



Canada Revenue
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Payroll Deductions Formulas

112th Edition
Effective July 1, 2020

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.

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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) to verify your calculations. 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.

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.

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La version française de cette publication est intitulée Formules pour le calcul des retenues sur la paie – 112^e édition.

What's new for July 1, 2020?

This guide reflects some income tax changes recently announced which, if enacted as proposed, would be effective July 1, 2020. At the time of publishing, these proposed changes may not have been 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 2020.

Federal Changes

There are no federal changes in this version of the guide as at the time of publishing a federal 2020 budget had not been released. Should a federal 2020 budget be released later in the year with changes to payroll deductions we may release an updated version of this guide.

Provincial and Territorial Changes

You will find below the provincial and territorial tax changes effective January 1, 2020. The current and previous figures for the most commonly used rates, amounts, and claim codes can be found in Chapter 4.

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

British Columbia

New tax bracket

- For 2020 and subsequent years, a new top marginal rate of 20.5% is introduced for British Columbia tax filers with incomes over \$220,000. The new bracket will be indexed starting in 2021.
- This new tax bracket is effective January 1, 2020, since employees have been taxed at different rates for the first six months of the year, a prorated tax rate will apply for the remaining six months.
- The prorated rate for July 1, 2020 to December 31, 2020 will be 24.2% for income greater than \$220,000.

Given the current situation with COVID-19 pandemic we understand that employers are facing unique challenges. For the remainder of 2020 the CRA will expect this change to be implemented on a best efforts basis.

Yukon

Yukon Basic Personal Amount

The Yukon Basic Personal Amount (**BPAYT**) has been changed to mirror the Federal Basic Personal Amount (**BPAF**). A new factor BPAYT has been created and added to the Chapter 2 — Glossary.

To adjust for the first six months, a prorated calculation will apply for the remaining six months, commencing with the first payroll in July.

Starting July 1, 2020 the formula below will apply for **BPAYT**. The prorated amounts in the formula are \$14,160 and the factor (\$1,862 / \$63,895).

The prorated formula is :

Where $NI^* \leq \$150,473$, **BPAYT** = \$14,160

Where $\$150,473 < NI^* < \$214,368$, **BPAYT**^{***} = $\$14,160 - (NI^* - \$150,473) \times (\$1,862 / \$63,895)$ ^{***}

Where $NI^* \geq \$214,368$, **BPAYT** = \$12,298

* Variable NI represents Net Income = A + HD

** If the BPAYT has three or more digits after the decimal point, increase the second digit after the decimal point by one if the third digit is five or more, and drop the third digit. If the third digit after the decimal point is less than five, drop the third digit

*** Note that there is no rounding on this division

The Yukon Claim Code Chart and corresponding CSV file has been removed as the BPAYT will be unique to each employee's annual income.

The Yukon Claim Code chart income range is \$2,350 between all claim codes once the BPAYT has been calculated. For example, if the Yukon BPAYT is \$12,298 for a particular employee, then the claim code 2 range would be \$12,298 – \$14,648 and so forth up to claim code 10.

Given the current situation with COVID-19 pandemic we understand that employers are facing unique challenges. For the remainder of 2020 the CRA will expect this change to be implemented on a best efforts basis.

Glossary definition

The glossary definition of BPAYT has been updated*

Chapter 2 – Glossary

Table 2.1 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 Canada Pension Plan contribution with the employer (cannot be more than the annual maximum)
DQ	Employee's year-to-date Quebec Pension Plan contribution with the employer (cannot be more than the annual maximum)
D1	Employee's year-to-date 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 child care expenses and support payments, requested by an employee or pensioner and authorized by a tax services office or tax centre
F2	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
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

Factor	Meaning (for complete details, see the formulas)
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 include 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 tax credits (such as medical expenses and charitable donations) authorized by a tax services office or tax centre
K3P	Other provincial or territorial tax credits (such as medical expenses and charitable donations) authorized by a tax services office or tax centre
K4	Canada employment amount credit (the lowest federal tax rate is used to calculate this credit)
K4P	Provincial or territorial Canada employment amount credit (only applies to Yukon)
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 New Brunswick, Newfoundland and Labrador, Nova Scotia, Saskatchewan, British Columbia, and Yukon)
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 B year-to-date
N	The number of days since the last commission payment. The minimum basic exemption amount of \$67.30 is included in the formula in line with CPP legislation
NI	Net income for the year
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)
S1	Annualizing factor
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

Factor	Meaning (for complete details, see the formulas)
TC	"Total claim amount" reported on federal Form TD1. If Form TD1 is not filed by the employee or pensioner, TC is the basic personal amount, 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
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 or territorial 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 or territorial tax reduction based on applicable amounts reported on the provincial or territorial Form TD1
YTD	Year-to-date

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

Chapter 3 – Option 1 – Tax formula

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

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.

Formula to calculate the annual federal tax payable (T₁)

As the formula to calculate the annual federal tax payable has not changed, this has not been reproduced.

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

As the formula to calculate the annual basic provincial or territorial tax has not changed, this has not been reproduced.

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

As Yukon is the only province or territory to have changes, we are only reproducing their calculations.

Yukon

Effective July 1, 2020 the calculation is;

BPAYT = Where $NI^* \leq \$150,473$, **BPAYT** = \$14,160

Where $\$150,473 < NI^* < \$214,368$, **BPAYT***** = $\$14,160 - (NI^* - \$150,473) \times (\$1,862 / \$63,895)$ ***

Where $NI^* \geq \$214,368$, **BPAYT** = \$12,298

* Variable NI represents Net Income = A + HD

** If the **BPAYT** has three or more digits after the decimal point, increase the second digit after the decimal point by one if the third digit is five or more, and drop the third digit. If the third digit after the decimal point is less than five, drop the third digit.

