

July, 2022

Patent List:

| Patent No. | Issued Date | Title |
|------------|-------------|---|
| 7,019,662 | 3/28/06 | LED Drive for Generating Constant Light Output |
| 7,768,755 | 8/3/10 | Over-voltage protection and automatic re-strike circuit for an electronic ballast |
| 7,786,391 | 8/31/10 | Ballast housing having rolled edge lead wire exit |
| 7,843,141 | 11/30/10 | Low cost step dimming interface for an electronic ballast |
| 8,427,074 | 4/23/13 | PLC controller and discharge lighting ballast receiver with high noise immunity |
| 8,498,124 | 7/30/13 | Magnetic circuit board stacking component |
| 8,536,801 | 9/17/13 | System and method for individually modulating an array of light emitting devices |
| 8,680,776 | 3/25/14 | Lighting device including a fast start circuit for regulating power supply to a PFC controller |
| 8,847,512 | 9/30/14 | Program start ballast having resonant filament heating circuit with clamped quality factor |
| 8,847,750 | 9/30/14 | Network of dual technology occupancy sensors and associated lighting control method |
| 8,909,382 | 12/9/14 | Occupancy detection system and method having automatic adaptation capabilities |
| 8,922,131 | 12/30/14 | Series resonant inverter with capacitive power compensation for multiple lamp parallel operation |
| 8,928,236 | 1/6/15 | LED driver circuit with unified controller |
| 8,928,250 | 1/6/15 | Method and circuit for LED load management |
| 8,947,015 | 2/3/15 | Indirect line voltage conduction angle sensing for a chopper dimmed ballast |
| 8,947,020 | 2/3/15 | End of life control for parallel lamp ballast |
| 9,095,022 | 7/28/15 | Constant current driver based on critical condition mode buck converter |
| 9,125,250 | 9/1/15 | Constant current control based on indirect current sensing for critical conduction mode buck converter |
| 9,125,259 | 9/1/15 | Constant current drive circuit for multi-channel LED lighting |
| 9,173,256 | 10/27/15 | Dimmable LED driver based on parallel resonant current fed self-oscillating topology |
| 9,183,974 | 11/10/15 | Bobbin apparatus for reducing gap losses in magnetic components |
| 9,190,830 | 11/17/15 | Overcurrent protection circuit and method for an LED driver |
| 9,203,321 | 12/1/15 | Non-isolated resonant DC-DC converter with boost-type voltage doubler output |
| 9,237,613 | 1/12/16 | Constant current control for an LED driver circuit using a microcontroller-based oscillator controlled by a differential error feedback signal from a proportional and integration control loop |

Universal Douglas

Universal Douglas – Canada Office
280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
Phone: 877-873-2797

Universal Douglas – United States Office
51 Century Blvd. Ste 230, Nashville, TN 37214
Phone: 615-315-5100

