C.O. Engineering – Bearings and PT Components
2019-12-18

Dodge Passport: Selecting a Belted Drive

Dodge Passport provides a quick & easy way to select drive systems. When selecting a belt drive, Dodge Passport Belted Drives selection program does the hard work for you. This document provides advice on how to get more out of Dodge Passport for Belted Drives, and how to resolve common questions and issues.

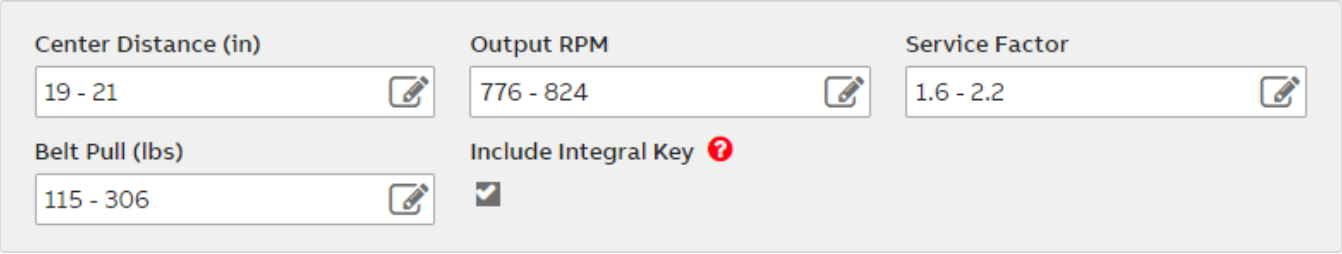
Information needed:

- Driver power
- Driver speed
- Driver shaft size
- Driven shaft size
- Driven shaft speed
- Center distance

Questions and issues:

Q: There are too many results found. How do I find the best selection?

A: By filtering and sorting. Filters are at the top of the selections page. You can filter by narrowing the ranges for center distance, output speed, service factor, or belt pull.



For example, limiting the belt pull to 200 lb: 

gives results of:

ABB Motors and Mechanical Inc.
6040 Ponders Court
Greenville, SC 29615
Phone: +1 864 284 5700
abb.com

List Price (USD)	Driver	Driven	Belt	Output RPM	Center Distance (in)	Belt Pull (lbs)	Actual Service Factor
V-Belt Drives (53)							
298.44	1B5V86 B SHEAVE	1B5V184-B SHEAVE	5V850 BELT	822	20.27	158	2.05
298.44	1B5V86 B SHEAVE	1B5V184-B SHEAVE	5V850 BELT	822	20.27	158	2.05
299.18	2B5V68-B SHEAVE	2B5V154-B SHEAVE	B74 BELT	795	19.43	188	2.15

Results can also be sorted by clicking on column header. By default, the selections are sorted by list or net price, from lowest to highest. For example:

List Price (USD)	Driver	Driven	Belt	Output RPM	Center Distance (in)	Belt Pull (lbs)	Actual Service Factor
V-Belt Drives (2349)							
226.82	2B5V56-B SHEAVE	2B5V124-B SHEAVE	B67 BELT	818	19.41	224	1.60
226.82	2B5V56-B SHEAVE	2B5V124-B SHEAVE	B67 BELT	818	19.41	224	1.60
227.06	2B5V56-B SHEAVE	2B5V124-B SHEAVE	B68 BELT	818	19.91	224	1.62

The red arrow (e.g. List Price) indicates which column is used for sorting the output.

Clicking on a different column header changes the sort to that column.

List Price (USD)	Driver	Driven	Belt	Output RPM	Center Distance (in)	Belt Pull (lbs)	Actual Service Factor
V-Belt Drives (380)							
495.55	3-3V5.0-1610 SHEAVE	3-3V10.6-2517 SHEAVE	3V630 BELT	822	19.05	266	1.91
495.55	3-3V5.0-1610 SHEAVE	3-3V10.6-2517 SHEAVE	3V630 BELT	822	19.05	266	1.91
487.55	3-3V4.75-1610 SHEAVE	3-3V10.6-2517 SHEAVE	3V630 BELT	781	19.23	280	1.80

You can even sort by both primary column and secondary column, by holding down the “shift” key while clicking on the secondary column. For example, by first clicking on “Driver” and then shift-clicking on “List Price”:

List Price (USD)	Driver	Driven	Belt	Output RPM	Center Distance (in)	Belt Pull (lbs)	Actual Service Factor
V-Belt Drives (650)							
296.38	1B5V86 B SHEAVE	1B5V184-B SHEAVE	5VX830 BELT	822	19.24	160	2.48
296.38	1B5V86 B SHEAVE	1B5V184-B SHEAVE	5VX830 BELT	822	19.24	160	2.48
298.44	1B5V86 B SHEAVE	1B5V184-B SHEAVE	5V850 BELT	822	20.27	158	2.05

…the results are sorted first by Driver, and second by List Price.

