Payroll Deductions Formulas

116th Edition
Effective July 1, 2022

Canada

Is this guide for you?

Use this guide if you are a payroll software provider or a company which develops its own in-house payroll solution.

This guide has the formulas you need to determine federal, provincial (except Quebec), and territorial income taxes, Canada Pension Plan (CPP) contributions, and employment insurance (EI) premium deductions. The formulas also let you calculate payroll deductions for income sources such as commission, pension, bonuses, and retroactive pay increases.

The formulas used in this guide to calculate statutory deductions have been approved for purposes of the Income Tax Act, the Canada Pension Plan, and the Employment Insurance Act, as well as their related regulations and any amendments proposed to these acts.

For more information on income amounts that are subject to payroll deductions, see the publication T4001, Employers' Guide – Payroll Deductions and Remittances.

If you have questions about the formulas in this guide, contact your tax services office or tax centre. For the address and telephone numbers of your tax services office or tax centre, see the listings in the government section of your telephone book or visit **canada.ca/taxes**.

Distribution of this guide

This guide is available in electronic format only.

Electronic mailing lists – more ways to serve you!

We provide an electronic service that can notify you immediately, free of charge, of any changes for payroll deductions.

To subscribe, go to **canada.ca/cra-email-lists** and enter your business's email address for each mailing list that you want to join.

Payroll Deductions Online Calculator

For your payroll deductions, you can use our Payroll Deductions Online Calculator (PDOC). The calculator includes an option to help you make sure that enough Canada Pension Plan contributions and employment insurance premiums have been withheld for full-year employees.

It calculates payroll deductions for the most common pay periods, as well as the applicable province (except Quebec) or territory. The calculation is based on exact salary figures.

Effective January 1, 2022, PDOC users may choose to calculate personal tax credits by either entering the Total Claim value manually or by selecting the corresponding claim code.

PDOC is available at **canada.ca/pdoc**.

Payroll Deductions Tables

Using the following links, you can download the publications **T4032, Payroll Deductions Tables** and **T4008, Payroll Deductions Supplementary Tables**. You can also choose to print only the pages or information that you need. For more information on payroll, see our webpage at **canada.ca/payroll**.

Table of contents

La version française de cette publication est intitulée Formules pour le calcul des retenues sur la paie – 116ᵉ édition.

What's new for July 1, 2022?

This guide reflects some income tax changes recently announced which, if enacted as proposed, would be effective July 1, 2022. At the time of publishing, these proposed changes were not law. We recommend that you use the Payroll Deductions Online Calculator (PDOC), the publication T4032 Payroll Deductions Tables, or the publication T4008 Payroll Deductions Supplementary Tables, and the formulas in this guide for withholding, starting with your first payroll in July 2022.

Upcoming Guidance for January 2023 and January 2024 Editions

On March 3, 2022, the Governor General in Council on the recommendation of the Minister of National Revenue, made amendments to Subsection 100 (3), paragraph 60 (e.1) of the Income Tax Regulation, ensuring CPP additional contributions are treated as a deduction at source. These changes will come into effect January 1, 2023.

As per Canada Pension Plan Regulations Subsection 5.1 (1), for the year 2024 and each subsequent year, pensionable earnings up to the second earnings ceiling are subject to the second additional contributions.

The Appendix 1 and Appendix 2 reflect changes for January 1, 2023, and January 1, 2024, respectively. These changes are being published in this edition to allow users to have adequate time to update their payroll systems. These changes are not to be implemented in 2022.

Federal Changes

At the time of publishing, there were no federal changes announced.

Provincial and territorial tax changes

You will find below the provincial and territorial tax changes effective July 1, 2022. The current figures for the most commonly used rates, amounts, and claim codes can be found in Chapter 8.

Please note that there is no change for Alberta, Manitoba, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Nunavut, Ontario, Prince Edward Island, Quebec, Saskatchewan, Yukon or Outside Canada.

British Columbia

The Provincial Labour Sponsored Funds Tax Credit rate and amount have been removed from Chapter 8.

New Brunswick

Basic Personal Amount
- On March 22, 2022, the Government of New Brunswick announced that the basic personal amount will increase from $10,817 to $11,720, effective January 1, 2022.
- Since employees have received a lower basic personal amount for the first six months of the year, a prorated basic personal amount of $12,623 will apply for the remaining six months commencing with the first payroll in July.
- The Option 2 personal amounts will not be prorated.

Clarification to T4127 January 2022 Edition

The following changes are clarifications to the January 2022 Edition.

Chapter 4 – Option 1 – Tax Formulas

K2 calculation
Current text
In either case, for the rest of the pay periods in the year, (P × C), (P × EI), or (P × IE × 0.00494) (as applicable) is replaced by the maximum annual deduction(s). This modification ensures that the employee will get the maximum CPP, EI, and QPIP tax credit for the rest of the pay periods in the year.

Updated text
In either case, once the employee contribution has reached annual maximum for CPP, EI or QPIP, for the rest of the pay periods in the year, (P × C), (P × EI), or (P × IE × 0.00494) (as applicable) is replaced by the employee's maximum annual contribution or premium. This modification ensures that the employee will get the maximum CPP, EI, and QPIP tax credit for the rest of the pay periods in the year.

Current text

If you want to use a year-to-date method to calculate CPP, EI, and QPIP federal tax credits, (P × C) and (P × EI) can be modified as follows:

(P × C) is changed to the lesser of:
(i) $3,499.80; and
(ii) Year-to-date C + (PR × C)

(P × EI) is changed to the lesser of:
(i) $952.74; and
(ii) Year-to-date EI + (PR × EI)

Only for employees in Quebec:
(P × EI) is changed to the lesser of:
(i) $723.60; and
(ii) Year-to-date EI + (PR × EI)

(P × IE × 0.00494) is changed to the lesser of:
(i) $434.72; and
(ii) Year-to-date QPIP + (PR × IE × 0.00494)

Updated text

If you want to use a year-to-date method to calculate CPP, EI, and QPIP federal tax credits, (P × C) and (P × EI) can be modified as follows:

(P × C) is changed to the lesser of:
(i) $3,499.80; and
(ii) D + (PR × C)

(P × EI) is changed to the lesser of:
(i) $952.74; and
(ii) D1 + (PR × EI)

Only for employees in Quebec:
(P × C) is changed to the lesser of:
(i) $3,776.10; and
(ii) DQ + (PR × C)

(P × EI) is changed to the lesser of:
(i) $723.60; and
(ii) D1 + (PR × EI)

(P × IE × 0.00494) is changed to the lesser of:
(i) $434.72; and
(ii) Year-to-date QPIP + (PR × IE × 0.00494)

Year-to-date bonus calculation

Current text

$$A = [(I_{YTD} - F_{YTD} - F2_{YTD} - U1_{YTD}) + (PR \times (I - F - F2 - U1)) - F1 - HD]^* + (B1 - F4)^{**}$$

* If the result is negative, enter $0.
** Result cannot be negative, and result cannot be negative after deducting CPP and EI.

Updated text

$$A = [(I_{YTD} - F_{YTD} - F2_{YTD} - U1_{YTD}) + (PR \times (I - F - F2 - U1)) - F1 - HD]^* + (B1 - F4)^{**}$$

* If the result is negative, enter $0.
** Result cannot be negative, and result cannot be negative after deducting CPP and EI.

If there is no current I, use the most recent I.

Chapter 7 – Employment Insurance (EI)

Current text

> **Note:**
> When an employee changes province of employment during the year but stays with the same employer, the maximum premium for the year is based on the province where the first $60,300 of insurable earnings is paid.

Updated text

> **Note:**
> When an employee changes province or territory of employment during the year but stays with the same employer, the maximum premium for the year is based on the provinces or territories where the first $60,300 of insurable earnings is paid.

Chapter 1 – General information

As the general information has not changed, this section has not been reproduced.

Chapter 2 – Personal tax credits return (Form TD1)

As the formula to calculate the personal tax credits return and the explanatory variables have not changed, they have not been reproduced.

Chapter 3 – Glossary

All factor definitions appear only in the Glossary unless further details are required in specific situations.

