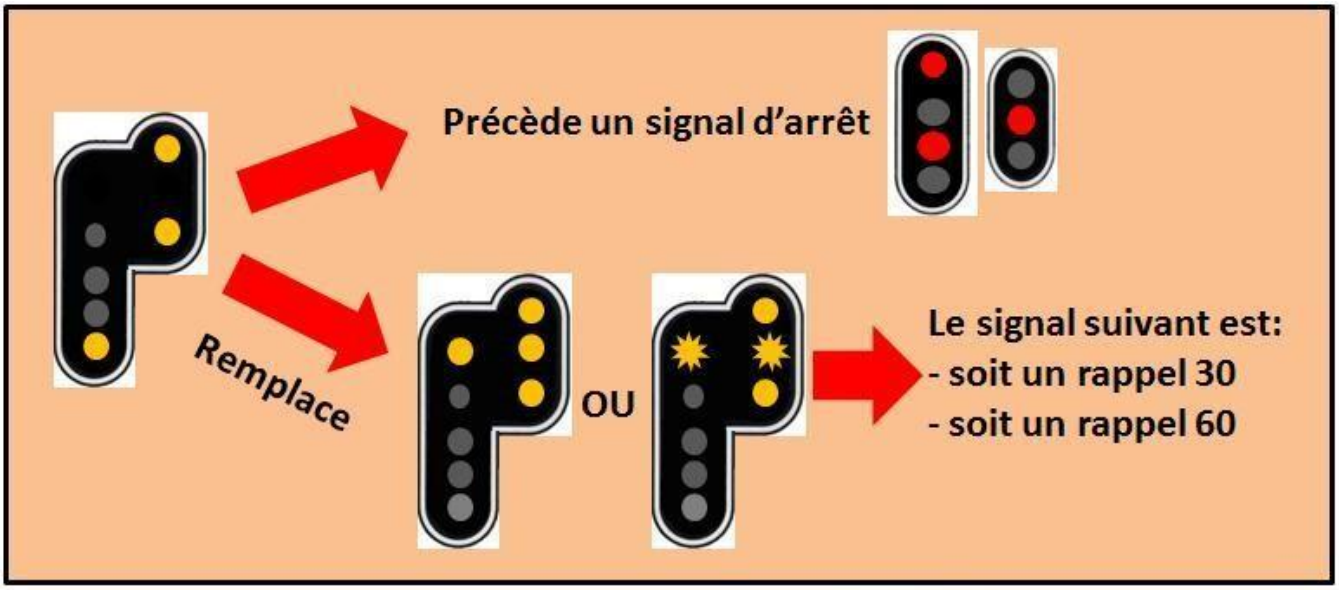
The G23 signal is used on tracks with maximum operating speeds of less than 160 km/h, while the G27 signal is used on tracks with maximum operating speeds above 160 km/h.

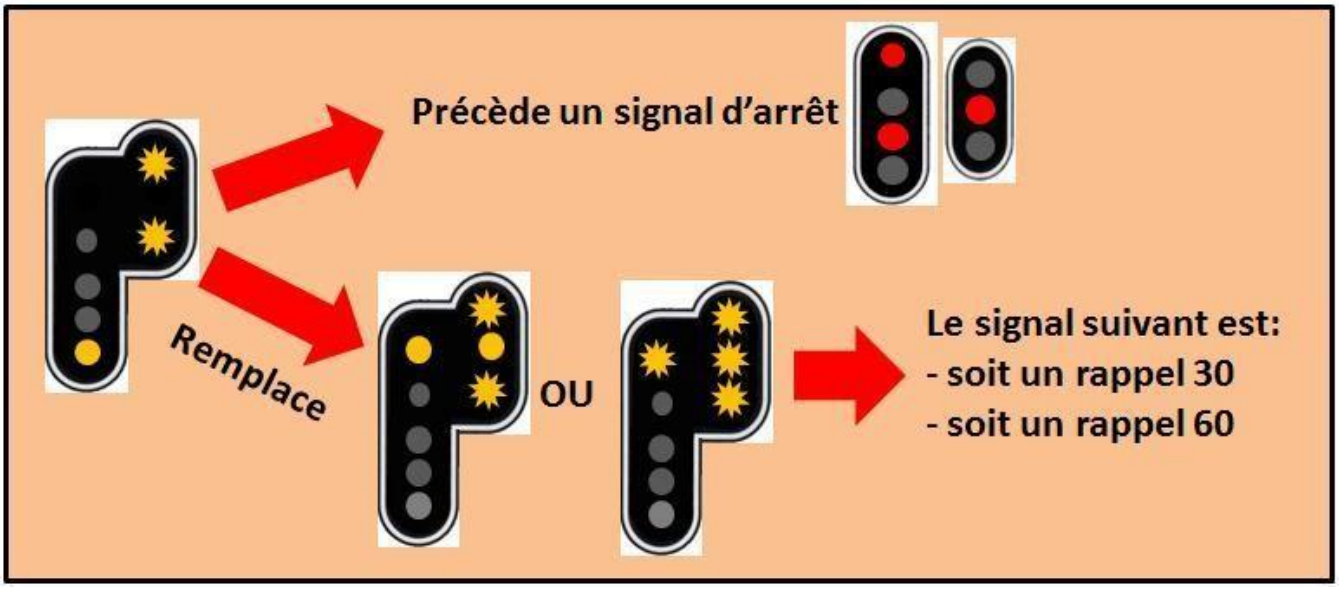


SIGNALS G3 AND G4 with slowdown

They are always followed on the direct track by a 30 or 60 slowing reminder. On the deviated lane, they can also be followed by a recall 30 or 60.