| | | |
|-----------|----------|--|
| 9,237,621 | 1/12/16 | Current control circuit and method for floating IC driven buck-boost converter |
| 9,237,636 | 1/12/16 | Self-clamped resonant filament heating circuit |
| 9,295,143 | 3/22/16 | Wireless controlled lighting system with shared signal path on output wires |
| 9,363,862 | 6/7/16 | Automatic current and reference gain control for wide range current control |
| 9,370,061 | 6/14/16 | High power factor constant current buck-boost power converter with floating IC driver control |
| 9,583,073 | 2/28/17 | Adaptive startup method for constant current LED drivers |
| 9,629,209 | 4/18/17 | Offline tuning interface for LED drivers |
| 9,645,597 | 5/9/17 | Circuit and method for indirectly sensing current and voltage in a floating output power supply |
| 9,648,678 | 5/9/17 | LED driver circuit with dimming control and programming interfaces |
| 9,666,355 | 5/30/17 | Common mode inductor assembly with magnetic I bar defined leakage path |
| 9,668,309 | 5/30/17 | LED driver providing constant output power across a wide output voltage and current range |
| 9,674,907 | 6/6/17 | Input surge protection circuit and method for a non-isolated buck-boost LED driver |
| 9,680,244 | 6/13/17 | Header apparatus for providing electrical connection to a printed circuit board, and daughter card and circuit assembly incorporating the header apparatus |
| 9,681,512 | 6/13/17 | Combined wireless voltage controlled dimming interface for an LED driver |
| 9,681,520 | 6/13/17 | Photosensor employing a fiber optic collector |
| 9,683,717 | 6/20/17 | Asymmetric area lens for low-profile lighting system |
| 9,689,554 | 6/27/17 | Asymmetric area lighting lens |
| 9,693,404 | 6/27/17 | Negative current sensing method for multi-channel LED driver |
| 9,693,411 | 6/27/17 | LED driver configuration and dimming interface for dynamic adjustment of driver operating parameters |
| 9,719,662 | 8/1/17 | Thin-form lens for volume lighting applications |
| 9,721,716 | 8/1/17 | Magnetic component having a core structure with curved openings |
| 9,723,667 | 8/1/17 | Output tuning and dimming interface for an LED driver |
| 9,723,695 | 8/1/17 | Power line communication method and apparatus using downstream current modulation |
| 9,756,703 | 9/5/17 | Lighting control system and method for communication of short messaging |
| 9,769,890 | 9/19/17 | Circuit and method for eliminating power-off flash for LED drivers |
| 9,769,896 | 9/19/17 | LED driver with offline tuning interface using hot and neutral inputs |
| 9,787,195 | 10/10/17 | Primary current sensing method for isolated LED driver |
| 9,788,430 | 10/10/17 | Stacked magnetic assembly |
| 9,801,262 | 10/24/17 | Conduit knockout interface device for connecting a power over ethernet cable to an LED luminaire |
| 9,805,859 | 10/31/17 | Magnetic component with elevated bobbin |
| 9,807,830 | 10/31/17 | LED driver circuit with step configurable output |

Universal Douglas

Universal Douglas – Canada Office
280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
Phone: 877-873-2797

Universal Douglas – United States Office
51 Century Blvd. Ste 230, Nashville, TN 37214
Phone: 615-315-5100

| | | |
|------------|----------|--|
| 9,820,351 | 11/14/17 | Circuit and method for abnormal fault testing in an LED driver |
| 9,826,583 | 11/21/17 | Auxiliary power supply with dynamically adjustable output |
| 9,835,322 | 12/5/17 | Flow through extended surface troffer system |
| 9,837,194 | 12/5/17 | Output transformer and resonant inductor in a combined magnetic structure |
| 9,837,913 | 12/5/17 | Control method to avoid capacitive mode switching for resonant converters |
| 9,842,683 | 12/12/17 | Bobbin and E-core assembly configuration and method for E-cores and EI-cores |
| 9,844,118 | 12/12/17 | AC LED driver circuit |
| 9,894,718 | 2/13/18 | Constant current source LED driver circuit with self-clamped output |
| 9,913,346 | 3/6/18 | Surge protection system and method for an LED driver |
| 9,913,354 | 3/6/18 | Unpowered tuning interface circuit for an LED driver |
| 9,974,129 | 5/15/18 | Circuit and method for LED current regulation and ripple control |
| 9,978,496 | 5/22/18 | Stacked magnetic assembly |
| 9,980,396 | 5/22/18 | Low profile magnetic component apparatus and methods |
| 9,991,045 | 6/5/18 | Bobbin and core assembly configuration and method for E-core and I-core combination |
| 10,039,159 | 7/31/18 | AC LED driver with capacitive switching |
| 10,041,984 | 8/7/18 | Input voltage sense circuit for boost power factor correction in isolated power supplies |
| 10,045,451 | 8/7/18 | Lighting control system, expansion pack, and method of use |
| 10,083,790 | 9/25/18 | Method and apparatus for attaching magnetic components to printed circuit boards |
| 10,098,194 | 10/9/18 | Current and voltage control circuit and method for a class II LED driver |
| 10,098,202 | 10/9/18 | Constant current source with output voltage range and self-clamping output voltage |
| 10,103,538 | 10/16/18 | Surge protection circuit for a half-bridge power converter |
| 10,128,740 | 11/13/18 | Dynamic AC impedance stabilization in a flyback LED driver |
| 10,178,720 | 1/8/19 | Low standby power control circuit for LED driver |
| 10,186,809 | 1/22/19 | Printed circuit board connector with integrated EMI noise suppression |
| 10,186,812 | 1/22/19 | Ferrite wafer and connector assembly for EMI noise suppression on a printed circuit board |
| 10,243,473 | 3/26/19 | Gate drive IC with adaptive operating mode |
| 10,264,641 | 4/16/19 | Lighting system and method for dynamically regulating driven current to an analog or digital dimming interface |
| 10,320,181 | 6/11/19 | Failure detection and alerting circuit for a common mode surge protection device in an LED driver |
| 10,320,283 | 6/11/19 | Resonant converter with pre-charging circuit for startup protection |
| 10,320,303 | 6/11/19 | Frequency controlled dummy load to stabilize PFC operation at light load conditions |
| 10,326,377 | 6/18/19 | Circuit and method for indirect primary-side load current sensing in an isolated power supply |
| 10,356,873 | 7/16/19 | Multiple interface LED driver with inherent overvoltage protection |

