Payroll Deductions Formulas for Computer Programs

102nd Edition
Effective October 1, 2015

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 special cases such as commission, pension income, 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 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 our website at **www.cra.gc.ca**.

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 **www.cra.gc.ca/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.

PDOC is available at **www.cra.gc.ca/pdoc**.

Payroll Deductions Tables

You can download Publication T4032, *Payroll Deductions Tables* and Publication T4008, *Payroll Deductions Supplementary Tables,* from our website at **www.cra.gc.ca/payroll**. You can also choose to print only the pages or information that you need.

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What's new for October 1, 2015?

This guide reflects some income tax changes recently announced which will be effective October 1, 2015. We recommend that you use the Payroll Deductions Online Calculator (PDOC), Publication T4032, *Payroll Deductions Tables*, or Publication T4008, *Payroll Deductions Supplementary Tables*, and the formulas in this guide for withholding, starting with your first payroll in October 2015.

Changes included in this edition

There are no changes to the federal tax rates, income thresholds, or personal amounts required for October 1, 2015. However, some provincial changes have been announced for October 1, 2015. As a result, we have not revised the entire guide, but we have provided this updated edition, which contains the provincial changes for Alberta.

For formulas and factors not included in this edition, see Guide T4127, *Payroll Deductions Formulas for Computer Programs – 100th Edition*, effective January 1, 2015.

Provincial and territorial tax changes

You will find below the provincial and territorial tax changes effective October 1, 2015.

Alberta

On June 18, 2015, changes were announced to the provincial tax rates and income thresholds. Effective for 2015 and subsequent tax years, four new tax brackets and rates will be introduced. Taxable income of $125,000 to $150,000 will be taxed at 10.5%. Taxable income of $150,000 to $200,000 will be taxed at 10.75%. Taxable income of $200,000 to $300,000 will be taxed at 11%. Taxable income over $300,000 will be taxed at 11.25%. Since employees in these income tax brackets have been taxed at a lower rate for the first nine months of this year, a prorated tax rate will be applied for the remaining three months commencing with the first payroll in October. The Option 2 tax rates will not be prorated. Effective October 1, 2015, the rates for Option 1 are as follows:

- 10% on taxable income less than or equal to $125,000;

- 12% on taxable income greater than $125,000, but less than or equal to $150,000;

- 13% on taxable income greater than $150,000, but less than or equal to $200,000;

- 14% on taxable income greater than $200,000, but less than or equal to $300,000;

- 15% on taxable income greater than $300,000.

For the provincial tax rates to apply for Option 2, starting October 1, 2015, see the Option 2 formulas beginning on page 7.

Chapter 1 – Claim codes

The Federal, provincial and territorial claim codes are not changed. Therefore we are not reproducing the charts in this edition.

Chapter 2 – Glossary

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

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)

Factor	Meaning (for complete details, see the formulas)
C	Canada (or Quebec) Pension Plan contributions for the pay period
D	Employee's year-to-date Canada 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), or a retirement compensation arrangement (RCA). For tax deduction purposes, employers can deduct amounts contributed to an RPP, RRSP, 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
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 22%, 26% and 29% 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 (or Quebec) 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, EI, or QPIP for the year with the employer, use the maximum CPP, EI, or QPIP 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, EI, or QPIP, 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 credit (the lowest federal tax rate is used to calculate this credit)
K4P	Provincial or territorial Canada employment credit (only applies to Yukon)

Factor	Meaning (for complete details, see the formulas)
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 Newfoundland and Labrador, Nova Scotia, Ontario, Manitoba, 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
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
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 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

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 annual basic provincial or territorial tax (T2)

As Alberta is the only province or territory to have provincial/territorial changes, we are only reproducing their calculations.

Alberta:

T_2 = $T_4 + V_1 - S - LCP$

If the result is negative, T_2 = $0.

Where:

T_4 = $(V \times A) - KP - K_1P - K_2P - K_3P$

Where V and KP are based on the value of A in the October 2015 Alberta tax rates and income thresholds - Option 1 table.

October 2015 Alberta tax rates and income thresholds - Option 1

Annual taxable income (A) More than – Not more than ($)	Rate (V)	Constant ($) (KP)
0 – 125,000	0.1000	0
125,000 – 150,000	0.1200	2,500
150,000 – 200,000	0.1300	4,000
200,000 – 300,000	0.1400	6,000
300,000 – and over	0.1500	9,000

K_1P = $0.10 \times TCP$

K_2P = $[(0.10 \times (P \times C, \text{maximum } \$2,479.95)) + (0.10 \times (P \times EI, \text{maximum } \$930.60))]^*$

V_1, **S,** and **LCP** = $0

Chapter 4 – Option 2 – Tax formula based on cumulative averaging

There are no changes to the federal tax rates, income thresholds, or personal amounts required for October 1, 2015.

Formula to calculate provincial and territorial tax payable (T2)

As Alberta is the only province or territory to have provincial/territorial changes, we are only reproducing their calculations.

Alberta:

T_2 = $T_4 + V_1 - S - LCP$

If the result is negative, T_2 = $0.

Where:

T_4 = $(V \times A) - KP - K_1P - K_2P - K_3P$

Where V and KP are based on the value of A in the October 2015 Alberta tax rates and income thresholds - Option 2 table.

October 2015 Alberta tax rates and income thresholds - Option 2

Annual taxable income (A) More than – Not more than ($)	Rate (V)	Constant ($) (KP)
0 – 125,000	0.1000	0
125,000 – 150,000	0.1050	625
150,000 – 200,000	0.1075	1,000
200,000 – 300,000	0.1100	1,500
300,000 – and over	0.1125	2,250

$K1P$ = $0.10 \times TCP$

$K2P$ = $[(0.10 \times (P \times C, \text{maximum } \$2,479.95)) + (0.10 \times (P \times EI, \text{maximum } \$930.60))]*$

$V1, S$ and LCP = $\$0$