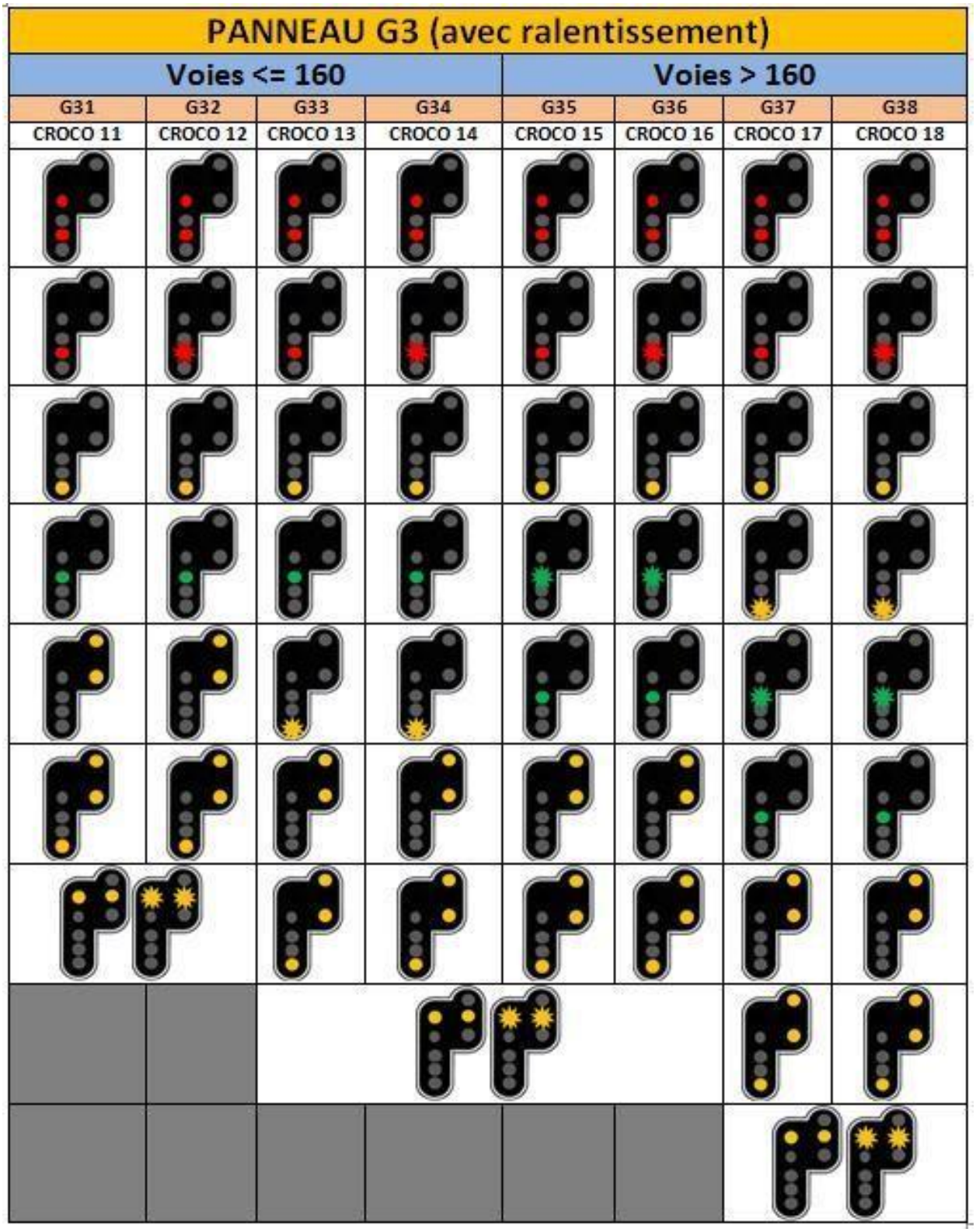
The various aspects of the presentation of the RR30 combined with the warning or the RR60 combined with the warning also apply to the deviated track and are synthesized in the diagram below.





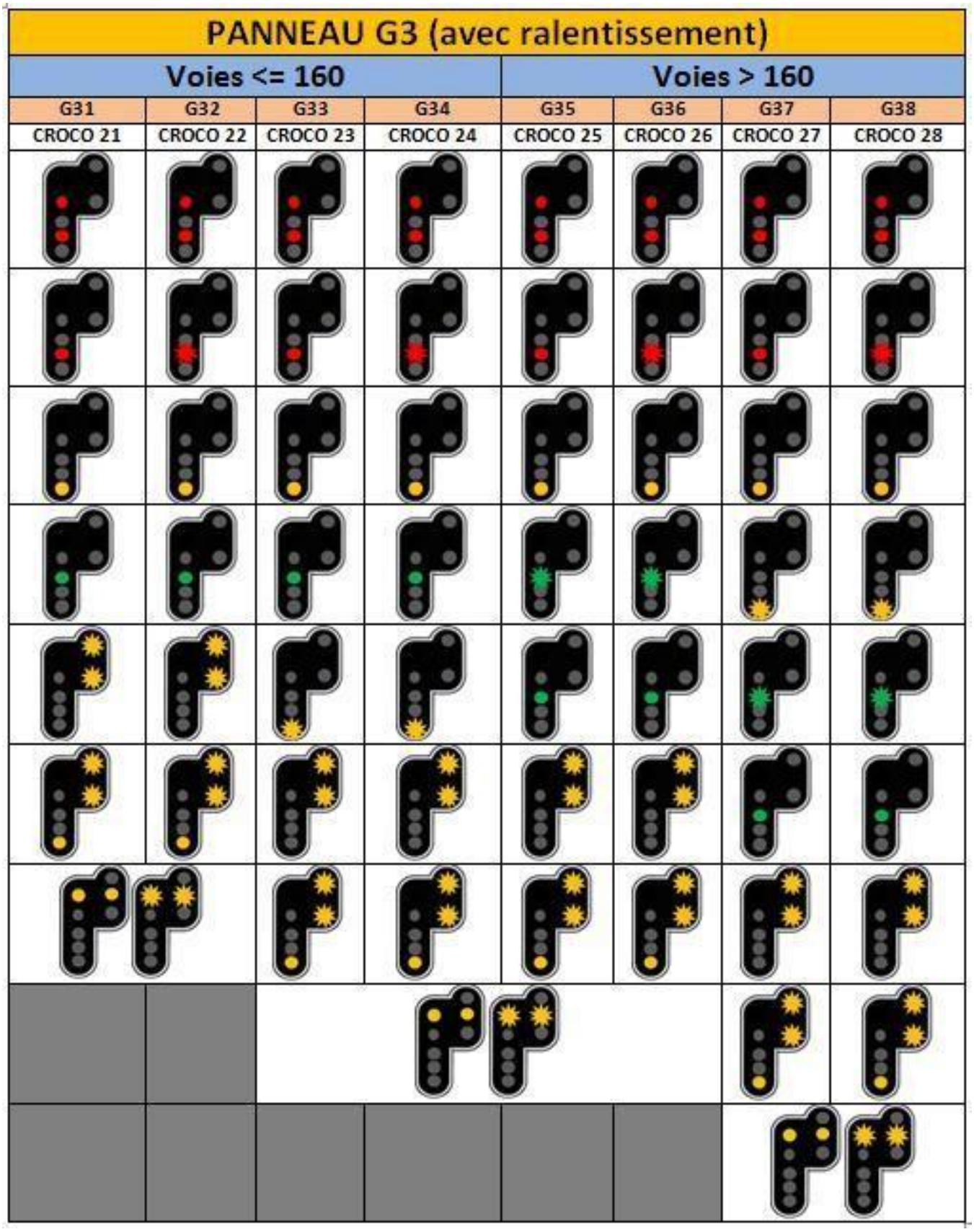
The G3 signal presents on the deviated track the RR (30 or 60) and the RR (30 or 60) - warning. This signal is always followed, on the direct track, by a slowing reminder and this may also be the case on the deviated lane.

The 30-slowing recall is shown when using crocodiles 11 to 18.



The G32, G34, G36, G38 signals replace the G31, G33, G35, G37 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The 60 slowing recall is shown when using crocodiles 21 to 28.

