

MORSE CODE ON HF SHORTWAVE RADIO - BASICS

An explanatory guide by Rob HA7RJA

Version: 31 May 2026

Please find the most recent version of this document on

https://www.ha7rja.hu/open_docs/ha7rja/

DECODING SOFTWARE

Morse code can be decoded with the free program **CwGet**, see here:

<http://www.dxsoft.com/en/products/cwget/>

The program does a fair job, I would rate it 6 out of 10. Not great, but sufficient as a first try and it's free!

MRP40 is a much better program. It does a better decoding job, also if the code is not 100% perfect:

<http://www.polar-electric.com/Morse/MRP40-EN/>

I would rate this decoder 8 out of 10. There is a 30 days free trial, after which a license will cost EUR 52,50. A substantial amount, especially if you are learning the morse code and don't really need a decoder.

My advice: If you have enough time available during a 30 days' period, use the free trial of **MRP40**. After that, there is always **CwGet**.

With **MRP40**, there will be less guessing about what has been said, because it decodes better. This is a positive if you're not too familiar with the jargon yet.

HF RECEIVER

You don't really need an HF receiver, because you can use an online WebSDR receiver.

See <http://www.websdr.org/>

But... using your own rig is more fun, of course. You will need to connect the audio output of your receiver to the input of your PC's sound card.

You may also need to configure the decoding software, to make it listen to the sound card.

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INTRODUCTION

Contrary to what some people may claim, Morse code is not a language nor an encryption; it is a code. Morse code has no grammar of its own, but is merely a one-to-one encoding of each character from an existing language (e.g. English).

To drastically increase the efficiency of the information transfer, abbreviations and codes are often used so that sending complete words is avoided. "GB" means "goodbye," two letters instead of seven! The code "73" means "best regards."

The abbreviations and codes originate from the early days of Morse code (mid-19th century), where telegraph operators often had to send the same sentences/phrases in their telegrams, unnecessarily tying up the telegraph line (costing extra money). If the recipient station heard at the end of a transmission "hav...", they already knew it was most likely going to be "have a pleasant day."

EXAMPLE OF A BASIC MORSE QSO ON HF

Abbreviations and the so-called Q code are abundantly used in morse code communications. They are often based on the English language.

Below list is in the approximate order in which the presented abbreviations are used. An alphabetic list can be found at the end.

Important abbreviations for a *more-or-less* basic QSO.

The abbreviations needed for a minimalistic morse QSO are in bold print.

- > CQ: general call, anyone may respond.
CQ DX: general call, but only DX may respond.
CQ VK: general call, but only Australian stations may respond.
CQ EU: general call, but only European stations may respond. Other regions: NA (North Americas), SA (South Americas), AS (Asia), AF (Africa), ...
CQ TEST or only TEST: general call during a contest.
- > **DE: 'this is' / 'from' as in "PA0XYZ DE HA7RJA". HA7RJA is calling PA0XYZ.**
- > **K: 'over', as in 'I will be listening'.**
- > KN: 'over' but only to the station with whom I am in QSO. KN is usually sent as one single character, with the K and N – sort of - glued together. It is a so-called prosign (procedural sign). It is often written with a dash above or below the two letters, i.e. as KN, or as <KN>.
- > BK: break. Quickly passing the key to the other station, for a short reply/response.
Explanation under 'MISCELLANEOUS'.
- > DR: dear, as in 'dear Peter'.
- > OM: old man. Way to address a radio ham. When in QSO with a female operator, you'd better NEVER say 'old woman'!
- > **TNX: thanks**
- > TU: thank you
- > **FER: for**
- > **QSO: (ham) radio contact, chat over radio**
- > **UR: your**
- > U: you
- > HR: here

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> **RST: signal report**

Three digits. The greater the numbers, the better the rating is.

There will be marks for (1) signal 'Readability' (how well 'decodeable', 1 to 5 incl), (2) signal 'Strength' (1 to 9 incl) and (3) 'Tone' (tone quality, 1 to 9 incl).