Table 3.1 Glossary

Factor	Meaning (for complete details, see the formulas)
A	Annual taxable income
B	Gross bonus, retroactive pay increase, vacation pay when vacation is not taken, accumulated overtime payment or other non-periodic payment
B1	Gross bonuses, retroactive pay increases, vacation pay when vacation is not taken, accumulated overtime payments or other non-periodic payments **year-to-date** (before the pay period)
BPAF	Federal Basic Personal Amount
BPANS	Basic Personal Amount for Nova Scotia
BPAYT	Basic Personal Amount for Yukon
C	Canada (or Quebec) Pension Plan contributions for the pay period
CEA	Canada Employment Amount, a non-refundable tax credit used in the calculation for K4 and K4P
D	Employee's year-to-date (before the pay period) Canada Pension Plan contribution with the employer (cannot be more than the annual maximum)
DQ	Employee's year-to-date (before the pay period) Quebec Pension Plan contribution with the employer (cannot be more than the annual maximum)
D1	Employee's year-to-date (before the pay period) employment insurance premium with the employer
E	Total commission expenses deductions reported on Form TD1X
EI	Employment insurance premiums for the pay period
F	Payroll deductions for the pay period for employee contributions to a registered pension plan (RPP) for current and past services, a registered retirement savings plan (RRSP), to a pooled registered pension plan (PRPP), or a retirement compensation arrangement (RCA). For tax deduction purposes, employers can deduct amounts contributed to an RPP, RRSP, PRPP, or RCA by or on behalf of an employee to determine the employee's taxable income
F1	Annual deductions such as childcare expenses and support payments, requested by an employee or pensioner and authorized by a tax services office or tax centre
F2	Annual alimony or maintenance payments required by a legal document dated before May 1, 1997, to be payroll-deducted authorized by a tax services office or tax centre
F3	Employee registered pension plan or registered retirement savings plan contributions deducted from the current non-periodic payment. You can also use this field or design another to apply other tax-deductible amounts to the non-periodic payment, such as union dues

Factor	Meaning (for complete details, see the formulas)
F4	Employee registered pension plan or registered retirement savings plan contributions deducted from the year-to-date non-periodic payments. You can also use this field or design another to apply other tax-deductible amounts to the non-periodic payment, such as union dues
G	Gross commission amount including gross salary at the time of payment, plus any taxable benefits for commission-remunerated employees who have filled out Form TD1X. When an employee has not filed Form TD1X, tax is calculated the regular way
HD	Annual deduction for living in a prescribed zone, as shown on Form TD1
I	Gross remuneration for the pay period. This includes overtime earned and paid in the same pay period, pension income, qualified pension income, and taxable benefits, but does not include bonuses, retroactive pay increases, or other non-periodic payments
I1	Total remuneration for the year reported on Form TD1X. This includes commission payments, salary (where applicable), non-periodic payments, and taxable benefits
IE	Insurable earnings for the pay period including insurable taxable benefits, bonuses, and retroactive pay increases
K	Federal constant. The constant is the tax overcharged when applying the 20.5%, 26%, 29%, and 33% rates to the annual taxable income A
KP	Provincial or territorial constant
K1	Federal non-refundable personal tax credit (the lowest federal tax rate is used to calculate this credit)
K1P	Provincial or territorial non-refundable personal tax credit (the lowest tax rate is used to calculate this credit)
K2	Federal Canada Pension Plan contributions and employment insurance premiums tax credits for the year (the lowest federal tax rate is used to calculate this credit). Note: If an employee has already contributed the maximum CPP and EI, for the year with the employer, use the maximum CPP and EI deduction to determine the credit for the rest of the year. If, during the pay period in which the employee reaches the maximum, the CPP and EI, when annualized, is less than the annual maximum, use the maximum annual deduction(s) in that pay period
K2P	Provincial or territorial Canada Pension Plan contributions and employment insurance premiums tax credits for the year (the lowest provincial or territorial tax rate is used to calculate this credit). If an employee reaches the maximum CPP or EI for the year with an employer, the instructions in the note for the K2 factor also apply to the K2P factor. For employees paid by commission, use the federal K2 formula for commissions and replace the lowest federal rate in the K2 formula with the lowest provincial or territorial tax rate
K2Q	Quebec Pension Plan contributions, employment insurance premiums, and Quebec Parental Insurance Plan premiums federal tax credits for the year (the lowest federal tax rate is used to calculate this credit)
K3	Other federal non-refundable tax credits (such as medical expenses and charitable donations) authorized by a tax services office or tax centre
K3P	Other provincial or territorial non-refundable tax credits (such as medical expenses and charitable donations) authorized by a tax services office or tax centre
K4	Federal non-refundable tax credit calculated using the Canada employment amount (the lowest federal tax rate is used to calculate this credit)
K4P	Territorial non-refundable tax credit calculated using the provincial or territorial Canada employment amount (the lowest territorial tax rate is used to calculate this credit)
L	Additional tax deductions for the pay period requested by the employee or pensioner as shown on Form TD1
LCF	Federal labour-sponsored funds tax credit
LCP	Provincial or territorial labour-sponsored funds tax credit (only applies to Manitoba, New Brunswick, Nova Scotia, and Saskatchewan)
M	Accumulated federal and provincial or territorial tax deductions (if any) to the end of the last pay period
M1	Year-to-date tax deducted on all payments included in B1
N	The number of days since the last payment in the current year. The minimum basic exemption amount of $67.30 is included in the formula in line with CPP legislation
NI	Net income for the year from the employer
P	The number of pay periods in the year
PI	Pensionable income for the pay period, or the gross income plus any taxable benefits for the pay period, including bonuses and retroactive pay increases where applicable
PR	The number of pay periods left in the year (including the current pay period)
R	Federal tax rate that applies to the annual taxable income A
S	Provincial tax reduction (only applies to Ontario and British Columbia)

Factor	Meaning (for complete details, see the formulas)
S1	Annualizing factor
S2	Basic amount used in the calculation of Factor S (only applies to Ontario and British Columbia)
T	Estimated federal and provincial or territorial tax deductions for the pay period
T1	Annual federal tax deduction
T2	Annual provincial or territorial tax deduction (except Quebec)
T3	Annual basic federal tax
T4	Annual basic provincial or territorial tax
TB	Tax deductions, i.e., bonuses or retroactive pay increases, payable now
TC	"Total claim amount" reported on federal Form TD1. If Form TD1 is not filed by the employee or pensioner, calculate TC using BPAF formula, and for non-resident individuals, TC is $0. If the claim code is E, T = $0. If the province is Ontario, even if the claim code is E, the Ontario Health Premium is payable on annual income over $20,000
TCP	"Total claim amount" reported on the provincial or territorial Form TD1. If that form is not filed, TCP is the provincial or territorial basic personal amount, refer to table 8.2. For Nova Scotia and Yukon, use BPANS and BPAYT formulas respectively.
U1	Union dues for the pay period paid to a trade union, an association of public servants, or dues required under the law of a province to a parity or advisory committee or similar body
V	Provincial or territorial tax rate for the year (does not apply to Quebec, outside Canada, or in Canada beyond the limits of any province or territory)
V1	Provincial surtax calculated on the basic provincial or territorial tax (only applies to Prince Edward Island and Ontario)
V2	Additional tax calculated on taxable income (only applies to the Ontario Health Premium)
Y	Additional provincial tax reduction amount based on the number of eligible dependents used in the calculation of Factor S (only applies to Ontario)
YTD	Year-to-date, not including current pay period

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Chapter 4 – Option 1 – Tax Formulas

Step 1 – Formula to calculate annual taxable income (A)

As the formula to calculate the annual taxable income and the explanatory variables have not changed, they have not been reproduced.

Step 2 – Formula to calculate basic federal tax (T3)

As the formula to calculate the basic federal tax and the explanatory variables have not changed, they have not been reproduced.

Step 3 – Formula to calculate the annual federal tax payable (T1)

As the formula to calculate the annual federal tax payable and the explanatory variables have not changed, they have not been reproduced.

Step 4 – Formula to calculate annual basic provincial or territorial tax (T4)

As the formula to calculate the annual basic provincial or territorial tax and the explanatory variables have not changed, they have not been reproduced.

Step 5 – Formulas to calculate the annual provincial or territorial tax deduction (T2)

As the formula to calculate the annual basic provincial or territorial tax and the explanatory variables have not significantly changed, only the changes have been reproduced.

British Columbia

$$T2 = T4 + V1 - S - LCP$$
If the result is negative, T2 = $0.

Where:
$$T4 = (V \times A) - KP - K1P - K2P - K3P$$

V and KP are based on 2022 index values for A see the **Rates (R, V), income thresholds (A), and constants (K, KP) for 2022** Table 8.2 in Chapter 8.

V1 and **LCP** = $0

New Brunswick

$$K1P = 0.094 \times TCP$$

Where:
TCP = The total of personal non-refundable tax credits amounts reported on Form TD1NB. If Form TD1NB is not filed, TCP is $12,623.

Step 6 – Formula to calculate the estimated federal and provincial or territorial tax deductions (T) for the pay period

As the formula to calculate the estimated federal and provincial or territorial tax deductions for the pay period and the explanatory variables have not changed, they have not been reproduced.

Chapter 5 – Option 2 – Tax formula based on cumulative averaging

As the formula to calculate the estimated federal and provincial or territorial tax deductions for the pay period and the explanatory variables have not significantly changed, only the changes have been reproduced.

Formulas to calculate provincial and territorial tax payable (T2)

New Brunswick

$K1P$ = $0.094 \times TCP$

> Where:
> TCP = The total of personal non-refundable tax credits amounts reported on Form TD1NB. If Form TD1NB is not filed, TCP is $11,720.

Chapter 6 – Canada Pension Plan (CPP)

As the formula to calculate the Canada Pension Plan contributions and the explanatory variables have not changed, they have not been reproduced.