Universal Douglas

Universal Douglas – Canada Office
 280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
 Phone: 877-873-2797

Universal Douglas – United States Office
 51 Century Blvd. Ste 230, Nashville, TN 37214
 Phone: 615-315-5100

| | | |
|------------|----------|---|
| 10,362,644 | 7/23/19 | Flyback converter with load condition control circuit |
| 10,362,652 | 7/23/19 | Lighting device with dimming reference control method to stabilize low output current |
| 10,476,399 | 11/12/19 | Frequency control method for self-oscillating circuit |
| 10,480,966 | 11/19/19 | Adaptable fixture mount sensor for vapor tight light fixtures |
| 10,483,864 | 11/19/19 | Method for detecting short circuit conditions in frequency control loop components |
| 10,485,079 | 11/19/19 | Centralized controller interface, system, and method for configuring devices in a lighting control system |
| 10,512,143 | 12/17/19 | Method for commissioning lighting system components using voice commands |
| 10,524,328 | 12/31/19 | Fixture mount sensor with remote energy usage reporting |
| 10,524,334 | 12/31/19 | Electrically isolated system and method for digital regulation of a programmable lighting device |
| 10,553,339 | 2/4/20 | Common-mode choke with integrated RF inductor winding |
| 10,554,122 | 2/4/20 | Low loss voltage feedback method for power factor correction circuits |
| 10,560,993 | 2/11/20 | Dimming controller for LED driver and method of indirect power estimation |
| 10,581,321 | 3/3/20 | Flyback converter with multiplier signal control circuit and method |
| 10,588,205 | 3/10/20 | Isolated digital control device for LED driver using NFC technology |
| 10,591,323 | 3/17/20 | Sealed sensor apparatus |
| 10,595,383 | 3/17/20 | Device and method for programming or configuring of NFC equipped LED driver |
| 10,622,887 | 4/14/20 | Adaptive off time control to improve total harmonic distortion and power factor for critical mode flyback type PFC circuits |
| 10,624,163 | 4/14/20 | Lighting device with output buffer circuit for stability during no-load or standby operation |
| 10,643,778 | 5/5/20 | Magnetic core structure and manufacturing method using a grinding post |
| 10,650,959 | 5/12/20 | Inductor with flux path for high inductance at low load |
| 10,707,746 | 7/7/20 | Power converter with independent multiplier input for PFC circuit |
| 10,707,763 | 7/7/20 | Partially clamped resonant half-bridge converter for highly efficient constant power LED driver with inherent hard-switching protection |
| 10,709,024 | 7/7/20 | Low-cost SMT printed circuit board connector |
| 10,743,382 | 8/11/20 | Closed loop frequency control method for a self-oscillating circuit |
| 10,784,678 | 9/22/20 | Damped PI-type filter Y-type capacitance network for radiated and conducted emission |
| 10,788,191 | 9/29/20 | Power track and method of mounting and connecting a light modulator to supported luminaires |
| 10,789,843 | 9/29/20 | Method for automatically locating and commissioning lighting system components |
| 10,794,576 | 10/6/20 | Slide adjustable hinge and latch securement for a light emitting diode (LED) fixture retrofit kit |
| 10,796,841 | 10/6/20 | Inductor with flux path for high inductance at low load |
| 10,798,797 | 10/6/20 | Ceiling mount sensor assembly |