The maximum RST 599 is often given by default during a contest, even if the station can be hardly heard. It makes the log book typing easier.

A signal can be extremely strong, but yet unreadable (bad keying or strong QRM), so an RST 399 could be justified. A signal report with 0 (zero) signal **Strength** is nonsense, because a station with zero signal strength cannot be heard.

Unless a station has a real ugly tone (like a spark tx), one usually gives a 9 for **T** (tone) and I would advise novice morse operators to always give a 5 for **R** (readability), so that you only need to concentrate on the **S** (strength).

Operators using a computerised log book may be a bit lazy and always give an **S** 9. Such a signal report is meaningless (unless the signal is really **S** 9).

It is sometimes considered a bit rude to give an **R** lower than 5, or a **T** lower than 9. In case of strong interference (QRM), an **R** of 3 or 4 can be appropriate, but if so, add a 'QRM' to the report, like 'RST 459 QRM'. This tells the other station that the **R** 4 is not the operator's fault.

To further speed up a standard **RST 599**, the number 9 may be keyed as N. The report then becomes 'RST 5NN', which is the same as 'RST 599'.

There is never a **T** in a phone QSO (SSB, AM, FM), because there is no tone! So the maximum report is then 'RS 59'.

- > **OP:** operator. Usually refers to the name of the operator. Some operators use 'NAME' instead of 'OP'
- > **QTH:** physical location of the station. Usually the location name; on HF rarely the Maidenhead locator (e.g. JN97td). Small communities are often referred to as in 'NR London', meaning 'near London'. I always say 'QTH Mikebuda', although this village is miniscule with only 300 inhabitants. But nowadays there is QRZ.com and my counter station can see on a map where my QTH is...
- > **NR:** near (closeby)
- > **NW:** now (at this precise moment)
- > **RPRT:** report (usually the RST report is meant)
- > **RIG:** equipment in use, often the transmitter (TX)
- > **ABT:** about, as in 'talking about the weather' or 'approximate'
- > **ANT:** antenna, aerial
- > **R: 'roger' as in 'understood' or 'ok'**
- > **FB:** fine business (excellent! as in FB SIGS, excellent signals! FB QSO, very pleasant QSO)

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- > CPY: 'copy' as in 'received and understood'. 'FB CPY' excellent reception! 'ALL CPY' all received and understood!
- > CFM: confirm(ed), as in 'understood'.
- > **ES: and, as in 'A and B'**
- > SIG or SIGS: signal(s)
- > PWR: (transmission) power
- > WTTS: Watt(s)
- > WX: weather
- > TEMP: temperature. Include Celcius (C) or Fahrenheit (F). Usually without the word 'degree(s)', i.e. '18C' or '64F'.
- > QRU: I have nothing more to say
- > HPE CUAGN: hope to call/see you again
- > GD DX: good dx
- > VY: very (e.g. VY TNX, thank you very much; VY QRM, strong QRM)
- > HW: how. Often followed by a question mark: hw? , meaning how did you copy?
- > PSE: please
- > GM: good morning
- > GD: good day or just 'good'
- > GE: good evening
- > GN: good night
- > GB: good bye. Russian speakers often say 'DSW' (*do svidaniya*)
- > **73: kind regards. (88: love and kisses - to female operators only).** In written text, I sometimes see '73s' which is incorrect! '73' is a plural form already; '73s' would be 'kind regards' which is nonsense of course.
- > AR: 'end of message'. Special character at the end of a transmission, usually not being the last transmission of the QSO. The letters A and R are keyed as one single character, sort-of glued together, indicated by an underline. It is a so-called prosign (procedural sign).
- > BT or '=': separation character to separate two topics during the transmission. Also inserts a brief pause. The letters B and T are keyed as one single character, sort-of glued together, indicated by an underline. It is a so-called prosign (procedural sign). Morse decoders often print BT as the equal sign ('=').
- > SK: closing sign of the last transmission of the station in a QSO. A QSO with another station may follow. The letters S and K are keyed as one single character, sort-of glued together, indicated by an underline. It is a so-called prosign (procedural sign). The exact same result is achieved when using the letters V and A, nevertheless is this prosign usually printed as SK.