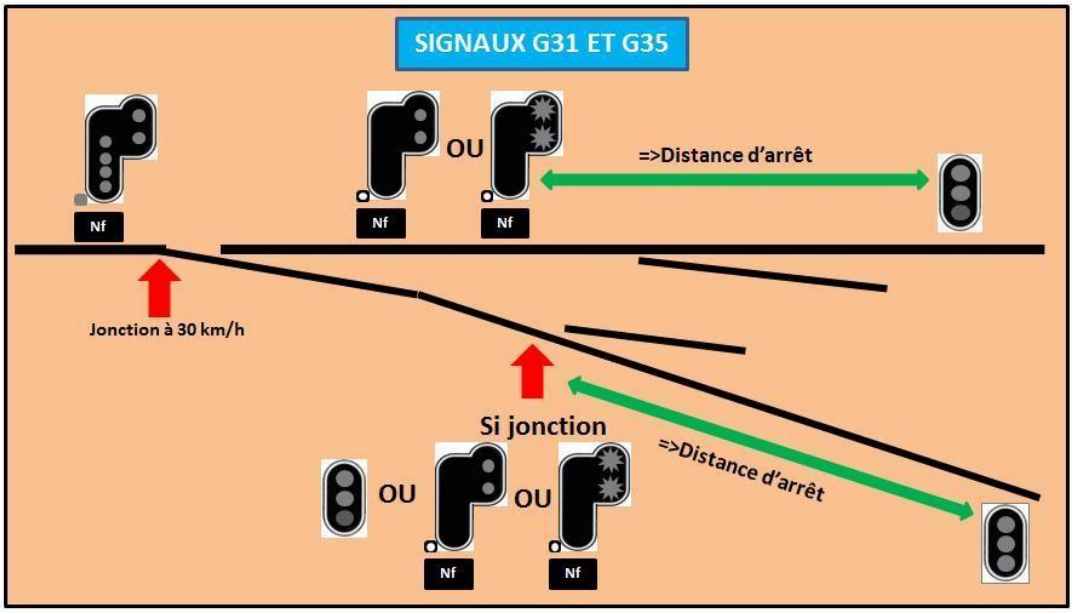


The G32, G34, G36, G38 signals replace the G31, G33, G35, G37 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The use of the G3 signal is shown next page.
The G31 and G35 signals:

The signal that follows it on the direct track and is a 30 or 60 slowing reminder, is itself followed by a signal that is located at a stopping distance.
The signal that follows him on the deflected lane is itself followed by a signal that is at a stopping distance.

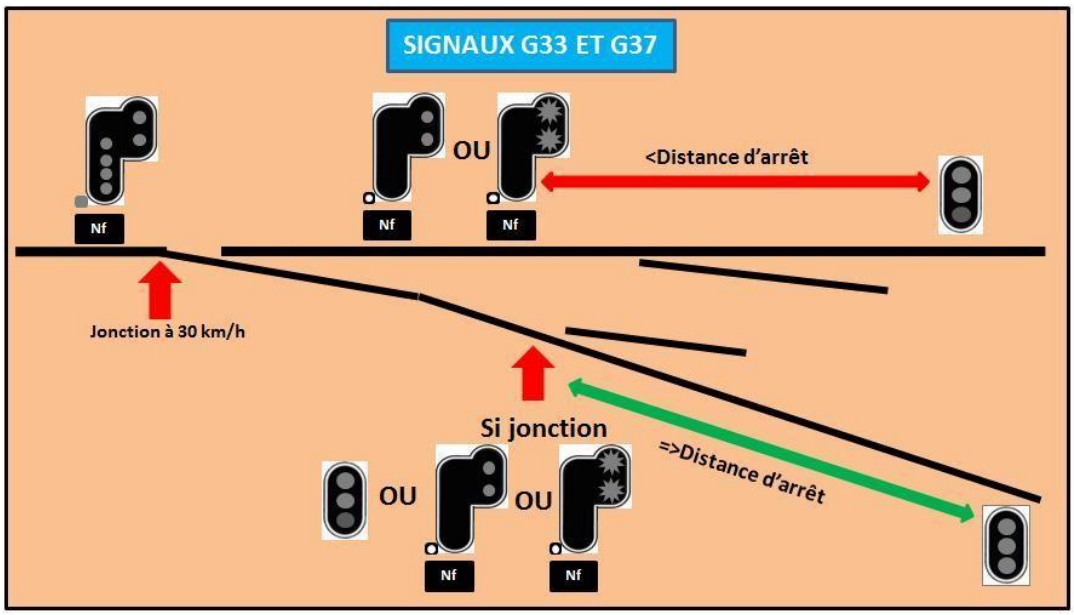
The G31 signal is used on tracks with maximum operating speeds of less than 160 km/h, while the G35 signal is used on tracks with maximum operating speeds above 160 km/h.



The G33 and G37 signals:

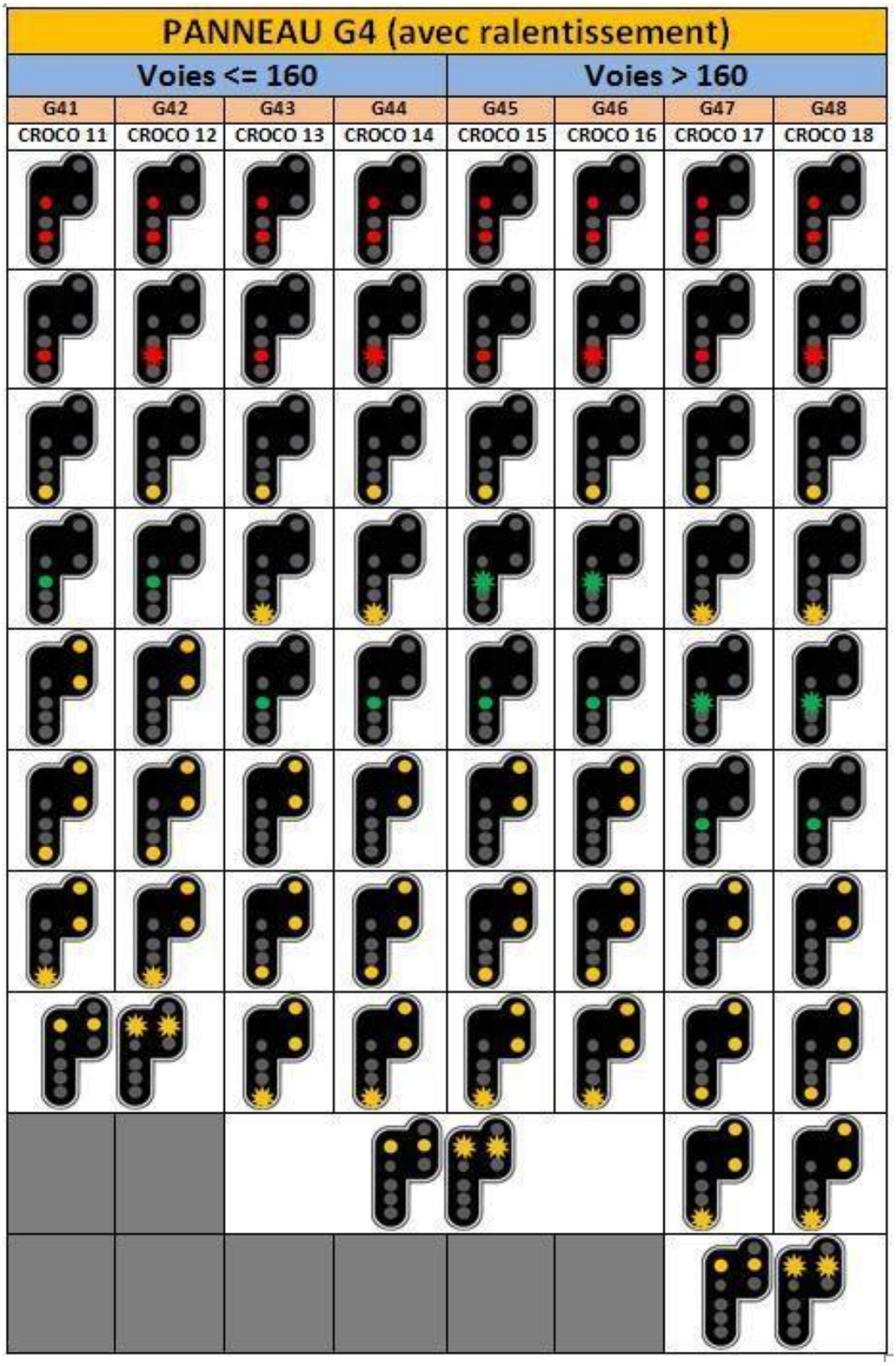
The signal that follows it on the direct track, which is a 30 or 60 slowing reminder, is itself followed by a signal that is not located at a stopping distance.
The signal that follows him on the deflected lane is itself followed by a signal that is at a stopping distance.