Chapter 7 – Employment Insurance (EI)

As the formula to calculate the employment insurance premiums and the explanatory variables have not changed, they have not been reproduced.

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Chapter 8 – Rates and amounts

To download the Chapter 8 tables in comma-separated value (CSV) format see the T4127 Payroll Deductions Formulas website.

Note:
Only the tables with changes have been reproduced.

Table 8.2 Other rates and amounts for 2022

	Basic amount	Index rate	LCP rate	LCP amount	CEA	S2	T4 to V1	V1 rate	Abatement	Surtax
Federal	BPAF	0.024	0.150	750	1,287					
AB	19,369	–								
BC	11,302	0.021				491				
MB	10,145	0.021	0.150	1,800						
NB	12,623	0.024	0.200	2,000						
NL	9,803	0.028								
NS	BPANS	–	0.200	2,000						
NT	15,609	0.024								
NU	16,862	0.024								
ON	11,141	0.024				257	0	0.000		
							4,991	0.200		
							6,387	0.360		
PE	11,250	–					0	0.000		
							12,500	0.100		
QC									0.165	
SK	16,615	0.024	0.175	875						
YT	BPAYT	0.024			1,287					
Outside Canada										0.480

For information on 2022 federal personal amounts, see the form TD1, Personal Tax Credits Return and the form TD1X, Commission Income and Expenses for Payroll Tax Deductions. For information on 2022 provincial or territorial personal amounts, see the respective form TD1AB, TD1BC, TD1MB, TD1NB, TD1NL, TD1NS, TD1NT, TD1NU, TD1ON, TD1PE, TD1SK, or TD1YT. For information on QC amounts, refer to Revenu Quebec

Table 8.9 New Brunswick claim codes

Claim code	Total claim amount ($) from	Total claim amount ($) to	Option 1, TCP = ($)	Option 1, K1P ($)
0	No claim amount	No claim amount	0.00	0.00
1	0	12,623.00	12,623.00	1,186.56
2	12,623.01	15,022.00	13,822.50	1,299.32
3	15,022.01	17,421.00	16,221.50	1,524.82
4	17,421.01	19,820.00	18,620.50	1,750.33
5	19,820.01	22,219.00	21,019.50	1,975.83
6	22,219.01	24,618.00	23,418.50	2,201.34
7	24,618.01	27,017.00	25,817.50	2,426.85
8	27,017.01	29,416.00	28,216.50	2,652.35
9	29,416.01	31,815.00	30,615.50	2,877.86
10	31,815.01	34,214.00	33,014.50	3,103.36

Appendix 1: Upcoming Guidance for T4127 January 2023 Edition

This Appendix only includes the information impacted or added due to the Income Tax Regulation Amendment, effective January 1, 2023.

Chapter 1 – General Information

As the general information has not changed, this section has not been reproduced.

Chapter 2 – Personal Tax Credit Returns (Form TD1)

As the formula to calculate the personal tax credits return and the explanatory variables have not changed, they have not been reproduced.

Chapter 3 – Glossary

The factors in the following table only include the factors to be added due to the Income Tax Regulation Amendment.

Table 3.1 Glossary

Factor	Meaning (for complete details, see the formulas)
F5	Deductions for Canada Pension Plan additional contributions for the pay period
F5Q	Deductions for Quebec Pension Plan additional contributions for the pay period
F5A	Deductions for Canada (or Quebec) Pension Plan additional contributions for the pay period deducted from the periodic income, if a non-periodic payment exists
F5B	Deductions for Canada (or Quebec) Pension Plan additional contributions for the pay period deducted from the non-periodic payment
K2R	Canada Pension Plan contributions and employment insurance premiums tax credits for the year (the lowest federal tax rate is used to calculate this credit), for employees that are transferred from Quebec to a location outside Quebec. The term "location outside Quebec" refers to a province or territory outside Quebec
K2RQ	Quebec Pension Plan contributions, employment insurance premiums, and Quebec Parental Insurance Plan premiums federal tax credits for the year (the lowest federal tax rate is used to calculate this credit), for employees that are transferred to Quebec from a location outside Quebec. The term "location outside Quebec" refers to a province or territory outside Quebec
PM	Pensionable Months (used in the proration of maximum contribution)

Chapter 4 – Option 1 – Tax Formulas

This chapter only includes the formulas to be impacted or added due to the Income Tax Regulation Amendment. The 2022 rates and maximums are used for illustrative purposes only.

Step 1 – Formula to calculate annual taxable income (A)

A = Annual taxable income

= $[P \times (I - F - F2 - F5^* - U_1)] - HD - F1$

If the result is negative, $T = L$.

* When in the province of Quebec, replace $F5$ with $F5Q$.

Only for employees paid by commission:

A = $I_1 - F^* - F2^* - F5^{**} - U_1^* - HD - F1 - E$

If the result is negative, $T = L$.

* Estimated deduction amounts for the year. For registered retirement savings plan (RRSP) contributions included in F, you will need to find out from your employee paid by commission the estimated or expected annual deduction. We recommend that you caution employees not to exceed their RRSP contribution limit for the year.

** When in the province of Quebec, replace $F5$ with $F5Q$.

$F5$ = $C \times (0.0075/0.0570)$

Only for employees in Quebec

$F5Q$ = $C \times (0.0075/0.0615)$

Only for employees paid by commission:

F5*	=	$(0.0075 \times (I_1 - \$3,500.00))^{**}$, maximum $460.50)

* Estimated annual amount
** If the resulting amount is negative, enter $0.

Only for employees in Quebec

F5Q* = $(0.0075 \times (I_1 - \$3,500.00))^{**}$, maximum $460.50)

* Estimated annual amount
** If the resulting amount is negative, enter $0.

Step 2 – Formula to calculate basic federal tax (T3)

T3	=	Annual basic federal tax
	=	$(R \times A) - K - K_1 - K_2^* - K_3 - K_4$

If the result is negative, T3 = $0.
* For employees being transferred from Quebec to a location outside Quebec, replace K2 with K2R.

Only for employees in Quebec:
$(R \times A) - K - K_1 - K_2Q^* - K_3 - K_4$
If the result is negative, T3 = $0.
* For employees being transferred to Quebec from a location outside Quebec, replace K2Q with K2RQ.

R and K are based on 2022 index values for A see the **Rates (R, V), income thresholds (A), and constants (K, KP) for 2022** Table 8.1 in Chapter 8.

K2	=	$[(0.15 \times (P \times C \times (0.0495/0.0570)$, maximum $3,039.30)) + (0.15 \times (P \times EI$, maximum $952.74))]^*$
K2R	=	$[(0.15 \times (P \times C \times (0.0495/0.0570)$, maximum ($3,039.30 - (DQ \times (0.0495/0.0615)))) + (DQ \times (0.0540/0.0615))) + (0.15 \times (P \times EI$, maximum $952.74))]^*$

Only for employees in Quebec:

K2Q	=	Quebec Pension Plan contributions, employment insurance premiums, and Quebec Parental Insurance Plan premiums federal tax credits for the year
	=	$[(0.15 \times (P \times C \times (0.0540/0.0615)$, maximum $3,315.60)) + (0.15 \times (P \times EI$, maximum $723.60)) + (0.15 \times (P \times IE \times 0.00494$, maximum $434.72))]^*$
K2RQ	=	$[(0.15 \times (P \times C \times (0.0540/0.0615)$, maximum ($3,315.60 - (D \times (0.0540/0.0570)))) + (D \times (0.0495/0.0570))) + (0.15 \times (P \times EI$, maximum $723.60)) + (0.15 \times (P \times IE \times 0.00494$, maximum $434.72))]^*$

* In all cases, once the employee contributions or premiums have reached annual for CPP, EI or QPIP, for the rest of the pay periods in the year, $(P \times C \times$ (base rate/(base rate + first additional rate))), $(P \times EI)$, or $(P \times IE \times 0.00494)$ (as applicable) is replaced by the employee's maximum annual contribution or premium. This modification ensures that the employee will get the maximum CPP, EI, and QPIP tax credit for the rest of the pay periods in the year.

If you want to use the year-to-date method to calculate CPP, EI, and QPIP federal tax credits:

$(P \times C \times (0.0495/0.0570))$ is changed to the lesser of:
(i) $3,039.30; and
(ii) $(D \times (0.0495/0.0570)) + (PR \times C \times (0.0495/0.0570))$

$(P \times EI)$ is changed to the lesser of:
(i) $952.74; and
(ii) $D_1 + (PR \times EI)$

Only for employees in Quebec:
$(P \times C \times (0.0540/0.0615))$ is changed to the lesser of:
(i) $3,315.60; and
(ii) $(DQ \times (0.0540/0.0615)) + (PR \times C \times (0.0540/0.0615))$

$(P \times EI)$ is changed to the lesser of:
(i) $723.60; and
(ii) $D_1 + (PR \times EI)$

$(P \times IE \times 0.00494)$ is changed to the lesser of:
(i) $434.72; and
(ii) $QPIP_{YTD} + (PR \times IE \times 0.00494)$

Only for employees paid by commission:

K2	=	$[(0.15 \times (0.0495 \times (I_1 - \$3{,}500.00)^*, \text{maximum } \$3{,}039.30)) + (0.15 \times (0.0158 \times I_1, \text{maximum } \$952.74))]$
		* If the resulting amount is negative, enter \$0.
K2R	=	$[(0.15 \times (0.0495 \times (I_1 - \$3{,}500.00)^*, \text{maximum } (\$3{,}039.30 - (DQ \times (0.0495/0.0615)))) + (DQ \times (0.0540/0.0615))) + (0.15 \times (0.0158 \times I_1, \text{maximum } \$952.74))]$
		* If the resulting amount is negative, enter \$0.