EXAMPLE OF A QSO BETWEEN HA7RJA AND PA0XYZ

HA7RJA calls CQ (general call) and PA0XYZ responds.

(1) HA7RJA says

CQ CQ CQ DE HA7RJA HA7RJA HA7RJA PSE K ('K' implies that any station may respond)

According to the unwritten rules of 'good operating practice', the responding station (counter station, in this example PA0XYZ) shall respond at an **EQUAL OR LOWER** keying speed than the calling station (i.e. HA7RJA). Just a matter of courtesy!

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(2) PA0XYZ says:

HA7RJA DE PA0XYZ PA0XYZ PSE KN ('KN' implies that only the station being called may respond, in this example HA7RJA)

(3) HA7RJA says:

PA0XYZ DE HA7RJA = GE DR OM TNX FER QSO = UR RST IS 579 579 = MY NAME IS ROB ROB ES MY QTH IS MIKEBUDA MIKEBUDA = HW? PA0XYZ DE HA7RJA AR KN

(4) PA0XYZ says:

HA7RJA DE PA0XYZ = GD DR OM ROB TNX FER NICE QSO ES FER RPRT = UR RST 599 599 FB = HR OP IS PAUL PAUL ES QTH IS NR ARNHEM NR ARNHEM = HW? HA7RJA DE PA0XYZ AR KN

(5) HA7RJA says:

PA0XYZ DE HA7RJA = FB DR OM PAUL ALL FB CPY = UR SIGS FB = HR RIG ABT 100 WTTS ES ANT DIPOLE UP 10 M = NW QRU = VY TNX FER QSO ES HPE CUAGN 73 ES BEST DX DR PAUL SK PA0XYZ DE HA7RJA 73 SK TU *dit dit*

(6) PA0XYZ makes his last transmission to HA7RJA in a comparable format as in (5).

MISCELLANEOUS

- > The **absolute minimum requirement** for a 'valid' morse QSO is, that both callsigns AND both signal reports (RST) have been exchanged.
- > The two *dits* at the end of the above final transmission (5) are rather common and typical for a morse QSO. They are like a final pen stroke, a 'squiggle' at the very end of a hand-written letter. It also means something like 'this is it!' PA0XYZ may also do this at the end of his final response (6), i.e. keying two *dits*. Station HA7RJA may then respond with ONLY two *dits*, as if he wants to have the very last word. Of course such exchange of *dits* is meant jokingly. A very stubborn (but not really) PA0XYZ may return yet again ONLY two *dits*...

In professional traffic, sending the above two dits is regarded as 'strictly off protocol'!

- > BK (break) is used when a quick and short response/answer is required. For example if HA7RJA was not able to copy PA0XYZ's name correctly. HA7RJA may respond to transmission (4) as follows: PSE AGN UR NAME NAME? BK PA0XYZ then responds with BK R MY NAME PAUL PAUL OK? BK HA7RJA responds with a CFM and continues with his transmission (5). When using the 'break option', no callsigns are usually sent, because the exchange is supposed to be as brief as possible, in order not to disrupt the overall QSO flow.
- > Many stations nowadays use electronic logging, on a computer or online. The confirmation of the radio contact (QSL) will often be done electronically also. Sometimes, a paper QSL card may still be exchanged: "QSL VIA BURO" (example).

AT THE BEGINNING: a 'minimalistic QSO' between HA7RJA and PA0XYZ

Below you will find an example of a short QSO where PA0XYZ is using a minimal number of abbreviations for making a very limited QSO. 'Thanks' (TNX) is regarded part of the minimal vocabulary... a matter of courtesy.