The G33 signal is used on tracks with maximum operating speeds of less than 160 km/h, while the G37 signal is used on tracks with maximum operating speeds above 160 km/h.

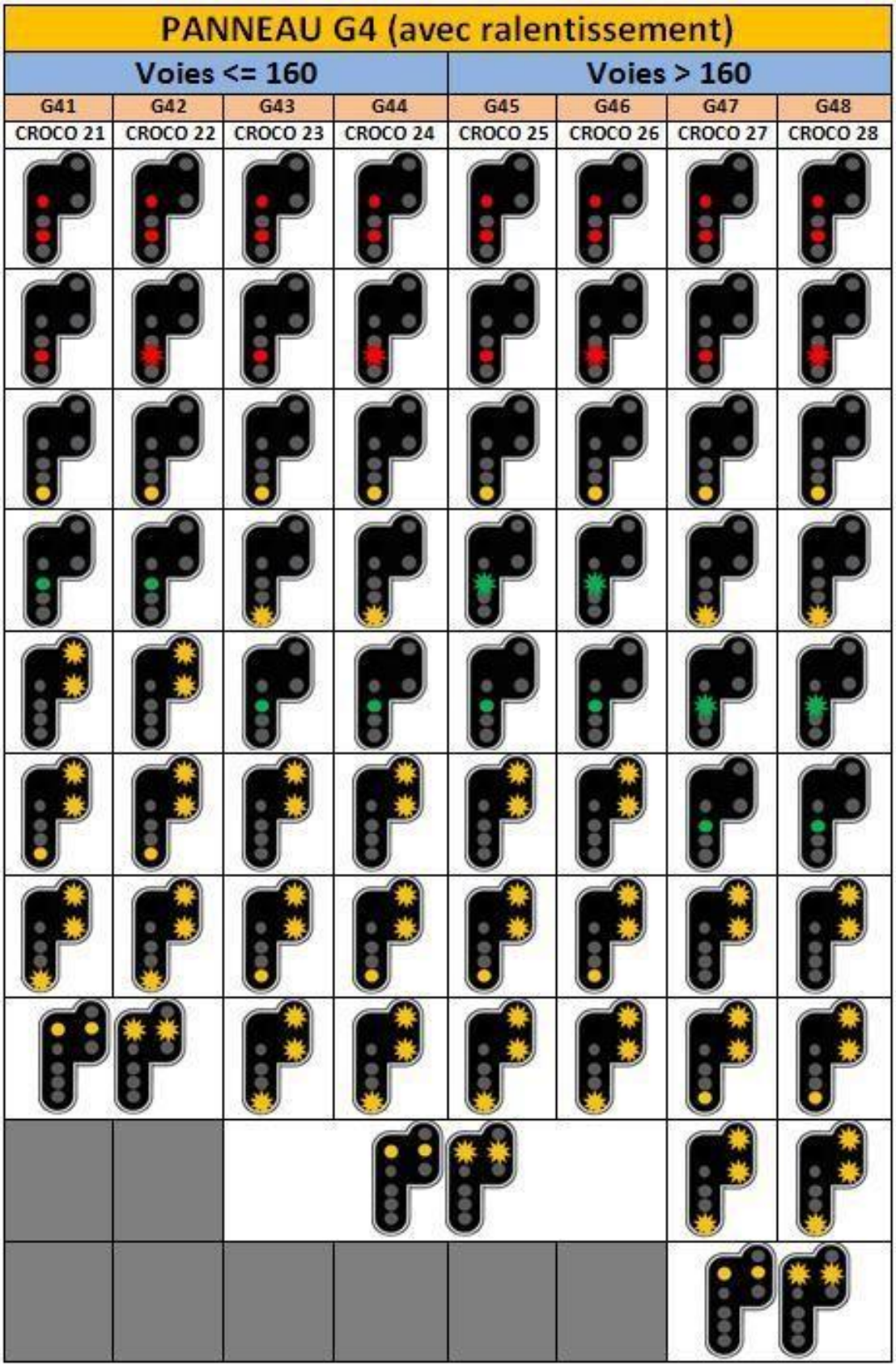


The G4 signal on the deviated track the RR (30 or 60) , the RR (30 or 60) - warning and the RR (30 or 60) - warning - RR (30 or 60) with flashing yellow. This signal is always followed, on the direct track, by a slowing reminder and this may also be the case on the deviated lane.

The 30-slowing recall is shown when using crocodiles 11 to 18.



The G42, G44, G46, G48 signals replace the G41, G43, G45, G47 signals respectively under the conditions set on page 17 on the use of the flashing red light.
The 60 slowing recall is shown when using crocodiles 21 to 28.