Universal Douglas

Universal Douglas – Canada Office
 280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
 Phone: 877-873-2797

Universal Douglas – United States Office
 51 Century Blvd. Ste 230, Nashville, TN 37214
 Phone: 615-315-5100

| | | |
|------------|----------|--|
| 10,910,139 | 2/2/21 | Compact common mode choke with differential noise suppression and high self resonant frequency |
| 10,930,423 | 2/23/21 | Single magnetic assembly combining three independent magnetics using a modified "E" core with four winding windows |
| 10,930,424 | 2/23/21 | Low profile inductor |
| 10,930,429 | 2/24/21 | Tunable magnetic core structure |
| 10,943,724 | 3/9/21 | Magnetic core structure |
| 10,945,320 | 3/9/21 | Output voltage control method to avoid LED turn-on flash |
| 10,945,322 | 3/9/21 | Lighting circuit and method for negative feedback control recovery in overload conditions |
| 10,952,299 | 3/16/21 | Power control method during input line voltage fluctuation |
| 11,049,642 | 6/29/21 | Dual magnetic component with three core portions |
| 11,049,643 | 6/29/21 | Combined U-core magnetic structure |
| 11,051,377 | 6/29/21 | Dynamic overload protection method |
| 11,064,588 | 7/13/21 | Clamped resonant tank with constant soft-switching and startup overshoot prevention |
| 11,089,664 | 8/10/21 | LED driver with programmable internal NTC temperature foldback |
| 11,096,253 | 8/17/21 | Method and circuitry to configure multiple drivers simultaneously |
| 11,118,761 | 9/14/21 | Lighting structure end cap mounts to secure cable without leakage paths |
| 11,122,668 | 9/4/21 | Power supply and power clamping method at high ambient temperatures |
| 11,201,006 | 12/14/21 | Bobbin for edge-mounted magnetic core |
| 11,228,169 | 1/18/22 | Combined high and low voltage protection circuit for half-bridge converter |
| 11,297,697 | 4/5/22 | Light modulating control method for dimming analog constant current LED driver |
| 11,297,698 | 4/5/22 | Constant current led driver with light output modulation |

Products & Supporting Patents:

| | |
|--------------|-----------|
| 188901.02 | |
| | 9,980,396 |
| B132I120RC-B | |
| | 7,786,391 |
| B132IUNVEL-A | |
| | 7,786,391 |
| B132IUNVHE-A | |
| | 7,786,391 |
| B132IUNVHE-N | |
| | 7,786,391 |
| B132IUNVHP-B | |
| | 7,786,391 |
| B132IUNVHP-N | |

| | |
|---------------|-----------|
| | 7,786,391 |
| B132PUNVHP-A | |
| | 7,786,391 |
| B214PU115S50A | |
| | 7,786,391 |
| B228PUNV-C | |
| | 8,847,512 |
| B228PUNV-N | |
| | 7,786,391 |
| B232I120RC-B | |
| | 7,786,391 |
| B232I120RCL-B | |
| | 7,786,391 |

| | |
|---------------|-----------|
| B232I120RHH-A | |
| | 7,786,391 |
| B232I347HP-A | |
| | 7,786,391 |
| B232I347L-A | |
| | 7,786,391 |
| B232I347RH-A | |
| | 7,786,391 |
| B232IUNV104-A | |
| | 7,786,391 |
| B232IUNVEL-A | |
| | 7,786,391 |
| B232IUNVEXP-B | |

Universal Douglas

Universal Douglas – Canada Office
280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
Phone: 877-873-2797