We will also use the Q code **QRU**, to indicate that we have nothing more to say. This makes the counter station understand why the QSO is so short; he will presume that PA0XYZ is a novice CW operator and that is just fine!

In below example, station PA0XYZ is not mentioning that he is a novice morse operator. This 'extra' is optional and is presented at the end of the example.

When making your first CW QSOs, it is recommended NOT to call CQ yourself. By responding to another station's CQ, you can - more or less - pick the best code speed. Select a station that is not going very fast, so that it does not need to drop its speed too much.

NOTE: If you get a reply, you may miss a lot of what is being said. That is OK, as long as you can copy the station's callsign and your RST report! The other infos can often be retrieved from QRZ.com and if not... so be it!

You can hear the station's callsign (and often the operator's name) in its QSOs with other stations before contacting you. Don't wait until after the QSO with you, because the station may not make new QSOs.

Example of a 'minimalistic QSO'

HA7RJA is calling CQ (general call) and PA0XYZ responds. PA0XYZ is the 'morse novice'. The separation sign '=' may be replaced by a short pause.

(1) HA7RJA says:

CQ CQ CQ DE HA7RJA HA7RJA HA7RJA PSE K ('K' implies that any station may respond)

(2) PA0XYZ (the morse novice) says:

HA7RJA DE PA0XYZ PA0XYZ K (he should have said 'KN', but 'K' is OK for now)

(3) HA7RJA does not (yet) realise, that PA0XYZ is a 'morse novice' and he says below text. PA0XYZ must be able to minimally copy the **bold print**.

PA0XYZ DE HA7RJA = GE DR OM TNX FER QSO = **UR RST IS 579 579** = MY NAME IS ROB ROB
ES MY QTH IS MIKEBUDA MIKEBUDA = HW? **PA0XYZ DE HA7RJA AR KN**

If PA0XYZ doesn't catch the prosign KN (at the end), he must wait until HA7RJA stops transmitting, AFTER callsign PA0XYZ has been transmitted at the end.

(4) PA0XYZ sends below text, confirming receipt, giving the report and his name and adding that there is nothing more to say (**QRU**).

HA7RJA DE PA0XYZ = R R = TNX FER QSO ES RST = UR RST 599 599 = MY NAME IS PAUL PAUL
= **QRU QRU** = HA7RJA DE PA0XYZ K

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(5) HA7RJA says:

PA0XYZ DE HA7RJA = ...*There may be a lot of text that you are unable to copy. Don't worry...*
= TNX FER QSO ES HPE CUAGN 73 DR PAUL SK PA0XYZ DE HA7RJA 73 SK TU *dit dit*

(6) PA0XYZ finalises the QSO and says goodbye, even if HA7RJA has not yet said 'thank you', 73 and goodbye. HA7RJA will probably finalise and wave goodbye after this transmission (6).

HA7RJA DE PA0XYZ = TNX FER QSO 73 = PA0XYZ DE HA7RJA 73 TNX *dit dit*

HA7RJA may find this an sudden and abrupt ending, but if he paid attention, he will know that PA0XYZ is a CW novice and he will forgive...

Well, now is the moment to take your handkerchief and wipe the sweat off your forehead...
haha!

But...you made it! Congratulations!

I am a morse novice...

Saying that you are a morse novice is recommended. You may use the following phrase, which can be used in your first 'real' transmission (4): PSE HR NEW FER CW. It says: 'please here new for CW'. The word 'please' will attract the station's attention, and he will start listening carefully. The text is poor English, but that doesn't matter, because the meaning is very clear, also to non-native speakers.

So the earlier transmission (4) will now become as follows:

(4) PA0XYZ says:

HA7RJA DE PA0XYZ = R R = TNX FER QSO ES RST = **PSE HR NEW FER CW** = UR RST 599 599 =
MY NAME IS PAUL PAUL = **QRU QRU** = HA7RJA DE PA0XYZ K

HA7RJA may start giving you extensive compliments, which you have deserved of course, but may be unable to copy. That's OK, as long as you pick up the **bold print** in transmission (5)...