Only for employees in Quebec:

K2Q = $[(0.15 \times (0.0615 \times (I_1 - \$3{,}500.00)^*, \text{maximum } \$3{,}315.60)) +$
$(0.15 \times (0.0120 \times I_1, \text{maximum } \$723.60)) + (0.15 \times (0.00494 \times I_1, \text{maximum } \$434.72))]$
* If the resulting amount is negative, enter \$0.

K2RQ = $[(0.15 \times (0.0615 \times (I_1 - \$3{,}500.00)^*, \text{maximum } \$3{,}315.60 - (D \times (0.0540/0.0570))) +$
$(D \times (0.0495/0.0570))) + (0.15 \times (0.0120 \times I_1, \text{maximum } \$723.60)) + (0.15 \times (0.00494 \times I_1,$
maximum \$434.72))]
* If the resulting amount is negative, enter \$0.

Note:
The K2 formulas are subject to the rules in Chapter 6 – "Canada Pension Plan (CPP)" and Chapter 7 – "Employment Insurance (EI)" of this document and the instructions in Guide T4001 Employers' Guide – Payroll Deductions and Remittances.

Step 3 – Formula to calculate the annual federal tax payable (T₁)

F5A = $F5^* \times ((PI - B)/PI)$
* When in the province of Quebec, replace F5 with F5Q.

F5B = $F5^* \times (B/PI)$
* When in the province of Quebec, replace F5 with F5Q.

TB = The difference between:
(i) the annual tax amount (T₁ + T₂) based on the instructions in Step 1 below; and
(ii) the annual tax amount (T₁ + T₂) based on the instructions in Step 2 below

(1) Regular bonus calculation

Step 1
Determine the annual tax (T₁ + T₂) based on the annual taxable income (factor A) with the non-periodic payment payable now. The formula to calculate factor A is as follows:

A = $([P \times (I - F - F2 - F5A - U1)] - HD - F1)^* + (B - F3 - F5B)^{**} + (B1 - F4 - F5B_{YTD})^{**}$
* If the result is negative, enter \$0.
** Result cannot be negative, and result cannot be negative after deducting CPP and EI.

Note:
If the result above is less than or equal to **\$5,000**, deduct 15% tax (10% in Quebec) from the bonus or retroactive pay increase.

Step 2
Determine the annual tax (T₁ + T₂) based on the annual taxable income (factor A) without the non-periodic payment payable now. The formula to calculate factor A is as follows:

A = $([P \times (I - F - F2 - F5A - U1)] - HD - F1)^* + (B1 - F4 - F5B_{YTD})^{**}$
* If the result is negative, enter \$0.
** Result cannot be negative, and result cannot be negative after deducting CPP and EI.
If there is no current I, use the most recent I.

(2) Year-to-date bonus calculation (optional)

Step 1

Determine the annual tax ($T_1 + T_2$) based on the annual taxable income (factor A) with the non-periodic payment payable now. The annual taxable income (factor A) is based on a year-to-date concept, plus the estimated income for the rest of the pay periods in the year. YTD means year-to-date (before this pay period). The formula to calculate factor A is as follows:

A = $[(I_{YTD} – F_{YTD} – F2_{YTD} – F5A_{YTD} – U1_{YTD}) + (PR × (I – F – F2 – F5A – U1)) – F1 – HD]* + (B – F3 – F5B)** + (B1 – F4 – F5B_{YTD})**$

* If the result is negative, enter $0.

** Result cannot be negative, and result cannot be negative after deducting CPP and EI.

Note:

If the result above is less than or equal to **$5,000**, deduct 15% tax (10% in Quebec) from the bonus or retroactive pay increase.

Step 2

A = $[(I_{YTD} – F_{YTD} – F2_{YTD} – F5A_{YTD} – U1_{YTD}) + (PR × (I – F – F2 – F5A – U1)) – F1 – HD]* + (B1 – F4 – F5B_{YTD})**$

* If the result is negative, enter $0.

** Result cannot be negative, and result cannot be negative after deducting CPP and EI.

If there is no current I, use the most recent I.

Example for year-to-date bonus calculation method

In this example, an employee got a retroactive pay increase from $1,000 to $1,100 per week that applies to 25 weeks. Therefore, a retroactive pay increase payment of $2,500 is payable now. $1,000 will be directed to the employee's RRSP. Thirty pay periods have passed and 22 pay periods remain in the year. Year-to-date income is $30,000, year-to-date RPP is $1,350, year to date CPP deductions against periodic income are $210 and year-to-date union dues are $150. The current income is $1,100 with RPP withheld of $45, CPP deductions against periodic income of $7 and union dues of $5. The employee received a previous non-pensionable bonus of $1,000 with only tax withheld from it.

$F5A$ = $7 × (($3,600 – $2,500)/ $3,600)$
= $2.14

$F5B$ = $7 × ($2,500/ $3,600)$
= $4.86

Step 1

A = Annual taxable income with the non-periodic payment payable now
= $[(I_{YTD} – F_{YTD} – F2_{YTD} – F5A_{YTD} – U1_{YTD}) + (PR × (I – F – F2 – F5A – U1)) – F1 – HD]* + (B – F3 – F5B)** + (B1 – F4 – F5B_{YTD})**$
= $[($30,000 – $1,350 – $0 – $210 – $150) + (22 × ($1,100 – $45 – $0 – $2.14 – $5)) – $0 – $0] + ($2,500 – $1,000 – $4.86) + ($1,000 – $0 – $0)$
= $28,290.00 + $23,052.92 + $1,495.14 + $1,000.00
= $53,838.06

Step 2

A = Annual taxable income without the non-periodic payment payable now
= $[(I_{YTD} – F_{YTD} – F2_{YTD} – F5A_{YTD} – U1_{YTD}) + (PR × (I – F – F2 – F5A – U1)) – F1 – HD]* + (B1 – F4 – F5B_{YTD})**$
= $[($30,000 – $1,350 – $0 – $210 – $150) + (22 × ($1,100 – $45 – $0 – $2.14 – $5)) – $0 – $0] + ($1,000 – $0 – $0)$
= $28,290.00 + $23,052.92 + $1,000.00
= $52,342.92

After calculating the annual taxable income, factor A, in steps 1 and 2, calculate the factors T_1 and T_2 in the same way as for regular remuneration.

> **Note:**
> The TB formula above can be used to calculate the tax deductions on non-periodic payments such as accumulated overtime not paid in the same pay period earned, paid vacation not taken by the employee, and bonuses.

Step 4 – Formula to calculate annual basic provincial or territorial tax (T$_4$)

As the formula to calculate the annual basic provincial or territorial tax and the explanatory variables have not changed, they have not been reproduced.

Step 5 – Formulas to calculate the annual provincial or territorial tax deduction (T$_2$)

Alberta

K_2P = $[(0.10 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.10 \times (P \times EI, \text{maximum } \$952.74))]$

British Columbia

K_2P = $[(0.0506 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.0506 \times (P \times EI, \text{maximum } \$952.74))]$

Manitoba

K_2P = $[(0.108 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.108 \times (P \times EI, \text{maximum } \$952.74))]$

New Brunswick

K_2P = $[(0.094 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.094 \times (P \times EI, \text{maximum } \$952.74))]$

Newfoundland and Labrador

K_2P = $[(0.087 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.087 \times (P \times EI, \text{maximum } \$952.74))]$

Northwest Territories

K_2P = $[(0.059 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.059 \times (P \times EI, \text{maximum } \$952.74))]$

Nova Scotia

K_2P = $[(0.0879 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.0879 \times (P \times EI, \text{maximum } \$952.74))]$

Nunavut

K_2P = $[(0.040 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.040 \times (P \times EI, \text{maximum } \$952.74))]$

Ontario

K_2P = $[(0.0505 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.0505 \times (P \times EI, \text{maximum } \$952.74))]$

Prince Edward Island

K_2P = $[(0.098 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.098 \times (P \times EI, \text{maximum } \$952.74))]$

Saskatchewan

K_2P = $[(0.105 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.105 \times (P \times EI, \text{maximum } \$952.74))]$

Yukon

K_2P = $[(0.064 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3{,}039.30)) + (0.064 \times (P \times EI, \text{maximum } \$952.74))]$

Step 6 – Formulas to calculate the estimated federal and provincial or territorial tax deductions (T) for the pay period

As the formula to calculate the estimated federal and provincial or territorial tax deductions for the pay period and the explanatory variables have not changed, they have not been reproduced.