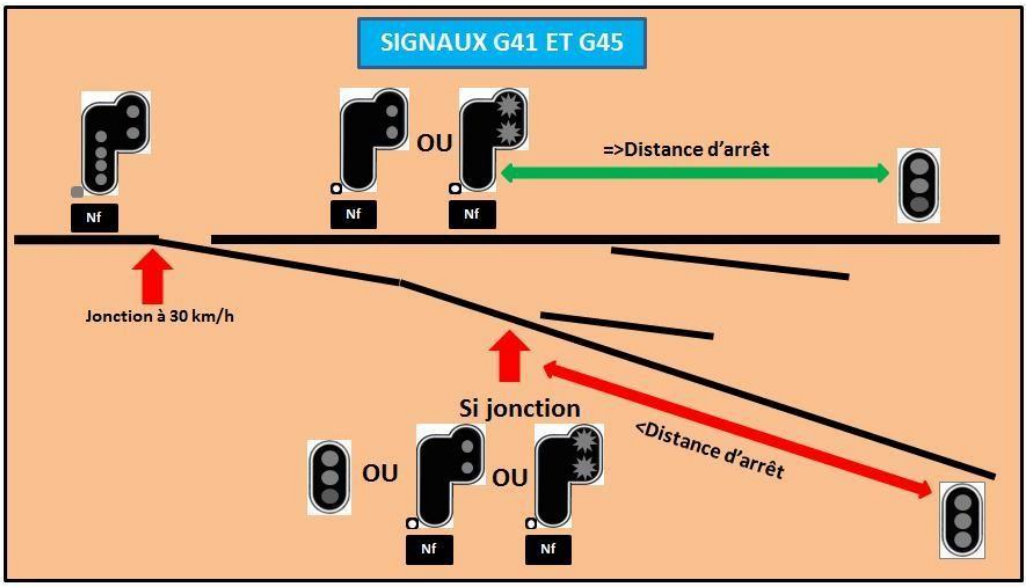
The G42, G44, G46, G48 signals replace the G41, G43, G45, G47 signals respectively under the conditions set on page 17 on the use of the flashing red light.

The use of the G4 signal is shown next page.

The G41 and G45 signals:

The signal that follows it on the direct track and is a 30 or 60 slowing reminder, is itself followed by a signal that is located at a stopping distance.
The signal that follows him on the deflected lane is itself followed by a signal that is not at a stopping distance.

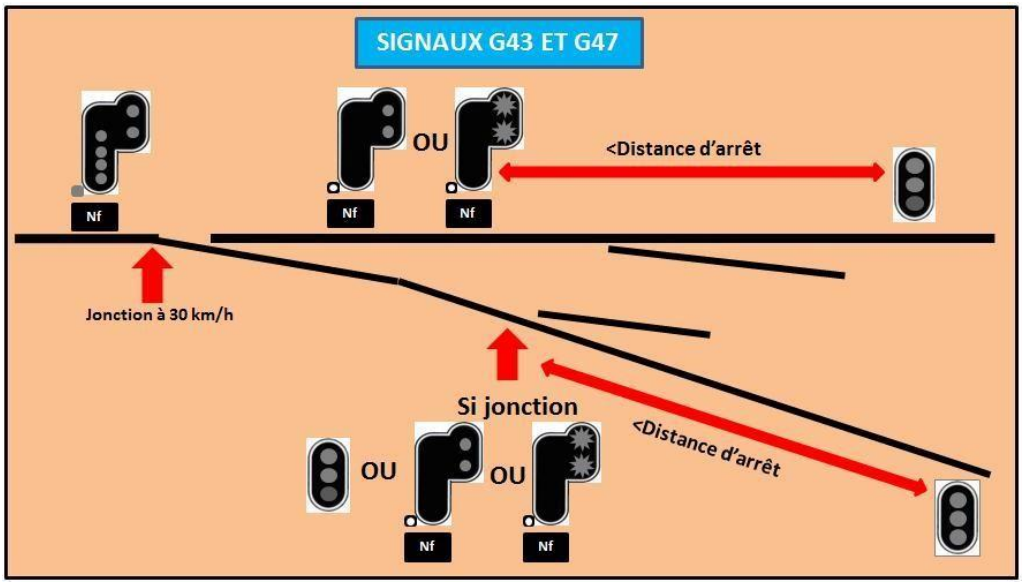
The G41 signal is used on tracks with maximum operating speeds of less than 160 km/h, while the G45 signal is used on tracks with maximum operating speeds above 160 km/h.



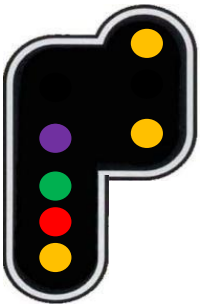
The G43 and G47 signals:

The signal that follows it on the direct track, which is a 30 or 60 slowing reminder, is itself followed by a signal that is not located at a stopping distance.
The signal that follows him on the deflected lane is itself followed by a signal that is not at a stopping distance.

The G43 signal is used on tracks with maximum operating speeds of less than 160 km/h, while the G47 signal is used on tracks with maximum operating speeds above 160 km/h.



LE SIGNAL G5



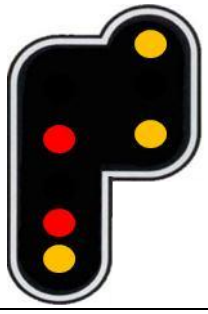
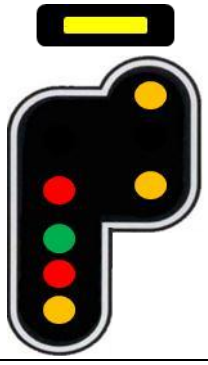
The G5 signal is used on service tracks leading to main tracks.

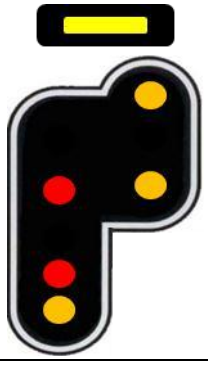
It presents the purple square in place of the red square.

The operation of the lights is strictly identical to those of the G1 signal. Refer to this signal pages 64 and 65 to learn about the various possibilities of presenting fires in connection with crocodiles.

SIGNALS G6 - G7 - G8

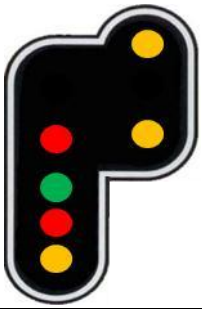
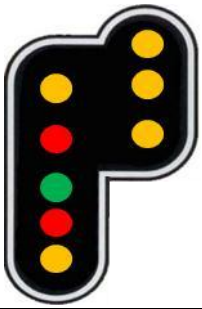
The G6, G7 and G8 signals are station entry signals.

	**G6**	The G6 signal is installed at the entrance to the general station. It presents the square when the track is not connected or occupied and the warning when the lane is clear. The RR30 is by default presented on a lane. But, with the use of the pedals Silec_2 to Silec_5, this number can vary up to 5 lanes. This signal may show the flashing red light under the conditions referred to in the "Operation common to certain categories of signals."
	**G7**	The G7 signal is installed at the entrance to the passing station. It may have the yellow stripe combined with the RR30. The number of lanes with RR30-yellow band is by default presented on a track. But, with the use of the pedals Silec_2 to Silec_5, this number can vary up to 5 lanes. It presents the square in place of the semaphore. For the display of other lights, this signal is strictly identical to the G1 page 63 signal. However, it should be used exclusively with crocodiles 11 or 13. This signal may show the flashing red light under the conditions referred to in the "Operation common to certain categories of signals." For the presentation of the yellow stripe, also refer to the same chapter.