FINALLY

You may be totally confused by now, but rest assured: the more you listen to morse code QSOs, with or without a decoder, the more you will notice, understand and remember. The broad outline of a morse QSO is virtually always the same.

There is much more to be discussed, but I'll leave that for later. I haven't mentioned yet the weather report, contest QSOs and the very few QSOs that fall into the *rag chew* category.

A handy list of amateur radio Q codes can be found here:

<https://a59.veron.nl/wp-content/uploads/2020/06/International-Q-Code.pdf>

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A last important advice: Avoid all morse code learning methods that use visual aids!

Only one piece of paper with the a code table is OK, in case you have forgotten the code for a character.

Radio morse code is an AUDIBLE phenomenon, NOT VISUAL! You must get used to the sound and the rhythm of morse code and NOT waste your brain's processing time on counting or visualising dots and dashes! Avoid morse code that has a speed lower than 12 to 15 wpm (words per minute), so that you will not be tempted to start counting dots and hashes.

When verbally communicating morse code, say 'di' (short) and 'daah' (long), NOT 'dot' and 'dash'.

All that is left now, is to wish you lots of success and ABOVE ALL lots of fun!

Things will be tough in the beginning and you will feel desparate at times; it will be a matter of persistence. Give yourself at least 30 days (free trial period of decoding program **MRP40**) before you decide whether or not to continue with morse code.

Persist and practise, practise, practise, because once you have mastered the basics, every next step you take will be more fun!

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== Morse code: Let your fingers do the talking! ==

<alphabetical abbreviations list on next page>

ABBREVIATIONS ALPHABETICAL

This list is slightly more comprehensive than used in the example QSO.

- > ABT: about, as in 'talking about the weather' or 'approximate'
- > ANT: antenna, aerial

- > BK: break. Quickly passing the key to the other station, for a short reply/response. Explanation under 'MISCELLANEOUS'.
- > BURO: the country's QSL card organisation. For paper QSL cards, usually through a national and/or local ham club.

- > CFM: confirm(ed), as in 'understood'.
- > CPY: 'copy' as in 'received and understood'. 'FB CPY' excellent reception! 'ALL CPY' all received and understood!
- > CQ: general call, anyone may respond.
CQ DX: general call, but only DX may respond.
CQ VK: general call, but only Australian stations may respond.
CQ EU: general call, but only European stations may respond. Other regions: NA (North Americas), SA (South Americas), AS (Asia), AF (Africa), ...
CQ TEST or only TEST: general call during a contest.

- > DE: 'this is' / 'from' as in "PA0XYZ DE HA7RJA". HA7RJA is calling PA0XYZ.
- > DR: dear, as in 'dear Peter'.

- > ES: and, as in 'A and B'

- > FB: fine business (excellent! as in FB SIGS, excellent signals! FB QSO, very pleasant QSO)
- > FER: for

- > GB: good bye. Russian speakers often say 'DSW' (*do svidaniya*)
- > GD: good day or just 'good'
- > GD DX: good dx
- > GE: good evening
- > GM: good morning
- > GN: good night

- > HI: radio laugh, as in 'ha ha'. Sometimes used in a phone QSO, which is a bit weird, because you can just laugh into your microphone, can't you?
- > HPE CUAGN: hope to call/see you again
- > HR: here
- > HW: how. Often followed by a question mark: hw? , meaning how did you copy?