Chapter 5 – Option 2 – Tax Formulas based on cumulative averaging

Formula to calculate annual taxable income (A)

A = Projected annual taxable income

= $[S_1 \times (I - F - F_2 - F_5{*} - U_1)] + B_1 - HD - F_1$

If the result is negative, A = $0.

* When in the province of Quebec, replace F5 with F5Q

F_5 = $C \times (0.0075/0.0570)$

Only for employees in Quebec

F_5Q = $C \times (0.0075/0.0615)$

Formula to calculate basic federal tax (T3)

K_2 = $[(0.15 \times (0.0495 \times ((S_1 \times PI) + B_1 - \$3,500.00){*}, \text{maximum } \$3,039.30)) +$
$(0.15 \times (0.0158 \times ((S_1 \times IE) + B_1), \text{maximum } \$952.74))]$

* If the result is negative, enter $0.

Only for employees in Quebec:

K_2Q = $[(0.15 \times (0.0540 \times ((S_1 \times PI) + B_1 - \$3,500.00){*}, \text{maximum } \$3,315.60)) +$
$(0.15 \times (0.0120 \times ((S_1 \times IE) + B_1), \text{maximum } \$723.60)) + (0.15 \times (0.00494 \times((S_1 \times IE) + B_1), \text{maximum } \$434.72))]$

* If the result is negative, enter $0.

Where:

PI = Pensionable income for the pay period, or the gross income plus any taxable benefits for the pay period, plus PI_{YTD}

IE = Insurable earnings for the pay period including insurable taxable benefits for the pay period, plus IE_{YTD}

The above has to follow the rules in Chapter 6 – "Canada Pension Plan (CPP)" and Chapter 7 – "Employment Insurance (EI)" of this publication and the instructions contained in Guide T4001, Employers' Guide – Payroll Deductions and Remittances.

Formulas to calculate provincial and territorial tax payable (T2)

K_2P = $[(\text{Lowest provincial or territorial tax rate} \times (0.0495 \times ((S_1 \times PI) + B_1 - \$3,500.00){*}, \text{maximum } \$3,039.30)) + (\text{lowest provincial or territorial tax rate} \times (0.0158 \times ((S_1 \times IE) + B_1), \text{maximum } \$952.74))]$

* If the result is negative, enter $0.

Replace the lowest provincial or territorial tax rate with the appropriate rate for the province or territory that applies to the employee or pensioner.

F_5A = $F_5{*} \times ((PI - B)/PI)$

*When in the province of Quebec, replace F5 with F5Q.

F_5B = $F_5{*} \times (B/PI)$

*When in the province of Quebec, replace F5 with F5Q.

TB = Estimated federal and provincial or territorial tax deduction on a non-periodic payment for the pay period

= Step 1 minus Step 2 below (if negative, TB = $0)

Step 1

Projected annual taxable income including B1 and B

= $[(S_1 \times (I - F - F_2 - F_5A - U_1)) - HD - F_1] + (B_1 - F_4 - F_5B_{YTD}) + (B - F_3 - F_5B)$

Step 2

Projected annual taxable income including B1, but not B

= $[(S_1 \times (I - F - F_2 - F_5A - U_1)) - HD - F_1] + (B_1 - F_4 - F_5B_{YTD})$

Chapter 6 – Canada Pension Plan (CPP)

For the following formulas, round the resulting amount to the nearest $0.01.

Note:
This chapter also outlines the Quebec Pension Plan (QPP) formulas. In addition, the term "location outside Quebec" refers to a province or territory outside Quebec.

To determine CPP contributions for employees receiving salary or wages

C   =   The lesser of:
    (i) $3,499.80* × (PM/12) – D*; and
    (ii)   0.0570* × [PI – ($3,500.00 / P)]
        If the result is negative, C = $0.
    *   For employees employed in Quebec
        use the QPP max contribution amount of $3,776.10 instead of $3,499.80;
        use DQ instead of D; and,
        use the QPP contribution rate of 0.0615 instead of 0.0570.

To determine CPP contributions – only for employees paid by commission

C   =   The lesser of:
    (i) $3,499.80* × (PM/12) – D*; and
    (ii)   0.0570* × [G – ($3,500.00 × N / 365, minimum $67.30)]
        If the result is negative, C = $0.
    *   For employees employed in Quebec
        use the QPP max contribution amount of $3,776.10 instead of $3,499.80;
        use DQ instead of D; and,
        use the QPP contribution rate of 0.0615 instead of 0.0570.

To determine CPP contributions for employees who were transferred by their employer from Quebec to a location outside Quebec during the year receiving salary or wages

C   =   The lesser of:
    (i) $3,499.80 × (PM/12) – [(DQ × (0.0570/0.0615)*) + D]; and
    (ii)   0.0570 × [PI – ($3,500.00 / P)]
        If the result is negative, C = $0.
    *   No rounding required for this factor.

To determine CPP contributions for employees who were transferred by their employer from Quebec to a location outside Quebec during the year – only for employees paid by commission

C   =   The lesser of:
    (i) $3,499.80 × (PM/12) – [(DQ × (0.0570/0.0615)*) + D]; and
    (ii)   0.0570 × [G – ($3,500.00 × N / 365, minimum $67.30)]
        If the result is negative, C = $0.
    *   No rounding required for this factor.

To determine QPP contributions for employees who were transferred by their employer to Quebec from a location outside Quebec during the year receiving salary or wages

C   =   The lesser of:
    (i) $3,776.10 × (PM/12) – [(D × (0.0615/0.0570)*) + DQ]; and
    (ii)   0.0615 × [PI – ($3,500.00 / P)]
        If the result is negative, C = $0.
    *   No rounding required for this factor.

To determine QPP contributions for employees who were transferred by their employer to Quebec from a location outside Quebec during the year – only for employees paid by commission

C = The lesser of:
    (i) $3,776.10 \times (PM/12) - [(D \times (0.0615/0.0570)^*) + DQ]$; and
    (ii) $0.0615 \times [G - (\$3,500.00 \times N / 365, \text{minimum } \$67.30)]$
         If the result is negative, C = $0.
    *   No rounding required for this factor.

Chapter 7 – Employment Insurance (EI)

As the formula to calculate the employment insurance premiums and the explanatory variables have not changed, they have not been reproduced.

Chapter 8 – Rates and amounts

This chapter only includes the tables to be impacted or added due to the Income Tax Regulation Amendment. The 2022 rates and maximums are used for illustrative purposes only.

Table 8.3 Canada Pension Plan / Quebec Pension Plan 2022 Contribution Rates and Amounts

CPP/QPP	Year's Maximum Pensionable Earnings (YMPE)	Basic Exemption	Year's Maximum Contributory Earnings (YMCE)	Employee and Employer Contribution Rate	Maximum Employee and Employer Contribution*	Year's Maximum Pensionable Earnings (YMPE) Before Rounding
CPP (Canada except QC)	64,900.00	3,500.00	61,400.00	0.0570	3,499.80	64,976.96
QPP (QC)	64,900.00	3,500.00	61,400.00	0.0615	3,776.10	64,976.96

* All self-employed workers pay both the employer and employee portions of CPP contributions.

Table 8.4 Canada Pension Plan / Quebec Pension Plan 2022 Additional Contribution Rates and Amounts

CPP/QPP	Year's Maximum Pensionable Earnings (YMPE)	First Additional Employee and Employer Contribution Rate	Maximum First Additional Employee and Employer Contribution
CPP (Canada except QC)	64,900.00	0.0075	460.50
QPP (QC)	64,900.00	0.0075	460.50

Appendix 2: Upcoming Guidance for T4127 January 2024 Edition

This Appendix only includes the information impacted or added due to the CPP Regulation Amendment.

Chapter 1 – General Information

As the general information has not changed, this section has not been reproduced.

Chapter 2 – Personal Tax Credit Returns (Form TD1)

As the formula to calculate the personal tax credits return and the explanatory variables have not changed, they have not been reproduced.

Chapter 3 – Glossary

The factors in the following table only include the new factors to be added due to the CPP Regulation Amendment.