*** Note that there is no rounding on this division.

Given the current situation with COVID-19 pandemic we understand that employers are facing unique challenges. For the remainder of 2020 the CRA will expect this change to be implemented on a best efforts basis.

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

Where:

T4 = $(V \times A) - KP - K1P - K2P - K3P - K4P$

V and KP are based on 2020 index values for A see the **Rates (R, V), income thresholds (A), and constants (K, KP) for 2020** Table 4.1 in Chapter 4.

K1P = $0.064 \times TCP$

K2P = $[(0.064 \times (P \times C, \text{maximum } \$2,898.00)) + (0.064 \times (P \times EI, \text{maximum } \$856.36))]$

K4P = The lesser of:

(i) $0.064 \times A^*$; and

(ii) $0.064 \times CEA$

CEA is an indexed amount. See Table 4.2 **Other rates and amounts** in Chapter 4.

* For the Canada employment amount, A is the annual gross income from office or employment before deductions. Only include the amounts from office or employment, this is the same amount you normally report in box 14 of the T4 slip (s).

V1 = \$0

S = \$0

LCP = The lesser of:

(i) \$1,250; and

(ii) 25% of the amount deducted or withheld during the year for the acquisition by the employee of approved shares of the capital stock of a prescribed labour-sponsored venture capital corporation

Chapter 4 – Rates and amounts

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

Table 4.1 Rates (R, V), income thresholds (A), and constants (K, KP) for 2020

		1st	2nd	3rd	4th	5th	6th	7th
Federal	A	0	48,535	97,069	150,473	214,368		
	R	0.1500	0.2050	0.2600	0.2900	0.3300		
	K	0	2,669	8,008	12,522	21,097		
AB	A	0	131,220	157,464	209,952	314,928		
	V	0.1000	0.1200	0.1300	0.1400	0.1500		
	KP	0	2,624	4,199	6,299	9,448		
BC	A	0	41,725	83,451	95,812	116,344	157,748	220,000
	V	0.0506	0.0770	0.1050	0.1229	0.1470	0.1680	0.242*
	KP	0	1,102	3,438	5,153	7,957	11,270	27,550
MB	A	0	33,389	72,164				
	V	0.1080	0.1275	0.1740				
	KP	0	651	4,007				
NB	A	0	43,401	86,803	141,122	160,776		
	V	0.0968	0.1482	0.1652	0.1784	0.2030		
	KP	0	2,231	3,706	5,569	9,524		
NL	A	0	37,929	75,858	135,432	189,604		
	V	0.0870	0.1450	0.1580	0.1730	0.1830		
	KP	0	2,200	3,186	5,218	7,114		
NS	A	0	29,590	59,180	93,000	150,000		
	V	0.0879	0.1495	0.1667	0.1750	0.2100		
	KP	0	1,823	2,841	3,613	8,863		
NT	A	0	43,957	87,916	142,932			
	V	0.0590	0.0860	0.1220	0.1405			
	KP	0	1,187	4,352	6,996			
NU	A	0	46,277	92,555	150,473			
	V	0.0400	0.0700	0.0900	0.1150			
	KP	0	1,388	3,239	7,001			
ON	A	0	44,740	89,482	150,000	220,000		
	V	0.0505	0.0915	0.1116	0.1216	0.1316		
	KP	0	1,834	3,633	5,133	7,333		
PE	A	0	31,984	63,969				
	V	0.0980	0.1380	0.1670				
	KP	0	1,279	3,134				
SK	A	0	45,225	129,214				
	V	0.1050	0.1250	0.1450				
	KP	0	905	3,489				
YT	A	0	48,535	97,069	150,473	500,000		
	V	0.0640	0.0900	0.1090	0.1280	0.1500		
	KP	0	1,262	3,106	5,965	16,965		

* Prorated rate for the remainder of 2020. See “What’s new for July 1, 2020?” for more information.

Table 4.2 Other rates and amounts for 2020

	Basic amount	Index rate	LCP rate	LCP amount	CEA	S	T4 → V1	V1 rate	Abatement	Surtax
Federal	BPAF	0.019	0.150	750	1,245					
AB	19,369	–								
BC	10,949	0.025	0.150	2,000		476				
MB	9,838	0.022								
NB	10,459	0.019	0.200	2,000						
NL	9,498	0.009	0.200	2,000						
NS	BPANS	–	0.200	2,000						
NT	15,093	0.019								
NU	16,304	0.019								
ON	10,783	0.019				249	0	0.000		
							4,830	0.200		
							6,182	0.360		
PE	10,000	–					0	0.000		
							12,500	0.100		
QC									0.165	
SK	16,065	–	0.175	875						
YT	BPAYT	0.019	0.250	1,250	1,245					
Outside Canada										0.480

For information on 2020 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 2020 provincial or territorial personal amounts, see the respective form TD1AB, TD1BC, TD1MB, TD1NB, TD1NL, TD1NS, TD1NT, TD1NU, TD1ON, TD1PE, TD1QC, TD1SK, or TD1YT.

Table 4.3 British Columbia 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	0.00	10,949.00	10,949.00	554.02
2	10,949.01	13,413.00	12,181.00	616.36
3	13,413.01	15,877.00	14,645.00	741.04
4	15,877.01	18,341.00	17,109.00	865.72
5	18,341.01	20,805.00	19,573.00	990.39
6	20,805.01	23,269.00	22,037.00	1,115.07
7	23,269.01	25,733.00	24,501.00	1,239.75
8	25,733.01	28,197.00	26,965.00	1,364.43
9	28,197.01	30,661.00	29,429.00	1,489.11
10	30,661.01	33,125.00	31,893.00	1,613.79