Universal Douglas – United States Office
51 Century Blvd. Ste 230, Nashville, TN 37214
Phone: 615-315-5100

| |
|---------------|
| 7,786,391 |
| B232IUNVHE-A |
| 7,786,391 |
| B232IUNVHEH-A |
| 7,786,391 |
| B232IUNVHE-N |
| 7,786,391 |
| B232IUNVHP-B |
| 7,786,391 |
| B232IUNVHP-BR |
| 7,786,391 |
| B232IUNVHP-N |
| 7,786,391 |
| B232IUNVHP-N0 |
| 7,786,391 |
| B232IUNVHP-NR |
| 7,786,391 |
| B232IUNVLC-B |
| 7,786,391 |
| B232P3S50PLA |
| 7,786,391 |
| B232P3S50PLHA |
| 7,786,391 |
| B232PU104S50A |
| 7,786,391 |
| B232PULV50-A |
| 7,786,391 |
| B232PULV50H-A |
| 7,786,391 |
| B232PUNVDFH-A |
| 7,786,391 |
| B232PUNVDR-A |
| 7,786,391 |
| B232PUNVDRH-A |
| 7,786,391 |
| B232PUNVDRL-A |
| 7,786,391 |
| B232PUNVEL-A |
| 7,786,391 |
| B232PUNVEL-B |
| 7,786,391 |
| B232PUNVHE-A |
| 7,786,391 |
| B232PUNVHE-B |
| 7,786,391 |

| |
|---------------|
| B232PUNVHEH-A |
| 7,786,391 |
| B232PUNVHP-A |
| 7,786,391 |
| B232PUS50-A |
| 7,786,391 |
| B232PUS50PLA |
| 7,786,391 |
| B232PUS50PLHA |
| 7,786,391 |
| B234SR120M-A |
| 7,786,391 |
| 9,805,859 |
| B240R220-A |
| 7,786,391 |
| B244I277HE-A |
| 7,786,391 |
| B244IUNVHE-A |
| 7,786,391 |
| B254PUNVPL-A |
| 7,786,391 |
| B259IUNVEL-A |
| 7,786,391 |
| B259IUNVHE-A |
| 7,786,391 |
| B259IUNVHP-A |
| 7,786,391 |
| B332I120L-A |
| 7,786,391 |
| B332I277L-A |
| 7,786,391 |
| B332I277RHU-A |
| 7,786,391 |
| B332IUNVEL-A |
| 7,786,391 |
| B332IUNVHE-A |
| 7,786,391 |
| B332IUNVHEH-A |
| 7,786,391 |
| B332IUNVHP-A |
| 7,786,391 |
| B332IUNVLC-A |
| 7,786,391 |
| B332PUNVEL-A |
| 7,786,391 |

| |
|-------------------|
| B332PUNVHE-A |
| 7,786,391 |
| B432I120L-A |
| 7,786,391 |
| B432I120RC-A |
| 7,786,391 |
| B432I120RCL-A |
| 7,786,391 |
| B432I120RES-A |
| 7,786,391 |
| B432I120RH-A |
| 7,786,391 |
| B432I277L-A |
| 7,786,391 |
| B432I277RH-A |
| 7,786,391 |
| B432IUNVEL-A |
| 7,786,391 |
| B432IUNVHE-A |
| 7,786,391 |
| B432IUNVHP-A |
| 7,786,391 |
| B432IUNVLC-A |
| 7,786,391 |
| B454PUNV-E |
| 9,237,636 |
| 9,805,859 |
| B454PUNVHB-E |
| 8,922,131 |
| 9,237,636 |
| 9,805,859 |
| B454PUNVPL-E |
| 8,922,131 |
| 9,183,974 |
| B454PUNVPLHB |
| 8,922,131 |
| C240PUNVDR-A |
| 7,786,391 |
| C240PUNVHP-B |
| 7,786,391 |
| D060C03250-SQ020C |
| 9,974,129 |
| 10,128,740 |
| D10CC150HV10F |
| 9,237,613 |

Universal Douglas

Universal Douglas – Canada Office
280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
Phone: 877-873-2797

Universal Douglas – United States Office
51 Century Blvd. Ste 230, Nashville, TN 37214
Phone: 615-315-5100

| |
|-----------------|
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| D10CC150HVT-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| 10,945,322 |
| 11,051,377 |
| D10CC150HVT-FR |
| 10,945,322 |
| 11,051,377 |
| D10CC150HVx-F |
| 8,680,776 |
| 8,928,236 |
| 8,928,250 |
| D10CC150UV10F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| D10CC150UVT-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| 10,945,322 |
| 11,051,377 |
| D10CC150UVT-FR |
| 10,945,322 |
| 11,051,377 |
| D10CC150UVx-F |
| 8,680,776 |
| D10CC30347PW-C |
| 11,089,664 |
| D10CC30347TWx-X |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |

| |
|-------------------|
| 9,820,351 |
| 9,826,583 |
| D10CC30UEXPW-C |
| 11,089,664 |
| D10CC30UNVD-C |
| 9,237,613 |
| D10CC30UNVPW-C |
| 9,894,718 |
| 10,083,790 |
| 10,098,202 |
| 11,089,664 |
| D10CC30UNVPW-L |
| 9,894,718 |
| 10,098,202 |
| D10CC30UNVPWX12-C |
| 10,083,790 |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D10CC30UNVPWX12-K |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D10CC30UNVPWX24-C |
| 10,083,790 |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D10CC30UNVPWX24-K |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D10CC30UNVPWX-C |
| 9,894,718 |
| D10CC30UNVPWX-K |
| 9,894,718 |
| D10CC30UNVTW-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D10CC30UNVTWL |
| 9,237,613 |
| 9,583,073 |

| |
|------------------|
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D10CC30UNVTW-L |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D10CC30UNVTZ-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D10CC30UVPID12-C |
| 10,045,451 |
| 10,098,202 |
| 10,264,641 |
| D10CC30UVPID24-C |
| 10,045,451 |
| 10,098,202 |
| 10,264,641 |
| D10CC30UVPWA12-C |
| 10,264,641 |
| D10CC30UVPWA24-C |
| 10,264,641 |
| D10CC42UNVA-A |
| 9,237,613 |
| D10CC42UNVS-A |
| 7,786,391 |
| 9,237,613 |
| D10CC55347TW-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D10CC55347TW-K |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |

Universal Douglas

Universal Douglas – Canada Office
 280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
 Phone: 877-873-2797

Universal Douglas – United States Office
 51 Century Blvd. Ste 230, Nashville, TN 37214
 Phone: 615-315-5100

| |
|----------------|
| 9,826,583 |
| D10CC55347TZ-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D10CC55UNVA-C |
| 9,237,613 |
| D10CC55UNV-C |
| 9,237,613 |
| D10CC55UNVD-C |
| 9,237,613 |
| D10CC55UNVT-C |
| 9,237,613 |
| D10CC55UNVTW-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D10CC55UNVTZ-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D10CC60UNVA-V |
| 9,190,830 |
| D10CC60UNV-V |
| 9,363,862 |
| D10CC60UNVV-V |
| 9,190,830 |
| D10CCT180UVT-F |
| 9,125,259 |
| D12V60UNV-A |
| 7,786,391 |
| D14CC150HVT-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| 10,945,322 |

| |
|--------------------|
| 11,051,377 |
| D14CC150HVT-FR |
| 10,945,322 |
| 11,051,377 |
| D14CC150HVx-F |
| 8,680,776 |
| 8,928,236 |
| 8,928,250 |
| D14CC150UV10F |
| 9,237,613 |
| D14CC150UVT-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| 10,945,322 |
| 11,051,377 |
| D14CC150UVT-FR |
| 10,945,322 |
| 11,051,377 |
| D14CC150UVx-F |
| 8,680,776 |
| D14CC180HRVPWX12-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 10,952,299 |
| 11,089,664 |
| D14CC180HRVPWX24-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 10,952,299 |
| 11,089,664 |
| D14CC180UNVPWX12-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 10,952,299 |
| 11,089,664 |
| D14CC180UNVPWX24-F |
| 10,945,322 |
| 11,051,377 |

| |
|-------------------|
| 11,064,588 |
| 11,122,668 |
| D15CC55347PW-C |
| 11,089,664 |
| D15CC55347TW-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D15CC55347TW-K |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D15CC55347TZ-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D15CC55UEXPW-C |
| 11,089,664 |
| D15CC55UNVA-C |
| 9,237,613 |
| D15CC55UNVD-C |
| 9,237,613 |
| D15CC55UNVPA12-FS |
| 9,913,354 |
| 10,098,202 |
| D15CC55UNVPA24-FS |
| 9,913,354 |
| 10,098,202 |
| D15CC55UNVPW12-C |
| 10,083,790 |
| 10,098,202 |
| D15CC55UNVPW24-C |
| 10,083,790 |
| 10,098,202 |
| D15CC55UNVPW-C |
| 9,894,718 |