	**G8**	The G8 signal is installed at the entrance to a terminus or general stop station. It presents the square when the track is not connected or occupied and the warning when the lane is clear. It may have the yellow stripe combined with the RR30. The number of lanes with RR30-yellow band is by default presented on a track. But, with the use of the pedals Silec_2 to Silec_5, this number can vary up to 5 lanes. This signal may show the flashing red light under the conditions referred to in the "Operation common to certain categories of signals." For the presentation of the yellow stripe, also refer to the same chapter.

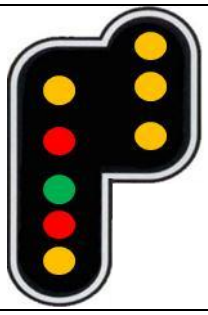
SIGNALS G9 - G10 - G11 - G12

The G9, G10, G11 and G12 signals are station exit signals. They do not present the semaphore.

	**G9 – G10**	Apart from the presentation of the square in place of the semaphore: - the G9 signal is strictly identical to the G1 signal pages 64 and 65 for other lights in connection with crocodiles 11 to 18 and 21 to 28. - The G10 signal is strictly identical to the G2 signal pages 67 and 68 for other lights in connection with crocodiles 11 to 18 and 21 to 28.
	**G11 – G12**	Apart from the presentation of the square in place of the semaphore: - the G11 signal is strictly identical to the G3 signal pages 71 and 72 for other lights in connection with crocodiles 11 to 18 and 21 to 28. - The G12 signal is strictly identical to the G4 signal pages 74 and 75 for other lights in connection with crocodiles 11 to 18 and 21 to 28.

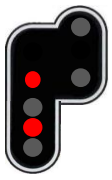
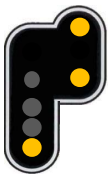
They have the same features as other G signals for selecting non-homogeneous direct routes and/or deviations. Refer to the chapter "Working common to certain categories of signals" page 26.

THE GE1 and GE2 depot entry signs

	
GE1	**GE2**

The number of direct lanes is set to a lane by default. But, with the use of the pedals Silec_2 to Silec_5, this number can vary up to 5 lanes. In this case, it is the 2 to 5 links that should be used.

On the deviated route, the occupation of the canton is not taken into account. That is why, as soon as a train passes the signal, it squares. When the train has completely crossed the link above 1, the signal presents recall 30 associated with the warning and a new train can then proceed to the depot. Messages from inside the repository have no action on this signal. As soon as a train from the depot passes the link above 1 (thus towards the main track), the signal squares.

ON THE DEVIEES LANES			

On the direct route:

- the GE1 signal presents the lights in a strictly identical manner to the G1 signal pages 64 and 65 in combination with crocodiles 11 to 18 and 21 to 28,
- the GE2 signal presents the lights in a strictly identical manner to the G3 signal pages 71 and 72 in combination with crocodiles 11 to 18 and 21 to 28.

They do not have non-homogeneous deviated pathways.

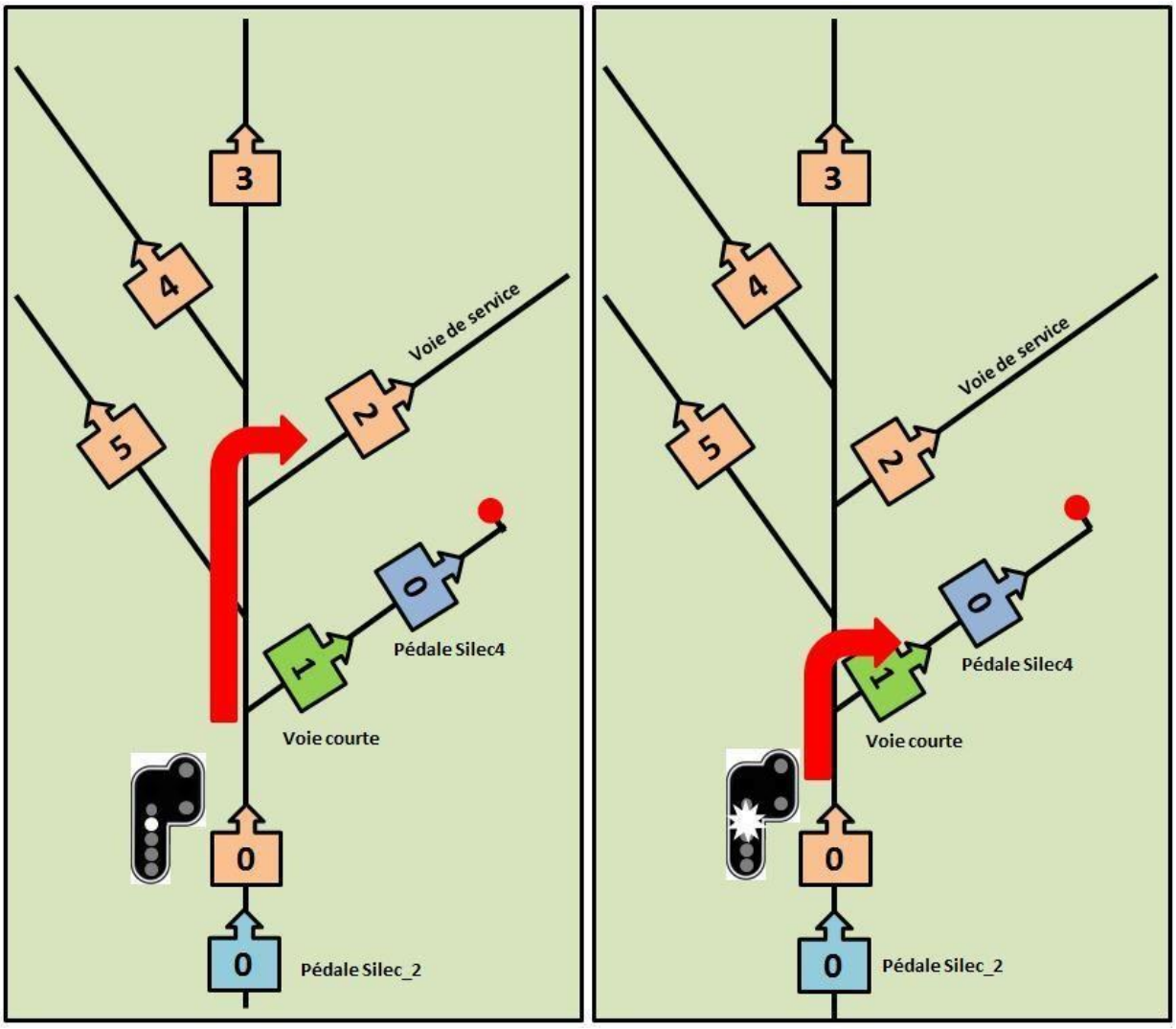
This signal must be combined with a mobile D sign or a mobile G sign.