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- > K: 'over', as in 'I will be listening'.
- > KN: 'over' but only to the station that I am connected to. KN is usually sent as one single character, with the K and N – sort of - glued together. It is a so-called prosign (procedural sign). It is often written with a dash above or below the two letters, i.e. as KN, or as <KN>
- > NR: near (closeby)
- > NW: now (at this precise moment)
- > OM: old man. Way to address a radio ham. When in QSO with a female operator, you'd better NEVER say 'old woman'!
- > OP: operator. Usually refers to the name of the operator. Some operators use 'NAME' instead of 'OP'.
- > PSE: please
- > PWR: (transmission) power
- > QRM: I have ('man-made') interference (for example from another station).
- > QRN: I have 'nature-made' interference (usually lightning/thunderstorm).
- > QRP: I am using a low power transmitter (typically 5W or less).
In a general call (CQ), a QRP station usually appends a '/QRP' to its callsign, for example HA7RJA/QRP, indicating that the station is using low power.
- > QRS: please lower your keying speed ('PSE QRS')
- > QRU: I have nothing more to say
- > QSB: the signal strength is fluctuating (therefore, I may not be able to copy all).
- > QSL: confirmed! (as in 'CFM'). Also formal confirmation of the two-way radio contact (QSL card).
QSL NO: station does not send QSL cards; this may include e-cards.
- > QSO: (ham) radio contact, chat over radio
- > QTH: physical location of the station. Usually the location name; on HF rarely the Maidenhead locator (e.g. JN97td). Small communities are often referred to as in 'NR London', meaning 'near London'. I always say 'QTH Mikebuda', although this village is miniscule with only 300 inhabitants. But nowadays there is QRZ.com and my counter station can see on a map where my QTH is...
- > R: 'roger' as in 'understood' or 'ok'
- > RIG: equipment in use, often the transmitter (TX)
- > RPRT: report (usually the RST report is meant)
- > RST: signal report
Three digits. The greater the numbers, the better the rating is.
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Unless a station has a real ugly tone (like a spark tx), one usually gives a 9 for **T** (tone) and I would advise novice morse operators to always give a 5 for **R** (readability), so that you only need to concentrate on the **S** (strength).

Operators using a computerised log book may be a bit lazy and always give an **S 9**. Such a signal report is meaningless (unless the signal is really **S 9**).

It is sometimes considered slightly rude to give an **R** lower than 5, or a **T** lower than 9. In case of strong interference (QRM), an **R** of 3 or 4 can be appropriate, but if so, add a 'QRM' to the report, like 'RST 459 QRM'. This tells the other station that the **R 4** is not the operator's fault.

To further speed up a standard **RST 599**, the number 9 may be keyed as N. The report then becomes 'RST 5NN', which is the same as 'RST 599'.

There is never a **T** in a phone signal report (SSB, AM, FM), because there is no tone! So the maximum report is then 'RS 59'.

- > SIG or SIGS: signal(s)
- > SRI: sorry

- > TEMP: temperature. Include Celcius (C) or Fahrenheit (F). Usually without the word 'degree(s)', i.e. '18C' or '64F'.
- > TEST: general call during a contest.
- > TNX: thanks
- > TU: thank you

- > U: you
- > UR: your

- > VY: very (e.g. VY TNX, thank you very much; VY QRM, strong QRM)

- > WTTS: Watt(s)
- > WX: weather

- > 73: kind regards
- > 88: love and kisses (to female operators only)
- > 99: go away! (as in 'sod off' (British slang); considered rather rude)

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Prosigns

- > AR: 'end of message'. Special character at the end of a transmission, usually not being the last transmission of the QSO. The letters A and R are keyed as one single character, sort-of glued together, indicated by an underline. It is a so-called prosign (procedural sign).
- > BT or '=': separation character to separate two topics during the transmission. Also inserts a brief pause. The letters B and T are keyed as one single character, sort-of glued together, indicated by an underline. It is a so-called prosign (procedural sign). Morse decoders often print BT as the equal sign ('=').
- > SK: closing sign of the last transmission of the station in a QSO. A QSO with another station may follow. The letters S and K are keyed as one single character, sort-of glued together, indicated by an underline. It is a so-called prosign (procedural sign). The exact same result is achieved when using the letters V and A, nevertheless is this prosign usually printed as SK.
- > **CwGet** will print the QSO in lower case and the above mentioned prosigns in capitals, i.e. not underlined but as 'AR', 'BT' (or '='), 'SK'.

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