Table 3.1 Glossary

Factor	Meaning (for complete details, see the formulas)
C2	Canada (or Quebec) Pension Plan second additional contributions for the pay period
D2	Employee's year-to-date (before the pay period) Canada Pension Plan second additional contribution with the employer (cannot be more than the annual maximum)
D2Q	Employee's year-to-date (before the pay period) Quebec Pension Plan second additional contribution with the employer (cannot be more than the annual maximum)
F5	Deductions for Canada Pension Plan additional contributions for the pay period
F5Q	Deductions for Quebec Pension Plan additional contributions for the pay period
F5A	Deductions for Canada (or Quebec) Pension Plan additional contributions for the pay period deducted from the periodic income, if a non-periodic payment exists
F5B	Deductions for Canada (or Quebec) Pension Plan additional contributions for the pay period deducted from the non-periodic payment
K2R	Canada Pension Plan contributions and employment insurance premiums tax credits for the year (the lowest federal tax rate is used to calculate this credit), for employees that are transferred from Quebec to a location outside Quebec. The term "location outside Quebec" refers to a province or territory outside Quebec
K2RQ	Quebec Pension Plan contributions, employment insurance premiums, and Quebec Parental Insurance Plan premiums federal tax credits for the year (the lowest federal tax rate is used to calculate this credit), for employees that are transferred to Quebec from a location outside Quebec. The term "location outside Quebec" refers to a province or territory outside Quebec
PM	Pensionable Months (used in the proration of maximum contribution and Year's Maximum Pensionable Earnings)
YAMPE	Year's Additional Maximum Pensionable Earnings
YMPE	Year's Maximum Pensionable Earnings
W	The greater of year-to-date (before the pay period) pensionable earnings (PI_{YTD} or G_{YTD}) and employee's Year's Maximum Pensionable Earnings (YMPE). This is used to calculate Factor C2

Chapter 4 – Option 1 – Tax Formulas

This chapter only includes the formulas to be impacted or added due to the CPP Regulation Amendment. The 2022 rates and maximums are used for illustrative purposes only.

Step 1 – Formula to calculate annual taxable income (A)

A = Annual taxable income

= $[P \times (I - F - F2 - F5^* - U1)] - HD - F1$

If the result is negative, $T = L$.

* When in the province of Quebec, replace F5 with F5Q.

Only for employees paid by commission:

A = $I1 - F^* - F2^* - F5^{**} - U1^* - HD - F1 - E$

If the result is negative, $T = L$.

* Estimated deduction amounts for the year. For registered retirement savings plan (RRSP) contributions included in F, you will need to find out from your employee paid by commission the estimated or expected annual deduction. We recommend that you caution employees not to exceed their RRSP contribution limit for the year.

** When in the province of Quebec, replace F5 with F5Q.

$F5$ = $C \times (0.0075/0.0570) + C2$

       Only for employees in Quebec

       $F5Q$ = $C \times (0.0075/0.0615) + C2$

Only for employees paid by commission:

$F5^*$ = $(0.0075 \times (I1 - \$3,500.00)^{**}, \text{maximum } \$460.50 \times (PM/12)) + (0.04 \times (I1 - (\$64,900.00 \times (PM/12)))^{**}, \text{maximum } \$180.00 \times (PM/12))$

* Estimated annual amount

** If the resulting amount is negative, enter \$0.

       Only for employees in Quebec

       $F5Q^*$ = $(0.0075 \times (I1 - \$3,500.00)^{**}, \text{maximum } \$460.50 \times (PM/12)) + (0.04 \times (I1 - (\$64,900.00 \times (PM/12)))^{**}, \text{maximum } \$180.00 \times (PM/12))$

       * Estimated annual amount

       ** If the resulting amount is negative, enter \$0.

Step 2 – Formula to calculate basic federal tax (T3)

$T3$ = Annual basic federal tax

= $(R \times A) - K - K1 - K2^* - K3 - K4$

If the result is negative, $T3 = \$0$.

* For employees being transferred from Quebec to a location outside Quebec, replace K2 with K2R.

       Only for employees in Quebec:

       $(R \times A) - K - K1 - K2Q^* - K3 - K4$

       If the result is negative, $T3 = \$0$.

       * For employees being transferred to Quebec from a location outside Quebec, replace K2Q with K2RQ.

       R and K are based on 2022 index values for A see the Rates (R, V), income thresholds (A), and constants (K, KP) for 2022 Table 8.1 in Chapter 8.

$K2$ = $[(0.15 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.15 \times (P \times EI, \text{maximum } \$952.74))]^*$

$K2R$ = $[(0.15 \times (P \times C \times (0.0495/0.0570), \text{maximum } (\$3,039.30 - (DQ \times (0.0495/0.0615)))) + (DQ \times (0.0540/0.0615))) + (0.15 \times (P \times EI, \text{maximum } \$952.74))]^*$

       Only for employees in Quebec:

       $K2Q$ = Quebec Pension Plan contributions, employment insurance premiums, and Quebec Parental Insurance Plan premiums federal tax credits for the year

       = $[(0.15 \times (P \times C \times (0.0540/0.0615), \text{maximum } \$3,315.60)) + (0.15 \times (P \times EI, \text{maximum } \$723.60)) + (0.15 \times (P \times IE \times 0.00494, \text{maximum } \$434.72))]^*$

       $K2RQ$ = $[(0.15 \times (P \times C \times (0.0540/0.0615), \text{maximum } (\$3,315.60 - (D \times (0.0540/0.0570)))) + (D \times (0.0495/0.0570))) + (0.15 \times (P \times EI, \text{maximum } \$723.60)) + (0.15 \times (P \times IE \times 0.00494, \text{maximum } \$434.72))]^*$

* In all cases, once the employee contributions or premiums have reached annual maximum for CPP, EI or QPIP, for the rest of the pay periods in the year, $(P \times C \times (\text{base rate}/(\text{base rate} + \text{first additional rate})))$, $(P \times EI)$, or $(P \times IE \times 0.00494)$ (as applicable) is replaced by the employee's maximum annual contribution or premium. This modification ensures that the employee will get the maximum CPP, EI, and QPIP tax credit for the rest of the pay periods in the year.

If you want to use the year-to-date method to calculate CPP, EI, and QPIP federal tax credits:

$(P \times C \times (0.0495/0.0570))$ is changed to the lesser of:
(i) $3,039.30;
(ii) $(D \times (0.0495/0.0570)) + (PR \times C \times (0.0495/0.0570))$

$(P \times EI)$ is changed to the lesser of:
(i) $952.74; and
(ii) $D_1 + (PR \times EI)$

Only for employees in Quebec:
$(P \times C \times (0.0540/0.0615))$ is changed to the lesser of:
(i) $3,315.60; and
(ii) $(DQ \times (0.0540/0.0615)) + (PR \times C \times (0.0540/0.0615))$

$(P \times EI)$ is changed to the lesser of:
(i) $723.60; and
(ii) $D_1 + (PR \times EI)$

$(P \times IE \times 0.00494)$ is changed to the lesser of:
(i) $434.72; and
(ii) $QPIP_{YTD} + (PR \times IE \times 0.00494)$

Only for employees paid by commission:

K2	=	$[(0.15 \times (0.0495 \times (I_1 - \$3,500.00)^*, \text{maximum } \$3,039.30)) + (0.15 \times (0.0158 \times I_1, \text{maximum } \$952.74))]$ * If the resulting amount is negative, enter $0.
K2R	=	$[(0.15 \times (0.0495 \times (I_1 - \$3,500.00)^*, \text{maximum } (\$3,039.30 - (DQ \times (0.0495/0.0615)))) + (DQ \times (0.0540/0.0615))) + (0.15 \times (0.0158 \times I_1, \text{maximum } \$952.74))]$ * If the resulting amount is negative, enter $0.

Only for employees in Quebec:

K2Q = $[(0.15 \times (0.0615 \times (I_1 - \$3,500.00)^*, \text{maximum } \$3,315.60)) + (0.15 \times (0.0120 \times I_1, \text{maximum } \$723.60)) + (0.15 \times (0.00494 \times I_1, \text{maximum } \$434.72))]$
* If the resulting amount is negative, enter $0.

K2RQ = $[(0.15 \times (0.0615 \times (I_1 - \$3,500.00)^*, \text{maximum } \$3,315.60 - (D \times (0.0540/0.0570)))) + (D \times (0.0495/0.0570))) + (0.15 \times (0.0120 \times I_1, \text{maximum } \$723.60)) + (0.15 \times (0.00494 \times I_1, \text{maximum } \$434.72))]$
* If the resulting amount is negative, enter $0.

Note:

The K2 formulas are subject to the rules in Chapter 6 – "Canada Pension Plan (CPP)" and Chapter 7 – "Employment Insurance (EI)" of this document and the instructions in Guide T4001 Employers' Guide – Payroll Deductions and Remittances.

Step 3 – Formula to calculate the annual federal tax payable (T_1)

Tax calculation formulas for bonuses, retroactive pay increases, and other non-periodic payments

F5A $\quad=\quad$ F5* × ((PI – B)/PI)
$\qquad\qquad$ * When in the province of Quebec, replace F5 with F5Q.

F5B $\quad=\quad$ F5*× (B/PI)
$\qquad\qquad$ * When in the province of Quebec, replace F5 with F5Q.

TB $\quad=\quad$ The difference between:
$\qquad\qquad$ (i) the annual tax amount ($T_1 + T_2$) based on the instructions in Step 1 below; and
$\qquad\qquad$ (ii) the annual tax amount ($T_1 + T_2$) based on the instructions in Step 2 below

(1) Regular bonus calculation

Step 1
Determine the annual tax ($T_1 + T_2$) based on the annual taxable income (factor A) with the non-periodic payment payable now. The formula to calculate factor A is as follows:

A $\quad=\quad$ $([P \times (I - F - F2 - F5A - U1)] - HD - F1)^* + (B - F3 - F5B)^{**} + (B1 - F4 - F5B_{YTD})^{**}$
$\qquad\qquad$ * If the result is negative, enter $0.
$\qquad\qquad$ ** Result cannot be negative, and result cannot be negative after deducting CPP and EI.