SIGNALS H

They present the white maneuvering light. Refer to the chapter "Working common to certain categories of signals" for the use of this fire with the following differences:

The Silec pedals (Silec_2 to Silec_5) are combined with these signals to present the white maneuvering light. This number is by default at 1. With these pedals, the signal will only show the fixed white light when the track is clear and the white light flashing when it is occupied.

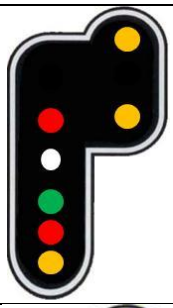
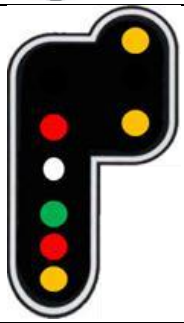
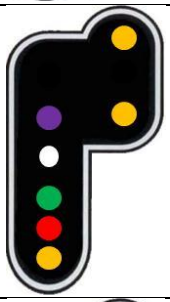
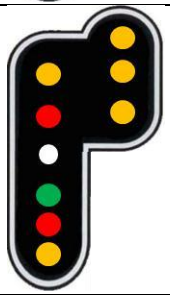
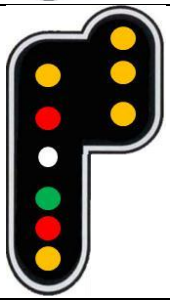
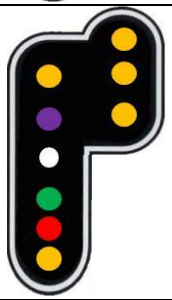
However, if one of these maneuvering lanes is a short track to which the signal must present the flashing white light when the track is clear, it is necessary to put on this path between the signal link and that of the knocker, a Silec4 pedal.



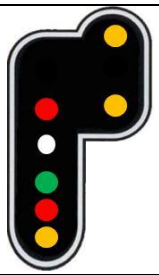
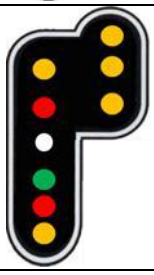
The Paulvé pedals allow you to vary the number of direct routes. This number is by default at 1.

H signals do not allow for non-homogeneous deviated pathways.

For the presentation of the other lights:

	**H1**	The H1 signal is strictly identical to the G1 signal pages 64 and 65 in conjunction with crocodiles 11 to 18 and 21 to 28.
	**H2**	The H2 signal is strictly identical to the G2 signal pages 67 and 68 in conjunction with crocodiles 11 to 18 and 21 to 28.
	**H3**	The H3 signal is strictly identical to the G1 signal pages 64 and 65 in conjunction with crocodiles 11 to 18 and 21 to 28 with the difference that it presents the purple square in place of the red square.
	**H4**	The H4 signal is strictly identical to the G3 signal pages 71 and 72 in conjunction with crocodiles 11 to 18 and 21 to 28.
	**H5**	The H5 signal is strictly identical to the G4 signal pages 74 and 75 in conjunction with crocodiles 11 to 18 and 21 to 28.
	**H6**	The H6 signal is strictly identical to the signal G3 pages 71 and 72 in connection with crocodiles 11 to 18 and 21 to 28 with the difference that it presents the purple square in place of the red square.

H7 to H10 signals are station exit signals. As such, they present the square in place of the semaphore. Aside from this difference:

	**H7 – H8**	The H7 signal is identical to the H1 signal. The H8 signal is identical to the H2 signal.
	**H9 – H10**	The H9 signal is identical to the H4 signal. The H10 signal is identical to the H5 signal.

LE SIGNAL I

Signal I is used on service tracks.

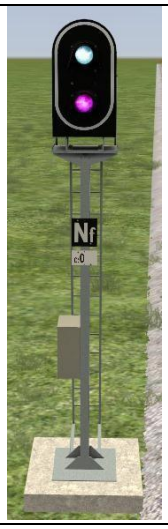
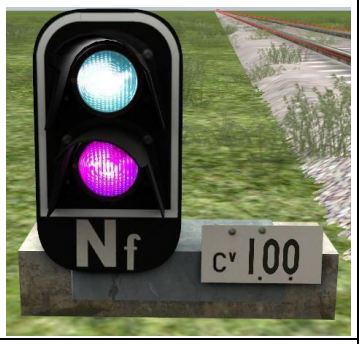
SIGNAL I


By default, it presents:

- the purple square when the track is not connected,
- the white fire when the way is clear,
- flashing white light when the track is occupied.

The joint use of a Silec pedal allows to define 1 to 5 routes (links 1 to 5 depending on the pedal) that will present the white light flashing when the lane is clear for short routes.

The signal comes in two versions:

	
I1	I2

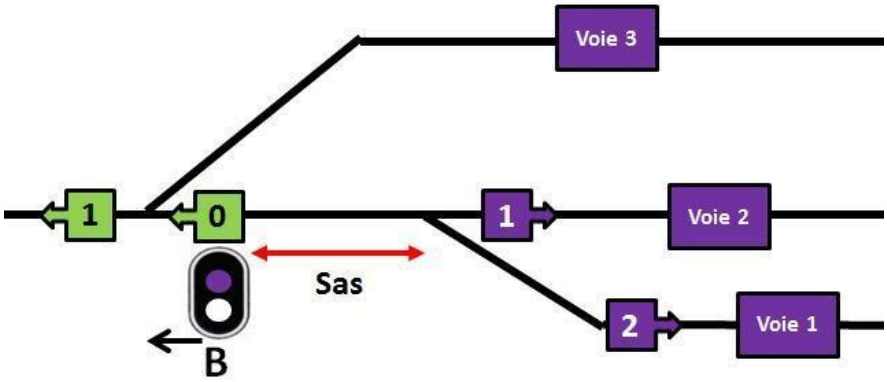
SIGNALS K

K1 and K2	K1_P and K2_P
	

The _P means that the signal is equipped with an umbrella.

The operation of these signals will not be exactly in line with reality.

The K1, K1_P, K2 and K2_P panels have the same states but have a totally different operating system.

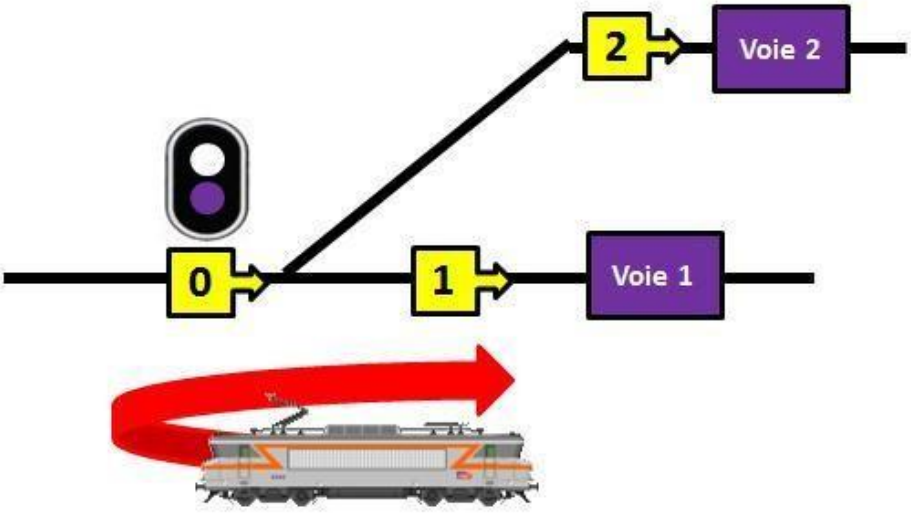


The K1 panel is used to set an sas as part of the turn (drawing left):

If the switch it protects is connected, the signal presents the white light, if it is not connected, the purple square is presented.