Universal Douglas

Universal Douglas – Canada Office
 280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
 Phone: 877-873-2797

Universal Douglas – United States Office
 51 Century Blvd. Ste 230, Nashville, TN 37214
 Phone: 615-315-5100

| |
|-------------------|
| 10,083,790 |
| 10,098,202 |
| 11,089,664 |
| D15CC55UNVPW-L |
| 9,894,718 |
| 10,098,202 |
| D15CC55UNVPWX12-K |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D15CC55UNVPWX24-K |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D15CC55UNVPWX-C |
| 9,894,718 |
| D15CC55UNVPWX-K |
| 9,894,718 |
| D15CC55UNVT-C |
| 9,237,613 |
| D15CC55UNVTW-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D15CC55UNVTW-L |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D15CC55UNVTZ-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D15CC55UVPA12-FS |
| 9,837,194 |
| 11,096,253 |
| D15CC55UVPA24-FS |
| 9,837,194 |
| D15CC55UVPID12-C |
| 10,045,451 |

| |
|--------------------|
| 10,098,202 |
| 10,264,641 |
| D15CC55UVPID24-C |
| 10,045,451 |
| 10,098,202 |
| 10,264,641 |
| D15CC55UVPWA12-C |
| 10,264,641 |
| D15CC55UVPWA24-C |
| 10,264,641 |
| D20CC180HRVPWX12-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 10,952,299 |
| 11,089,664 |
| 11,228,169 |
| D20CC180HRVPWX24-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 11,228,169 |
| D20CC180UNVPWX12-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 10,952,299 |
| 11,089,664 |
| 11,228,169 |
| D20CC180UNVPWX24-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 11,228,169 |
| D21CC80347PW-C |
| 11,089,664 |
| D21CC80347TW-D |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |

| |
|-------------------|
| 9,820,351 |
| 9,826,583 |
| D21CC80347TZ-D |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D21CC80UEXPW-C |
| 11,089,664 |
| D21CC80UNVPW-C |
| 9,894,718 |
| 10,083,790 |
| 10,098,202 |
| 11,089,664 |
| D21CC80UNVPWX12-D |
| 10,083,790 |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D21CC80UNVPWX24-D |
| 10,083,790 |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D21CC80UNVPWX-D |
| 9,894,718 |
| D21CC80UNVTW-D |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D21CC80UNVTZ-D |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D21CC80UVPID12-D |
| 10,045,451 |
| 10,098,202 |
| 10,264,641 |
| D21CC80UVPID24-D |

Universal Douglas

Universal Douglas – Canada Office
 280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
 Phone: 877-873-2797

Universal Douglas – United States Office
 51 Century Blvd. Ste 230, Nashville, TN 37214
 Phone: 615-315-5100

| |
|-------------------|
| 10,045,451 |
| 10,098,202 |
| 10,264,641 |
| D21CC80UVPWA12-D |
| 10,264,641 |
| D21CC80UVPWA24-D |
| 10,264,641 |
| D23CC90HRVT-F |
| 9,237,613 |
| D23CC90UNVT-F |
| 9,203,321 |
| 9,237,613 |
| D24V100UNV-A |
| 7,786,391 |
| D28CC95UNVPW-F |
| 11,089,664 |
| D28CC95UNVPWX12-F |
| 11,089,664 |
| D28CC95UVPA12-F |
| 9,837,194 |
| 9,913,354 |
| 10,098,202 |
| 11,096,253 |
| D28CC95UVPA12-FS |
| 9,913,354 |
| 9,978,496 |
| 10,098,202 |
| 11,096,253 |
| D28CC95UVPA12-VF |
| 9,837,194 |
| 9,913,354 |
| 9,978,496 |
| 10,098,202 |
| 11,096,253 |
| D28CC95UVPA12-VJ |
| 9,913,354 |
| 9,978,496 |
| 10,098,202 |
| 11,096,253 |
| D28CC95UVPA24-F |
| 9,837,194 |
| 9,913,354 |
| 10,098,202 |
| D28CC95UVPA24-FS |
| 9,913,354 |