Q: There are no selections found. Or,
Q: I don’t see the selection I expected.

A: There are several possible reasons for this, often because Passport searches for stock products but not for MTO (make-to-order) products:

Possible Issue	Solution
Driven speed tolerance may be too small.	In some cases, there are large jumps in between stock sheave/sprocket diameters. Try increasing the driven speed tolerance. 5 | % | rpm
Center distance tolerance may be too small.	In some cases, there are large jumps in between stock belt lengths. Try increasing the center distance tolerance. 10 | % | in
Center distance may be too large.	Try specifying a smaller center distance to test whether this is the issue.
Passport will not offer a sheave which is smaller than the NEMA minimum recommended pitch diameter --- see NEMA MG 1.	This is normal --- the intent is to ensure the motor can handle the belt pull. If desired, you can circumvent this by selecting Primary Mover Type “Engine / Other”: Primary Mover Type Engine / Other …but you will need to ensure the system can handle the belt pull. The belt pull is reported in the Dodge Passport output: **Technical Data** Speed Ratio 2.21 Belt Speed 1,970 ft/min Belt Pull 306 lbs
Rim speeds greater than 6500 feet/min are not supported by Passport as of this writing.	You will have to do a manual selection to get rim speeds up to 10000 feet/min. Alternate materials will be required; therefore, the sheaves will be MTO (make-to-order).
Bored-to-size sheaves will not be selected because they are not supported by Passport as of this writing.	You can work around this by selecting a standard shaft size (possibly with bushing) that is supported by Passport. Then, buy the corresponding bored-to-size sheave instead.
The selection you expected may not fit onto the driver (or driven) shaft.	Try specifying a smaller shaft diameter to test whether this is the issue: 1.5625 | in | mm In some cases, a larger shaft can be accommodated by an MTO (make-to-order) sheave with a larger bushing.

Q: Passport says " * Dynamic balancing is recommended…"

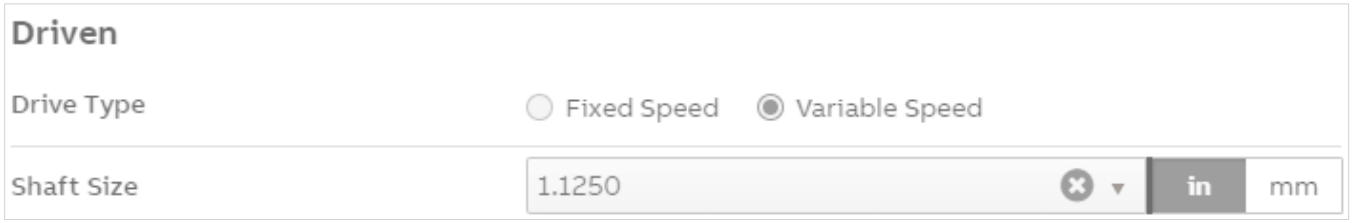
5,859.80	* 10-5V13.2-4040 SHEAVE	10-5V31.5-4545 SHEAVE	5VX1600 BELT	729	43.96	2,057	2.22

* Dynamic balancing is recommended for Sheave/Sprocket.

A: Dynamic balancing is recommended by MPTA (Mechanical Power Transmission Association) when the face width and RPM exceed a certain calculation. Stock Dodge sheaves are static balanced. If dynamically balancing is desired, this can optionally be provided as an MTO (make-to-order).

Q: Can I select a variable speed sheave?

A: Yes. Use the "Variable Speed" drive type to select a variable pitch driver sheave:



…then the Passport output report will advise how to adjust the variable pitch sheave to achieve the desired output speed:

VP Sheave Adjustment

# of Turns	0 (Closed)	1	2	3	4	5	6
Pitch Diameter	6.63	6.43	6.22	6.02	5.81	5.61	5.41
Center Distance	20.14	20.28	20.43	20.57	20.72	20.86	21.00
Output Speed	852	826	799	773	746	721	695