$\qquad\qquad$ **Note:**
$\qquad\qquad$ If the result above is less than or equal to **$5,000**, deduct 15% tax (10% in Quebec) from the bonus or retroactive pay increase.

Step 2
Determine the annual tax ($T_1 + T_2$) based on the annual taxable income (factor A) without the non-periodic payment payable now. The formula to calculate factor A is as follows:

A $\quad=\quad$ $([P \times (I - F - F2 - F5A - U1)] - HD - F1)^* + (B1 - F4 - F5B_{YTD})^{**}$
$\qquad\qquad$ * If the result is negative, enter $0.
$\qquad\qquad$ ** Result cannot be negative, and result cannot be negative after deducting CPP and EI.
If there is no current I, use the most recent I.

(2) Year-to-date bonus calculation (optional)

Step 1
Determine the annual tax ($T_1 + T_2$) based on the annual taxable income (factor A) with the non-periodic payment payable now. The annual taxable income (factor A) is based on a year-to-date concept, plus the estimated income for the rest of the pay periods in the year. YTD means year-to-date (before this pay period). The formula to calculate factor A is as follows:

A $\quad=\quad$ $[(I_{YTD} - F_{YTD} - F2_{YTD} - F5A_{YTD} - U1_{YTD}) + (PR \times (I - F - F2 - F5A - U1)) - F1 - HD]^* + (B - F3 - F5B)^{**} +$
$\qquad\qquad$ $(B1 - F4 - F5B_{YTD})^{**}$
$\qquad\qquad$ * If the result is negative, enter $0.
$\qquad\qquad$ ** Result cannot be negative, and result cannot be negative after deducting CPP and EI.

$\qquad\qquad$ **Note:**
$\qquad\qquad$ If the result above is less than or equal to **$5,000**, deduct 15% tax (10% in Quebec) from the bonus or retroactive pay increase.

Step 2
A $\quad=\quad$ $[(I_{YTD} - F_{YTD} - F2_{YTD} - F5A_{YTD} - U1_{YTD}) + (PR \times (I - F - F2 - F5A - U1)) - F1 - HD]^* +$
$\qquad\qquad$ $(B1 - F4 - F5B_{YTD})^{**}$
$\qquad\qquad$ * If the result is negative, enter $0.
$\qquad\qquad$ ** Result cannot be negative, and result cannot be negative after deducting CPP and EI.
If there is no current I, use the most recent I.

Example for year-to-date bonus calculation method

In this example, an employee got a retroactive pay increase from $1,000 to $1,100 per week that applies to 25 weeks. Therefore, a retroactive pay increase payment of $2,500 is payable now. $1,000 will be directed to the employee's RRSP. Thirty pay periods have passed and 22 pay periods remain in the year. Year-to-date income is $30,000, year-to-date RPP is $1,350, year to date CPP deductions against periodic income are $210 and year-to-date union dues are $150. The current income is $1,100 with RPP withheld of $45, CPP deductions against periodic income of $7 and union dues of $5. The employee received a previous non-pensionable bonus of $1,000 with only tax withheld from it.

$F5A$	=	$7 \times (($3,600 - $2,500)/ $3,600)$
	=	$2.14

$F5B$	=	$7 \times ($2,500/ $3,600)$
	=	$4.86

Step 1

A	=	Annual taxable income with the non-periodic payment payable now
	=	$[(I_{YTD} - F_{YTD} - F2_{YTD} - F5A_{YTD} - U1_{YTD}) + (PR \times (I - F - F2 - F5A - U1)) - F1 - HD]^* + (B - F3 - F5B)^{**} + (B1 - F4 - F5B_{YTD})^{**}$
	=	$[($30,000 - $1,350 - $0 - $210 - $150) + (22 \times ($1,100 - $45 - $0 - $2.14 - $5)) - $0 - $0] + ($2,500 - $1,000 - $4.86) + ($1,000 - $0 - $0)$
	=	$28,290.00 + $23,052.92 + $1,495.14 + $1,000.00
	=	$53,838.06

Step 2

A	=	Annual taxable income without the non-periodic payment payable now
	=	$[(I_{YTD} - F_{YTD} - F2_{YTD} - F5A_{YTD} - U1_{YTD}) + (PR \times (I - F - F2 - F5A - U1)) - F1 - HD]^* + (B1 - F4 - F5B_{YTD})^{**}$
	=	$[($30,000 - $1,350 - $0 - $210 - $150) + (22 \times ($1,100 - $45 - $0 - $2.14 - $5)) - $0 - $0] + ($1,000 - $0 - $0)$
	=	$28,290.00 + $23,052.92 + $1,000.00
	=	$52,342.92

After calculating the annual taxable income, factor A, in steps 1 and 2, calculate the factors $T1$ and $T2$ in the same way as for regular remuneration.

> **Note:**
> The TB formula above can be used to calculate the tax deductions on non-periodic payments such as accumulated overtime not paid in the same pay period earned, paid vacation not taken by the employee, and bonuses.

Step 4 – Formula to calculate annual basic provincial or territorial tax (T4)

As the formula to calculate the annual basic provincial or territorial tax and the explanatory variables have not changed, they have not been reproduced.

Step 5 – Formulas to calculate the annual provincial or territorial tax deduction (T$_2$)

Alberta

K_2P = $[(0.10 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.10 \times (P \times EI, \text{maximum } \$952.74))]$

British Columbia

K_2P = $[(0.0506 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.0506 \times (P \times EI, \text{maximum } \$952.74))]$

Manitoba

K_2P = $[(0.108 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.108 \times (P \times EI, \text{maximum } \$952.74))]$

New Brunswick

K_2P = $[(0.094 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.094 \times (P \times EI, \text{maximum } \$952.74))]$

Newfoundland and Labrador

K_2P = $[(0.087 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.087 \times (P \times EI, \text{maximum } \$952.74))]$

Northwest Territories

K_2P = $[(0.059 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.059 \times (P \times EI, \text{maximum } \$952.74))]$

Nova Scotia

K_2P = $[(0.0879 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.0879 \times (P \times EI, \text{maximum } \$952.74))]$

Nunavut

K_2P = $[(0.040 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.040 \times (P \times EI, \text{maximum } \$952.74))]$

Ontario

K_2P = $[(0.0505 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.0505 \times (P \times EI, \text{maximum } \$952.74))]$

Prince Edward Island

K_2P = $[(0.098 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.098 \times (P \times EI, \text{maximum } \$952.74))]$

Saskatchewan

K_2P = $[(0.105 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.105 \times (P \times EI, \text{maximum } \$952.74))]$

Yukon

K_2P = $[(0.064 \times (P \times C \times (0.0495/0.0570), \text{maximum } \$3,039.30)) + (0.064 \times (P \times EI, \text{maximum } \$952.74))]$

Step 6 – Formulas to calculate the estimated federal and provincial or territorial tax deductions (T) for the pay period

As the formula to calculate the estimated federal and provincial or territorial tax deductions for the pay period and the explanatory variables have not changed, they have not been reproduced.

Chapter 5 – Option 2 – Tax Formulas based on cumulative averaging

Formula to calculate annual taxable income (A)

A = Projected annual taxable income

= $[S_1 \times (I - F - F_2 - F_5^* - U_1)] + B_1 - HD - F_1$

If the result is negative, $A = \$0$.

* When in the province of Quebec, replace F5 with F5Q

F_5 = $C \times (0.0075/0.0570) + C_2$

Only for employees in Quebec

F_5Q = $C \times (0.0075/0.0615) + C_2$

Formula to calculate basic federal tax (T3)

K_2 = $[(0.15 \times (0.0495 \times ((S_1 \times PI) + B_1 - \$3,500.00)^*, \text{maximum } \$3,039.30)) +$
$(0.15 \times (0.0158 \times ((S_1 \times IE) + B_1), \text{maximum } \$952.74))]$

* If the result is negative, enter $0.

Only for employees in Quebec:

K_2Q = $[(0.15 \times (0.0540 \times ((S_1 \times PI) + B_1 - \$3,500.00)^*, \text{maximum } \$3,315.60)) +$
$(0.15 \times (0.0120 \times ((S_1 \times IE) + B_1), \text{maximum } \$723.60)) + (0.15 \times (0.00494 \times ((S_1 \times IE) + B_1), \text{maximum } \$434.72))]$

* If the result is negative, enter $0.

Where:

PI = Pensionable income for the pay period, or the gross income plus any taxable benefits for the pay period, plus PI_{YTD}

IE = Insurable earnings for the pay period including insurable taxable benefits for the pay period, plus IE_{YTD}

The above has to follow the rules in Chapter 6 – "Canada Pension Plan (CPP)" and Chapter 7 – "Employment Insurance (EI)" of this publication and the instructions contained in Guide T4001, Employers' Guide – Payroll Deductions and Remittances.