| |
|------------------|
| 9,978,496 |
| 10,098,202 |
| D28CC95UVPA24-VF |
| 9,837,194 |
| 9,913,354 |
| 9,978,496 |
| 10,098,202 |
| D28CC95UVPA24-VJ |
| 9,913,354 |
| 9,978,496 |
| 10,098,202 |
| D530C150HV10F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| D530C150HV-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| D530C150HVT-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| 10,945,322 |
| 11,051,377 |
| D530C150HVx-F |
| 8,680,776 |
| 8,928,236 |
| 8,928,250 |
| D530C150HVT-FR |
| 10,945,322 |
| 11,051,377 |
| D530C150UV10F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| D530C150UV-F |

| |
|----------------|
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| D530C150UVT-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| 10,945,322 |
| 11,051,377 |
| D530C150UVT-FR |
| 10,945,322 |
| 11,051,377 |
| D530C150UVx-F |
| 8,680,776 |
| D700C120UVT-V |
| 9,237,613 |
| D700C120UVx-V |
| 9,190,830 |
| D700C150HV10F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| D700C150HVT-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| 10,945,322 |
| 11,051,377 |
| D700C150HVT-FR |
| 10,945,322 |
| 11,051,377 |
| D700C150HVx-F |
| 8,680,776 |
| 8,928,236 |
| 8,928,250 |
| D700C150UV10F |
| 9,237,613 |
| 9,837,913 |

Universal Douglas

Universal Douglas – Canada Office
 280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
 Phone: 877-873-2797

Universal Douglas – United States Office
 51 Century Blvd. Ste 230, Nashville, TN 37214
 Phone: 615-315-5100

| |
|-------------------|
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| D700C150UVT-F |
| 9,237,613 |
| 9,837,913 |
| 9,913,346 |
| 10,098,202 |
| 10,103,538 |
| 10,945,322 |
| 11,051,377 |
| D700C150UVT-FR |
| 10,945,322 |
| 11,051,377 |
| D700C150UVx-F |
| 8,680,776 |
| D700C20347PW-C |
| 11,089,664 |
| D700C20UEXPW-C |
| 11,089,664 |
| D700C20UNVPW-C |
| 9,894,718 |
| 10,083,790 |
| 10,098,202 |
| 11,089,664 |
| D700C20UNVPW-L |
| 9,894,718 |
| 10,098,202 |
| D700C20UNVPWX12-C |
| 10,083,790 |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D700C20UNVPWX12-K |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D700C20UNVPWX24-C |
| 10,083,790 |

| |
|-------------------|
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D700C20UNVPWX24-K |
| 10,098,194 |
| 10,098,202 |
| 10,178,720 |
| D700C20UNVPWX-C |
| 9,894,718 |
| D700C20UNVPWX-K |
| 9,894,718 |
| D700C30347TW-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D700C30347TW-K |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D700C30347TZ-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,820,351 |
| 9,826,583 |
| D700C30UNVD-C |
| 9,237,613 |
| D700C30UNVTW-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |

| |
|--------------------|
| 9,826,583 |
| D700C30UNVTZ-C |
| 9,237,613 |
| 9,583,073 |
| 9,668,309 |
| 9,769,890 |
| 9,826,583 |
| D700CT160UVT-F |
| 9,125,259 |
| D950C180HRVPWX12-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 10,952,299 |
| 11,089,664 |
| 11,228,169 |
| D950C180HRVPWX24-F |
| 10,945,322 |
| D950C180UNVPWX12-F |
| 10,945,322 |
| 11,051,377 |
| 11,064,588 |
| 11,122,668 |
| 10,952,299 |
| 11,089,664 |
| 11,228,169 |
| D950C180UNVPWX24-F |
| 10,945,322 |
| SLI259IUNVHPA |
| 7,786,391 |
| WRV-LP-232HA |
| 7,786,391 |
| WRV-LP-232NA |
| 7,786,391 |
| WRV-PS-232HA |
| 7,786,391 |
| WRV-PS-232NA |
| 7,786,391 |

Universal Douglas

Universal Douglas – Canada Office
 280-3605 Gilmore Way Burnaby, BC V5G 4X5, Canada
 Phone: 877-873-2797

Universal Douglas – United States Office
 51 Century Blvd. Ste 230, Nashville, TN 37214
 Phone: 615-315-5100