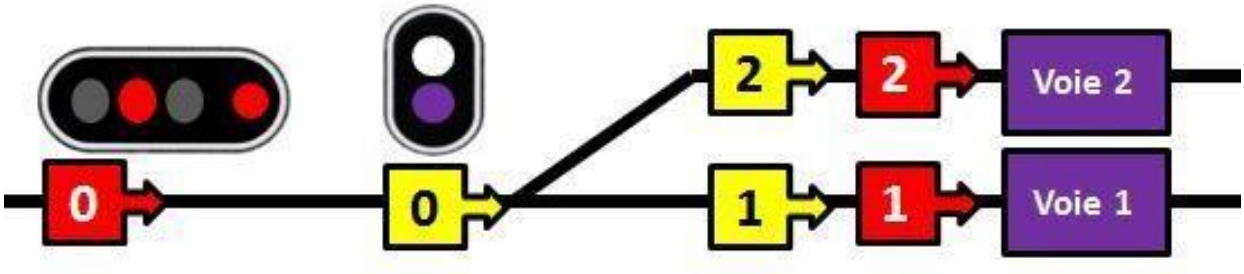
The K2 sign is used to indicate to the train driver that the turn-back route is open.

For example, the train departs from track 1 and re-tracks track 2. When it starts to cross the 0 link, the signal goes to the purple square. When the switch changes position, the signal presents the white light. Thus, the driver will see the fire go from the purple square to the white light and will know that a back-up route has been opened.



The signal will show the white fire of the walking maneuver, whether the course of return is busy or free.

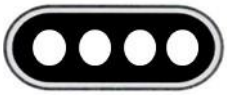
Important: The links of the K2 and K2_P signals must be framed by those of the signal that protects the switch. This signal must **IMPERATIVELY** be a station entry signal.

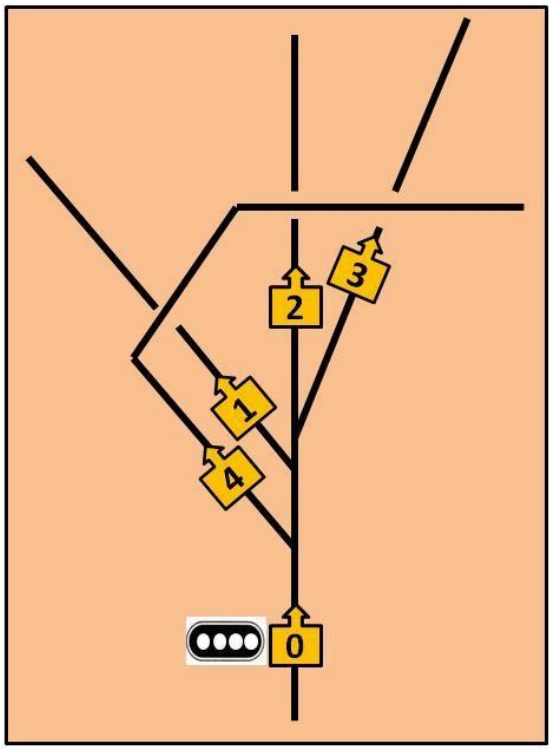


K signals are not crocodiled.

DIRECTION INDICATORS

The pack contains 3 steering indicators.

ID2	ID3	ID4
		



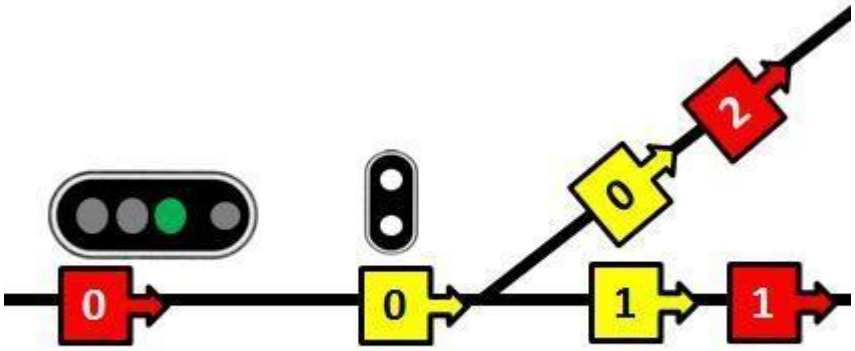
The steering indicator is grouped with the square that protects the deviation.

Links should be made under the following conditions:

- link 1 for 1 fire of the ID,
- link 2 for 2 ID fires,
- link 3 for 3 ID fires,
- link 4 for 4 ID lights.

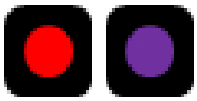
The ID lights are presented according to the geographical direction from left to right. In the above drawing, the 4-light ID will be presented by link 4 because its final geographical direction is the most to the right.

As with K signals, the links in the ID must be framed by those of the associated square.



Only the protective signal is crocodiled.

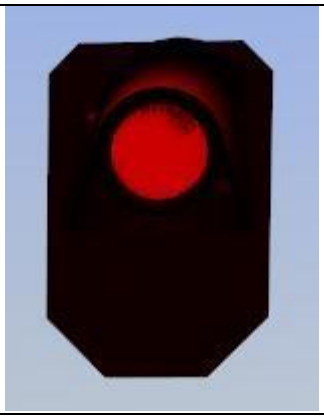
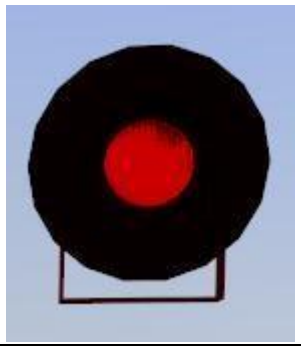
BUFFER LIGHTS



They are of two types: with red light for main tracks and purple light for service lanes.

They only have a 0 link. The previous signal displays the warning. Crocodiles can sometimes be implanted upstream of the bumpers and trigger the "closed signal" information.

Each red and purple light comes in three versions:

		
_R Heurtoir or Heurtoir _V	_P_R Heurtoir or Heurtoir _P_V	Heurtoir2_R or Heurtoir2_V

The _P means that the signal is equipped with an umbrella. The Heurtoir2 is an old model.

WHITE SLENDER

The white arrow is used to indicate which way the signal is addressed when it is implanted to its right (excluding Alsace and Moselle and outside ICS). In the case of the CSI, the contravene output signal must be arrowed.

The white arrow comes in two versions for the left and right.