Formulas to calculate provincial and territorial tax payable (T2)

K_2P = $[(\text{Lowest provincial or territorial tax rate} \times (0.0495 \times ((S_1 \times PI) + B_1 - \$3,500.00)^*, \text{maximum } \$3,039.30)) +$
$(\text{lowest provincial or territorial tax rate} \times (0.0158 \times ((S_1 \times IE) + B_1), \text{maximum } \$952.74))]$

* If the result is negative, enter $0.

Replace the lowest provincial or territorial tax rate with the appropriate rate for the province or territory that applies to the employee or pensioner.

F_5A = $F_5^* \times ((PI - B)/PI)$

* When in the province of Quebec, replace F5 with F5Q.

F_5B = $F_5^* \times (B/PI)$

* When in the province of Quebec, replace F5 with F5Q.

TB = Estimated federal and provincial or territorial tax deduction on a non-periodic payment for the pay period

= Step 1 minus Step 2 below (if negative, TB = $0)

Step 1

Projected annual taxable income including B_1 and B

= $[(S_1 \times (I - F - F_2 - F_5A - U_1)) - HD - F_1] + (B_1 - F_4 - F_5B_{YTD}) + (B - F_3 - F_5B)$

Step 2

Projected annual taxable income including B_1, but not B

= $[(S_1 \times (I - F - F_2 - F_5A - U_1)) - HD - F_1] + (B_1 - F_4 - F_5B_{YTD})$

Chapter 6 – Canada Pension Plan (CPP)

For the following formulas, round the resulting amount to the nearest $0.01.

Note:

This chapter also outlines the Quebec Pension Plan (QPP) formulas. In addition, the term "location outside Quebec" refers to a province or territory outside Quebec.

To determine CPP contributions for employees receiving salary or wages

C = The lesser of:
    (i) $3,499.80* × (PM/12) – D*; and
    (ii) 0.0570* × [PI – ($3,500.00 / P)]
        If the result is negative, C = $0.
    * For employees employed in Quebec
      use the QPP max contribution amount of $3,776.10 instead of $3,499.80;
      use DQ instead of D; and
      use the QPP contribution rate of 0.0615 instead of 0.0570.

To determine CPP contributions – only for employees paid by commission

C = The lesser of:
    (i) $3,499.80* × (PM/12) – D*; and
    (ii) 0.0570* × [G – ($3,500.00 × N / 365, minimum $67.30)]
        If the result is negative, C = $0.
    * For employees employed in Quebec
      use the QPP max contribution amount of $3,776.10 instead of $3,499.80;
      use DQ instead of D; and
      use the QPP contribution rate of 0.0615 instead of 0.0570.

To determine CPP contributions for employees who were transferred by their employer from Quebec to a location outside Quebec during the year receiving salary or wages

C = The lesser of:
    (i) $3,499.80 × (PM/12) – [(DQ × (0.0570/0.0615)*) + D]; and
    (ii) 0.0570 × [PI – ($3,500.00 / P)]
        If the result is negative, C = $0.
    * No rounding required for this factor.

To determine CPP contributions for employees who were transferred by their employer from Quebec to a location outside Quebec during the year – only for employees paid by commission

C = The lesser of:
    (i) $3,499.80 × (PM/12) – [(DQ × (0.0570/0.0615)*) + D]; and
    (ii) 0.0570 × [G – ($3,500.00 × N / 365, minimum $67.30)]
        If the result is negative, C = $0.
    * No rounding required for this factor.

To determine QPP contributions for employees who were transferred by their employer to Quebec from a location outside Quebec during the year receiving salary or wages

C = The lesser of:
    (i) $3,776.10 × (PM/12) – [(D × (0.0615/0.0570)*) + DQ]; and
    (ii) 0.0615 × [PI – ($3,500.00 / P)]
        If the result is negative, C = $0.
    * No rounding required for this factor.

To determine QPP contributions for employees who were transferred by their employer to Quebec from a location outside Quebec during the year – only for employees paid by commission

C = The lesser of:

(i) $\$3{,}776.10 \times (PM/12) - [(D \times (0.0615/0.0570)^*) + DQ]$; and

(ii) $0.0615 \times [G - (\$3{,}500.00 \times N / 365, \text{ minimum } \$67.30)]$

If the result is negative, $C = \$0$.

* No rounding required for this factor.

To determine CPP second additional contributions for employees receiving salary or wages

C_2 = The lesser of:

(i) $\$180.00 \times (PM/12) - D_2^*$; and

(ii) $(PI_{YTD} + PI - W) \times 0.04$

W = The greater of:

(i) PI_{YTD}; and

(ii) $YMPE \times (PM/12)$

If the result is negative, $C_2 = \$0$.

* For employees employed in Quebec, use D2Q instead of D2

To determine CPP second additional contributions – only for employees paid by commission

C_2 = The lesser of:

(i) $\$180.00 \times (PM/12) - D_2^*$; and

(ii) $(G_{YTD} + G - W) \times 0.04$

W = The greater of:

(i) G_{YTD}; and

(ii) $YMPE \times (PM/12)$

If the result is negative, $C_2 = \$0$.

* For employees employed in Quebec, use D2Q instead of D2

To determine CPP second additional contributions for employees who were transferred by their employer from Quebec to a location outside Quebec during the year receiving salary or wages

C_2 = The lesser of:

(i) $\$180.00 \times (PM/12) - [(D2Q \times (0.04/0.04)) + D_2]$; and

(ii) $(PI_{YTD} + PI - W) \times 0.04$

W = The greater of:

(i) PI_{YTD}; and

(ii) $YMPE \times (PM/12)$

If the result is negative, $C_2 = \$0$.

To determine CPP second additional contributions for employees who were transferred by their employer from Quebec to a location outside Quebec during the year – only for employees paid by commission

C_2 = The lesser of:

(i) $\$180.00 \times (PM/12) - [(D2Q \times (0.04/0.04)) + D_2]$; and

(ii) $(G_{YTD} + G - W) \times 0.04$

W = The greater of:

(i) G_{YTD}; and

(ii) $YMPE \times (PM/12)$

If the result is negative, $C_2 = \$0$.

To determine QPP second additional contributions for employees who were transferred by their employer to Quebec from a location outside Quebec during the year receiving salary or wages

C_2 = The lesser of:
(i) $\$180.00 \times (PM/12) - [(D_2 \times (0.04/0.04)) + D_2Q]$; and
(ii) $(PI_{YTD} + PI - W) \times 0.04$

W = The greater of:
(i) PI_{YTD}; and
(ii) $YMPE \times (PM/12)$
If the result is negative, $C_2 = \$0$.

To determine QPP second additional contributions for employees who were transferred by their employer to Quebec from a location outside Quebec during the year– only for employees paid by commission

C_2 = The lesser of:
(i) $\$180.00 \times (PM/12) - [(D_2 \times (0.04/0.04)) + D_2Q]$; and
(ii) $(G_{YTD} + G - W) \times 0.04$

W = The greater of:
(i) G_{YTD}; and
(ii) $YMPE \times (PM/12)$
If the result is negative, $C_2 = \$0$.

Chapter 7 – Employment Insurance (EI)

As the formula to calculate the employment insurance premiums and the explanatory variables have not changed, they have not been reproduced.

Chapter 8 – Rates and amounts

This chapter only includes the tables to be impacted or added due to the CPP Regulation Amendment. The 2022 rates and maximums are used for illustrative purposes only.

Table 8.3 Canada Pension Plan / Quebec Pension Plan 2022 Contribution Rates and Amounts

CPP/QPP	Year's Maximum Pensionable Earnings (YMPE)	Basic Exemption	Year's Maximum Contributory Earnings (YMCE)	Employee and Employer Contribution Rate	Maximum Employee and Employer Contribution*	Year's Maximum Pensionable Earnings (YMPE) Before Rounding
CPP (Canada except QC)	64,900.00	3,500.00	61,400.00	0.0570	3,499.80	64,976.96
QPP (QC)	64,900.00	3,500.00	61,400.00	0.0615	3,776.10	64,976.96

* All self-employed workers pay both the employer and employee portions of CPP contributions.

Table 8.4 Canada Pension Plan / Quebec Pension Plan 2022 Additional Contribution Rates and Amounts

CPP/QPP	Year's Maximum Pensionable Earnings (YMPE)	Year's Additional Maximum Pensionable Earnings (YAMPE)	First Additional Employee and Employer Contribution Rate	Maximum First Additional Employee and Employer Contribution	Second Additional Employee and Employer Contribution Rate	Maximum Second Additional Employee and Employer Contribution*	Year's Additional Maximum Pensionable Earnings (YAMPE) Before Rounding
CPP (Canada except QC)	64,900.00	69,400.00	0.0075	460.50	0.04	180.00	69,443.00
QPP (QC)	64,900.00	69,400.00	0.0075	460.50	0.04	180.00	69,443.00

* All self-employed workers pay both the employer and employee portions of CPP contributions.